Comprehension of Labrador Inuttitut functional morphology by receptive bilinguals

by

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Abstract

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This study examines knowledge of grammar by receptive bilinguals (RBs) - heritage speakers who describe themselves as capable of fluent comprehension in Labrador Inuttitut (an endangered dialect of Inuktitut), but of little or no speech production in it. Despite the growing research on incomplete acquisition, RBs have yet to be studied as a specific population.

Participants (8 fluent bilinguals, 17 RBs, 3 low-proficiency RBs) performed a morpheme comprehension task and a grammaticality judgment task. General measures of their comprehension and production abilities included a story retelling task as an overall assessment of comprehension, a vocabulary test, an elicited imitation task, and a production task. This data was complemented by language behaviour interviews.

The results showed that RBs have good, though not perfect, comprehension and basic vocabulary, but speech production is very difficult for them. They have grammatical knowledge, but it is incomplete: Knowledge of some structures is robust, and their comprehension is fluent (past vs. future contrast, aspectual morphemes); others are missing (temporal remoteness degrees); and yet for others (case and agreement), RBs have the category and know its position in the word structure, but have difficulty connecting the features with the morphemes expressing them. These findings explain the significant asymmetry between comprehension and production in RBs: In comprehension, incomplete knowledge may result in loss of some aspects of meaning, but in many cases it

can be compensated for by pragmatic knowledge and extralinguistic context, while in production, it can result in the selection of an incorrect morpheme or inability to select a morpheme.

Low-proficiency RBs have partial comprehension, small vocabulary, and almost no production. They do not understand most functional morphemes; however, they show knowledge of the basic properties such as the position of the obligatory agreement marker on the verb.

This study provides data on an understudied language and an understudied population at the extreme end of unbalanced bilingualism. The findings have implications both for the psycholinguistics of bilingualism and for language revitalization, especially in the context of a language shift in indigenous language communities, where RBs are often the last generation to have competence in the indigenous language.

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Chapter 1

Introduction: The problem

Receptive knowledge of a language - also termed *receptive bilingualism*, or *passive bilingualism* - is a type of language competence that is limited to speech comprehension, without speech production. Anecdotally, it appears to be quite common. Many people say that they understand a certain language, but cannot speak it. This can apply to a first language or any subsequently learned language that either was not acquired completely or underwent attrition. Receptive bilingualism is especially common in cases when the language in question is a minority language, such as immigrants' children, as well as the younger generations in indigenous communities where a majority language has become dominant.

Receptive bilingualism has not been previously studied as a phenomenon in its own right in psycholinguistics and language acquisition. The term itself has existed for some decades, but it has rarely been mentioned in the general literature on bilingualism, for example, in Romaine (1989): "A person might, for example, have no productive control over a language, but be able to understand utterances in it. In such instances linguists generally speak of 'passive' or 'receptive' bilingualism" (p. 10). In such definitions, it was taken for granted that receptive bilinguals (RBs) have comprehension ability. Though receptive bilingualism received some attention in previous research, it was mainly in

sociolinguistic studies of language shift and language death, where RBs' language abilities were not tested. In recent years, the new field of heritage language acquisition has emerged, which focuses on incomplete acquisition of a first language as a result of shift to a second language[1]. In heritage speakers of various proficiency levels, grammatical deficits have been found not only in production but also in comprehension. In some studies (e.g. Polinsky, 2006), some heritage speakers were reluctant to produce speech, but they were not studied as a separate group defined by presence of comprehension and lack of production. In other heritage language studies (e.g. Laleko, 2010, p. 5), RBs are not credited with real knowledge of the heritage language beyond a few words and phrases, and are explicitly excluded from the scope of the term *heritage speaker* (i.e., a heritage speaker must actually speak the language). As a result, RBs' knowledge has not been previously investigated. It is not known what their comprehension is like, whether - and how - it is different from that of the fluent bilinguals, and what the explanation is for the striking asymmetry between comprehension and production.

This study investigates comprehension in receptive bilinguals in order to find out what they know in their receptively known language, with the focus on morphosyntactic knowledge. Do RBs actually have good comprehension? And what kind of grammatical knowledge do they have, if any? Answering these questions brings us closer to understanding what knowledge enables us to understand a language, and what else we need to be able to speak that language. This, in turn, is directly related to the central question of modern linguistics - what it means to know a language. Since receptive bilingualism is a type of bilingualism, studying it enriches our understanding of bilingualism in general, and a weaker language in unbalanced bilingualism in particular.

[1]The term *heritage language* in a broad sense is sometimes applied, on one hand, to cases of individuals who have fairly high proficiency in their family language, and, on the other hand, to cases of individuals who have only a cultural connection to their family language, but no knowledge of that language. Following the practice of researchers working on incompletely acquired heritage languages, I use the term *heritage language* in a narrow sense to denote an incompletely acquired language to which an individual was exposed in his or her family (see Chapter 2 for details).

Besides its theoretical significance, investigation of receptive bilingualism has practical implications that are especially important for endangered languages. Receptive bilinguals often are the last generation to have at least some kind of competence in the endangered language. Because they do not speak the language, they cannot pass it on to their children. When the nature of their competence is understood better, this might become a step forward towards the development of strategies helping receptive bilinguals to become fully fluent bilinguals.

In principle, one could do research on receptive bilingualism in any place where there are immigrants or members of language minorities. However, one of the best places for such research is a minority language community where a majority language is taking over, because then it is possible to have a large and more or less homogeneous group of participants. The case investigated in this paper is that of Labrador Inuttitut[2] receptive bilinguals. Labrador Inuttitut, a dialect of the Eskimo-Aleut language Inuktitut, is spoken in Inuit communities of Northern Labrador (Nunatsiavut). In Nunatsiavut, language shift from Inuttitut to English that has been taking place since the eighteenth century has accelerated since the 1950s, and today, Labrador Inuttitut is endangered. Among Labrador Inuit, most speak English, and only older people are fluent in Inuttitut. Residents of Nunatsiavut report that there are many Labrador Inuit who understand speech in Inuttitut, and can even translate from Inuttitut to English, but do not ever say anything in Inuttitut; typically, they were raised by Inuttitut-speaking parents or grandparents. Such individuals are receptive bilinguals: They are English-Inuttitut bilinguals in speech comprehension, but English monolinguals in speech production. When addressed in Inuttitut, they reply in English. Johns and Mazurkewich (2001) describe Labrador Inuit RBs who took Inuttitut language classes as having "extensive passive knowledge and even a wide vocabulary", but lacking "the ability to make sentences in the language" (p.

[2]I use the term *Inuttitut* to refer to the Labrador dialect, because this is the term its speakers currently use to refer to their own dialect in English. For the discussion of other dialects or this language in general, I will use the more widely accepted term *Inuktitut*.

362). Little else has been known about RBs' knowledge of Inuttitut, or, in fact, any kind of incomplete knowledge of Inuttitut, prior to the present study.

Since RBs' knowledge does not enable them to produce fluent speech, it is likely a type of incomplete knowledge. Because Inuttitut RBs were raised in families where Inuttitut was spoken, this is likely their first language. Therefore, this study is informed by previous research in incomplete language knowledge, with a focus on incomplete acquisition of the first language (also referred to as heritage language acquisition). In turn, this study contributes new data a) on a population that has not been studied as a separate group before; b) on a language incomplete acquisition of which has not been studied before. In fact, while incomplete acquisition of a variety of typologically different languages has been studied to date, from isolating (e.g. Mandarin) to agglutinative (e.g. Turkish), and also including languages with non-linear morphology (e.g. Hebrew), to the best of my knowledge, there are no previous studies of low-proficiency speakers of a polysynthetic language; this study on Inuttitut is the first one.

The main goal of this study is to test RBs' comprehension of functional morphemes' contribution to meaning and to well-formedness. Functional morphology, such as affixes expressing case on nouns, agreement or tense on verbs, etc., is especially relevant in the case of such a pronounced asymmetry between comprehension and production. Hypothetically, in the most extreme case, functional morphology might be completely ignored in comprehension, which would result in missing some aspects of meaning, but it still may be possible to compensate for this loss by using lexical and pragmatic knowledge; however, functional morphemes are necessary to build a well-formed, informative utterance for speech production. Alternatively, RBs might exhibit a difference in their processing of the two types of functional morphemes - those that provide easily noticeable contribution to meaning (such as tense, that provides information about the event time) and those that mainly serve for well-formedness (such as agreement). The latter morphemes can be ignored in comprehension without significant loss of meaning, but are necessary for

production. Thus, it is possible that RBs ignore such morphemes, but pay attention to morphemes with a clear contribution to the meaning. It is also possible that RBs attend to both types of morphemes, but have selective deficits in their grammar. Therefore, the study has been designed to answer the following questions about grammatical knowledge. Do RBs have any grammatical knowledge? Does their knowledge consist only of morphemes with obvious semantic contribution, or, in addition, morphemes that contribute to well-formedness? How is their grammatical knowledge different from that of fluent speakers? With these questions in mind, two main tasks were selected for this study: the morpheme comprehension task and the grammaticality judgment task. The morpheme comprehension task was designed to test functional morphemes' contribution to meaning. The grammaticality judgment task was designed to test comprehension of morphemes and structures that contribute mainly to well-formedness. In these tasks, RBs listened to sentences in Inuttitut; English, their dominant language, was used as a meta-language for instructions and participants' responses. RBs' responses were compared to those of a control group of fluent Inuttitut-English bilinguals.

In order to gather more information on what RBs can do with their receptively known language, additional tests of general comprehension were conducted. RBs' comprehension of a piece of discourse was tested in a story retelling task, in which they listened to a story in Inuttitut and then re-told it in English. Their receptive vocabulary was tested in a word translation task. Two other tests probed to what extent speech production can be elicited from RBs. Free production was tested in a picture description task, and assisted production, in an elicited imitation task, where RBs listened to long complex Inuttitut words and tried to repeat them. Thus, there were six experiments in total: two grammar tasks (morpheme comprehension and grammaticality jugments), two general comprehension tasks (story retelling and word translation), and two production tasks (picture description and elicited imitation). The experimental data is complemented by data gathered via guided interviews on language behaviour that consisted of four

parts: self-assessment of language skills, language use, language acquisition history, and language attitudes.

The results reveal that RBs do have good general comprehension, but it is not perfect. They have basic grammatical knowledge, and comprehend functional morphemes, both those contributing to meaning and those contributing to well-formedness, but there are gaps in this knowledge. Some linguistic categories are robust, some are missing, and knowledge of others is partial.

The structure of the thesis is as follows. In Chapter 2, I provide an overview of the literature on incomplete language knowledge and incomplete language acquisition, with particular attention to the differences between speech production and speech comprehension, in order to provide the psycholinguistic background for this study. In Chapter 3, I provide background on the language in question, Labrador Inuttitut. This includes the status of the language in the community where the study took place, overview of its grammar, and rationale for the selection of linguistic variables for testing, as well as theoretical background and L1 acquisition findings for the selected variables. In Chapter 4, I present my research methodology: research questions, hypotheses and predictions, goals and components of the study, and general overview of the data elicitation procedures. This chapter also contains information about the study participants, including the results of the interviews on language behaviour. In Chapter 5, I present the results of general language ability tests: picture description, elicited imitation, story retelling, and word translation. In Chapter 6, I present and discuss the findings of the test of functional morpheme comprehension (part of these findings, on comprehension of tense, have been published in Sherkina-Lieber, 2010). In Chapter 7, I present and discuss the findings of the grammaticality judgment task (these have been disseminated in Sherkina-Lieber, Perez-Leroux, & Johns, 2011[3]). The concluding chapter 8 contains the summary and

[3]This is a joint paper, in the writing of which I acted as the principal author who had designed and conducted the experiment, and analyzed the data.

the discussion of the whole study, its limitations, and implications of the findings for the study of bilingualism and for language revitalization efforts. The test materials are attached as appendices.

Chapter 2

Incomplete language knowledge: Background

The purpose of this chapter is to provide a background on language knowledge in populations similar to receptive bilinguals in that they are also characterized by incomplete knowledge of their first language. The closest such population is heritage speakers - those who have not acquired their first language completely before switching to another language. In fact, RBs are a subset of heritage speakers, and for this reason most of this chapter focuses on heritage speakers. Other populations with incomplete knowledge of a first language, also discussed in this chapter, are overhearers and attriters.

2.1 Introduction and definitions

While balanced bilingualism (defined as complete native competence in both languages), is possible in individuals who acquired both languages early in their life, it is probably not as common as unbalanced bilingualism. The latter comes in many varieties. Language abilities in each of the languages of a person exposed to more than one language can range from full fluency to barely detectable traces of language knowledge. Between these two extremes is a wide range of incomplete knowledge which can be an outcome

of L2 acquisition, incomplete L1 acquisition, or L1/L2 attrition. Depending on the level of proficiency, an individual can use an incompletely known language for communication, though he/she is likely to make errors in production and miss some information in comprehension. Receptive bilinguals are at the low end of the incomplete language knowledge continuum.

There are two main dimensions through which bilinguals are classified: language proficiency and acquisition history. Bilingual acquisition history has several components that affect the outcome of the acquisition process: order of acquisition of the languages, age of onset of exposure for each language, amount and quality of input, language maintenance, and length and age of interruptions of exposure. Because of that, there is tremendous variation in bilingual populations, but the consensus is that low levels of exposure to a language are associated with low proficiency.

In terms of onset of exposure to an additional language, bilinguals can be simultaneous or sequential. Simultaneous bilinguals are exposed to both languages from birth or at least under the age of 3-4 (Meisel, 2007). Sequential bilinguals are exposed to a second language at any time after the age of 3-4.

There are several distinctions between the languages of a bilingual. I use the terms *first language (L1)* and *second language (L2)* strictly for the temporal order of their acquisition. In the case of simultaneous bilinguals, therefore, there are two first languages. Within the second language, researchers distinguish *child L2* (exposure to L2 after the age of 3-4) and *adult L2 acquisition*, which tend to have different outcomes. The age divide between child and adult L2 varies from the age of puberty to 8-9 years old (Meisel, 2007; Montrul, 2008).

Typically, a first language in adults is fully developed, but in bilinguals, it can weaken if an L2 takes over. Thus, another important distinction between languages of an unbalanced bilingual is *dominant* versus *non-dominant*, or *stronger* versus *weaker* language. The dominant, or stronger, language is the one in which a bilingual individual possesses

the highest level of proficiency. Either the first or the second language can be dominant.

There is yet another, a socio-political distinction: a *majority* versus a *minority language*. A majority language is typically the language spoken by a dominant group in a country or region, has high prestige, and is used by government, the media, and the education system. For example, in the U.S.A. and most of Canada, English is the majority language, while immigrant and aboriginal languages are minority languages.

Insufficient input and/or interruptions during the process of acquisition can result in incomplete acquisition of a language. Montrul (2008) defines an individual grammar as incomplete if it fails to reach the age-appropriate linguistic level of proficiency compared to the grammar of monolingual or fluent bilingual speakers of the same age, cognitive development, and social group. This is what often happens to the family language of second-generation immigrants. The relatively new field of incomplete language acquisition, often referred to as heritage language acquisition, investigates proficiency in L1 that has never been fully acquired. Heritage speakers are usually defined as people who have some knowledge of a language other than the majority language through exposure at home and possibly in a minority ethnic community. The most widely known definition of heritage speakers is the one by Valdes (2000): "individuals raised in homes where a language other than English is spoken and who are to some degree bilingual in English and the heritage language" (p. 1) (any majority language name can be substituted for English). The outcome of such acquisition varies widely, from balanced bilingualism to minimal knowledge of the first language, but the term *heritage speaker* presupposes the lack of full fluency in the heritage language (while fluent bilinguals are typically called fluent regardless of their acquisition history).

Typically, heritage speakers who participate in the studies are not literate in the language, but possess reduced listening and speaking skills (see Benmamoun, Montrul, and Polinsky (2010) for a review). Low-proficiency heritage speakers may avoid producing speech in the heritage language, replying in their dominant language regardless of the

language in which they were addressed - that is, heritage speakers population contains receptive bilinguals (though usually they are not studied as a separate group).

Studies of heritage speakers typically involve children of immigrants or individuals who immigrated as young children; however, individuals growing up in aboriginal communities that undergo a shift to a majority language often end up with the same kind of incomplete language knowledge. While the two situations are socially different, they are the same psycholinguistically, characterized by reduced input in the minority first language, especially after schooling in the majority language starts. Typically, heritage speakers have either no access at all or limited access to education in the heritage language.

Insufficient use of a language after the acquisition process has been completed can result in various degrees of language attrition. Sometimes incomplete first language acquisition is subsumed under the term *attrition*, but I will make a distinction between attrition and incomplete acquisition, reserving the term *attrition* for loss of linguistic ability after a particular structure (or the whole language) has been acquired completely and was stable for some time.

2.2 Unbalanced bilingual acquisition in childhood

How do individuals become unbalanced bilinguals? In bilingual acquisition, it is probably rare to find completely balanced input in both languages, even in simultaneous bilingualism. The reality is that, in most situations, there is a majority language. If there is less input in one language than in the other, or fewer possibilities to use one of the languages, that language is often acquired more slowly, and production in it may contain more errors.

Common phenomena in early production of a weaker language are omission of obligatory elements (determiners, subjects, objects), problems with inflectional morphology

(especially verbal morphology - tense, aspect, auxiliaries), and deviant word order patterns (Meisel, 2007; Schlyter, 1993). This lead Schlyter (1993) to propose the Weaker Language Hypothesis in simultaneous bilingualism: The weaker language differs fundamentally from L1 and resembles L2 in that it exhibits more variation in acquisition of central grammatical phenomena, "from complete nonexistence of the grammatical phenomena mentioned to a lower occurrence of them" (Schlyter, 1993, p. 305). Meisel (2007) argues against that hypothesis, showing that, while the acquisition of a non-dominant language is delayed, and there can be performance issues, there is no evidence for acquisition failure. He argues that acquisition is still going on even when the input is reduced, and even if a child avoids speaking the target language. He discusses two examples of children acquiring German and French who each had a period of not speaking French while still receiving input in French. After they resumed speaking French, no regress or stagnation was found; their MLU in French did not drop, but continued to increase. As for non-target structures in the non-dominant language production, Meisel pointed out that children produce both target and non-target structures on different occasions (both correct and incorrect inflection or word order; omission of an obligatory element on one occasion and presence on another), not because they did not acquire the target structures, but because it is sometimes hard to access them. Thus the presence of the non-target structures suggests not lack of knowledge, but rather difficulty putting that knowledge to use, that is, performance problems.

For highly unbalanced bilingual first language acquisition, when one language is considerably weaker than the other, "The Ivy Hypothesis" was suggested by Bernardini and Schlyter (2004). According to this hypothesis, when such an unbalanced bilingual child speaks his or her weaker language, he or she inserts portions of higher syntactic structure from the stronger language. That is, the weaker language in such cases is like an ivy that cannot stand on its own and has to lean on syntactic structure provided by the stronger language. When the development of required elements of higher syntactic structure in

the weaker language "catches up", the child becomes able to produce utterances entirely in the weaker language. However, Bernardini and Schlyter noted that not all children who are unbalanced bilinguals show this pattern.

In sequential bilingualism, the second language is typically the weaker language for those who were exposed to it late, after acquisition of the first language has been completed. However, when exposure to the second language begins in childhood, its acquisition is more successful, but the first language can be affected, especially if the second language is the majority language. Subtractive bilingualism is a kind of sequential bilingual acquisition in which acquisition of the majority language as an L2 comes at the cost of slowing down acquisition of the first language, or even its attrition - as opposed to additive bilingualism, where there is enough support to maintain L1 during L2 acquisition (Lambert, 1975). Two studies of subtractive bilingualism concern Inuktitut-English and Inuktitut-French bilingual children in Arctic Quebec. Even for those children who start as fluent for their age speakers of Inuktitut, acquisition and use of the higher-prestige second language at school can adversely affect their L1 - Inuktitut, as shown by Wright, Taylor, and Macarthur (2000) and Allen, Crago, and Pesco (2006).

Wright, Taylor, and Macarthur (2000) compared language proficiency in children with different L1 (Inuktitut, English or French) and language of school instruction (also Inuktitut, English or French) from kindergarten to the end of Grade 2. Their major finding is that Inuktitut of L1-Inuktitut children who are educated in an L2 (English or French) develops more slowly than Inuktitut of L1-Inuktitut children educated in L1. The problem is not simply the quantity of input in Inuktitut, but also the quality: The authors found that academic proficiency in Inuktitut (expressing abstract ideas) is affected by the language of instruction more than conversational proficiency (talking about everyday issues).

Allen, Crago, and Pesco (2006) compared narrations in Inuktitut by Grade 3 students (8-9 y.o.), Grade 8 students (15-16 y.o.), and adults, both in large and in small Inuit

communities (community size was taken into account because the authors noticed that the presence of English and French is more prominent in larger communities). While older students made fewer errors and used more words, there was no difference in grammatical complexity (mean word length in morphemes) between Grades 3 and 8, while adults' narratives showed higher complexity. These results indicated a degree of stagnation in the development of Inuktitut between age 8-9 and adolescence. In addition, children from small communities (with less exposure to English and French) performed better than children from large communities: They produced longer narratives, demonstrated higher lexical diversity, and made fewer grammatical errors. Both studies were conducted in Nunavik (Arctic Quebec), where the local Inuktitut dialects are much more viable than in Labrador (see Section 3.1), where these tendencies are likely to be amplified.

Both in Meisel (2007) and in the two studies on Arctic Quebec Inuit children, the weaker language was still relatively strong. In other cases, particularly in immigrants' children (as in studies reviewed below), subtractive bilingualism may manifest itself not only in slowing down L1 acquisition, or stagnation, but also in destabilization of the linguistic knowledge that had already been acquired. Such processes may result in an incomplete grammar later in life.

Schmitt (2004) studied Russian children who immigrated to the U.S.A. at age 4 and attended monolingual English daycares, receiving input in Russian mainly at home. In naturalistic recordings at age 9 and 11, the children still used all six noun cases of Russian, but sometimes incorrectly. Accuracy varied depending on specific cases: Nominative was used in almost all the contexts where it was required; accusative, in most obligatory contexts; accuracy in use of the inherent cases varied from 42% to 85%, and it was higher on cases that occurred more frequently in the data. The percentage of target use of cases dropped slightly in the second recording. Thus, no simplification of the case system occurred, but instability in the use of cases was found.

Bolonyai (2007) also found some instability in the morphology of Hungarian in chil-

dren who were exposed to English before age 2 and received input in Hungarian only at home. In Hungarian, the verb agrees with the subject in person and number and with the object in definiteness. Hungarian possessed nouns are marked for number and person of the possessor. In naturalistic recordings at age 7-9, subject-verb agreement was virtually intact (99% correct), but there were slightly more errors in object-verb agreement (substitutions) and even more with possessive marking (omissions). The author explained the results as the influence of English: English also has verb agreement, but not possessive marking on a possessed noun.

Longitudinal case studies of younger children showed a serious decline in L1 morphological abilities after only one year in L2 environment: Turian and Altenberg (1991) - in a Russian-speaking child since age 3;6; Kaufman and Aronoff (1991) - in a Hebrew-speaking child since age 2;6. In both studies, children had an age-appropriate command of the L1 before the input in L2 increased and the input in L1 decreased. Finally, vocabulary and lexical access in L1 are also affected in subtractive bilingualism. In all the studies of immigrant children reviewed in this section, the children used code-switching to fill lexical gaps in the minority language.

In sum, heritage speakers (i.e. those who ended up with incomplete knowledge of L1) grew up either as simultaneous bilinguals with the heritage language as the weaker one, or as sequential bilinguals with the heritage language as their L1 affected by subtractive bilingualism. In early childhood, they may have had better command of the minority language, perhaps spending more time communicating to minority-language-speaking parents. However, as they began socialization in the majority language (typically, around the age of 5, when they started school), with an increase in the majority language input and a decrease in the minority language input, the majority language quickly became dominant. As a consequence, acquisition of the minority language started to lag behind, destabilize or undergo attrition (or all of that, in this order), and by the time they became adults, they had not attained full mastery of their L1.

2.3 Linguistic system and processing in an incompletely acquired language

Polinsky (2006a and subsequent work) stresses that interrupted acquisition results in language performance that is deviant in a systematic rather than a random way from full knowledge of that language. Research on heritage speakers accumulated to date points out certain linguistic characteristics shared by heritage speakers of various languages, even though in all the studies, there is substantial variation in heritage speakers' language abilities. Such common linguistic characteristics of heritage speakers are reviewed in this section.

One of the most salient characteristics of speech production in a heritage language is its slow speech rate, measured in the number of words per minute. Heritage speakers make many long pauses, caused by difficulties both in lexical retrieval and in constructing phrases and sentences. Speech rate correlates with the degree of morphosyntactic attrition: Russian heritage speakers with slower speech had more morphosyntactic errors (Polinsky, 2007a), and showed simplification of Russian gender system from three genders to only two (Polinsky, 2008a). However, speech rate can hardly be measured in the case of the "lowest proficiency heritage speakers who may be reluctant to produce any [heritage] language whatsoever" (Polinsky and Kagan, 2007, p. 376) - that is, heritage receptive bilinguals.

In the domain of phonology, studies of heritage speakers show that, in some cases, these speakers have native-like speech perception and production; in other cases, they may have non-native accents. Oh, Jun, Knightly, and Au (2003) found that those who spoke Korean during childhood but not adulthood and were re-learning it in a classroom setting had native-like perception of VOT and also produced native-like VOT in Korean consonants. Also, Hakansson (1995) describes her participants as having next to perfect pronunciation in their heritage Swedish. On the other hand, Godson (2004) found that

the quality of vowels in heritage Armenian in the U.S. was closer to the English values of corresponding vowels than to the target Armenian vowels. So far, research on heritage language phonology is inconclusive.

The lexicon of heritage speakers is likely to be limited because of the nature of the input they received. If they were exposed to the heritage language predominantly in the home, topics discussed in that language likely revolved, for the most part, around everyday activities of the family. Also, their passive vocabulary is larger than their active vocabulary, and during sentence production, they might know a word passively, but lack direct access to it, which makes retrieval of that word in production slow, thus affecting speech rate (Polinsky, 2006a). Lexical proficiency was found to correlate with grammatical proficiency. Those participants who had a smaller active vocabulary also showed more deviations in grammar in spontaneous speech (Polinsky, 1997, 2000, 2006a). Similar relations between lexical and grammatical knowledge have been found in child language (Bates et al., 1994; Thal, Bates, Goodman, and Jahn-Samilo, 1997; Thal, Bates, Zappia, and Oroz, 1996). Thus, difficult lexical recall goes hand in hand with difficult access to (or, for some of them, loss of) functional morphemes and syntactic rules. Both have an effect of slowing down the speech rate.

Morphology and syntax have received more attention in heritage language research than other areas did. Language production of heritage speakers of various languages is characterized by levelling of paradigms (keeping only the most unmarked member), increased analyticism (e.g. use of an additional verb instead of a verbal affix), and increased redundancy (e.g. use of resumptive pronouns where they are not needed, and loss of gapping). Nominal and verbal inflectional morphology is affected the most in heritage language production, especially in languages with rich morphological systems and both regular and irregular paradigms (Benmamoun et al., 2010). Certain categories, such as gender and aspect, may undergo simplification.

In the nominal domain, studies documented errors in case marking in Russian (Polin-

sky, 1997, 2006a,b); gender agreement in Russian (Polinsky, 2008a), Spanish (Montrul, Foote, & Perpiñán, 2008a) and Swedish (Hakansson, 1995); and also definiteness agreement between the article and the noun in Swedish (Hakansson, 1995). Problems with nominal morphology are not limited to production but also exist in comprehension. Song, O'Grady, Cho, and Lee (1997) found that heritage speakers of Korean performed below chance level in a picture-sentence matching task where the choice of the picture depended on case marking. In Montrul et al.'s (2008a) study, heritage speakers of Spanish performed well above chance but still worse than fluent and even L2 speakers in a comprehension task that involved gender. Polinsky's (2008a) study included an acceptability judgment task, in which heritage speakers of Russian accepted ungrammatical phrases with gender mismatch between the noun and the adjective; the pattern of gender errors in the acceptability judgment task was consistent with the pattern of errors in production.

In the verbal domain, categories are differentially affected. Tense is generally well preserved (Benmamoun et al., 2010; Fenyvesi, 2000), but some heritage speakers were reported to use incorrect tense in production (Schmid, 2002). Production of subject-verb agreement was found to be affected in heritage Russian (Polinsky, 1997, 2006a) but preserved in Spanish (Montrul, 2008) and Egyptian and Palestinian Arabic (Albirini, Benmamoun, & Saadah, 2011); this might depend on proficiency level. Aspectual morphology of different types is especially vulnerable in heritage language. Heritage speakers of Russian, where the perfective-imperfective opposition is expressed via prefixes and suffixes in all tenses, make errors in production, using a verb carrying the incorrect aspect (Pereltsvaig, 2005; Polinsky, 1997, 2006), but they also show restructuring of the aspectual system in comprehension and grammaticality judgments (Laleko, 2010; Polinsky, 2008c). In particular, low-proficiency heritage speakers retain only one member of each aspectual pair, depending on lexical aspect: Telic verbs are favoured in their perfective form, and atelic, in their imperfective form (Polinsky, 2008c). In Spanish, where the aspectual opposition exists only in the past tense, Montrul (2002a) found differences be-

tween heritage and fluent speakers of Spanish not only in production (number of errors in narratives and in a fill-in-the-blank task), but also in comprehension tasks (sentence conjunction judgments and truth value judgments). Across all the tasks, bilinguals had the most difficulty with stative verbs in Preterite and achievement verbs in Imperfect, that is, with the less canonical combinations that involve a clash between the lexical aspectual type and the aspectual properties of the tense (Montrul, 2002a). Mood is also affected in heritage Spanish (Montrul, 2007; Silva-Corvalán, 1994) and Russian (Polinsky, 1997, 2006a).

Syntax tends to be more resilient in heritage language than inflectional morphology, especially the basic, core structures, but the complex syntax that involves recursion and higher projections of the CP layer appears less developed and less productive (Benmamoun et al., 2010). Structures that are retained in heritage language include V2 placement in Swedish (Hakansson, 1995), subject-verb inversion in Spanish wh-questions (Montrul, Foote, & Perpiñán, 2008b), and the overt pronominal system (e.g. in Russian, Polinsky, 1997). One of the language phenomena that are significantly affected across heritage languages is the *pro*-drop feature, which is either lost or used in a limited manner in production of languages including Korean (Choi, 2003), Spanish (Montrul, 2004; Silva-Corvalán, 1994), and Arabic (Albirini et al., 2011). Heritage speakers have difficulties in the interpretation of anaphors, though they often produce correct ones (Polinsky, 2006a). Other difficulties that heritage speakers have in comprehension include identifying heads of relative clauses (especially object relative clauses) in Russian (Polinsky, 2008b) and Korean (O'Grady, Lee, & Choo, 2001), and processing A-chains, such as identifying agents and patients in passives (Polinsky, 2007b). Heritage speakers seem to disregard morphological cues in comprehension of such structures (passive morphology on verbs, case on the complementizer in Russian relative clauses, etc.) because inflectional morphology is problematic for them, as discussed above. They have difficulties in establishing syntactic dependencies, especially long-distance ones, likely as a result of

ignoring morphology (Benmamoun et al., 2010). Heritage speakers try to compensate for morphological deficits by using other cues such as word order or lexical properties of the words involved - cues that are known by native speakers to be unreliable.

In languages with variable word order, heritage speakers tend not to use the full range of possible orders. In Russian (Polinsky, 2006a, 2007a) and Arabic (Albirini et al., 2011), English-dominant heritage speakers produce SVO most of the time, although Arabic also allows VSO, and Russian allows all possible orderings of S, V, and O. In comprehension, low-proficiency Russian heritage speakers also seem to assume the SVO (or SOV) order for every sentence, assigning the subject's theta-role to the first noun phrase in the sentence, and the object's theta-role, to the second one, even when case marking points to the opposite (Polinsky, 2009).

Thus, heritage speakers have knowledge of basic syntactic structures of their heritage language, but exhibit morphological and syntactic deficits. How can we predict what properties are likely to be affected? There exists a number of hypotheses on what is affected in L1 attrition and incomplete acquisition, and partial evidence for most of them, but it is not conclusive. It is possible that many of them, rather than just one, are on the right track, referring to different factors in incomplete acquisition.

The regression hypothesis was suggested as early as in Jacobson (1941): The order of language loss is the reverse order of language acquisition (Andersen, 1982; Seliger, 1991). A related hypothesis is that what is learned best is the least vulnerable (Berko-Gleason, 1982; Jordens et al., 1986; Lambert, 1989). This hypothesis predicts that core structures that are acquired early in a first language are more likely to be retained than the structures that are acquired late. However, studies show that what is acquired early is still vulnerable in incomplete acquisition.

The interlanguage, or convergence-based, hypotheses state that L1 attrition is influenced by L2 encroaching on L1. These hypotheses call attention to convergence between the two languages of a bilingual. Features that are the same in L1 and L2 are more likely

to be retained in L1 than those without equivalents in L2 (Andersen, 1982; Dorian, 2006; Lambert, 1989; Romaine, 1989; Sharwood Smith, 1989). Dorian (2006) used the term *negative borrowing* to refer to the loss of grammatical properties of a weaker language that do not exist in the dominant language (vocative case and locational vs. directional adverb contrast that exist in Scottish Gaelic but not in English). There also exists the opposite hypothesis, that features existing only in L1 are less affected by attrition than features that have counterparts in L2 (Altenberg, 1991).

Influence of the dominant language on the heritage language is a debatable question. To what extent deviations from the target grammar are due to transfer from the dominant language? It is possible that loss of many morphological distinctions in morphologically rich languages occurs because the dominant language in most heritage language studies is English, where these distinctions do not exist (e.g. gender, case). Overuse of overt subjects in null subject heritage languages can also be due to their obligatory use in English; the same goes for the preference for SVO over other word orders. On the other hand, not all deviations can be explained by transfer. Certain properties that do not exist in English are still retained, and restructured in the way that cannot be influenced by English, such as restructuring from a three-gender to a two-gender system in Russian (Polinsky, 2008a), while English has no gender at all.

The language change hypothesis suggests that language attrition, as a type of language change, is governed by general tendencies of language change leading to simplification (shift from synthetical to analytical, more periphrastic constructions, less morphological complexity, less allomorphy) (Andersen, 1982; Dorian, 1982; Hakansson, 1995; Maher, 1991; Seliger & Vago, 1991). A subhypothesis of this is that reduction in morphological complexity is dependent on the amount of vital information that a morpheme contributes - the more such information, the more likely it is to be retained (Andersen, 1982; Lambert & Moore, 1986).

Each of these families of hypotheses bases its predictions on different factors: order

of acquisition (the regression hypotheses), counterparts in the other, dominant language (the interlanguage hypotheses), or amount of information in a morpheme (the language change hypotheses). It is possible that all these factors, rather than just one of them, play a role.

2.4 Lost or never acquired?

Incomplete acquisition is more than child language fossilization. The language properties affected in heritage language include not only those that are acquired late, such as relativization in Russian (Polinsky, 2007b, 2008b), imperfective achievements in Spanish (Montrul, 2002a), or subjunctive in Spanish (Martinez Mira, 2009; Montrul, 2007; Silva-Corvalan, 2003), but also those that are acquired very early, such as case and agreement in Russian (Polinsky, 2006a, 2007a). Therefore, depending on the age of onset of bilingualism and the age of shift of dominance to the majority language, heritage speakers might have never acquired some phenomena in their L1, but also experienced loss or reanalysis of already (fully or partially) acquired aspects of grammar, demonstrated both in production and in comprehension (Silva-Corvalan, 2003; Polinsky, 2007a, 2008b, 2011).

Among language properties that deviate from the baseline in heritage language, core language properties that are fully acquired by age 4-5 (which is, for many heritage speakers, the age when the majority language becomes dominant) are vulnerable to attrition. Such attrition has been documented in the studies reviewed in Section 2.2. Studies comparing adult heritage speakers to monolingual children and to child heritage speakers show that adult heritage language deviates more from the baseline than child heritage language, suggesting that more attrition happens on the way to adulthood. Polinsky (2008b, 2011) found that in a comprehension task that required identifying heads of relative clauses, seven-year-old child heritage speakers performed at the same level as

monolingual adults and children, but adult heritage speakers performed worse than all other groups.

On the other hand, when it comes to those language properties that are acquired late (after the age of 4-5), heritage speakers make the same errors as monolingual children who have not acquired these properties yet. In the case of heritage speakers, their use of the heritage language decreased before they could acquire such properties. As a result, heritage speakers never learned them completely.

2.5 Incomplete acquisition versus adult L2 and attrition

The outcome of incomplete L1 acquisition has certain similarities to and differences from the outcomes of adult L1 attrition and L2 learning. The age of exposure to the second language and the age of onset of attrition appear to be among the most important factors. Montrul (2008) points out that a younger age of exposure to the second language is associated, on one hand, with better attainment of L2, but, on the other hand, with higher degrees of L1 loss.

Becoming dominant in the second language in adulthood has less dramatic effects on L1 than if it happens in childhood, as shown by studies that compare early and late bilinguals who are L2-dominant. Montrul (2002a) compared erosion of the Preterite/Imperfect contrast in Spanish in simultaneous Spanish-English bilinguals (exposed to both languages at age 0-3), early child L2 learners (exposed to English at age 4-7), late child L2 learners (exposed to English at age 8-12), and Spanish-dominant adult L2 learners. All three target groups performed differently from the Spanish-dominant adult L2 group, and the earlier the onset of bilingualism, the larger the difference. Also, Polinsky (1997, 2006a, 2007a) found one important difference between heritage speakers (who were born in the U.S.A. or immigrated as young children) and attriters (who immigrated as adults).

Russian heritage speakers were not sensitive to many of the grammar violations. They either accepted all sentences, or could not answer, unless some very basic principle of grammar was violated (in the examples, it was subject-verb agreement and negation). In contrast, those who had fully acquired Russian before undergoing attrition gave more correct answers and fewer "I don't know" answers. There are no reports of receptive-only L1 knowledge in late L2 learners.

The point after which L1 is no longer vulnerable to dramatic attrition and ultimate attainment in L2 is no longer possible has not been determined with certainty. Traditionally, it was thought to be the age of puberty, but more recent works suggests that it is approximately the age of 8-9 (Hyltenstam & Abrahamson, 2003; Jia & Aaronson, 2003; Köpke & Schmid, 2004; see Montrul, 2008, for a review). By that age, knowledge of L1 in monolingual speakers is in a mature and steady state, and less likely to be vulnerable to loss in bilinguals even if L1 is hardly used.

On the surface, speech production in adult attrition also contains morphological and syntactic errors similar to errors made by heritage speakers (Montrul, 2002a, 2002b; Polinsky 2007a), but the error rates are lower (Montrul, 2008). Adult attrition is also characterized by lexical retrieval difficulties and delays (Ammerlaan, 1996; Hulsen, 2000; Olshtain & Barzilay, 1991), and some attriters develop a non-native accent (de Leeuw et al., 2010; Major, 1992; Schmid, 2002). Montrul (2008) argues that, while there exist attrition effects in grammar, "the extent of L1 loss is relatively minor in adults. ... The grammatical system per se is not deeply compromised under attrition"(p. 63). According to Montrul, in adult attrition, it is primarily performance that is affected, not competence, and more in production than in comprehension; the attrition effects in production can be explained by L2 influence. For example, De Bot, Gomman, and Rossing (1991) found signs of attrition in oral interviews, but not in grammaticality judgments in Dutch of the Dutchmen who immigrated to France after age 17. A number of other studies also suggests that L1 attrition in adulthood is not an irretrievable loss, but

rather a temporary accessibility problem (Ammerlaan, 1996; De Bot, 1996; Hulsen, de Bot, & Weltens, 1999; Köpke, 1999). It has also been argued that in adult attrition, only semantic features at the syntax-semantics and syntax-pragmatics interfaces are affected, but core syntax is not (Montrul 2002a; Tsimpli, Sorace, Heycock, & Filiaci, 2004), while in incomplete acquisition, both interpretable and uninterpretable features are affected. In sum, a language that became non-dominant after its complete acquisition can contain minor deviations from the baseline and present performance issues, while a language that became non-dominant before reaching the mature state is susceptible to loss or restructuring of grammatical properties.

Second language speakers are also distinct from heritage speakers, although both heritage speakers and second language speakers have morphosyntactic deficits in production and comprehension, especially in the domain of inflectional morphology, that often result in the same types of errors (Bruhn de Garavito, 2002; Montrul, 2002b, 2005; O'Grady, Lee, & Choo, 2001). In both populations, the dominant language (L2 for heritage speakers, but L1 for second language speakers) influences the weaker language (Montrul, 2008). However, heritage speakers, in certain circumstances, have selective advantages over L2 learners in all areas of linguistic knowledge, including morphology, syntax and semantics - that is, heritage speakers show better knowledge of some language properties, but not others (provided that heritage speakers and L2 learners are matched in terms of proficiency). For example, Hakansson (1995) found that Swedish heritage speakers enrolled in a class with L2 learners, while making as many errors in NP agreement as L2 learners, had a native-like command of V2 placement in topicalized sentences, unlike L2 learners. Montrul (2005) found that intermediate- and low-proficiency heritage speakers had better knowledge of the syntax and semantics of unaccusativity in Spanish than intermediate- and low-proficiency L2 learners.

The nature of the task is important. Montrul, Foote, and Perpiñán (2008a) found that heritage speakers have advantages in oral tasks, but L2 learners have advantages in

written tasks. Bowles (2011) compared performance on four different tasks in Spanish heritage speakers who received no more than two years of formal instruction in their heritage language and L2 learners with no previous exposure to Spanish. The pattern of results in one group was the opposite of the other. Heritage speakers did better on tasks tapping implicit knowledge. Oral narration was the best, followed by oral imitation and timed grammaticality judgments, but the tasks tapping explicit knowledge - untimed grammaticality judgments and especially a metalinguistic knowledge test - were much more difficult for them. L2 learners, on the contrary, performed best on the metalinguistic knowledge test, followed by untimed grammaticality judgments, but much worse (under 50%) on the other three tasks. This difference is due to the manner in which the target language was acquired. L2 is acquired in late childhood or adulthood, typically in a classroom setting, L2 grammar is explicitly taught, and writing is a significant component of an L2 classroom experience. A heritage language, on the other hand, is acquired in early childhood, as an L1, in naturalistic settings, without explicit instruction, and acquisition is often interrupted before the development of literacy and metalinguistic knowledge. As a result, L2 speakers have some advantage in more metalinguistic tasks, and in written tasks, but heritage speakers have advantage in less metalinguistic, more naturalistic tasks, and in oral tasks.

2.6 Overhearers and international adoptees

Two extreme cases of incomplete acquisition and childhood attrition are overhearers and international adoptees, respectively. Both populations were exposed to a language early in life, but ended up with minimal knowledge of it as adults.

Childhood overhearers are people who heard a language regularly during their childhood, but did not communicate in that language. An overhearer can (though not necessarily will) develop receptive knowledge of the overheard language, and such cases are

documented (Schlegel, 2004). The few studies of overhearers explored whether they have any advantages when learning that language in a classroom setting, that is, what they had acquired through overhearing before the formal instruction began.

Au, Knightly, Jun, and Oh (2002) tested childhood overhearers of Spanish, who later (at the age of 14) started learning it at school, then continued at the university. Compared to novice learners who had no exposure to Spanish until the start of instruction (also at the age of 14), overhearers had more target-like phonological production (the VOT measures for voiced and voiceless stops in Spanish, the application of the lenition rule, and the overall accent as perceived by native speakers), but no advantage in morphosyntactic tasks - production of number and gender agreement in DPs and grammaticality judgments. In the production task, where they had to produce DPs containing a determiner, an adjective, and a noun, they made as many errors in agreement as the novice learners. In the grammaticality judgment task, overhearers were slower and less accurate in their judgments than native speakers, and performed no differently from the novice learners. Knightly, Jun, Oh, and Au (2003) found similar results: an advantage in phonology but not in morphosyntax.

The authors do not mention whether the overhearers had receptive knowledge of Spanish prior to the onset of classroom instruction, apart from testing their knowledge of "childhood slang" - the layer of vocabulary not taught in class, but presumably known to those who heard the language in their childhood. Overhearers could comprehend and produce (as translation) some childhood slang words (17 % in production, 22 % in comprehension). The authors also note that " 'Pure' overhearers are difficult to find" (Au et al., 2002, p. 238), and that their subjects could typically say some words and common phrases in Spanish. Still, it can be inferred that the overhearers in that study were not receptive bilinguals before learning Spanish in the classroom.

International adoptees who did not have any input in their first language after adoption can show no traces of remembering their first language. An fMRI analysis demon-

strated that adults who were adopted from Korea between the ages 3 and 8, and lived in France since adoption (without any exposure to Korean), perceived Korean as an unfamiliar language, in the same way as French speakers who were never exposed to Korean (Pallier et al., 2003). Other studies on the same population (Ventureyra, Pallier, & Yoo, 2004; Ventureyra, 2005) found that adoptees were unable to discriminate Korean stop consonants (plain vs. tense vs. aspirated), just as native speakers of French who were never exposed to Korean. However, this does not mean that their first language is completely lost: Ventureyra (2005) found that when adoptees and French native speakers were trained to discriminate Korean stops, the adoptees who were re-exposed to Korean made more gains after training than the adoptees who were not re-exposed and French native speakers. Therefore, it is possible to re-activate a completely dormant first language upon re-exposure to it.

2.7 Receptive multilingualism: Mutually intelligible languages

A new research area called receptive multilingualism emerged in Europe in recent years. Receptive multilingualism is the ability to understand languages that are closely related to a language that an individual already knows. It does not involve the ability to produce speech in these languages. For example, a speaker of Swedish can, to some extent, understand Norwegian, or a speaker of Russian can, again, to some extent, understand Ukrainian without long-term exposure and language acquisition in the usual sense, but not produce speech in Norwegian or Ukrainian, respectively. It does require some exposure, though, in order to learn the phonological correspondence rules between the languages (Warter, 2001).

Receptive multilingualism in this sense is different from receptive knowledge of an incompletely acquired language that is not closely related to the dominant language.

Although functional convergence with the dominant language presumably plays an important role both for heritage speakers and receptive multilinguals, understanding of a related language that was never learned is completely based on the knowledge of the familiar language - including the lexical items, while in the understanding of a heritage language, one cannot rely on the dominant language for lexical knowledge, because lexical items are usually different in the two languages (with the exception of cognates and borrowings).

2.8 Production versus comprehension

Understanding the difference between language production and language comprehension is important for the search of explanations for receptive bilingualism. While both processes make use of the same linguistic knowledge, they are not mirror images of each other. Comprehension is more automatic but production demands more effort.

In psycholinguistic experiments, reaction times for production tasks are usually longer and error rates higher than those for comprehension tasks. In L2 lexical processing, it is easier to translate words from L2 to L1 than the reverse: The reaction times are shorter, and fewer errors are made (De Groot & Keijzer, 2000; Kroll & Dussias, 2004). This suggests that it is less costly to recognize a word from the weaker language in the input than to retrieve it from memory for production. The passive vocabulary is usually larger than the active vocabulary in any language that an individual speaks (Laufer, 1998; Laufer & Paribakht, 1998), and this difference is more prominent in a weaker language of unbalanced bilinguals.

From research on acquisition, it is known that comprehension develops earlier than production (see Clark, 2003). It is well known that infants understand parents' speech before starting to produce their own first words. Preferential looking studies showed that infants have sensitivity to word order and certain morphological forms before they

are able to produce multiword utterances (Golinkoff, Hirsh-Pasek & Schweisguth, 2001; Hirsh-Pasek & Golinkoff, 1996, a.o.). Toddlers in the one-word stage can respond to multiword utterances with an action that demonstrates comprehension. Also, two-year-olds understand more words than they produce (Goldin-Meadow, Seligman, & Gelman, 1976). Finally, young children use fewer overextensions in comprehension than in production (O'Grady, 2005).

However, full comprehension of the target language takes years to develop. In children's comprehension, apart from lack of world knowledge, age limitations in cognitive development, and a smaller vocabulary, there are also specifically linguistic problems. For example, passives pose difficulties in comprehension for children under five (Wexler & Hirsh, 2006). Constructions *easy to see/hard to see* are not understood correctly by many children younger than nine (Chomsky, 1969), and there are also other constructions that children do not understand correctly until a certain age. For certain categories, such as pronouns, production even becomes adultlike before comprehension (Hendriks & Spenader, 2006). If acquisition is interrupted before comprehension of a given linguistic structure is developed, the target knowledge of this structure will likely not be attained.

Heritage speakers and attriters tend to have better listening than speaking skills (Benmamoun et al., 2010; Polinsky & Kagan, 2007, a.o.), and attrition in adults affects comprehension less than production. This is reflected in the results of a large-scale online heritage language survey conducted in the U.S.A. by National Heritage Language Resource Center (NHLRC) in 2007-2009 (Carreira & Kagan, 2011): More heritage speakers rated their listening skills at advanced levels of proficiency, compared to the speaking skills. The asymmetry is also reflected in heritage speakers' and attriters' lexical processing. Hulsen (2000) tested Dutch immigrants in New Zealand, and found that both first-generation (attriters) and second-generation (heritage speakers) immigrants performed better on a picture-word matching task (testing comprehension) than on a picture naming task (testing production) in Dutch. Both generations made fewer errors in the picture-

word matching task, and for the second generation, reaction times were also faster. When the first generation was compared to Dutch baseline data from fluent speakers, it was found that in the picture naming task, the immigrants performed significantly worse than fluent speakers, but there was no difference in the picture-word matching task, that is, lexical retrieval in comprehension was unchanged. Similarly, Ammerlaan (1996) found that lexical retrieval in a language undergoing attrition is more affected in production than in comprehension. Also, studies reviewed in Section 2.5 show that under attrition, grammar presents more problems in production than in comprehension.

Finally, the phenomenon of receptive multilingualism - understanding of a language that was never learned but is similar to the language that an individual already knows - demonstrates that where the knowledge of a language is limited, comprehension has a better chance for success than production.

2.9 Language attitudes

Yet another important factor that should not be overlooked in heritage language acquisition is the attitude of a heritage speaker to his or her heritage language: what he or she thinks and feels about it. Language attitudes have been known to influence language maintenance, multiple language acquisition, and language attrition. A person who attributes a high value to a language he/she speaks is likely to be motivated to maintain, and possibly develop that language (though it does not necessarily mean he/she will actually maintain or develop it). Socio-affective factors, according to Montrul (2008), have no impact on monolingual language development, but do play a role in a heritage language development, just like in L2 development. In both cases, language choices affect how much exposure to a language an individual seeks. An extreme case of negative language attitudes influencing attrition has been reported in Schmid (2002): Among German Jews who immigrated to the U.S.A. during the Nazi regime, those who immigrated later (and

therefore had been through more adverse experience in Germany) showed more attrition of German. Bilingual children, according to Montrul (2008), figure out from early on that their heritage language is less prestigious and less useful in the wider community than the majority language.

In the NHLRC survey (Carreira & Kagan, 2011), most heritage speakers, representing a wide variety of heritage languages in the U.S., reported positive attitudes to their heritage languages. For many of them (85.2%), their heritage language is part of their identity, and as many as 88.5% find it useful, most of all, to communicate with family members and friends who speak that language. That is, for most of them, heritage language has both symbolic and practical value. Many heritage speakers reported that they were enrolled in classes to re-learn or improve their heritage language. They reported that the major reasons for taking these classes were learning about their cultural and linguistic roots and improving communication with family.

2.10 Conclusion

Studies of incomplete acquisition show that first language acquisition does not always culminate in a fully developed language competence when more than one language is acquired during childhood. While more or less balanced bilingualism is certainly possible, a minority first language in simultaneous or early sequential bilinguals can be vulnerable if increasing exposure to the majority language comes at the cost of decreasing support for the minority language before approximately the age of 8-10. When the majority language becomes dominant in a bilingual child, the minority language development may lag behind and never catch up. As a result, structures that are acquired late in normal L1 development may never be acquired, and even structures that have been acquired by such bilingual children can undergo attrition. Comprehension is less affected by incomplete acquisition and attrition than production. Listening is the strongest language skill in

heritage speakers, but speaking is much weaker. However, morphosyntactic deficits in heritage grammars have been found in both production and comprehension. Heritage speakers are distinct from attriters and L2 learners: These populations show similar linguistic behaviour in some cases but not others. Language attitudes play a role in heritage language development, unlike in monolingual first language acquisition, where they are mainly irrelevant.

Chapter 3

Labrador Inuttitut

The purpose of this chapter is to provide background on structure, acquisition and sociolinguistic context of the language which is the object of this study. First, I give an overview of the language shift situation in the community where this study took place in order to clarify what kind of exposure to the target language RBs receive in the community. Then I give a general overview of the structure of Labrador Inuttitut, followed by a rationale for the choice of the specific variables in this study, and more theoretical background on the syntax and semantics of these variables. After that, I discuss first language acquisition of the selected variables.

3.1 Language situation in Nunatsiavut

Labrador Inuttitut is a dialect of Inuktitut, an Eskimo-Aleut language. Various Inuktitut dialects are spoken from Alaska to Greenland, including the northern regions of Canada: Northwest Territories, Nunavut, Nunavik (Arctic Quebec), and Nunatsiavut (Northern Labrador) (Dorais, 1990).

The participants in this study are residents of the largest Inuit community in northern Labrador – Nain (1,034 residents, according to 2006 census). Nain is the administrative capital of Nunatsiavut, the Inuit area within the province of Newfoundland and Labrador,

and Labrador Inuttitut is the dialect spoken in the small communities that make up Nunatsiavut: Nain, Hopedale, Makkovik, Postville, with the exception of Rigolet, where a distinct dialect is spoken (but this dialect is heading for extinction (Andersen & Johns, 2005)). Most Nunatsiavut residents are Inuit and people of mixed Inuit-white heritage. The mixed Inuit-white population includes descendants of European settlers, who came to live among Labrador Inuit generations ago, adopted the Inuit way of life, and married Inuit (Johns & Mazurkewich, 2001). The Labrador Inuit Association consists of both Inuit and descendants of settlers, without making a distinction between them.

While Inuktitut in general is considered viable, the Labrador dialect has been endangered over several decades. In the *UNESCO Interactive Atlas of the World's Languages in Danger*, Nunatsiavummiutut (Labrador Inuttitut) is listed as "definitely endangered" (3 on the scale from 5 (safe) to 0 (extinct), as defined in UNESCO document *Language Vitality and Endangerment*). This is the result of the language shift from Inuttitut to English that has been taking place in Labrador Inuit communities. The language shift started as a result of the early contact with white people (as early as the XVIII century) and was accelerated by the assimilationist policies in the second half of the XX century. In the late 1700s, Moravian missionaries established mission stations in Labrador, and later, schools. The missionaries already spoke the West Greenlandic dialect of Inuktitut, and learned the local dialect. Inuit children were educated in Labrador Inuttitut - including literacy in Inuttitut that was introduced by the Moravians, while settler children were educated in English (Johns & Mazurkewich, 2001). However, in 1949, when the province of Newfoundland joined Canada, it became obligatory to make one of Canada's official languages the language of instruction, and so English replaced Inuttitut in the school system (Johns & Mazurkewich, 2001). This change had a drastic effect on the use of Inuttitut. White teachers required students to speak only English at school, and punished those who were caught speaking Inuttitut. There was no high school in Nain, and after Grade 8, teenagers would leave for a residential school in the town of Northwest

River, in Central Labrador, where Inuit were a minority. All these changes lead to the decline of Inuttitut in Labrador.

Chartrand (1985) analyzes retention of Inuktitut across the Canadian north by comparison of 1971 and 1981 census data, and finds that retention of Inuktitut in Newfoundland and Labrador declined dramatically; the same happened in the Western Arctic, but not in the Eastern Arctic and Northern Quebec. Both Newfoundland and Western Arctic are the areas where Inuit were in contact with white people for a longer period of time than elsewhere in the Canadian north, but in fact, the most significant changes in the retention of Inuttitut actually happened in the 1970s. In 1971, 91% of Newfoundland and Labrador Inuit had Inuttitut as a mother tongue, while in 1981, this number was down to 58.6% - from nearly all to a little more than half of the Inuit. The percentage of Labrador Inuit who spoke Inuttitut at home also went down, from the majority to the minority: 72% in 1971, but only 37.3% in 1981. There are two reasons for this percentage being so low in 1981: First, there were fewer Inuit with Inuttitut as mother tongue, and second, even among those whose mother tongue was Inuttitut, not everybody used it at home. Already in 1971, only 78% of Inuit who reported that Inuttitut was their mother tongue used it at home, and in 1981, this number went down to 63%.

In the 1970s, language maintenance and revitalization efforts started. Inuttitut was re-introduced into the school system in Labrador as a subject (Andersen, 2009), but English has continued to remain the language of instruction for the other subjects. In 1987, an option of Inuttitut immersion (the First Language Program) from kindergarten to Grade 3 became available in Nain. Currently, the Torngâsok Cultural Centre in Nain has been providing training for translators-interpreters, organizing youth Inuttitut immersion camps once or twice a year, and producing Inuttitut language learning resources (including Rosetta Stone language learning software starting from 2007). There are also radio and television programs in Labrador Inuttitut, produced by the OKâlaKatiget Society in Nain.

Both English and Inuttitut are spoken in Nain, but English is by now more dominant in all domains to the point that "for most residents, Inuttitut is not required to function in everyday life" (Andersen, 2009, p. 116). Most people, except a handful of elders, can speak English. According to Statistics Canada (2006), only 15 Nain residents did not have knowledge of English in 2006. However, many people are not fluent in Inuttitut or do not speak it at all, especially within the younger generations. Currently, Inuttitut in Nain is not used as much as, for example, local Inuktitut dialects in Nunavik (Arctic Quebec) or Nunavut. According to Statistics Canada, only 26.6% of Labrador Inuit reported knowledge of Inuttitut in the census of 2006, compared to 90% in Nunavut and 99% in Nunavik. Specifically in Nain, in the census of 2006[1], 38.9% of aboriginal population reported knowledge of Inuttitut, while only 11.1% claimed that Inuttitut was the language they spoke most often at home (which is three times less than in 1981).

In a large-scale language survey that took place in Labrador Inuit communities in 1999-2000 (Andersen, 2004), 9.5% of respondents claimed to speak Inuttitut at home. Both the census and the survey data indicate that there are fewer speakers than non-speakers, and not all those who are fluent in Inuttitut actually speak it at home. Nine years later, a smaller-scale, but more detailed language survey was conducted by Andersen (2009) in Nain, using a stratified sample, in which participants were selected so that all age groups from age 19 and up were equally represented. In this survey, 46% of participants reported high speaking proficiency in Inuttitut, almost all of them older than 38. Andersen (2009) divided her participants into three age groups, based on the history of Labrador Inuttitut. The oldest participants were born before 1950, exposed more to Inuttitut, and educated in Inuttitut. The middle-age group participants were born between 1950 and 1970, when only English was spoken at school, but they were exposed to Inuttitut through their families. The youngest participants were born after 1970, when Inuttitut was taught in schools as a subject, but less spoken around town. The

[1]Similar percentages are reported in the census of 2001 and 1996.

results of the survey showed that speaking proficiency in Inuttitut was tied to age: Almost all older participants reported high proficiency, most younger participants reported low proficiency, and the middle-age group was the most diverse in terms of proficiency.

Part of the non-speaking population consists of receptive bilinguals. In the 1999-2000 language survey (Andersen, 2004), 1.6% of the respondents reported that they understand Inuttitut but do not speak it. Andersen & Johns (2005) suggest that in reality, this number is greater. Also, in Andersen's (2009) survey, more respondents claimed good listening comprehension (56%) than good speaking skills (46%).

Attitudes to Inuttitut in Nain are mostly positive. Almost all respondents in Andersen (2009) stated that Inuttitut is important for them, and that it is necessary to keep it alive. However, intergenerational transmission, which is a very important factor for the health of a language, appears to have been disrupted among Labrador Inuit. First, the percentage of people who acquired Inuttitut as a first language, through interactions in their family, is relatively small. In Andersen (2004), only 15% of the survey respondents reported that they had Inuttitut as their first language, and, according to Statistics Canada, 31.6% of Nain Inuit did in 2006 (which is even less than in 1981). In Andersen (2009), among those respondents who said that their parents could speak Inuttitut, only slightly more than half said that their parents actually spoke Inuttitut to them. In the same survey, 75% of the respondents reported speaking only or mostly English to their children, while only 54% of the respondents reported not being fluent in Inuttitut. Therefore, even now, when Labrador Inuit are aware that their language is endangered, not all fluent speakers speak Inuttitut to their children.

A serious problem in Labrador Inuit communities, as visitors and community residents report, has been the negative attitude towards non-fluent speakers' attempts to speak Inuttitut (A. Johns, p.c., April 2007). Until recently, most older fluent speakers laughed at, or reacted in other negative ways to dysfluent speech in Inuttitut, and this likely discouraged many non-fluent speakers from trying to speak. At present, the attitude

seems to be changing both ways, as the community members realize how endangered their language is. Fluent speakers have become much more supportive, and some non-fluent speakers have become more motivated and less inhibited by other people's attitude.

Though Inuttitut in Nunatsiavut is endangered, community members report that even non-speakers know and use Inuttitut words in English speech as borrowings from Inuttitut unique to English spoken in Nunatsiavut. This was also noticed by Mazurkewich (1991). These are usually words for traditional food, clothing, and equipment, such as *pitsik* 'dried char', *kamik* 'boot (especially an Inuit sealskin boot)' or *Kamutik* 'an Inuit sled', as well as for local species of animals and fish.

The present language situation in Labrador is such that at this point, it could develop in both ways. The language shift can be either reversed or completed. On the one hand, there are still fluent speakers, and there are revitalization efforts; on the other hand, intergenerational transmission is disrupted, and English dominates in all spheres. In particular, receptive bilinguals have some knowledge of Inuttitut and a desire to maintain and develop it, yet they cannot transmit it to their children or make it more heard in the community because they do not speak it.

3.2 Overview of the structure of Inuttitut

Inuktitut is a polysynthetic language, with rich morphology, both nominal and verbal. Word order in Inuktitut is flexible, determined by information structure, but morpheme order is much more restricted - changing the morpheme order is either impossible or results in a different meaning (Fortescue, 1984).

Verbs consist at least of a root and an obligatory portmanteau agreement+mood marker[2]. A clause can consist only of a verb, when the verb's arguments are null, as

[2]I call it portmanteau for the ease of exposition, but in certain moods, it is possible to distinguish agreement and mood within such a morpheme.

shown in the example in (1)[3], or it can include overt noun phrases and other free elements such as conjunctions and adverbs.

(1) Sini-juk
sleep-PART.3SG
'He/she is sleeping'

The verb agrees with either the subject (in intransitive and antipassive clauses) or both the subject and the object (in ergative clauses) in person and number. In the Labrador Inuttitut (unlike in other Eastern Canadian dialects of Inuktitut) antipassive constructions are more prevalent than ergative (Johns, 2001). Ergative constructions in this dialect are usually used with null arguments that have antecedents in the previous discourse. In example (2), an antipassive (2a) and an ergative (2b) sentences are shown.

(2) a. Mary iga-sima-juk manni-nik.
Mary cook-PERF-PART.3SG egg-MIK.PL
'Mary has cooked eggs'

b. Nigi-kKau-jangit.
Eat-RPST-PART.3SGS.3PLO
'She ate them'

Labrador Inuttitut has at least eight moods. Four of them are independent moods that can occur in main clauses: indicative, participial, interrogative and imperative. Indicative and participial moods characterize an independent (or main) declarative clause (the difference between these moods will be discussed in section 3.4.1). Interrogative mood is used in questions, and imperative, in requests and commands. There are also

[3]In Inuttitut examples, I use the Labrador orthography. Most letters correspond to IPA symbols, with the following exceptions: 'ng' corresponds to a velar nasal, 'ngng' to a geminate velar nasal, capital K=x in IPA, â=long a, e=long i, o=long u.

dependent moods that are used in specific types of dependent clauses. The causative mood is used in clauses of reason or purpose (*because*-clauses), and also in *when*-clauses; the conditional mood, in conditional (*if*-) clauses; the conjunctive mood, in clauses conjoined to the main clause; the negative mood is used in negated clauses.

In addition to the root and the agreement+mood marker, there is a large class of morphemes traditionally called postbases by linguists working on Eskimo-Aleut languages. A given postbase can attach to a verb, to a noun, or to both. A verbal postbase is any morpheme that appears between the root and the agreement+mood marker, including negation, tense, aspect, valency-changing markers (passive, antipassive, causative), manner, intensifiers, noun-incorporating verbs, verbs incorporating other verbs, and various other morphemes with less classifiable meaning. Cook & Johns (2009) argue that postbases are functional heads. A verb can contain any number of postbases, as illustrated in (3): (3a) contains the root *nigi*-, the agreement+mood marker -*Kugut*, and no postbases; (3b) contains one postbase, and (3c), four postbases.

(3) a. nigi-vugut
eat-INDIC.3PL
'We are eating'

b. nigi-niak-Kugut
eat-NFUT-INDIC.3PL
'We will eat'

c. nigi-mmâ-ngua-giattu-niak-Kugut
eat-plentifully-play-go.in.order.to-NFUT-INDIC.3PL
'We will be going for a picnic'

A sentential enclitic is the only type of morpheme that can be attached at the right of the agreement+mood marker. Examples include -*li* 'but also, and', -*tauk* 'also, too', and

some others. A verbal complex in Inuttitut can express a whole proposition (and would be translated into a non-polysynthetic language such as English as a whole sentence).

Nouns are marked for Case, number, and possession. Number in Inuttitut can be singular, dual or plural. Both the possessor and the possessed noun are morphologically marked in Inuttitut: the possessor, with the ergative case marker, and the possessed, with a morpheme containing the person and number features of both the possessor and the possessed. Case, number and possession marking is illustrated in Table 3.1. There are also various postbases that attach to nouns in order to derive new nouns or verbs.

Table 3.1: *Case, number, and possession marking on nouns*

illuk house-ABS.SG 'house'	illu-it house-ABS.PL 'houses'	illu-mut house-ALLAT.SG 'to a/the house'
illu-ga house-POSS.1SG.SG 'my house'	illu-kka house-POSS.1SG.PL 'my houses'	illu-ga-nut house-1SG.SG-ALLAT 'to my house'

Labrador Inuttitut appears to have little or no idiosyncratic allomorphy. Usually, allomorphy in Inuttitut is predictable from morphophonological rules that operate on morpheme boundaries. The morpheme-final consonant in the Labrador dialect is affected by the initial consonant of the next morpheme. According to Smith (1978), there are two types of affixes: deleting and adjoining affixes, which differ in the way they affect the last consonant of the previous morpheme. A consonant before a deleting affix is simply deleted. A consonant before an adjoining affix undergoes total assimilation to the initial consonant of that affix, resulting in geminates. The first consonant in an agreement+mood morpheme, on the other hand, is affected by the last segment of a preceding morpheme: in the participial mood markers, the initial consonant would be /j/ after a vowel and /t/ after a consonant (although there is some variation), and in the declarative mood markers, it would be /v/ after a vowel and /K/ after a consonant (where /p/ appears in other dialects of Inuktitut); the consonant before the agreement+mood marker also undergoes total assimilation to its first consonant.

In the Labrador dialect (and also in closely related Arctic Quebec dialects), there exists the Law of Double Consonants (Consonant Cluster Simplification in Smith, 1978), a phonological rule which requires a consonant cluster (including geminates) immediately following another consonant cluster to be reduced by deleting the first consonant (Dresher & Johns, 1995). The rule is iterative from left to right, as it is illustrated in examples (4a) and (4b) from Andersen and Johns (2005).

(4) a. â**nn**ia-**K**au-**ngng**i-langa
sick-RPST-NEG-NEG.1SG
'I was not sick (earlier today)'

*â**nn**ia-**kK**au-**ngng**i-langa

b. nigi-**kK**au-**ng**i-langa
eat-RPST-NEG-NEG.1SG
'I did not eat (earlier today)'

*nigi-**kK**au-**ngng**i-langa

Another morphophonological property of Inuttitut is that it does not allow more than two adjacent vowels or a long vowel adjacent to another vowel. If three vowels become adjacent at a morpheme boundary, in some cases, the second vowel is deleted, and in other cases, an epenthetic *ng* /ŋ/ is inserted (Smith, 1978).

Labrador Inuttitut-English bilingualism provides an interesting case because the two languages differ so much. While English is mostly analytic, Inuttitut is polysynthetic - that is, on the other end of the spectrum for morphological richness. Inuttitut encodes many contrasts that are not grammatically encoded in English. Even the meanings that are also encoded in English are encoded in Inuttitut in a different way (as for the linguistic variables discussed in the next two sections). Also, Labrador Inuttitut differs from most previously studied heritage languages. On one hand, it has higher

morphological complexity, which is likely to make it more difficult to learn, as heritage speakers tend to favour analytic constructions (see Polinsky & Kagan, 2007, for a review). On the other hand, allomorphy in it is mostly predictable, which should make it easier to learn than languages where idiosyncratic allomorphy is abundant.

3.3 The selection of linguistic variables

For this study, I needed to select a variety of functional morphemes with different properties to serve as stimuli. Factors that were considered in the choice of morphemes included vulnerability in incomplete acquisition, time of acquisition in L1, similarity to English counterparts, and semantic contribution of the morphemes to an utterance (see Chapter 2). Analysis of comprehension of morphemes differing in the degree of vulnerability in incomplete acquisition would allow a comparison between Inuttitut RBs and heritage speakers of other languages. Comprehension of morphemes with and without English equivalents provides a testing ground for the interlanguage/convergence-based hypotheses of bilingualism and attrition. Semantic contribution of morphemes is relevant for testing a hypothesis that functional morphemes contributing more to the meaning of the utterance (as opposed to functional morphemes that serve mainly for grammatical well-formedness) are more likely to be preserved in incomplete grammars.

Both nominal and verbal morphology have been reported to be vulnerable in incomplete acquisition, as discussed in Chapter 2. Of the nominal morphology, I chose nominal case, as there are many reports of deficits in production and comprehension of case in various heritage languages. It is not convergent with English, as English does not have overt case marking for nouns. Even though English pronouns have case, English and Inuttitut have different case systems. The semantic contribution of case is that it allows to identify the theta-roles of noun phrases, but in many utterances, there are other clues as well, such as pragmatic knowledge, context, and canonical word order. Of the verbal

morphology, I selected three categories with different properties: agreement, tense and aspect. They differ in the degree of vulnerability in incomplete acquisition: recall from Chapter 2 that aspect is usually affected in heritage language, agreement was reported to be affected in some studies, but preserved in others, and tense is usually preserved. They are partially convergent with English, in different ways. Subject-verb agreement in person and number exists in English, but not object-verb agreement. Additionally, unlike Inuttitut, English does not have the dual number. Within the category of tense, both languages have the contrast between past, present and future, but only Inuttitut has remoteness degrees (i.e. contrasts within past/future, such as recent past versus distant past). Aspectual meanings are expressed by different means in Inuttitut and English. Both tense and aspect morphemes carry interpretable features (in the Minimalist theory, Chomsky, 1995) that have to make their way to LF to contribute to the interpretation of the utterance, but agreement morphemes on verbs carry uninterpretable features that are checked by the interpretable phi-features carried by nouns. However, when there is a null argument, the agreement morpheme on the verb helps to identify that argument in the previous discourse.

For a polysynthetic language, morpheme ordering is also relevant. I chose to test both the ordering of a postbase (tense) and an agreement+mood marker, and the ordering of two postbases (tense and negation). The former ordering appears to be a core property of Inuttitut because of the difference between morpheme classes – the agreement+mood morpheme is distinct from postbases, and always appears to the right of them. In the ordering of postbases, both morphemes involved belong to the same class, and some postbases – but not tense and negation – can appear in different orders, which results in different meanings. There is no data on morpheme ordering in heritage languages, because previously studied heritage languages are not polysynthetic. In the next section, I provide more details on the variables selected for testing.

3.4 Theoretical background on the variables selected

3.4.1 Agreement

Agreement in Inuttitut is encoded separately from tense but is fused with mood, and the agreement+mood marker is syntactically obligatory: No verb can appear without it (Labrador Inuttitut does not have infinitives or any other non-agreeing forms). In rare cases, it can be omitted in colloquial speech under certain circumstances, at least in Arctic Quebec dialects (Crago & Allen, 2001; Swift & Allen, 2002). In Inuttitut, a verb with intransitive agreement (inherently intransitive or antipassivized) agrees only with its subject (though the object can be present), and a verb with transitive agreement (in an ergative construction) agrees with both its subject and its object. Given that there are eight moods, three numbers (singular, dual, plural), three persons (first, second, third) and, for dependent moods, a distinction between reflexive (same as in the main clause) versus disjoint third person subject, the number of agreement+mood markers in Inuttitut is over 500.

Inuttitut allows null subjects and objects; in fact, overt pronouns are rarely used and usually are emphatic. A first or second person pronominal argument that is conjoined with an NP argument is also null; its presence is marked by a clitic *-lu* 'and' attached to the NP with which the pronominal argument is conjoined, and the verb agrees with the combination of the NP and the pronominal argument. This is illustrated in (5).

(5) Ilanna-ga-lu Kakka-lia-lauk-Kuguk.
Friend-POSS.1SG.SG-and hill-go-DPST-INDIC.1D
'My friend and me went up a hill.'

Agreement morphemes on verb provide information about the identities of the arguments of the verb. Thus, while this information can be disregarded when all the arguments are

overt, it is needed for argument recovery when one or more of the arguments are null. The task of the parser is then to look at the previous discourse and find an entity that is compatible with the agreement morpheme on the verb.

For this study, I focused on the indicative (also called declarative) and participial moods. One obvious difference is that the participial mood is used to form participles, hence the name; however, both are used for verbs in main clauses of declarative sentences, with a subtle difference, which has not been formalized yet. Because of this difference and its interaction with the person features of the verb's arguments, the unmarked mood in Labrador Inuttitut main clauses is different for different persons. In the declarative main clauses with intransitive agreement, the participial mood is the unmarked mood for the third person subject, but it is ungrammatical with the first and second person subjects (Johns, 1995). The indicative mood, on the other hand, is the unmarked mood for the first and the second person, but the marked one for the third person, in which case it conveys "a meaning of surprise or immediacy" (Johns, 1995, p. 132). In the declarative main clauses with transitive (i.e. ergative) agreement, the choice of mood depends not on the subject, but on the object. First and second person objects require the verb to be in the indicative mood, while for the third person object the participial mood is the unmarked choice, and the indicative, marked. This is shown in Table 3.2, based on examples from Johns (1995). By 'indicative/participial' in this paper I mean the most unmarked mood for each main clause of a declarative sentence.

Table 3.2: *Participial and indicative mood*

Intransitive *nigi-* 'eat'			
Person	*Participial*	*Indicative*	
1 sg	*nigi-**junga**	nigi-**vunga**	'I am eating'
2 sg	*nigi-**jutit**	nigi-**vutit**	'You are eating'
3 sg	nigi-**juk**	nigi-**vuk**	'He is eating'
Transitive *takunna-* 'to look at'			
Person	*Participial*	*Indicative*	
1 sg Subj, 3 sg Obj	takunna-**jaga**	takunna-**vaga**	'I am looking at him'
3 sg Subj, 1 sg Obj	*takunna-**jânga**	takunna-**vânga**	'He is looking at me'

I included both transitive and intransitive indicative/participial mood in the test materials. Indicative intransitive first and second person and participial intransitive third person are probably the most unmarked and most frequent agreement+mood inflections in Labrador Inuttitut, because ergative sentences, with transitive agreement, are used in Labrador Inuttitut less often than in other dialects of Inuktitut (Johns, 1999). The intransitive is also more English-like, since it is non-ergative, and only the subject agrees with the verb. Thus, the intransitive indicative/participial mood can be expected to be the easiest one to acquire and to process. Indicative transitive is in the same mood, but it is more complex, encoding more information - both about the subject and about the object identity.

3.4.2 Tense

There has been a debate on whether Inuit languages actually have tense (Hayashi, 2011; Hayashi & Spreng, 2005), or they are tenseless (Bittner, 2005; Crago & Allen, 2001; Schaer, 2003). In Labrador Inuttitut, the tense markers for eventualities taking place other than in the present (or, for achievement verbs, immediate past) are obligatory (Clarke, 2009).

The present tense in Inuttitut is morphologically unmarked. A verb consisting of a root/stem and an agreement+mood morpheme is interpreted as present, denoting an eventuality that is taking place during speech time, as in (6). The exception to this are achievement verbs - they are perfective, and in the absence of a tense marker, they express immediate past, as in (7) (but require a past tense marker to express past that is earlier than a few minutes ago).

(6) Kaja-liu-juk
kayak-make-PART.3SG
'He is making a kayak'

(7) katat-tuk
fall-PART.3SG
'He (just) fell down'

Both the past and the future are marked by affixes that attach before the agreement+mood inflection, as shown in (8a) and (8b), respectively. A verb without past tense markers is incompatible with past time adverbials; this is also the case in other Eastern Canadian Inuktitut dialects (Swift, 2004, for Arctic Quebec; Hayashi, 2011, for South Baffin), unlike in West Greenlandic (Shaer, 1997, 2003).

(8) a. Kaja-liu-**laut**-tuk
kayak-make-DPST-PART.3SG
'He made a kayak (yesterday or earlier)'

b. Kaja-liu-**lât**-tuk
kayak-make-DFUT-PART.3SG
'He will make a kayak (tomorrow or later)'

According to Swift (2004), the main distinction in the marking of time in Inuktitut is realis versus irrealis, with irrealis as the marked member, while in many commonly studied languages, the main distinction is past versus non-past (e.g., English has a synthetic past, but no synthetic future). Future, as a special case of irrealis, is marked, since it always has to have an overt morphological marker, but past can be morphologically unmarked (in the case of immediate past of achievement verbs). Verbs without tense or aspectual markers can thus be interpreted as present or past (depending on lexical aspect; though in order to express a more distant past, a tense marker is needed), but can never be interpreted as future.

Inuttitut future and past each have several degrees of remoteness. Most common are

the two I will use in the test materials: hodiernal (within the day the utterance is made) versus non-hodiernal (beyond the day the utterance is made). Hodiernal past is also called recent past, and hodiernal future, near future, while non-hodiernal tenses are also called distant. The near future marker is *-niaC-*[4], the distant future, *-lâC-*. The recent past marker is *-kKau-*, the distant past marker, *-lauC-*.

Inuttitut also has a very near future marker *-langa-* (closer to the moment of speech than *-niaC-*). Other dialects, such as those spoken in Arctic Quebec, also have a very recent past *-kainnaq-*, but it did not occur in my fieldwork data and is not listed in the dictionary of Labrador Inuttitut postbases by Smith (1978). In addition, Inuttitut has a remote past marker *-lautsima-*, denoting eventualities that took place long ago.

3.4.3 Aspect

In terms of lexical aspect, there is a difference between achievements (punctual verbs) and other lexical aspectual classes, as mentioned above. Achievement verbs are telic and have no duration; that is, they are points. According to Cowper's (1998) Principle of Non-Simultaneity of Points, two temporal points cannot be simultaneous (unless simultaneity is expressed through certain lexical elements); therefore, such verbs cannot coincide with the moment of speech (which is also a point, as Cowper argues) and, consequently, cannot express present time. In Inuktitut, such verbs express immediate past instead (Clarke, 2009; Hayashi, 2011). Accomplishment verbs, however, though telic, are also durative, and in Labrador Inuttitut, they pattern with other durative verbs - activities and states, expressing an eventuality that is taking place at the moment of speech.

In addition to lexical aspect, Inuttitut has numerous aspectual postbases of different kinds. I include two of them in the test materials: the ingressive *-liC-* and the habitual *-Katta-*.

[4]C represent an unspecified consonant that undergoes total assimilation to the first consonant of the next morpheme.

Ingressive *-liC-*

Ingressive *-liC-* (*-liq-* in other dialects) is glossed either as 'be in the process of X-ing; now' (Smith, 1978, Labrador Inuttitut) or 'begin to, be in the process of X-ing' (Fortescue, Jakobson & Kaplan, 1994, West Canadian Inuktitut); it is termed *ingressive* in Swift (2004). From my fieldwork in Labrador (Sherkina-Lieber, 2008a), it appears that the meaning of *-liC-* include all these components: 'begin to' (there is a presupposition that the subject was not X-ing before), 'be in the process of X-ing' (for events and processes), and 'at the reference time'[5]. More precisely, it means something like 'begin X(-ing) shortly before reference time and be X(-ing) at the reference time'. Swift (2004) points out that it "highlights the initial boundary of an event" (p. 59).

There are certain consequences of the interaction of lexical aspect and *-liC-*. This suffix can appear with any lexical aspectual classes, including states, as in (9b).

(9) a. Kuviasu-juk
Happy-PART.3SG
'He is happy'

b. Kuviasu-**lit**-tuk
happy-INGR-PART.3SG
'He is (being) happy now (after being sad a while ago)'

Although accomplishments, processes, and states without tense or aspectual affixes are by themselves interpreted as going on at the speech time (unlike accomplishments in Swift's (2004) data from Arctic Quebec, which pattern with achievements), *-liC-* seems to add more focus on the current situation and on its initial boundary. As Swift (2004) puts it, with atelic verbs, it serves to highlight the fact that the eventuality is taking

[5]Reference time equals to 'now' in the present tense, but the gloss 'now' is incorrect when *-liC-* co-occurs with a tense marker.

place now but was not before. With achievements (e.g. *kata-* 'fall', *tiki-* 'arrive', etc.), *-liC-* also affects their temporal interpretation. While Inuttitut achievements without tense or aspectual markers express immediate past, with *-liC-*, as shown in (10b), they become progressive and then express the present (unlike punctual verbs in Swift's data, which are said to be incompatible with *-liC-*, only some Labrador punctual verbs are incompatible with it, e.g. *napva-* 'find').

(10) a. Tiki-juk
arrive-PART.3SG
'He (just) arrived'

b. Tiki-**lit**-tuk
arrive-INGR-PART.3SG
'He is arriving'

With achievement verbs, V+*-liC-* can denote not only the slowed-down version of a punctual event (*kata-lit-tuk* 'he is falling'), but also the state before that punctual event, and in fact, some verbs can denote both (*ani-lit-tuk* 'he is going out' is true either when somebody is stepping through the door (is in the process of X-ing) or when he is still putting his clothes on (is about to X)). For testing, only the perfective/progressive contrast in achievements was used, as this appears to be the clearest contrast involving this morpheme.

Pluractional *-Katta-*

A habitual/iterative, or, more precisely, pluractional suffix *-Katta-* (*-qatta(q)-* in other dialects) is sometimes glossed 'often', but in fact it often behaves as a habitual marker (and is glossed as such by, e.g. Swift, 2004). A verb without tense or aspectual affixes is interpreted as present and ongoing single eventuality (or, in the case of achievements, a

single perfective event that had just happened), but if *-Katta-* is added, the interpretation becomes pluractional: Such a verb denotes an eventuality that occurs multiple times or habitually (Sherkina-Lieber, 2008b). It is compatible with any lexical aspectual class. In (11b), the pluractional marker occurs with an accomplishment, and in (12b), with a state.

(11) a. Illu-liu-juk
House-make-PART.3SG
'He is building a house'

b. Illu-liu-**Katta**-juk
house-make-PLURACT-PART.3SG
'He builds houses'

(12) a. Anguti-nga aulla-mmat, Mary pingiga-juk
Man-ABS.3SG.POSS leave-CAUS.3SG.NR Mary worry-PART.3SG
'Because her husband is away, Mary is worrying.'

b. Anguti-nga aulla-**Katta**-mmat, Mary pingiga-**Katta**-juk
Man-ABS.3SG.POSS leave-CAUS.3SG.NR Mary worry-PLURACT-PART.3SG
'Every time her husband goes away, Mary worries.'

The single ongoing vs. pluractional eventuality contrast was tested for all lexical aspectual classes (achievements, accomplishments, activities and states).

3.4.4 Case

Inuttitut has eight cases: absolutive, ergative/possessive, *mik*-case (used for objects in antipassive sentences), allative (or dative), locative, ablative, similaris, and vialis. All of the cases have overt markers except absolutive (for singular non-possessed nouns). The

subject in an ergative sentence has the ergative case, the object, absolutive. The subject of an intransitive verb or in an antipassive sentence has the absolutive case (*angutik* 'man' in (13)); if the verb has an object (*sikitu-mik* 'skidoo' in (13)), the object is marked with the so-called *-mik* Case (marked by the morpheme *-mik* in the singular, *-nik* in the plural), which is often called oblique, but in fact it behaves much like the accusative case in nominative-accusative languages (Bok-Bennema, 1991; Johns, 2001; Spreng, 2001). The absolutive case on subjects of such sentences functions similarly to the nominative case in nominative-accusative languages.

(13) Angutik sikitu-**mik** niuvi-laut-tuk
man-ABS skidoo-MIK buy-DPST-PART.3SG
'A/the man bought a skidoo'

Since in Labrador Inuttitut, ergative constructions are typically produced when at least one argument is null (otherwise, intransitive or antipassive constructions are used), an ergative marker on a subject noun phrase or an absolutive marker on an object noun phrase are not as frequently seen. Only two cases that are likely to be most frequently used - absolutive case on subjects and the *-mik* case on objects - were tested in the present study.

3.4.5 Morpheme and word order

The morpheme order in Inuttitut, unlike the word order, is restricted. Inuttitut has no prefixes, and so the root is always the leftmost morpheme in all words. Within verbs, the portmanteau agreement+mood marker is almost always the rightmost morpheme (unless a sentential enclitic is present). The agreement+mood morpheme has a rigidly fixed position and is syntactically obligatory. The same is true for morphemes expressing case, number and, where applicable, possession on nouns. The postbases

in verbs (tense, aspect, negation, manner, intensifiers, etc.) appear between the root and the agreement+mood marker; the postbases in nouns, between the root and the case/number/possession marker. There is a specific place for each class of verb-modifying postbases in the structure of a verb. Changing the position of a non-postbase morpheme results in ungrammaticality. The outcome of changing the positions of postbases depends on the specific postbases involved: It is either an ungrammatical sequence, or a verb with a different meaning (caused by a change of the scope of each morpheme (Fortescue, 1980)). For example, a tense morpheme must be on the left of the agreement+mood morpheme (the reverse order is ungrammatical), and the negation marker, if present, must be on the right of the tense morpheme, but on the left of the agreement+mood morpheme (other positions for the negation marker are ungrammatical, at least in the Labrador dialect).

Within the verb, the order is roughly as follows:

(14) Root-(Manner)-(Aspect)-(Tense)-(Neg)-Agr+Mood-(Enclitic)

The order is illustrated in (15), where *pisu-* is the root 'walk', *-langa* is an agreement+mood marker, *-li* is a sentential enclitic, and the rest are postbases: *-Katta-* is an aspectual marker, *-lauC-* is a tense marker, *-ngngi-* is a negation marker.

(15) ilinniavvi-mut pisu-Katta-lau-ngngi-langa-li
school-ALLAT.SG walk-PLURACT-DPST-NEG-NEGD.1SG-BUT.ALSO
'But also, I usually didn't walk to school'

Word order in Inuktitut, unlike morpheme order, is syntactically free, but it is governed by the information structure (Fortescue, 1984, for West Greenlandic; Sherkina-Lieber, 2005, for South Baffin). The default order (neutral, without a context) is SOV (for ergative sentences) or SVO (for antipassive sentences), but all possible orderings of subject, object,

and verb are acceptable in an appropriate context, depending on what the focus and the topic are. Topics tend to be in the sentence-initial position (Fortescue, 1984).

3.5 Acquisition of Inuktitut

There exists a body of work on acquisition of morphosyntax in Inuktitut as a first language, involving dialects other than Labrador Inuttitut[6]. Most of it has been conducted in Nunavik (Arctic Quebec) (Crago & Allen, 2001, and earlier work by both authors; Skarabela & Allen, 2010, and earlier; Swift, 2004, etc.). The dialects spoken there are the closest relatives of the Labrador dialect, though there are differences in both phonology and grammar (Dorais, 1990). There are also a few works on acquisition of other dialects, such as Kivalliq, spoken in Nunavut (Parkinson, 2000), and West Greenlandic (Fortescue, 1984; Fortescue & Lennert Olsen, 1992). The discussion below is based on the data from Arctic Quebec Inuktitut, unless specified otherwise.

Generally, the biggest difference in acquisition between Inuktitut and English is the early presence of functional morphemes in Inuktitut - both inflectional (agreement+mood on verbs; Case, number and possession on nouns) and derivational (postbases), likely because of morphologically rich polysynthetic nature of Inuktitut (Crago & Allen, 1999). According to Crago and Allen (1999), children who learn Inuktitut start their production of language uttering one morpheme at a time, similarly to the one-word stage in children who are learning English. In this stage, Inuktitut-learning children produce particles that do not require affixes, nouns without case markers (that look like singular non-possessed nouns in the absolutive case), and uninflected verbs. They also use the special Inuktitut baby word vocabulary. In the next stage, according to Crago and Allen (1999), when Inuktitut-learning children start to combine morphemes, their early multimorphemic ut-

[6]The only study touching on acquisition of Labrador Inuttitut has been done by Mazurkewich (1991), who examined bilingual development of children in the First Language Program, the Inuttitut immersion program in the Nain school, but it contains no details on the children's morphosyntactic development.

terances more often consist of two morphemes within one word rather than two separate words, in contrast to telegraphic speech of English-learning children at this stage. The most common combinations are a verb root plus an agreement+mood marker and a noun root plus a possessive marker.

Fortescue (1984) describes a language sample taken at the age of 2;3 from a child learning West Greenlandic. The child demonstrated productive use of many agreement+mood morphemes and various types of postbases, as well as good knowledge of morphophonological rules that apply at morpheme boundaries. While his MLU in morphemes was close to 2 (which is comparable to that of his peers learning English), some of his utterances reached up to six morphemes in length (although Fortescue notes that it was difficult to tell if all the morphemes in his longest utterances were productive, or some were learnt only in a combination of morphemes). Fortescue also notes the child's tendency to put topics in the sentence-initial position, as in adult West Greenlandic.

Inflectional affixes on verbs (agreement+mood) appear especially early. Children who are learning Inuktitut start using agreement+mood markers as soon as they start to combine morphemes, between the ages of approximately 1;6 and 2;0, and achieve the adult level of verbal inflectional affixes use by approximately the age of two (Crago & Allen, 2001; Crago, Allen, & Pesco, 1998). In comparison, it takes longer for children who are learning English, presumably because of a smaller number and therefore lower frequency of inflectional affixes in English verbs. In Crago et al. (1998) and Crago and Allen (2001), at the beginning of the two-morpheme stage, over 90% of children's two-morpheme utterances containing a verb root also contained an agreement+mood morpheme (i.e. most verbs were inflected). The English-speaking children of the same age, in the two-word stage, who were compared to Inuktitut-speaking children in Crago et al. (1998), used a dramatically higher number of non-adultlike uninflected verbs. In most of the few cases when Inuktitut-speaking children omitted verbal inflection, it was also acceptable to omit it in the adult colloquial speech due to the presence of

certain pragmatic or structural factors (Crago & Allen, 2001; Swift & Allen, 2002). Around the age of two and an MLU in morphemes around 2, Inuktitut-speaking children productively use many different agreement+mood markers, expressing various persons and various moods (Crago & Allen, 2001). Unlike their English-learning counterparts, typically developing children learning Inuktitut do not go through the optional infinitive stage (a stage when children who already produce more than one morpheme per utterance treat verbal inflection as optional). This is in line with findings on other languages that allow null subjects (Bar-Shalom & Snyder, 1998; Guasti, 1993). A single child, diagnosed with SLI, was found to use uninflected verb roots in Inuktitut multimorphemic utterances (Crago et al., 1998).

In Inuktitut, subjects and objects are often dropped, and this is reflected in Inuktitut child language. Children aged from 2;0 to 3;6 drop subjects and objects in a non-random manner, similar to adult Inuktitut speakers - usually when the referents of the arguments were mentioned in previous discourse, or are present in the immediate environment and are the focus of joint attention of the child and his/her interlocutor (Skarabela, 2007; Skarabela & Allen, 2010). This suggests that children are aware that agreement markers provide information about the person and number of the arguments to help recover the identities of these arguments, and also aware when this information is sufficient or not - because when it is not, they tend to use overt noun phrases.

Postbases appear later than inflection, and word complexity increases gradually. In Fortescue & Lennert Olsen's (1992) study of five children acquiring West Greenlandic, children younger than 3;4 hardly produced verbs with more than one postbase. A child aged 3;4 produced a number of verbs containing two postbases (Stem+Postbase 1+Postbase2+Agr/Mood) but only one verb with three postbases; the oldest children, aged 4;7 and 5;2, produced several verbs with three postbases, and these were their longest verbs. Verbs of greater complexity, then, are not produced until after the age of five.

Postbases marking tense and aspect are acquired later than agreement+mood mor-

phemes, but still, first occurrences of them are found before the age of 2;0 and at MLU below 3 (Swift, 2004). Swift (2004) analyzed Inuktitut speech of children aged between 1;0 and 3;6 and found that Inuit children in Arctic Quebec start producing future markers before past markers, although children acquiring other languages usually produce past markers first. Swift's explanation is based on the cross-linguistic differences in TAM systems. In Inuktitut, the main distinction in the TAM system is realis versus irrealis, and future, as irrealis, is always morphologically marked. However, in many commonly studied languages, the main distinction is past versus non-past, where the past is marked (see Section 3.4.2 above).

Different degrees of remoteness have different status in the acquisition of Inuktitut. Swift (2004) found that children first acquire tenses with the shortest distance from the time of the utterance - very near future *-langa-* and very recent past *-kainnaq-* (the latter is not attested in Labrador Inuttitut). Only one instance of remote past *-lautsima-* ('long ago') was found, and the remote future suffix never occurred in Swift's data. The distance from the time of the utterance is not the only factor. After the very near future and very recent past, children acquire distant, non-hodiernal tenses that refer to the time beyond the day of the utterance: distant future *-laaq-* (Labrador *-lâC-*, 'tomorrow or later') and distant past *-lauq-* (labrador *-lauC-*, 'yesterday or earlier'). Only after that do children acquire hodiernal tenses that refer to the day of the utterance, but are further away from the time of the utterance than *-langa-* and *-kainnaq-*: same-day future *-niaq-* (Labrador *-niaC-*) and same-day past *-qqau-* (Labrador *-kKau-*). Even though *-niaq-* and *-qqau-* are common in caregiver speech (especially *-niaq-*, for talking about plans for later in the day), they are not so frequent in child Inuktitut before the age of 3;6. Swift argues that a fine-grained distinction between two degrees of remoteness that both refer to the same day is more difficult to acquire than a more general contrast between the same day and a different day.

Lexical aspect, according to Swift (2004), is acquired before aspectual suffixes. Inuktitut-

speaking children use verbs without tense or aspectual affixes correctly from early on: Telic verbs in child Inuktitut refer to immediately completed events with clear results, and atelic verbs, to activities in progress and to states. The ingressive suffix *-liq-*, the equivalent of Labrador *-liC-*, appears at MLU of 3.5 and at first is restricted to atelic verbs to express an activity or state that is taking place at the moment of speech. Only later, after the age of 3, children in Swift (2004) used this suffix with telic verbs to express a change of state in progress (though in Quebec dialect, this suffix does not combine with punctual verbs). The pluractional suffix *-qattaq-* (Labrador *-Katta-*) occurred very rarely in children's speech in Swift (2004), and therefore was not analyzed; it is likely becomes productive some time after the age of 3;6.

There are no studies specifically on acquisition of case in Inuttitut, but Fortescue & Lennert Olsen (1992) report occurrences of *-mik* case markers in the speech of the youngest child, aged 2;2, though all were instrumental uses ('with X'). More productive use of this case was found in the third youngest child, aged 3;4, and no case errors were reported.

The complexity of child-directed speech in Inuktitut might be a factor in early acquisition of functional morphology. Inuit mothers in Arctic Quebec do not reduce grammatical complexity of their speech when talking to children (Crago, Allen, & Pesco, 1998). Use of Inuktitut special baby word vocabulary is perceived by Inuit mothers and caregivers as simplified language, but in fact it is the phonology that is simplified in these baby words, not grammar. Baby word roots often consists of simpler phonemes that are mastered early, compared to the adult equivalents of these words, which contain phonemes that are acquired late and are difficult to pronounce for younger children. However, these roots are often affixed in caregivers' speech, sometimes with a large number of affixes, such as six or seven. In a very few cases, verbal inflection can be omitted in adult language under certain pragmatic and some other considerations, and it is reflected in child-directed speech (less than 1% in caregiver speech in Crago & Allen, 2001)

In sum, children who acquire Inuktitut, with its high morphological complexity abundant in the input, acquire functional morphology early. As soon as they start combining morphemes, they produce verbal inflection (the agreement+mood marker). Lexical aspect is also acquired early, before any aspectual postbases. Postbases in general are acquired after the inflection. There is substantial variation in acquisition of specific postbases, based on characteristics of those postbases.

Chapter 4

The study: Goals, method, participants

4.1 Research questions

Receptive bilinguals in this study appear to be a subset of heritage speakers at the low end of the proficiency continuum, between overhearers (who were exposed to a language but did not acquire it) and incomplete acquirers who produce deviant speech in the heritage language. The main research question in this study is what receptive bilinguals' grammatical knowledge of Inuttitut is like, and how it compares to that of fluent bilinguals and heritage speakers who produce speech.

In more details, the first set of questions concerns vulnerability of specific morphemes in receptive bilingualism. Incomplete acquisition studies show that heritage speakers have morphosyntactic deficits, and different kinds of functional morphemes are affected in different ways. It is important to find out which morphemes are retained, if any, in receptive bilinguals' comprehension in Inuttitut, and which are affected. Which of the hypotheses concerning retention of specific language properties makes the best predictions? Are morphemes that are acquired early retained better than those acquired late, as predicted

by the regression hypothesis? Are features that also exist in the dominant language more likely to be retained, as predicted by the interlanguage-type (convergence-based) hypotheses? Is there a difference between morphemes whose function is more syntactic (such as agreement) versus those whose function is more semantic, and within the latter, between morphemes expressing basic semantic properties (such as tense) versus more subtle ones (such as aspect)?

Another set of questions concerns how incomplete acquisition in receptive bilingualism is reflected in different domains of language knowledge and processing. First, how complete RBs' comprehension is? Complete comprehension requires processing all the morphemes in the input. It is therefore illuminating to find out how much information receptive bilinguals can extract from listening to a piece of discourse in Inuttitut: Do they understand all the details or only the main points? Second, what are their speech production abilities like? Even though receptive bilinguals claim that they do not produce speech in their heritage language, to what extent can speech be elicited? And what characteristics will their speech display? Third, do receptive bilinguals possess metalinguistic knowledge? Given that heritage speakers often have difficulty with tasks such as grammaticality judgments, are receptive bilinguals likely to have difficulties with such tasks as well? Fourth, what is the size of the receptive bilinguals' lexicon: Do they know enough words and - more appropriate for Inuttitut - morphemes to understand what they hear? Finally, does the relation between lexical and grammatical knowledge found in heritage speakers also hold for receptive bilinguals?

The last set of questions is about the role of external factors in RBs' acquisition and maintenance of Inuttitut. How did these individuals arrive at the state of receptive bilingualism? A look at their acquisition history can reveal the role of factors such as age of onset of bilingualism, input at different stages of their life, interruptions in input, and possibly some others. The social side of bilingualism should also be taken into account. Since language attitudes are known to be a factor in language acquisition

and maintenance, what are their language attitudes? And is lack of production more of a social than psycholinguistic problem? Are they afraid to speak, or not comfortable speaking Inuttitut? Or are they simply not interested in speaking it?

The answers to these questions enrich our understanding of incomplete acquisition, bilingualism and language competence and processing in general.

4.2 Predictions

Given what we know about heritage speakers, on one hand, and Labrador Inuttitut, on the other hand, what answers to the research questions posited in the previous section can we expect to find? First of all, Labrador Inuttitut RBs are likely to be very low proficiency heritage speakers. The community profile is such that Inuttitut, unfortunately, can be regarded as a minority language in Nunatsiavut, since exposure to it takes place mostly at home, access to education in Inuttitut is limited (and there was no access in many RBs' childhood), and everyone except a few old people speaks English. Therefore, RBs' acquisition history must resemble heritage language acquisition in terms of early exposure, but limited quantity of input (from the beginning or becoming limited as RBs grew up). If RBs' proficiency in Inuttitut is low, shift of dominance to English is likely to have occurred in the early age, before they were 8-10 years old.

If RBs are a subset of heritage speakers, one can expect the linguistic system of their Inuttitut to differ from that of fluent speakers, and to display properties typical of an incompletely acquired grammar. In particular, it is reasonable to expect at least some lexical knowledge, but morphosyntactic deficits in comprehension. However, it is hard to predict whether RBs are different from higher-proficiency heritage speakers who produce speech.

I also expect a high degree of variation between participants, as in all studies of incomplete language knowledge. They probably differ in terms of their comprehension

skills, vocabulary size, and metalinguistic abilities. Social factors around their language development and use are probably quite different for each participant as well. Nevertheless, since language acquisition and language attrition are systematic, I expect receptive knowledge to be systematic too.

Turning to the question of which language properties are retained and which are affected, it is conceivable that at the extreme of incomplete language knowledge, morphological competence might be extremely low, to the point that functional morphology might not be part of RBs' knowledge, and partial comprehension may come from lexical and extralinguistic knowledge. More likely, however, is heritage-language-like selective retention of some structures.

Based on general observations about heritage speakers, tense can be predicted to be well-preserved, at least past versus future (I am not aware of studies of remoteness in heritage language). In contrast, aspect and case are likely to be affected. Studies on agreement provide varying results, but given the low proficiency of RBs, it is likely to be vulnerable. Word order flexibility might be lost as well. There are no studies on morpheme order in polysynthetic heritage languages, therefore, no predictions can be made based on previous studies.

The predictions of the regression hypothesis are based on the age and order of acquisition. As all the properties selected for testing are basic, and are acquired before the age of four, they all have a chance to be retained; however, there is a small difference between them. Agreement and word order (topicalization) are acquired the earliest - by age 2, but tense and aspectual affixes are acquired later; thus, according to the regression hypothesis, agreement and word order have a better chance to be intact. Within tense and aspectual affixes, future is acquired before the past; distant past and future are acquired before same-day past and future; thus, past is likely to be more vulnerable than future, and same-day tenses, more vulnerable than distant tenses. The aspectual suffixes selected for this study are acquired after the age of 3, so they are even more likely to be

vulnerable - if such a small difference in the age of acquisition is relevant. It might be relevant if the onset of dominance shift to English occurred very early. Also, since word complexity in production of Inuktitut increases gradually, and verbs containing more than three postbases are not produced by children younger than five, it can be expected that RBs would have difficulties with words containing a large number of postbases.

The predictions of interlanguage/convergence hypotheses are based on the similarity between an Inuttitut structure and its counterpart in English. Word order and morpheme order have no counterparts in English: English does not allow the SOV order, and does not have polysynthetic-like words. For the remainder of the linguistic variables, convergence is partial. Case in English exists only for pronouns, and there are only two cases, while Inuttitut has a richer system. Subject-verb agreement exists in both languages, but the English paradigm is impoverished; only Inuttitut, but not English, has object-verb agreement. Within tense, both languages distinguish past and future, but only Inuttitut has remoteness degrees. For the aspectual affixes, the meanings of both of them (pluractional/habitual and progressive of achievements) exist in English, but they are expressed by different means: habitual is expressed by simple tenses (but it is not the only meaning expressed by them), and progressive with non-achievements behaves differently from Inuttitut *-liC-*. Convergence-based accounts predict better retention of subject-verb agreement and the past versus future contrast than of object-verb agreement and the remoteness contrast, and also poor retention of aspect, case, word order, and morpheme order.

The versions of the language change hypothesis that suggest better retention of morphemes with higher amount of semantic contribution predict better retention of tense and aspect than of case and agreement. On the other hand, agreement in null subject languages like Inuttitut may be retained because it contributes to identification of the antecedent of the null argument. Word order and morpheme order can also be categorized as contributing little semantic information, and therefore vulnerable.

Given that metalinguistic knowledge is not highly developed in heritage speakers, one can expect either low level or a complete lack of it in RBs. It is reasonable to expect RBs to be completely unable to perform tasks like grammaticality judgments, or to give judgments only for the most basic properties of Inuttitut.

Regarding speech production, it might be possible to elicit it. Alternatively, elicitation attempts might fail completely. If production does occur, it is likely to be very difficult for RBs. Speech rate might be extremely slow, and both lexical access and morphosyntactic building are likely to be slow and laborious, and to contain errors.

Last but not least, some predictions can be based on what is known about language attitudes in Nunatsiavut. Avoidance of speaking Inuttitut may be caused by negative reactions of fluent speakers, and if it is the reason why RBs do not produce speech in Inuttitut, this suggests awareness that they are likely to make errors. However, it is likely that fluent speakers' reaction is only part of the story, and RBs have difficulties with speech production even without that.

4.3 Components of the study

The main experiments in this study test comprehension of functional morphemes. In the morpheme comprehension task, RBs are tested on comprehension of functional morphemes' contribution to meaning. In the grammaticality judgment task, they are tested on comprehension of the morphemes that contribute mainly to well-formedness - whether they notice ungrammaticality caused by incorrect use or omission of morphemes. To gather more information on RBs' comprehension, I used a story retelling task, in which overall understanding of a coherent piece of discourse was tested; I also tested RBs' receptive vocabulary in a word translation task, where they translated basic words from Inuttitut to English. Two more tasks were included to probe for production abilities: a picture description task, in which the participants had to tell a story presented in

pictures in Inuttitut, and an elicited imitation task, in which they had to listen to long multimorphemic words in Inuttitut and try to repeat them verbatim.

In total, the study contains the following six experiments:

1. picture description
2. elicited imitation
3. story retelling
4. word translation
5. morpheme comprehension
6. grammaticality judgments

In addition, data on language behaviour was collected via guided interviews. This data included self-assessment of comprehension and production in Inuttitut in general and in various situations, for two reasons: first, to confirm to which fluency group a given participant belongs, and second, to better understand how RBs perceive their own abilities, and compare them to the experimental findings. Quantity and quality of RBs' interactions in Inuttitut is also important for determining the use to which they can put their knowledge of Inuttitut. Questions on language acquisition history were also included in order to find out what kinds of language acquisition processes lead to receptive bilingualism, and what factors are most important in these processes. Last but not least, questions were asked about attitudes to Inuttitut, in order to find out the role of language attitudes in receptive bilingualism. Thus, the interviews consist of the following four parts:

1. self-assessment of language skills
2. use of Inuttitut

3. language acquisition history

4. language attitudes

4.4 Procedure

Testing took place in Nain, Nunatsiavut. The participants were tested individually in a quiet room. For most participants, all the tasks and the interview were done in one visit, which lasted approximately 2 hours. The participants were paid for their participation.

Inuttitut was the target language, and, because RBs do not produce speech in Inuttitut, English was used as a meta-language. Only the stimuli were presented in Inuttitut. All questions, instructions, explanations and any other communication between the participants and me took place in English in order to ensure that the participants understand the tasks. Also, in all the comprehension tasks (i.e. except picture description and elicited imitation), participants were requested to answer in English. The interviews were conducted entirely in English.

The Inuttitut stimuli were constructed with the help of Inuttitut language consultants from the same community and pre-tested with other fluent speakers who were neither consultants nor participants in the study. The stimuli were audio-recorded prior to testing as they were read by a fluent speaker of Inuttitut from Nain, and these recordings were played to each participant. The auditory modality was chosen over the visual modality (reading) because this is the usual modality for communication in Inuttitut that RBs use; moreover, heritage speakers are often not literate in their heritage language (Benmamoun et al., 2010), and, according to Nain residents, Inuttitut RBs are no exception. All the oral responses elicited from participants in all tasks were audio-recorded and later transcribed for analysis.

The same order of components was used for all participants. The picture description task was the first, followed by the elicited imitation task, then by the story retelling task,

then by the word translation task. After that, the interview was conducted, followed by the morpheme comprehension task; the grammaticality judgment task was the last one. The interview was conducted in the middle of each participant's testing, in order to provide a change of activity and prevent the participant from getting tired. Participants could take short breaks at any time between the tasks.

4.5 Recruitment and sample

Participants were recruited in Nain in the summer of 2008 through poster advertising and word of mouth, or were identified by fluent speakers and contacted. Twenty-eight people took part in the study: 20 of them, as receptive bilinguals, self-identified as capable of understanding Inuttitut but not speaking it, and eight, as the control group of self-identified fluent Inuttitut-English bilinguals (mean age 55, 4 females, 4 males). Based on self-assessment of comprehension in Inuttitut (see below), the receptive bilinguals were later divided into high comprehension proficiency receptive bilinguals (HRBs; n=17, mean age 42, 12 females, 5 males) and low comprehension proficiency receptive bilinguals (LRBs; n=3, mean age 25, 2 females, 1 male).

4.6 Guided interviews on language behaviour

In this section, I present the data about the participants that I collected via guided interviews. The interviews were designed to answer questions about the external factors affecting RBs' knowledge of Inuttitut. How much do they use Inuttitut? What kind of acquisition history results in receptive bilingualism? What are their attitudes towards Inuttitut? Another goal was to obtain RBs' self-assessment of their linguistic skills in Inuttitut.

4.6.1 Materials and procedure

The data about language use, self-assessment of language skills, language acquisition history and language attitudes was collected in the form of guided interviews. The interview format was deemed preferable to a questionnaire as less formal and therefore more culturally appropriate. Two sets of questions were prepared, one for RBs, and another for fluent bilinguals (FBs). The sets of questions were identical where possible, and adjusted for each fluency group where necessary (see Appendix A for the list of questions). The interviews were conducted in English. The researcher read the interview questions to the participant.

4.6.2 Self-assessment of language skills

This part of the interview contained questions about the participants' current comprehension and production abilities in Inuttitut, that is, how they perceive their own abilities in Inuttitut in various circumstances. In the fluent bilinguals' group, six out of eight participants said that they understand everything that they hear, but two of them said that they occasionally do not understand some details. One of these two, in her late fifties, reported occasionally hearing unfamiliar words from speakers who are in their late sixties or older.

In terms of language dominance, the fluent speakers group was heterogeneous. Two fluent bilinguals said that they feel more comfortable speaking Inuttitut than English, three said the opposite, and the remaining three did not give a clear answer, but it appears from the rest of their interviews that they are either balanced or English-dominant. When asked what language they would speak to a bilingual person, only one FB chose English; two said that they prefer Inuttitut and the rest said that they could speak either and it depends on which language the interlocutor starts to use and what the topic is (traditional activities, such as hunting and fishing, are more likely to be discussed in Inuttitut).

The receptive bilinguals' self-assessment was, as expected, more variable. For listening comprehension, RBs were asked to choose the category that best describes their abilities: understanding everything, most of it, general idea, or just some words. Some also provided an estimate in the percentage of the input that they understand. The statements were converted into scores in order to be compared statistically to other data. The scores and the number of RBs in each category are shown in Table 4.1.

Table 4.1: *RBs' self-assessment of speech comprehension*

Score	Statement	Percentage of input	Number of participants
0	nothing	0%	0
1	some random words	25%	3
2	the general idea	70-80%	4
3	most of it	80-90%	11
4	everything	100%	2

The majority of RBs said that they understand most of what they hear, and some estimated their comprehension at 80-90% of what they hear. Two RBs said that they understand everything, but one of them admitted later in the interview that people usually say simple things when talking to her. Four RBs said that they understand the general idea, or 70-80% of the input. The last three RBs reported understanding only some words, and estimated their comprehension at about one-quarter of the input. Thus, there was a large gap between the three RBs who estimated their comprehension at 25% of the input and the rest of the RBs, who estimated their comprehension at 70% or higher. Therefore, the data from the three RBs with low self-assessment of comprehension was analyzed separately. Henceforth, these three participants are referred to as low comprehension proficiency receptive bilinguals (LRBs); the rest of the receptive bilinguals (17) are referred to as high comprehension proficiency receptive bilinguals (HRBs). The difference between HRBs' and LRBs' levels of receptive competence can be illustrated by this example: In a mother-daughter pair of participants, the mother - an HRB - reported that she translates from Inuttitut to English for her daughter, who is an LRB.

Six of the HRBs added that their comprehension is good "if it's not a long word" or a long sentence. Since Inuttitut is a polysynthetic language, long morphologically complex words are common in it, and this morphological complexity is perceived by RBs as causing difficulties in comprehension. Two of the three LRBs stated that conversation on certain topics is easier for them to understand, particularly, weather and what they call "going off" or "going on the land" - travelling to hunting and fishing camps or cabins and temporarily living as it was traditional for Inuit. Typically, younger people go on the land with older relatives who speak Inuttitut, and this is where they hear more Inuttitut than in their everyday life in town.

In order to determine the role of extralinguistic context, especially its visual aspect, RBs were asked to compare their listening comprehension in different circumstances: overhearing versus participating in a conversation and a face-to-face conversation versus phone and radio. Most HRBs and all the LRBs reported no difference in their comprehension of speech addressed to them and a conversation in which they are not participating. Three HRBs said that understanding other people's conversation is harder, and each provided a different reason: because other people's speech is more complex than what they would use when addressing an RB; because the context of the conversation might not be known; and because of not paying close attention. Two HRBs, on the other hand, claimed that it is easier to understand speech that is not addressed to them because there is no pressure on them to understand it, and also because they grew up as overhearers. The majority of the HRBs and all the LRBs reported no difference between their understanding in a face-to-face conversation and hearing Inuttitut on the phone or on the radio. Only two HRBs said that understanding Inuttitut on the phone is somewhat harder because they do not see their interlocutor's facial expression and gestures, and one HRB said that understanding Inuttitut on the radio is harder "because they don't stop" and because it is impossible to ask to repeat. Generally, most RBs possess enough knowledge to understand Inuttitut even in the absence of extralinguistic context.

There is anecdotal evidence that RBs can translate from Inuttitut to English (A. Johns, p.c., January 2007), and in the interviews, they were asked about their translation ability. All the HRBs except one said that they could translate, but most of them, with limitations such as only on certain topics, only part of an utterance, "everyday stuff", not a "long word", or "only if it's something simple". Among the LRB, only one reported being able to translate something short and simple.

While all those who came to participate as receptive bilinguals said that they do not speak Inuttitut, they were still asked about their speaking abilities. RBs were asked to choose the category that best describes their speaking abilities from the list in Table 4.2. This table provides the number of HRBs and LRBs in each category, as well as the score for each category that was later used for comparison with other data.

Table 4.2: *RBs' self-assessment of speech production*

score	statement	HRB	LRB
0	cannot speak at all	0	3
1	common expressions or words	6	0
2	words embedded in English speech	6	0
3	short sentences or parts of sentences	4	0
4	full sentences	1	0

The LRBs said that they cannot speak Inuttitut at all, but almost all HRBs reported incomplete speaking abilities, ranging from using only common expressions or very few words to embedding Inuttitut words in English discource to producing short sentences or parts of sentences. Therefore, HRBs' knowledge of Inuttitut is not exclusively receptive. As many as 11 HRBs reported trying to speak Inuttitut, some of them making conscious efforts to learn by talking to supportive fluent speakers. HRBs who reported hearing Inuttitut at work (see below) also stated that they try to respond in Inuttitut, though usually if it is something simple, as in this example from an interview: "Let's say if someone's not in the office, I say *auka, anijuk* ['no, he/she went out'], *auka, tamânengngituk* ['no, he/she is not here']." Speaking is difficult for them, as the following quotations

illustrate: "I tries[*sic*][1] to talk in Inuttitut, but when I'm stuck, I just goes[*sic*] talking in English"; "I get mixed up and just goes[*sic*] blank sometimes. . . . once I start getting flustered, I guess, that's when everything changes, I start to forget stuff, like even simple words in Inuttitut." Five HRBs reported that they avoid speaking Inuttitut, with statements such as "I only speak when I'm forced to".

Table 4.3: *Reasons for not producing speech*

	HRB	LRB
Difficulty putting words together	14	1
Negative social reaction	10	0
Lack of practice	7	0
Need to learn	3	1
Long time needed to form a sentence	3	0
Not knowing enough words	2	1
Difficult sounds	1	0

Reasons for not producing speech in Inuttitut named by RBs are listed in Table 4.3. Some RBs named more than one reason. The most frequently named reason was difficulty with putting words together to form a sentence, which means insufficient knowledge of Inuttitut grammar. Specifically, functional morphology is seen as problematic: "...the smaller words, like 'and', and 'she', and 'he'[2], and... And, like, when you are talking about one person, and then it goes to two people, and then three or more[3]." Some RBs noted difficulties with grammar even in comprehension: "I don't get tenses, for instance, and whether it's 'us' or 'them'. But I can get the main gist usually..." The next most common reason was the fear of the negative reaction of fluent speakers to RBs' imperfect Inuttitut. Not having enough practice and opportunities to use Inuttitut was mentioned less frequently. Other reasons were rarely named. Notably, only one HRB mentioned that some sounds are difficult to produce. Small lexicon was also hardly mentioned; on the contrary, many HRBs reported knowledge of quite a number of words, which is in line

[1]Many Labrador residents speak the Labrador dialect of English, in which first person singular verbs are used with *-s* in certain conditions.

[2]Their equivalents in Inuttitut are expressed as bound morphemes.

[3]Singular, dual and plural number.

with Johns & Mazurkewich's (2001) observation that receptive bilinguals often appear to have large vocabularies. This is one HRB's illustrative answer:

> I know a lot of words, and I know a lot of what people are saying, but it's the little twists... little ends and beginnings, depending on how you are trying to say what you are trying to say. . . . For example, to say that you are going to walk, and you are already walking, there are different twists to the word, so, like, to *pisuk* is 'to walk', and then *pisugasuaKunga* means 'I'm going to walk', and then there is *pisugumavunga*, means 'I want to walk'. . . . And then there's *-guma-*['want' (a postbase)] and *-vunga* [INDIC.1SG], and then there's *-gumavunga*, and then there's... I always get those wrong.

Another HRB said that she understood when her grandmother asked her in Inuttitut to go to the store and buy cigarettes, but had difficulty recalling that sentence: "It's like *niufi*[buy]... *niufi*... it's a long word. *Niufilia* [buy-go.to[4]] ... something then. *Sikari* [cigarette]... it's a long word, like, 'go to the store and buy smokes'." In both cases, RBs seemed to know the roots, but had difficulties with producing the rest of the word. Yet another HRB related her struggle with producing speech in Inuttitut in this way: "If I call my mother, I say a few sentences, but then I have to think it in my mind first, and then she repeats what I say, but it sounds different from what I wanted to tell her".

Interestingly, two HRBs and one LRB claimed that for some words that they know in Inuttitut, they do not know their English equivalents. Such words are names for animals and plants that they usually heard in Inuttitut. This is consistent with Mazurkewich's (1991) observation that residents of Nain sometimes use Inuttitut names for animals and plants when speaking English; it is likely that the abovementioned participants always heard their interlocutors referring to such animals and plants by their Inuttitut names.

[4]An unfinished sequence, not a word.

4.6.3 Language use

The tables below summarize reported use of Inuttitut in the three groups of participants. For fluent speakers, use implies both listening and speaking, while for RBs, the data in the tables reflect only listening. Table 4.4 summarizes the frequency with which the participants reported to use Inuttitut. Table 4.5 contains information on contexts in which Inuttitut was reported to be used (with family members at home, with relatives who do not live with the participants, with monolingual elders, at work, listening to the radio, with any speaker of Inuttitut) and the number of participants using Inuttitut in each context. Most participants reported using Inuttitut in more than one of these contexts.

Table 4.4: *Frequency of use of Inuttitut*

	Daily	2-3 times/week	Occasionally	No answer
FB (n=8)	6	2	0	0
HRB (n=17)	7	3	4	3
LRB (n=3)	0	0	0	3

Table 4.5: *Contexts of use of Inuttitut*

	Home	Relatives	Elders	Work	Radio	Any speaker
FB (n=8)	4	3	3	3	8	4
HRB (n=17)	7	12	9	5	11	0
LRB (n=3)	1	2	0	0	0	0

All FBs and more than half of HRBs reported using Inuttitut on a regular basis (daily or 2-3 times a week), but four HRBs reported hearing it occasionally, such as when going on the land with relatives. In both FB and HRB groups, Inuttitut is reported to be used in all the contexts listed, with one exception: Only FBs reported talking in Inuttitut to any speaker. LRBs said that only their relatives speak Inuttitut to them. Also, all FBs said that they enjoy listening to the radio in Inuttitut, including Nunavut and Arctic Quebec radio stations, where different dialects are spoken. Many HRBs listen to the radio as well, but find it difficult to understand other dialects, so one of the differences

between FBs and HRBs is in the ease of understanding dialects other than their own. Three of the FBs said that they use Inuttitut at work (and two more did until retirement) - including two for whom Inuttitut is central for their work (a teacher and a translator). Other FBs and five HRBs use Inuttitut at work because their job involves contact with people (jobs such as a government officer, a health care worker, a church minister, etc.), especially with monolingual elders.

4.6.4 Language acquisition history

During the language acquisition history portion of the interviews, participants were asked questions about the circumstances of acquisition of Inuttitut and English during their childhood. The aim was to find out the role of the following factors in the outcome of the acquisition process: language choices in the family and school, participants' language abilities in childhood, and the quality and quantity of Inuttitut input.

First, the age in the three fluency groups differed. As expected, the oldest participants were in the FB group, and the youngest, in the LRB group. The mean age[5] and age range for each group is presented in Table 4.6.

Table 4.6: *Mean age of participants*

	Mean age	*SD*	Age range	Born in
Fluent	55	8	40-66	1942-1968
HRB	42	8.2	30-56	1952-1978
LRB	25	6.1	18-29	1979-1990

All the LRBs in the study are younger than any of the HRBs and fluent speakers. However, there is an overlap in age between the fluent speakers and HRBs. While the participants who are in their sixties (born in 1940s) are fluent speakers, those in their forties and fifties (born in 1950-60s) can be either fluent or HRBs. A number of HRBs are in their thirties, but there are no fluent speakers of this age in this study. The year of

[5]The age given is the age of participants during testing, which was done in 2008.

birth is an important factor, since the use of Inuttitut in the community has diminished over time since 1949 (see Section 3.1 above). Consequently, fluency in Inuttitut was less likely to develop. The following examples from the participants' early language experiences illustrate this. In the 1940s, a child from an English-monolingual family started school and learned Inuttitut from his classmates. In the 1960s and later, children from Inuttitut-monolingual families started school and lost speaking abilities in Inuttitut because everybody spoke English at school.

Andersen (2009) found the same relationship between age and proficiency in Inuttitut in her survey of language behaviours and attitudes in Nain. First, age positively correlated with self-assessment of proficiency in speaking, listening, reading and writing in Inuttitut. Second, recall from Section 3.1 that Andersen tied the difference in age and proficiency to the significant events in the history of Labrador Inuit and Labrador Inuttitut: early 1950s, when English became the only language of instruction at schools, and early 1970s, when revitalization efforts began, and Inuttitut was re-introduced into schools as a subject. Inuit born before 1950 (who are now 60 or older) were educated in Inuttitut, and most are fluent. Those born after 1950 were educated in English. Among them, those who were born between 1950 and 1970 constitute the most diverse group in terms of proficiency in Inuttitut, both in Andersen (2009) and in the present study: It includes fluent speakers, receptive bilinguals, and (in Andersen, 2009) individuals with low proficiency in Inuttitut. Those born after 1970 mostly have low proficiency in Inuttitut.

Language abilities of the participants' parents or caregivers, as well as language choices in the family, and participants' language abilities in childhood were, for the most part, different between the fluent speakers and receptive bilinguals. Most fluent speakers reported growing up as Inuttitut monolinguals until the school age in families that were Inuttitut-monolingual or strongly Inuttitut-dominant (i.e., in their own words, their parents "spoke very little English"), with two exceptions: One reported growing up in a bilingual family, and the other, in an English-monolingual family, learning Inuttitut from

friends at school. While most FBs reported keeping Inuttitut language abilities throughout their life, two FBs underwent attrition with subsequent relearning.

In contrast, no HRBs grew up in an Inuttitut-monolingual family. In the case of HRBs, the pattern is more complex, as presented in Table 4.7, where parents' language abilities and language choices in the family are cross-tabulated.

Table 4.7: *Language abilities and choices of HRBs' parents*

	Inuttitut	Both	Inuttitut to each other, English to children	English
Bilingual parents	2	1	5	3
Inuktitut-dominant parents	3	0	0	0
One Inuktitut-dominant, one bilingual parent	0	3	0	0

Only three HRBs reported growing up in families where both parents were strongly Inuttitut-dominant and spoke Inuttitut to them. In another type of family, one parent was bilingual and spoke English to the participant; the other parent was an almost monolingual Inuttitut speaker, with a varying degree of mostly receptive knowledge of English, and spoke Inuttitut to the participant. The majority of the HRBs reported growing up in families where both parents were bilingual, and their parents' language choices at home varied along the whole spectrum: from speaking Inuttitut to all family members to speaking both languages or speaking Inuttitut to each other but English to their children to speaking English while their relatives spoke Inuttitut to their children and/or in their children's presence. The participants who said that their bilingual parents spoke Inuttitut to them in childhood added that later the parents started using more English.

The data suggests that speaking Inuttitut to children was something done mostly by those parents who had no choice, namely, by those who could not effectively communicate in English, being highly Inuttitut-dominant. Those who were bilingual tended to speak English to their children. As one of the fluent speakers put it, "That's where a lot of people in Nain made mistakes, I guess. For whatever reason, they didn't find the time

to speak to their children in Inuttitut." The parents likely had good intentions to help their children learn English in order to be successful at school and in communication with white people, or (after some point) they thought that the children did not understand Inuttitut. But even those who did speak Inuttitut to their children sometimes did not always use full, well-formed sentences. Many participants reported that their parents and relatives often had used what they called "small words" – Inuttitut roots inserted into an English discourse. Examples of such code-switching from interviews include *don't* ***katak*** ('don't fall') and *put on your* ***jaika*** ('put on your jacket').

According to the interview data discussed above, all HRBs were exposed to Inuttitut from birth, and most were also exposed to English from birth. Two HRBs reported that they heard Inuttitut in their childhood, but acquired receptive competence in Inuttitut during their teenage years. There could be two ways to becoming a receptive bilingual: One way is subtractive bilingualism, and the other way is growing up with receptive knowledge, never being a speaker of Inuttitut. Five of the HRBs reported that they were fluent Inuttitut speakers in childhood (four were monolingual speakers, one was bilingual) and underwent attrition of speaking abilities in Inuttitut during school age, after the onset of exposure to English. They said that in the early stages of attrition, they experienced negative comments on their imperfect Inuttitut, which made them avoid speaking Inuttitut and, in turn, led to more attrition. In fact, as children, they were in a difficult situation of not being accepted as speakers of any language. One of them recalls being humiliated at a family gathering:

> I must have been six, and I said a wrong word in Inuttitut, and the whole family laughed at me. So I remember saying to myself, "I'll never speak Inuttitut again", but then when I went to school, I said the wrong word in English.

Another, who went to a residential school, recalled a similar experience:

> ... you are being made fun of from the white people and [they are] saying, you know, "you can't, you're not supposed to use that [Inuttitut]", and you go to your Inuk people, and they are calling you white because you were away at school.

Nine HRBs reported never having been able to speak Inuttitut fluently, and two did not remember if they ever spoke Inuttitut or not. All but one of them reported growing up in bilingual families, addressed in English by parents, and overhearing their parents or other relatives (typically grandparents) speaking Inuttitut. The trend is clear: RBs from families where both parents spoke Inuttitut to them initially became monolingual speakers (though did not maintain their abilities later, due to the prevalence of English outside the family), and those RBs who grew up as overhearers developed only receptive competence. Those who had only one parent who spoke Inuttitut to them still developed only receptive competence in it. That is, those who were able to speak English did not speak Inuttitut. Virtually none of the HRBs became even close to balanced bilinguals in any sufficiently long period of their lives.

Language use in the LRBs' families during their childhood is not different from that in the HRB group. Two LRBs reported growing up in bilingual families with "one parent - one language" approach (Grammont, 1902; Ronjat, 1913), and the third LRB reported hearing English from parents and Inuttitut from grandparents. Therefore, all LRBs (like most HRBs) were exposed to both languages from birth. Two of them reported that they were speakers in childhood (one from a bilingual family and one who heard Inuttitut from grandparents), and the remaining one reported never being a speaker.

No connection was found between learning Inuttitut in a classroom setting and reported Inuttitut language abilities. Some HRB and all FBs except one went to school when teachers in Nain and in residential schools in other communities (Northwest River, St. Anthony, etc.) discouraged use of Inuttitut and even punished students for speaking it (including physical punishment). The youngest FB, HRBs who were born in the late

1960s and after, and all LRB participants had Inuttitut classes at school. However, they reported that in these classes, the emphasis was on basic word learning rather than speaking practice, and they perceived the classes as ineffective, at least partly because they already had a basic vocabulary. This recollection is typical: "Back then it was mostly just colours, and how to tell time, and animals, and like, but I already knew that." None of the participants attended the Inuttitut immersion program at school. Other sources of training in Inuttitut included, for some FBs, a course on the Labrador Inuttitut standardized writing system, along with other training needed for jobs as Inuttitut teachers and translators, and for some HRBs, adult Inuttitut courses or drop-in programs of short duration, and immersion trips. LRBs reported not taking any Inuttitut lessons besides school.

4.6.5 Language attitudes

For this component of the interviews, the goal was to find out what FBs' and RBs' attitudes to Inuttitut are. I sought to explore whether Inuttitut is valued and why, how the participants view its viability, and how FBs and RBs perceive each other. Finally, I tried to establish whether attitudes differ across the fluency groups.

When asked how fluent speakers of Inuttitut in Nain react when they hear somebody trying to speak Inuttitut, but making mistakes, all fluency groups had the same pattern of answers, divided almost equally between describing positive reaction (fluent speakers as encouraging and helping), describing negative reaction (fluent speakers making fun of non-fluent speakers), and stating that either kind of reaction can be expected, as shown in Table 4.8.

Table 4.8: *Fluent speakers' reaction to imperfect speech in Inuttitut*

	Positive	Negative	Either	Don't know
FB	2	3	2	1
HRB	4	4	7	1
LRB	2	1	0	0

The negative reaction descriptions included portraying fluent speakers who are "making fun", "frustrated", "annoyed", who "call you *Kallunak*, or a white person", "make you feel ashamed", "get mad", "put you down", and one "could see disgust on their faces" when a non-fluent speaker says something incorrectly. Some participants emphasized that it is only recently that fluent speakers became more encouraging, and that in earlier times, virtually everybody ridiculed non-fluent Inuttitut, which caused many of the RBs in this study to stop speaking Inuttitut in their childhood or youth, and, for some of them, still keeps them from speaking. In their own words, "When somebody makes a mistake, the worst thing you can do is to laugh at them." All the fluent speakers who participated in the study said that they are always encouraging and trying to help when they hear somebody who is not a good speaker trying to speak Inuttitut. One of them said, "I usually like to hear somebody using our language".

A related question was whether it is good or bad when fluent speakers correct non-fluent speakers' mistakes in Inuttitut. Answers to it are summarized in Table 4.9. While some HRBs prefer not to be corrected ("when somebody tells me I'm saying something wrong in Inuttitut, I just give up, just start speaking English"), and some FBs said that they avoid correcting in order not to embarass the person who made a mistake, a few participants in each group said that correcting is good as a way of learning. The majority of participants, however, specified that it is good to correct in a positive, supportive way, but not in an embarassing way.

Table 4.9: *Is it good or bad to correct mistakes?*

	Bad	Good	Good if in a supportive way
FB	2	3	3
HRB	3	4	10
LRB	0	1	2

Answering the questions about the future of Inuttitut in Labrador, all the participants agreed that all Labrador Inuit should speak Inuttitut. They concur that a community where all Inuit speak their language would be a very desirable future for Nunatsiavut.

However, not everyone believes that there will be time when more Labrador Inuit will speak their language, as reflected in Table 4.10.

Table 4.10: *Will Labrador Inuit speak Inuttitut in the future?*

	Yes	Yes, but with more efforts	Only some people	No	Don't know
FB	4	2	0	0	2
HRB	3	5	5	3	1
LRB	0	0	1	2	0

Half of HRB and all LRBs said that the language is declining, children are not interested in learning it, and only older people will continue speaking Inuttitut. FBs and the other half of HRBs, on the contrary, commented that the language situation is improving, since they saw more people with a desire to learn and children learn more at school than previously; however, many of them specified that it would be possible to have a society with more Inuttitut speakers, but only with more efforts put into teaching and promoting Inuttitut at school and daycare, more programs for adults, more camps, more books in Inuttitut, more technology use for teaching purposes. Most participants said that if Labrador Inuttitut disappeared completely, this would be a terrible, devastating loss. They also expressed that it would make them feel very sad, and it would be "shameful" to lose their language.

All the participants claimed that they want their children to speak Inuttitut, and that they understand the importance of speaking Inuttitut to infants and children, but none of them, even fluent speakers, have children who are fluent (though some have incomplete knowledge of Inuttitut). Some FBs confessed that they regret not speaking enough Inuttitut to their children when they were growing up ("I didn't really think it was that important to keep our language at that time"). Interestingly, even HRBs try to speak Inuttitut to their children: Five of them reported that they use "small words here and there" – some Inuttitut words and expressions that they know.

The next set of questions concerned the importance of Inuttitut for the participants.

When asked whether it is important to understand and speak[6] Inuttitut, most participants agreed. When asked why understanding and speaking Inuttitut is (or might be) important, all the participants named at least one of the reasons listed in Table 4.11.

Table 4.11: *Why is it important to understand and speak Inuttitut?*

	FB	HRB	LRB
It gives better job opportunities	1	9	2
Speaking helps keep Inuttitut alive	2	8	0
It helps to preserve culture and traditions	1	7	1
Inuit need to understand elders	2	6	1
It makes one feel proud and improves self-esteem	2	6	1
The Inuit language is their identity	1	6	0
It allows to communicate with Inuit across the Arctic	2	1	0

Inuttitut has both practical value, providing better job opportunities and allowing to communicate with monolingual elders and Inuit from other areas, and symbolic value, associated with culture and identity. One of the HRBs stated, "It's embarassing not to know your own language. I'm happy that I even got just a little bit of it".

When fluent speakers were asked how their life would be different if they did not speak Inuttitut, they could hardly imagine themselves as non-speakers. They said that it would be very hard not to understand people, including their relatives; some of them would not have their current jobs. When RBs were asked how their life would be different if they were fluent speakers of Inuttitut, all but one HRB said that their life would change significantly: They would be more likely to have a better job (seven HRBs and two LRBs), they would speak Inuttitut to their children and therefore take part in keeping it alive (three HRBs and two LRBs), they would feel better about themselves (four HRBs and one LRB), and they would listen to elders (one HRB, two LRBs).

[6]The participants were asked separate questions about the importance of understanding and the importance of speaking Inuttitut, but in their answers, they - even RBs - did not make this distinction.

4.6.6 Summary: How participants describe themselves

FBs reported good comprehension and production abilities, as well as regular use of Inuttitut, including listening to other dialects on the radio and TV. In the RB group, self-assessment of proficiency varied, but two different groups emerged: HRBs, who get the gist of what they hear (although miss some details) and possess partial speaking abilities, and LRBs, who understand parts of the input and have no production abilities. Most RBs reported that their comprehension abilities are not significantly affected by extralinguistic context. Many RBs claimed to hear Inuttitut regularly, but some, only occasionally. The two main reasons for the lack of speech production named by RBs were lack of grammatical knowledge and fear of making a mistake.

The data on the acquisition of Inuttitut from the interviews suggests that language use in the family predicts whether an individual will be a speaker in the beginning of his/her life. Those who are addressed in English and hear other people speaking Inuttitut are likely to develop only receptive competence, levels of which can vary. In contrast, those who are addressed in the heritage language are more likely to become speakers. However, childhood speakers can undergo various degrees of attrition of both speech production and comprehension in their heritage language when they start using more English. Having both parents who are Inuttitut monolinguals or highly Inuttitut-dominant and therefore speak Inuttitut to their children helps to maintain Inuttitut language abilities and even to re-acquire them after attrition.

The data also illustrates the language shift from Inuttitut to English in Nain. Before 1950s, Inuit in Nain spoke Inuttitut, and participants from that age group were FBs. However, Inuit born in 1950s, 60s and 70s could grow up as fluent speakers, receptive bilinguals or non-speakers; RBs in the present study belong to this age group. Those born in 1980s or later are likely to have low proficiency in Inuttitut; in this study, only LRBs are in this age group.

The issue of reaction of fluent speakers to non-fluent Inuttitut comes up in every

interview, since RBs were so seriously affected by it in the past. Although the attitude of fluent speakers is already changing, the RBs, as well as fluent participants in this study, would like to see more supportive fluent speakers who could help non-fluent Inuit to learn to speak Inuttitut, whether in personal interactions or in intentionally instructional settings (classes, drop-in programs, immersion camps, etc.).

All the participants have positive attitudes towards Inuttitut. These results corroborate Andersen's (2009) survey findings. The only difference between fluency groups in terms of language attitudes is that fluent speakers are more optimistic about the future of Inuttitut in Labrador. Speaking Inuttitut is a desirable ability in Labrador, and the Inuttitut language is viewed by Labrador Inuit as a part of their identity and as a vehicle for preserving their culture. Most RBs are concerned over not being fully fluent, and all of them would be happy to turn into fluent speakers - which, in their opinion, would make them proud of maintaining their heritage, leading to a better self-esteem, and therefore, making them happier. They would be able then to directly learn from the elders and pass that knowledge to their children. In addition, fluency in Inuttitut is seen as a key to better, higher-paying job opportunities, such as translator-interpreter, Inuttitut teacher, or certain Nunatsiavut government officials; or even running for president[7].

[7]One of the requirements for president of Nunatsiavut is to be a fluent speaker of Inuttitut.

Chapter 5

Language abilities of receptive bilinguals

In this chapter, I present findings of general language tasks designed to provide background information on RBs' proficiency in Inuttitut before beginning a discussion about their knowledge of functional morphemes in the following two chapters. These tasks were aimed at probing for production abilities (picture description and elicited imitation), vocabulary (word translation), and general comprehension abilities (story retelling).

5.1 A production ability test: Picture description

The goal of this task is to test production abilities of the participants – whether they are available at all, and if yes, to what extent. This task was planned partly as screening, partly to provide another measure to classify RBs by their production skills. According to RBs' self-assessment, they either do not speak Inuttitut at all, or "speak very little". This might mean lack of use of the language, but not necessarily completely absent production abilities.

To elicit a speech production sample, a short picture description task was used. The participants were asked to provide a short narrative based on four pictures. The level of

simplicity was chosen based on the pre-established notion that their production abilities are very limited, and that they would be uncomfortable with a long production task.

5.1.1 Materials

Four pictures (see Appendix B) were selected from a children's book *Pêta Pinguatuk Aputime* (*Peter Plays in the Snow*), so that they make a sequence, depicting a boy going outside in winter. The book was selected for two reasons. First, the content was local, culturally appropriate. Second, a children-related topic was deemed appropriate, since all RBs heard Inuttitut since childhood, and most (except two HRBs who developed receptive competence in teenage years) got more input as children than as adults.

5.1.2 Procedure

The pictures were laid out in a sequence in front of the participant. The participant was asked to look at the pictures, prepare to describe in Inuttitut what was going on in the pictures, and when he/she was ready, to tell the story. The participants were explicitly told that the experimenter would like to know how much they are able to say in Inuttitut. The session was audio-recorded.

5.1.3 Data analysis

The audio-recorded narratives were transcribed by a professional language consultant. The same language consultant provided an English translation for each narrative and pointed out errors. The following was measured in the data: narrative length, lexical diversity, functional morpheme diversity, morphosyntactic complexity, morphosyntactic errors, dysfluencies, and use of English.

First, the length of each participant's production sample had to be determined. In this task (unlike in spontaneous production), the length of a narrative is meaningful. Since

all the narratives were elicited in response to the same set of pictures, generally, a longer sample might be presumed to indicate better speaking abilities (although individual differences in narrative style must also be taken into account). The narrative length in sentences, words, and morphemes was also needed in order to calculate complexity measures (see below). To determine the length, each narrative had to be divided into sentences and words, and each word, into morphemes.

Dividing the narratives into sentences was a challenging task. Pauses turned out not to be reliable cues for distinguishing where one sentence ends and another begins, because RBs pause both between and within utterances. First, words in each narrative had to be identified. This included identifying a verbal complex as one word (starting with a root, optionally followed by postbases, and finishing with an agreement+mood marker, optionally followed by a sentential enclitic), then identifying nouns (containing a root and possibly other morphemes, and ending with a case marker), then identifying any other free elements, such as adverbs, pronouns, or conjunctions. Next, each narrative was divided into clauses. Each clause contained one verbal complex, its arguments (noun phrases containing nouns or pronouns, and any modifiers), and any elements that modify the verbal complex. Each independent clause – a clause where the verbal complex carries one of the independent mood markers (declarative, declarative negative, or participial[1]) – was counted as one sentence/utterance. Clauses with a conjunctive mood marker (corresponding to English *and/and then*) were counted as independent utterances as well, since in a narrative, there can be multiple sentences in this mood, one after another; it is even possible that all clauses except the first one are in the conjunctive mood (cf. *He got dressed, and then went outside, and then started sliding, and then played*). Other dependent clauses, where the verbal complex carries one of the dependent mood markers (conditional or causative), were counted as constituting one sentence with the main

[1]Other independent moods in Inuttitut are interrogative and imperative, but these did not occur in the samples, due to the nature of the task.

clause only if they could not stand on their own[2]. This is illustrated in (1): *angKagami* 'when he went home' is part of a sentence *Kausittogaluatluni angKagami*, but *siniligami* 'because/when he is sleeping' is a separate sentence, since there is no suitable main clause before or after it.

(1) Kausi-ttu-u-galua-tluni... angKa-gami...
wet-PART.3SG-be-although-CONJ.3SG home-CAUS.3SG.REF
sini-li-gami
sleep-INGR-CAUS.3SG.REF
'Although he was wet when he went home. (Because/when) he is sleeping (now).'

If a verbal complex contained a dependent mood marker as a result of an error (incorrect mood used), and the correct mood marker would be one of the independent mood markers, a clause with such a verbal complex was counted as a separate clause. For example, in an excerpt shown in (2), the conditional mood marker is used incorrectly. A better choice would be to use the participial mood, which is an idependent mood. Therefore, *Siagu itisimajuk* and *Sinippat* are counted as two separate sentences.

(2) ...siagu... iti-sima-juk... Sini-ppat...
later enter-PERF-PART.3SG sleep-COND.3SG
'Later, he has come inside. If he is sleeping.'

(intended: 'Later, he has come inside. He is sleeping.')

Words were counted regardless of whether they were existing words or not, and whether the form was grammatical or not; sentences were also counted regardless of grammati-

[2]Clauses in the causative mood in some cases can be used without a main clause, implying the meaning that could be expressed by the main clause that is absent. For example, *Kaak-kama* (hungry-CAUS.1SG) '(Because) I am hungry' implies something like "therefore, give me something to eat" (North Baffin dialect, Harper, 1974, p. 23). Thus, if a causative clause occurred with an overt main clause, these two clauses were counted as parts of one sentence, and those causative clauses for which there was no main clause in the sample were counted as separate sentences.

cality. Repetition of exactly the same sentences, words within the same sentence, and morphemes within the same word were not counted. This included instances when a participant produced the beginning part of a word, then repeated it, adding more morphemes, and so on until the whole word was produced (as in (3)).

(3) Kausi... Kausilisimat... Kausi... **Kausi-li-sima-mmat**.
wet wet-INGR-PERF wet wet-INGR-PERF-3SG.NREF.CAUS
'Because he got wet'

The segmentation process is illustrated in (4) and (5). In (4), a whole sample from one of the strongest speakers among HRBs before segmentation is presented. In (5), the sample is divided into sentences; repetition, dysfluencies and comments in English are removed.

(4) *Before segmentation*
Angutik sila-mut pingngua-giattu-guma-juk... anâna-nga pannai... pannai-juk... sugusik... stuck on that one... situga-ngngua-juk sila-mi... angKa-juk angutik situga-ngngua-mi. Ah... Kausi-li-vuk... pani-tsi-giattu-juk... angutik sini-juk sinnatoma-juk auja-mmi

(5) *After segmentation*

a. Angutik sila-mut pingngua-giattu-guma-juk.
man/boy outside-ALLAT play-go.to-want-PART.3SG
'The boy wants to go and play outside.'

b. Anâna-nga pannai-juk.
mother-POSS.3SG.SG get.ready-PART.3SG
'His mother is getting ready.'

c. Sugusik situga-ngngua-juk sila-mi.
child slide-play-PART.3SG outside-LOC.SG
'The child is sliding outside.'

d. AngKa-juk angutik *situga-ngngua-mi.
home-PART.3SG man/boy slide-play-?
'The boy went home (intended: 'after sliding').'

e. Kausi-li-vuk.
wet-INGR-INDIC.3SG
'He got wet.'

f. Pani-tsi-giattu-juk.
dry-AP-go.to-PART.3SG
'He is going to get dry.'

g. Angutik sini-juk.
man/boy sleep-PART.3SG
'The boy is sleeping.'

h. Sinnatoma-juk auja-mmi.
dream-PART.3SG summer-LOC.SG
'He is dreaming in the summer (intended: 'about the summer').'

In order to measure morphosyntactic complexity in production, Mean Length of Utterances (MLU) in morphemes was calculated for each participant, as well as Mean Length of Words (MLW) in morphemes. MLW has been used in work by Allen, Crago, and Pesco (2006) on acquisition of Inuktitut in Arctic Quebec (reviewed in Section 2.2), where it was one of the measures of complexity in a speech production task, needed in order to compare production abilities in third-graders, eight-graders and fluent adults, from large and small communities. MLW proved to be particularly useful for this kind of language[3], where "much of the syntax occurs within the word" (Allen et al. 2006, p. 589). There is much more variation in the number of morphemes per word than in non-polysynthetic and non-agglutinative languages, and fluent speakers tend to produce longer words. In polysynthetic languages like Inuttitut, a one-word utterance can be of high morphological complexity, and express a whole proposition in English, translated as a fairly long sentence (see the next section, on the elicited imitation task, for examples).

Another measure of grammatical competence in production was developed - a checklist of morphosyntactic inventory in production. I designed it by analogy to the Index of

[3]Caution must be exercized when interpreting MLW: A. Johns (p.c., May 2011) points out that non-fluent speakers can produce longer words because of not knowing the correct postbase and conveying its meaning periphrastically through a combination of other postbases; however, this did not occur in my data.

Productive Syntax, or IPSyn, developed by Scarborough (1990) for assessment of L1 acquisition of English. The structures in IPSyn are organized in four parts: Nouns, Verbs, Questions and Negation, and Sentence Structures. A researcher has to look for two occurrences of each structure in the IPSyn checklist, assigning 1 point for each occurrence in a production sample[4]. Versions adapted for other languages also exist (cf. IPSyn for Finnish by Nieminen & Torvelainen, 2003). I excluded Questions and Negation, because of the nature of the task, where neither questions nor negation were expected. The remaining three parts consisted of six structures each, or 18 structures in total, to the maximum of 36 points (18 structures multiplied by 2 occurrences). The checklist for Inuttitut is provided in Table 5.1.

A participant automatically gets a point for N1, V1 and S1 if he/she gets a point for any other entry in the corresponding part (Nouns for N1, Verbs for V1, and Sentence Structures for S1). He or she also automatically gets credit for S2 and S3 when assigned a point for S4. Uninflected (or combined with English inflections) nominal and verbal roots were also counted for N1 and V1.

I modified the IPSyn checklist for Inuttitut using the following approach. Entries that are common to any language that has nouns and verbs and at least some morphology, such as "a noun", "a verb", "any other morpheme on noun/verb" (i.e. other than those specifically named in the checklist), were simply taken from IPSyn. Structures that a) do not exist in Inuttitut (e.g. articles); b) are expressed in a very different way (e.g. the progressive suffix), or c) are infrequent (e.g. personal pronouns[5]), were excluded. Structures and morphemes that exist both in English and Inuttitut and function more or less in a similar way were preserved from IPSyn; these include plural suffixes on

[4]Thus, 0 points is assigned if no occurrences of a given structure are found (no evidence of use), 1 point for one occurrence (evidence of use), and 2 points for two occurrences (evidence for productive use).

[5]Recall from Section 3.2 that in Inuttitut, the verb normally encodes agreement with the subject and sometimes the object (especially if the object was mentioned before), and overt pronouns are not used; they are used in emphatic contexts and as an answer to a *who*-question.

Table 5.1: *Morphosyntactic inventory checklist for Inuttitut*

#	structure	example
Nouns		
N1	any noun (excluding proper names)	***sugusik*** '**child**'
N2	modifier(adjective or pronoun)	***tânna*** *sugusiapik* '**this** little child'
N3	possessive	*anâna-**nga*** '**his** mother'
N4	Case (any case other than Absolutive)	*ukiu-**mi*** '**in** winter' (locative)
N5	plural suffix (any case)	*atigi-**it*** 'parka-**s**'
N6	any other morpheme on a noun (not *-nguak* 'pretend/play')	*anguti-**kuluk*** '**little** boy'
Verbs		
V1	any verb	***sinijuk***/*He is **sinik**-ing* 'he is **sleeping**'
V2	agreement: participial or declarative intransitive	*sini-**juk*** '**he is** sleeping'
V3	agreement: conjunctive mood	*sinnatoma-**tluni*** '**and then** he is dreaming.'
V4	agreement: any other mood	*uti-**gami*** '**when** he came back'
V5	aspect	*iti-**sima**-juk* 'he **has** come inside'
V6	any other morpheme on a verb (not *-nguak*)	*ane-ngua-**guma**-juk* 'he **wants** to play outside'
Sentence structures		
S1	any two-word combination	***una sinijuk*** '**this one is sleeping**'
S2	Subject-Verb combination	***jaikanga kusijuk*** '**his jacket is dripping**'
S3	Verb-Object combination	*Anânanga **sugusimminik pannaititsijuk*** 'The mother **is getting her son ready**'
S4	Subject-Verb-Object combination	***Anânanga sugusimminik pannaititsijuk*** '**The mother is getting her son ready**'
S5	conjoined phrase	***anânak amma inninga*** '**mother and her son**'
S6	subordinate clause	*jaikanga Kausittuk **silalummat*** 'his jacket is wet **because it is raining**'

nouns (N5), and all the entries in the Sentence Structures part, with small changes (the subordinate clause was termed "propositional complement" in IPSyn). Past tense was excluded because of the nature of the task: Most participants described the pictures, using present tense, rather than telling a story using the past tense. No verbal structures were preserved from IPSyn, reflecting the fact that the differences between Inuttitut and English are most prominent in the verbal morphosyntax.

The Nouns part of IPSyn contained an entry "modifier, including adjectives, possessives, and quantifiers". In my checklist for Inuttitut, I split this category into two: one for possessives (N3) and one for other modifiers (N2), because possessives in Inuttitut are different from adjectives, quantifiers, or other nominal modifiers. Possessives are expressed as suffixes on nouns, containing the phi-features (person and number) of the possessor and the possessed, but, for example, adjectival meanings can be expressed as suffixes on nouns or separate words. I also added nominal case to the Nouns part (N4). In N4, points were not given for non-possessed nouns in Absolutive case, because it is expressed by a zero marker. In the Verbs part, since no specific morphemes or structures were taken from IPSyn, I added morphemes that are central to Inuttitut verbal morphology and/or are likely to be common in this task. I included aspectual morphemes (V5), such as ingressive *-li-*, perfect *-sima-*, *-gasua-* 'going to', etc. I also included three entries for agreement+mood morphemes. The first (V2) consists of the moods that are likely most common, indicative and participial, combined with intransitive agreement (i.e. agreement with the subject only), which in Labrador is used much more often than transitive agreement both with the subject and the object. The second (V3) is another common mood - conjunctive, which is especially likely to be used in the context of describing events in one picture after another, as in this task. The third (V4) is there to recognize the ability to produce less common moods. In N6 and V6, combinations with the affix *-ngnguak-* were excluded, because they are often lexicalized, and might be unanalyzable for non-fluent speakers. Examples include *pingnguak* - a noun 'toy' (literally,

"pretend thing") and a verbal stem 'play'; *anengnguak-* a verbal stem 'play outside'; *situgangnguak-* a verbal stem 'play, sliding', etc.

The resulting list is shorter than IPSyn, and it has not been tested for validity prior to this study. In future work, it is possible to expand, refine, and validate it to develop a language assessment tool that could be used in Labrador Inuit communities. Also, although for the original IPSyn, either 50 or 100 utterances for each participants are used, the samples obtained in this task are smaller and far from equal. Because of this, there was no choice but to use the whole samples, without a possibility to use a fixed number of utterances.

The next issue of interest is lexical and functional morpheme diversity – how many different morphemes (types, not tokens) each RB produced. To assess lexical diversity and productive vocabulary, the number of different roots in each sample was counted. To assess the diversity of functional (non-root) morphemes that participants control in production, the number of different functional morphemes in each sample was counted. The latter measure (the number of functional morpheme types, or FMT) is related to the morphosyntactic inventory checklist, but is different: The checklist contains morphosyntactic structures and some specific morphemes, while FMT is the total number of all functional morphemes used by a given participant, and the more advanced the participant, the more morphemes that he/she produced are not on the checklist.

Morphosyntactic errors, such as incorrect use of morphemes or omitting obligatory morphemes, were also counted, as well as any other errors, and also the number and the proportion of dysfluencies (how often the participants failed to produce a whole word from the first attempt, and it took them more than one attempt to complete the word). Yet another measure was the presence of English: whether they used English within their Inuttitut utterances or produced utterances entirely in Inuttitut. Three types of use of English were distinguished: intrasentential (embedding Inuttitut words in an English sentence and/or using English functional morphemes, e.g. He's *anenguak*-ing 'He is

playing outside'), translation, and comments. Intrasentential use of English was of most interest, since it is this type of use that would presumably reflect low speech production ability in Inuttitut. Though fluent bilinguals also use intrasentential code-switching in spontaneous speech (Poplack, 1980), the participants were instructed to produce speech only in Inuttitut and not to switch to English. The number and proportion of English morphemes used intrasententially in each sample was calculated. Morphemes, rather than words, were counted, because some RBs attached English affixes to Inuttitut roots. Lastly, I analyzed the relationship between these speech production measures and self-assessment of speech production abilities (acquired via interviews) in the HRB group.

5.1.4 Results

As expected, there are salient differences between the groups, and there is also much variation within each group, even among the fluent speakers. While part of the variation is due to production abilities, another part is due to individual narration style (some participants produce short narrations with the minimum of required information, while others produce more elaborate stories and mention more details). The length of production samples (measured in sentences, words and morphemes), as seen in Table 5.2, varied both within and between groups, but clearly, fluent speakers produced longer narratives than HRBs, and HRBs' narratives were longer than LRBs'.

Table 5.2: *Mean narrative length*

	sentences	*SD*	range	words	*SD*	range	morphemes	*SD*	range
FB	9	5.37	5-20	23.88	13.18	6-46	57.5	32.29	15-117
HRB	6	2.2	3-10	9.8	4.5	5-17	22.3	13.2	6-55
LRB	4	1.7	2-5	4.3	2.1	2-6	5.7	3.1	3-9

Wilcoxon rank sum tests with continuity correction[6] were used to test the difference in the length of narratives by fluent speakers and HRBs (here and below LRBs are not

[6]This non-parametric test was used here and in subsequent analyses in the place of a t-test, since the data, as any count data, is not normally distributed.

included in statistic tests because of the small size of the group). The difference in the number of sentences in the narratives did not reach significance (W=48.5, p=0.25), but the difference in the number of words and morphemes was significant (for words, W=22.5, p=0.008; for morphemes, W=18.5, p=0.004). Thus, fluent speakers did not produce significantly more sentences than HRBs, but the sentences produced by fluent speakers were more complex, containing more words and more morphemes.

The morpheme diversity measures - the number of root types (lexical diversity) and the number of functional morpheme types (FMT) - are shown in Table 5.3.

Table 5.3: *Morpheme diversity in the picture description task*

	root types	*SD*	range	FMT	*SD*	range
FB	17.1	7.9	6-26	14.38	6.93	5-29
HRB	8.2	3	5-14	6.59	4.15	1-14
LRB	4.3	2.1	2-6	1.33	0.58	1-2

In terms of lexical diversity, there are clear differences between the three groups: HRBs, on average, used about twice as many roots as LRBs, and FBs, twice as many roots as HRBs. A Wilcoxon test showed that the difference between fluent speakers and HRBs in lexical diversity was significant (W=23, p=0.009). The difference in FMT between groups was also significant, as shown by a Wilcoxon test (W=17.5, p=0.004). Fluent speakers, unsurprisingly, control a wider variety of functional morphemes, HRBs use some, and LRBs use very few.

Grammatical complexity measures - mean MLU and MLW - are presented in Table 5.4. (The morphosyntactic inventory results are presented separately in Table 5.5.)

Table 5.4: *Mean MLU and MLW*

	MLU	*SD*	range	MLW	*SD*	range
FB	6.53	2.09	3-10.4	2.45	0.33	2-3.1
HRB	3.77	1.66	1.2-7.86	2.23	0.75	1.2-4
LRB	1.5	0.3	1.2-1.8	1.4	0.17	1.2-1.5

A comparison of fluent speakers' and HRBs' performance via Wilcoxon tests showed significant differences in MLU (W=16.5, p=0.003), but not in MLW (W=45.5, p=0.2).

These results further refine the findings on the production sample size differences. Fluent speakers produce more words per sentence, but not necessarily more morphemes per word; it is because they produce more words, it results in more morphemes per utterance.

The mean morphosyntactic inventory scores for each part (Nouns, Verbs, and Sentence Structures) as well as the mean total scores for each group are shown in Table 5.5. As with other measures, there are differences between the groups. Wilcoxon test shows a significant difference between fluent speakers' and HRBs' total scores (W=13, p=0.002), as well as scores for each part (for Nouns (N), W=14.5, p=0.002; for Verbs (V), W=29, p=0.02; for Sentence Structures (SS), W=12.5, p=0.0013).

Table 5.5: *Mean scores on the morphosyntactic inventory checklist*

	N	*SD*	range	V	*SD*	range	SS	*SD*	range	TOTAL	*SD*	range
FB	8	2.82	5-11	9.13	2.23	5-11	8.38	2.72	2-11	25.5	6.61	10-30
HRB	3.59	1.81	0-7	6.41	2.87	2-12	3.41	2.03	0-6	13.41	5.37	2-22
LRB	2.33	2.08	0-4	1.67	1.53	0-3	0.67	1.16	0-2	4.67	3.79	2-9

Errors were produced by all RBs except two HRBs. Most of the errors were morphosyntactic: morpheme omission or use of an incorrect morpheme; other, very rare, errors were sound substitution and incorrect lexical choice. The mean percentage of words containing errors in the HRB group was 35.4% (*SD*=27.3%) of the words in a narrative, and in the LRB group, 54.5% (*SD*=23.5%).

Omissions of obligatory morphemes that resulted in ungrammatical uninflected forms (verbs without an agreement+mood marker, or nouns without a case marker) were found in the narratives of seven HRBs and two LRBs. The number of such uninflected forms in a given narrative sample ranged from 1 to 5 (which constituted from 8.3% to 100% of the words in a sample). These included bare stems or stems to which English morphemes (*-ing*, third person singular *-s*, or plural *-s*) were attached. All of the RBs who produced uninflected forms (with one exception) had MLW of 2 or less, but did not differ in the other measures discussed above from those who produced no uninflected forms. Also, two HRBs omitted the antipassive morpheme *-tsi-* after the same root, *pe-* 'come off',

which did not make the word or the sentence ungrammatical, but affected the meaning – for example, one of them produced *jaika-nga pe-littuk* 'his jacket is coming off (by itself)' instead of *jaika-minik pe-tsi-littuk* 'he is taking his jacket off'.

Incorrect morpheme selection occurred in the narratives of eight HRBs. Such errors included incorrect use of possessive (first or second person instead of third person possessive, e.g. *anâna-ga* 'my mother' instead of *anâna-nga* 'his mother'), incorrect case marking (locative instead of ablative), incorrect agreement (first person instead of third person, e.g. *situganguali-kKunga* 'I am sliding' instead of *situganguali-ttuk* 'he is sliding'; dual instead of singular[7]), and incorrect mood (conditional or causative mood where it is not felicitous in the context, and participial is a better choice, e.g. *sini-ppat* 'if he is sleeping' instead of *sinijuk* 'he is sleeping'). In addition, four HRBs produced ungrammatical uninterpretable combination of morphemes (where one of the morphemes was either non-existent or could not be combined with the other morphemes in the word), and one HRB produced a morpheme combination with a meaning other than intended (*kami-llâ-ttuk* 'she is not wearing boots' instead of *kami-nginnik petsijuk* 'she is taking his boots off').

Failure to produce a word from the first attempt and finishing it from the second or later attempt occurred in all three groups, though not in all samples (e.g. *sini... sini-juk*, where *sini(k)-* is the bound verbal stem 'to sleep' and *-juk* is the obligatory agreement+mood marker that has to be added to the stem to express the meaning 'He/she is sleeping'). Mean percentage of words that were produced in this way for fluent speakers was 3.8% (*SD*=4%), ranging from 3.1% to 10% of the words, and for HRBs, 16.2% (*SD*=13.7%), but the range was much wider, from 5.9% to 44.5% . Among LRBs, this occurred in only one participant's sample. The difference between HRBs and fluent speakers in the number of these was significant in a Wilcoxon rank sum test

[7]This might be a phonological error, since these errors involved the participial mood, third person, for which dual and singular differ only in vowel length: singular is *-juk*, and dual is *-jok*[juuk].

(W=34.5, p=0.05).

Intrasentential use of English in production samples occurred in both HRB and LRB groups, but not in the fluent speakers' group. In the HRB group, the average percentage of intrasentential English morphemes in a sample was 15.2% (SD=26.7%), although they were used only by one-third of the group, who inserted Inuttitut words into English sentences, in some cases adding English morphemes to Inuttitut stems (e.g. English plural *-s* in *kamik-**s*** 'boots' instead of *kami-it*; English *-ing* added to a verbal root, e.g. *sinik-**ing*** 'sleeping' instead of *sini-juk*), as also illustrated in (6). That is, in most cases, these HRBs could produce roots, but could not add Inuttitut functional material to "glue" them together in a sentence. This is reminiscent of The Ivy Hypothesis of unbalanced bilingual first language acquisition (Bernardini & Schlyter, 2004; see Section 2.2). In sentences such as (6), HRBs' Inuttitut is like an ivy that grows on the syntactic structure provided by English.

(6) a. **Little** sugusik **and his** anânak **are getting ready to** anenguak.
little child and his mother are getting ready to play.outside
'A little child and his mother are getting ready to play outside.'

b. **And he is** situgak-**ing**.
and he is slide-ing
'And he's sliding'

The other two types of use of English, translation and comments, are not relevant for the discussion of speech production in Inuttitut except that they reveal RBs' lack of confidence in their Inuttitut speaking abilities. Some participants provided English translation of what they said, and most RBs provided comments in English, either about the pictures or about the participant's own limited ability to speak Inuttitut ("I forgot that word", "I know I gonna say it wrong", etc.).

MLW of approximately 2 appears an important divide. Almost all RBs who produced intrasentential English had MLW of 2 or less and produced uninflected forms (though not all those with MLW of 2 or less produced intrasentential English). RBs with MLW 1.8 or less - LRBs and five of the HRBs - not only mixed Inuttitut with English and used uninflected forms or supplied inflection from English, but also produced very few functional morphemes (1-3), and no postbases (except *-nguak-*, which might be a part of unanalyzed stems such as *ane-ngnguak* 'play outside' and *situga-ngnguak* 'slide/play, sliding'). In contrast, HRBs with MLW over 2 produced no intrasentential English, no uninflected forms, and did produce four or more different functional morphemes, including postbases.

Lastly, self-assessment of production abilities in the HRB group, as shown by Spearman rank correlation test, did not correlate with the morphosyntactic inventory scores (r_s=0.35, p=0.17), narrative length in morphemes, (r_s=0.24, p=0.37), or MLU (r_s=0.03, p=0.92), and marginally correlated with MLW (r_s=0.42, p=0.09). Table 5.6 shows individual results for self-assessment and these speech production measures[8].

As seen from Table 5.6, HRBs' self-assessment of speech production abilities does not correspond to their performance on the picture description task. For example, #116, the participant with the highest self-assessment, performed below the HRB average on all measures; on the other hand, #115, the participant with the highest MLW and one of the highest MLUs, had low self-assessment.

[8]Recall that in self-assessment, 1="common expressions or words", 2="words embedded in English speech", 3="short sentences or parts of sentences", 4="full sentences"; for the morphosyntactic inventory, the maximum score was 36.

Table 5.6: *Self-assessment of production abilities and production measures*

participant	self-assessment	morphosynt. inventory	narrative length in morphemes	MLU	MLW
116	4	8	12	2.4	2
112	3	16	19	3.8	2.4
114	3	17	29	4.1	3.2
117	3	15	29	2.9	2.1
118	3	15	14	4.7	2.3
101	2	8	9	1.5	1.3
102	2	22	55	7.9	3.2
107	2	19	29	4.8	1.9
108	2	19	33	3.7	2.8
109	2	17	34	3.8	2
115	2	11	24	4.8	4
103	1	2	6	1.2	1.2
104	1	14	15	5	2.5
106	1	4	9	1.3	1.3
110	1	15	38	4.8	2.2
111	1	14	9	4.5	1.8
113	1	12	15	3	1.7

5.2 Elicited imitation

Labrador Inuttitut receptive bilinguals appear to have difficulties repeating words and sentences in Inuttitut, either being unable to do it, or sometimes filling in nonsense syllables (A. Johns, p.c., April 2008). Therefore, a task in which participants have to repeat long multimorphemic words could show differences between speakers and non-speakers. This task involves highly constrained speech production - the participants repeat what they just have heard rather than actually generate an utterance. On the other hand, the participants are not passively echoing back the stimulus sentence. The stimuli for an elicited imitation task must be longer than working memory can hold, so as to prevent simple parroting and require use of the target language knowledge for comprehension of the stimulus, then reconstruction of that stimulus for production (Lust, Flynn, & Foley, 1996). Thus, the participants have to build a word, but they are given the building blocks. Systematic deviations or failures in sentence repetition suggest

deviations or deficits in the participant's grammar. The elicited imitation task has been successfully used in research on acquisition of syntax in a first language (Lust, Flynn, & Foley, 1996) and in a second language (Munnich, Flynn, & Martohardjono, 1994), as well as in clinical assessment of language development (Sturner, Kunze, Funk, & Green, 1993). The reliability of this task is supported by the findings that its results converge with results from other tasks, such as a correlation between elicited imitation results and parental reports of children's proficiency (Perez-Leroux, Cuza, & Thomas, 2011), or convergent results in elicited imitation and grammaticality judgment tasks (Munnich, Flynn, & Martohardjono, 1994). It is informative to see whether RBs are capable of this kind of assisted speech production.

5.2.1 Materials

Materials consisted of ten morphologically complex Inuttitut words, ranging from five to eight morphemes in length. These were produced by two language consultants and audio-recorded as they were read by one of them. Each word contained a full proposition and could be translated into English as a full sentence. Two examples are shown below: the shortest, five-morpheme word in (7), and the longest, eight-morpheme word in (8) (see Appendix C for the complete set of the stimuli words).

(7) IKalutsiasimangngilagut
IKalu-tsia-sima-ngngi-lagut
char-nice/much-PERF-NEG-NEGD.1PL

'We hardly got any char(fish) at all'

(8) ilinniaviliagumaKattangimagikKunga
ilinnia-vi-lia-guma-Katta-ngi-magi-kKunga
learn-place-go.to-want-PLURACT.-NEG-real-INDIC.1SG

'I don't really like going to school'

The length of such words-sentences (complex verbs) depends on the number of postbases: the more postbases, the longer the word. Each verb has one root and one agreement+mood marker; some of the verbs in the stimuli set also have a sentential enclitic (one per sentence), and all the remaining morphemes are postbases, from two to six per word.

Each morpheme is typically 1-3 syllables long. The shortest word in the stimuli set consists of nine syllables. If RBs do not parse the words into morphemes, the unit would probably be the syllable, and nine or more syllables is a fairly long sequence to hold in working memory. Successful repetition then is likely to reflect abilities to parse, comprehend, and construct the word again for production.

5.2.2 Procedure

The words were played one at a time. Participants were instructed to listen to the word and repeat it. After the participant repeated the word, the next word was played. If the participant was unable to repeat the word, he/she was asked whether he/she wanted to try the next word. The participants could ask to hear a word again, as many times as they wanted. All the participants heard the words in the same order, from the shortest to the longest. The responses were audio-recorded.

5.2.3 Data analysis

The data was transcribed by a professional Inuttitut language consultant trained in transcription, and then checked by me. First, as a global measure of success, the number of words repeated exactly by each participant was counted. Second, the number of words requested to be heard again was counted for each participant in order to determine whether RBs ask for a second attempt more often (and also whether it results in better

repetition). Since each participant's data could contain more than one attempt per word, only the best attempt was analyzed (the one containing the largest number of correctly imitated morphemes).

Third, for each morpheme, it was recorded whether it was successfully repeated by a given participant. The morpheme count was included in order to see a more detailed picture of what parts of a word RBs are more likely to repeat successfully, and what parts cause more difficulties. If RBs' vocabulary knowledge is better than their knowledge of grammar (as observations in Johns & Mazurkewich (2001) suggest), we can expect better repetition for the roots than for other morpheme classes. Thus, the morphemes were coded for the morpheme class: root, postbase, agreement+mood, or a sentential enclitic. In (9), *nigi-* is the root, *-mmâ-*, *-ngngua-*, *-giattu-*, and *-niaC-* are postbases, *-kKugu(t)* is the agreement+mood marker, and *-(l)li*[9] is a sentential enclitic.

(9) nigimmânguagiattuniakKugulli
nigi-mmâ-ngngua-giattu-niaC-kKugut-lli
eat-plentifully-play-go.in.order.to-NFUT-INDIC.1PL-also

'We will be going for a picnic'

An analysis of non-target answers at the level of whole words was also conducted. Aside from exact repetitions, responses were assessed by a professional language consultant and, based on her judgments, divided into the following categories: a word with the same meaning (containing omission and/or replacement of some morphemes that does not significantly affect meaning), a word with a different meaning (containing omission and/or replacement of some morphemes or sounds that causes a change in meaning, but the result is still an existing word in Inuttitut), and a non-word (containing omission and/or replacement of morphemes or sounds such that the result is not an existing word

[9]See Section 3.2 on Inuttitut morphophonology and consonant change at morpheme boundaries.

in Inuttitut). The examples from RBs' data that illustrate these categories are shown in (10).

(10) **Non-target answers**

a. ***Same meaning***

(i) *Target*
nigimmângngguagiattuniakKugulli
nigi-mmâ-ngngua-giattu-nia-kKugu-lli
eat-plentifully-pretend-go.in.order.to-NFUT-INDIC.1PL-also
'We will be going for a picnic'

(ii) *Response*
niginguammâniakKugulli
nigi-ngua-mmâ-nia-kKugu-lli
eat-pretend-plentifully-NFUT-INDIC.1PL-also
'We will have a picnic'

b. ***Different meaning***

(i) *Target*
atuagaliulautsimavungali
atuaga-liu-lautsima-vunga-li
book-make-LONG.AGO.PAST-INDIC.1SG-also
'I have written a book before'

(ii) *Response*
atuagalautsimavungali
atuaga-lautsima-vunga-li
book-LONG.AGO.PAST-INDIC.1SG-also
'I read before'

c. ***Non-word***

(i) *Target*
salummasaigiaKanginnaKattaKugut
salummasa-i-giaKa-nginna-Katta-Kugut
clean-AP-necessary-always–PLURACT-INDIC.1PL
'We always had to clean up'

(ii) *Response*
salummasaigiaKakKingilagut
salummasa-i-giaKa-kKi-ngi-lagut
clean-AP-necessary-[no meaning]-NEG-NEGD.1PL

5.2.4 Results

All the participants completed the task. Even those who were unable to produce an answer for most words, listened to all the words and tried to repeat them. However, only

a few words were repeated correctly in its entirety by RBs; most words were partially repeated. The number of correctly repeated words[10] out of 10 experimental items was compared across groups. The mean number of correctly repeated words in each group of participants is provided in Table 5.7.

Table 5.7: *Mean number of correctly repeated words*

	Mean	*SD*	median	range
FB	6.63	3.16	7	1-10
HRB	1.59	1.54	1	0-5
LRB	0.67	0.58	1	0-1

The difference between fluent speakers and HRBs was highly significant, as shown by the Wilcoxon rank sum test: W=124, p=0.00097. In both fluent bilinguals' and HRBs' group, the range of the scores is very large. Each of the two groups has one participant whose score is very different from the rest of the group (more than two standard deviations from the group mean): an FB with the lowest score, and an HRB with the highest score. Without them, the range of the number of exactly repeated words would be 0-4 in the HRB group, and 4-10 in the FB group. Two-thirds of the HRB group and all LRBs were unable to repeat more than one word - the shortest word[11] *IKalu-tsia-sima-ngngi-lagut*[12].

The analysis of non-target answers at the word level was also conducted. In Table 5.8, mean number of non-target answers of each type is provided for each group. The distribution of the answer types differs between fluency groups. FBs as a group produced very few non-target answers of all types (except not providing any answer). In the HRB and LRB groups, non-word was the prevalent type of answer. Absence of an answer was extremely rare among HRBs, but frequent among LRBs.

Some RBs provided translations for the words that they were trying to repeat (although it was not required) - including many cases when they were unable to repeat the

[10]Only exact repetitions were counted as correct. I also tried adding repetitions that differed in some morphemes but had the same meaning; however, it did not change the pattern of results.

[11]While there are other five-morpheme words in the stimuli set for the elicited imitation task, they have a higher number of syllables (i.e. the morphemes themselves are longer).

[12]See (7) for gloss and translation.

Table 5.8: *Mean number of non-target answers by type in the elicited imitation task*

	same meaning(*SD*)	different meaning(*SD*)	non-word(*SD*)	no answer(*SD*)	Total(*SD*)
FB	1(2.72)	0.75(1.49)	1.63(1.69)	0(0)	3.38(3.16)
HRB	0.59(0.94)	1.18(1.29)	6.41(2.48)	0.24(0.66)	8.41(1.54)
LRB	0(0)	0.33(0.58)	5.67(2.31)	3.33(3.22)	9.33(0.58)

word correctly. Some translations were vague, such as "something to do with books" for *Atuaga-liu-lautsima-vunga-li* 'But also, I have written a book before', where the root is *atuaga(k)* 'book', or "something about children, or growing up" for *Sugusi-u-Katigi-lautsima-jaga* 'I grew up together with him/her' (lit. 'I was a child together with him/her'), with the root *sugusi(k)* 'child'. In the HRB group, there were 28 instances of such translations, offered by eight HRBs. Even LRBs produced vague translations for words that they could not imitate. Most interestingly, in other cases, HRBs provided exact translations, or at least quite detailed ones, though their imitation of the word in question was unsuccessful, ranging from repeating only the root to omitting or replacing some morphemes. There were 28 instances of exact or detailed translations in the HRB group (but none in the LRB group), offered by 13 HRBs. Many HRBs produced detailed translations for some words and vague translations for other words.

The next issue explored was whether the participants request an opportunity to listen to the same word again, and whether the fluency groups differ with respect to this. The mean number of words requested to be heard again (one or more times) is presented in Table 5.9.

Table 5.9: *Mean number of words requested to be heard again*

	Mean	*SD*	median	range
FB	1.25	1.83	0.5	0-5
HRB	4.77	2.59	4	1-10
LRB	6	3	6	3-9

The data suggests, unsurprisingly, that less fluent bilinguals are more likely to ask to hear a word again before they repeat it. LRBs ask for a second attempt more often than

HRBs, and HRBs, more often than fluent speakers. A Wilcoxon rank sum test confirmed this difference between HRBs and fluent speakers (W=16, p=0.003). Half of the FBs never asked to play any of the words again, while all HRBs did it at least once, and all LRBs, at least for three words.

Hearing the same word for the second, third or even fourth time did not improve chances of successful imitation. In the LRB group, none of the words heard more than one time was successfully repeated. Among the HRBs, while all of them heard at least some words more than one time, only six of them correctly repeated one or two of these words. Moreover, the best attempt for a given word was not always the last attempt; sometimes the first attempt was even better than the second one.

Since RBs provided partial repetitions of many words (only one LRB could not repeat any morphemes), an analysis of morpheme classes was conducted as well, and it revealed differences between fluency groups as well as, for RBs, differences between morpheme classes. The mean number and percentage of correctly repeated morphemes of each class is shown in Table 5.10.

Table 5.10: *Mean number and percentage of correctly repeated morphemes*

	roots(*SD*)	postbases(*SD*)	agr+mood(*SD*)	enclitics(*SD*)	Total(*SD*)
#	10	38	10	4	62
FB	9.5(0.54)	32.75(5.68)	9.25(1.17)	3.63(0.74)	55.13(7.66)
%	*95%(5.4%)*	*86.2%(14.9%)*	*92.5%(11.7%)*	*90.6%(18.6%)*	*88.9%(12.4%)*
HRB	8.35(1.32)	18.06(7.93)	5.29(2.62)	3.29(0.85)	35(11.25)
%	*83.5%(13.2%)*	*47.5%(20.9%)*	*52.9%(26.2%)*	*82.4%(21.2%)*	*56.5%(18.1%)*
LRB	4(3.47)	5.33(4.73)	0.67(0.58)	1.7(2.08)	11.67(10.41)
%	*40%(34.7%)*	*14%(12.4%)*	*6.7%(5.8%)*	*41.7%(52%)*	*18.8%(16.8%)*

The morpheme data was analyzed by means of a mixed-effect logistic regression with two interacting factors: fluency (fluent vs. HRB) and morpheme type, as well as with item and participant as random effects. The reference levels were *fluent* for fluency and *root* for morpheme type. The results of this logistic regression are summarized in Table

5.11.

Table 5.11: *Logistic regression: interaction of fluency and morpheme type in the elicited imitation task*

	Estimate	*SE*	*p*
(Intercept (Fluent-Root))	-4.5	0.89	**<0.0001**
Fluency Receptive	2.096	0.85	**0.014**
Morpheme type Agr	0.71	1.03	0.49
Morpheme type Enclitic	1.37	1.71	0.42
Morpheme type Postbase	1.56	0.82	**0.056**
Fluency Receptive:Morpheme Type Agr	1.29	0.798	0.107
Fluency Receptive:Morpheme Type Enclitic	-0.88	0.96	0.36
Fluency Receptive:Morpheme Type Postbase	1.095	0.67	0.103

The significant intercept means that for the reference condition (fluent speakers' repetition of roots), the probability of a correct answer was significantly higher than 50%. The next line in Table 5.11 shows that the effect of fluency - the difference between fluent speakers and HRBs - was significant for roots. As for morpheme types, within the fluent speakers' group, there was a marginally significant difference between roots and postbases, but no differences between roots and agreement or enclitics. Even fluent speakers repeated postbases slightly worse than other morphemes. The last three lines give information about the interaction between the factors, expressed here as the difference between the size of the fluency effect for roots and for other morphemes. The differences between effects of fluency for roots and for other morphemes did not reach significance. That is, HRBs were less successful than fluent speakers in repetition of all types of morphemes.

To obtain more information on the influence of morpheme type on success in repetition, multiple comparisons of morpheme types within FB and HRB groups were conducted by means of Tukey HSD tests, with significance levels adjusted. The comparisons for FBs are presented in Table 5.12, and for HRBs, in Table 5.13. (The tables contain the adjusted p-values.)

With p-values adjusted because of multiple tests, there is no significant difference be-

Table 5.12: *Morpheme type comparisons in the elicited imitation task: FBs*

	Estimate	*SE*	*p*
Agr vs Root	0.47	1.06	0.97
Enclitic vs Root	1.28	1.65	0.86
Postbase vs. Root	1.65	0.82	0.17
Enclitic vs. Agr	0.81	1.65	0.96
Postbase vs. Agr	1.18	0.82	0.45
Postbase vs. Enclitic	0.37	1.51	0.99

Table 5.13: *Morpheme type comparisons in the elicited imitation task: HRBs*

	Estimate	SE	p
Agr vs Root	2.03	0.77	**0.035**
Enclitic vs Root	0.51	1.54	0.99
Postbase vs. Root	2.66	0.595	**<0.001**
Enclitic vs. Agr	-1.52	1.56	0.74
Postbase vs. Agr	0.63	0.63	0.74
Postbase vs. Enclitic	2.15	1.48	0.44

tween any morpheme types in fluent bilinguals' responses anymore. In the HRB group, repetition of roots is significantly better than repetition of agreement markers and especially postbases, but is not different from repetition of enclitics. LRBs' performance was much lower than that of HRBs, but their pattern of results is similar to that of the HRB group, as can be seen from Table 5.10. Postbases in this task included tense, aspect, negation, noun-incorporating verbs, valency-changing markers (passive and antipassive) and other kinds; there was no difference between the kinds of postbases in any of the fluency groups. For each kind, successful imitation was close to that group's mean for all postbases.

Individual results for the morpheme analysis show large variation, especially in HRB data, and especially when it comes to postbases and agreement markers - from repeating very few morphemes to repeating quite many. Half of the HRBs performed in the FB range with respect to roots, repeating 9-10 roots correctly; the rest of the group and two LRBs correctly repeated 6-8 roots. Most HRB made one or no errors when repeating enclitics. The number of correctly repeated agreement+mood markers in the HRB group

varied enormously, from zero to the fluent speakers' range of seven to nine, and five of the HRBs performed in this range. LRBs could not repeat more than one agreement+mood marker. Similar variation was found in repetition of postbases: in the HRB group, successful repetition ranged from 15.8% to 81.6%.

Given that roots (that are always word-initial in Inuttitut) and enclitics (that are always word-final) were repeated by RBs better than postbases (that are always in the middle) and agreement (that are word-final but can be in the middle when followed by enclitics), it is worth considering whether the difference between morpheme types is in fact the difference between positions in the word. The RBs' data might be showing what Aitchison (1987) termed "the bathtub effect": The beginning of the word has the highest saliency, the end, the next highest, and the middle, the least, resembling a person in a bathtub, with his head and feet sticking out. For the word-initial position, however, it is impossible to distinguish the position and the morpheme type, since roots are always word-initial, but it is possible to test for the effect of the word-final position via a comparison between different positions of the agreement morphemes. Normally, agreement morphemes are word-final, but if there is a sentential enclitic, it is to the right of the agreement morpheme, making the latter no longer word-final. If word-final agreement markers are repeated more successfully than non-word-final ones, this would be evidence for the bathtub effect. A subset of the HRBs' data, containing only agreement morphemes, was analyzed by means of a logistic regression, with position in the word (final vs. non-final) as the sole predictor. The difference between HRBs' repetition of word-final and non-word-final agreement morphemes was not significant (coefficient estimate -0.05, standard error 0.42, p=0.23). Therefore, there is no evidence for a bathtub effect.

Finally, one should note that prosody does not provide any advantage for any of the morphemes, since there is no stress in Inuttitut. Amplitude, vowel duration or vowel quality do not change, and pitch changes only at major prosodic boundaries such as

the end of an utterance (Fortescue, 1983; Compton, 2003; specifically on Nain dialect - Hardy, 2009).

5.3 A global comprehension measure: Story retelling

This test was designed for global assessment of comprehension – how much information receptive bilinguals can extract while listening to a coherent discourse sample, such as a story. This task is closest to RBs' everyday language experience. Previously, such a task was used by Levine (2000) as a screening tool in a study of attrition of Yiddish, but Levine did not report its results in detail.

5.3.1 Materials

Two long stories had been elicited from two Inuttitut language consultants (see Appendix D). The consultants declined to produce a spontaneous narration, but felt more comfortable about writing a story. They were asked to write about anything they like, in order to make the stories as natural as possible. The stories were culturally appropriate; both were on the topic of going outdoors to hunt and fish, but Story 1 described one family's modern-day trips, while Story 2 described traditional Inuit trips. Sentences and words in both stories were, on average, more complex than those in other tasks (with the exception of the elicited imitation task). Story 1 contained 81 words, or 263 morphemes[13]; the average word length in morphemes was 3.25, ranging from one to seven morphemes per word. Story 2 was somewhat longer, but at the same level of complexity, containing 110 words, or 349 morphemes, with average word length in morphemes 3.18, also ranging from one to seven morphemes per word. The recording time for Story 1 was 2 minutes 11 seconds, and for Story 2, 2 minutes 53 seconds. A story in English (see Appendix D)

[13]In a polysynthetic language like Inuttitut, the number of words in a story is not completely informative of its size, since one multimorphemic word can contain as much information as a multiword phrase or a sentence. This is why it is necessary to know the number of morphemes in a story in Inuttitut.

was also added as a baseline, because individual retelling styles vary in length, amount of details, and so forth. This story was on a related topic (going outdoors), and attempts were made to make it similar to the stories in Inuttitut in the type of narration, amount of details, and length. The English story contained 309 words, or 376 morphemes, and the recording time was 1 minute 50 seconds. The stories were audio-recorded. The Inuttitut stories were read by their authors, and the English story was read by a native speaker of English.

5.3.2 Procedure

The participants listened to the first story and then were asked to retell it in English. After retelling, they listened to the next story, until they have retold all the stories. Participants who were intimidated by the length of the story were told that they needed to retell at least the main points, but still with as much detail as they could remember. Participants could request to listen to a story for the second time. All participants heard the stories in Inuttitut first (Story 1, then Story 2), and the story in English was the last one.

5.3.3 Data analysis

Each participant's English version of each story was analyzed in terms of how much information from the original story was present in their narration. In order to do that, a checklist was created for each story (see the Appendix D for the complete checklists). The checklist contained the most important pieces of information from each clause, as either a proposition (e.g. DRIED (MEAT) for *panittitausot nikkuliagidlugit* 'meat would be dried'; could also be recalled as 'They dried the meat', or 'They made dried meat', or 'The meat was dried', etc.) or a keyword (e.g. SEALSKIN: several clauses in the Story 2 describe different ways Inuit used sealskins; any mention of sealskins in a participant's narration would be counted as successful recall of this piece). For each of these pieces,

if they were present in a participant's narration, that participant was given points. The most crucial pieces (three keywords in Story 1: TRIPS, HUNT, and FISH; three in Story 2: GO OFF, HUNT, and SEALS; three in English story: CAMPING, FISH and PICK BERRIES) were assigned two points each; the rest of the pieces, one point each. The most crucial pieces were keywords; most of the other items were propositions. If an item in the checklist contained a list (e.g. HUNTING (WE; CARIBOU, SEALS, PORCUPINES)), a point was assigned if even one member of the list was mentioned (e.g. "caribou"), and no additional points were given for other members. If a piece of information in the narration was incomplete (e.g. target IF THE WEATHER IS FINE, actual answer "something about the weather") or partially incorrect (e.g. target GO WITH GRANDMOTHER, actual answer "go with grandparents", or target TAKE DAUGHTER, actual answer "she takes kids with her" or "she takes her little sister"), half a point was assigned. In order to illustrate how the results were scored, a fragment of Story 2 with the corresponding part of the checklist and responses from randomly selected participants (one from each group) are presented in (11).

(11) a. *Sentence*
NiKingit
NiKik-ngit
Food.meat-POSS.3SG.PL
'meat'
Checklist item
MEAT/SEAL MEAT (1 point)
Responses
FB: "Seal meat was used..." (1 point)
HRB: "They used everything on the seal and cooked it." (i.e. "meat" is implied)(1 point)
LRB: "She's having seal meat for dinner."(1 point)

b. *Sentence*
NiKingit asikKitauKattalaungitut,
NiKik-ngit asikKi-tau-Katta-lauC-ngi-tut
Food.meat-POSS.3SG.PL waste-PASS-PLURACT-DPST-NEG-PART.3PL
'The [seal] meat was never wasted.'
Checklist item

NOT (WASTED (MEAT)) (1 point)
Responses
FB: "Seal meat was used, seal meat wasn't spoiled, everything was used for cooking." (1 point)
HRB: "They used every bit of it and they never wasted anything." (1 point)
LRB: no mentioning (0 points)

c. *Sentence*
panittitausot nikkuliagidlugit
paniC-ti-tau-sot nikkuk-liagi-dlugit
dry-cause-PASS-CAN.3PL dried.meat-make.into-CONJ.3PL.O
'It was dried to make *nikku* (traditional Inuit food)'
Checklist item
DRIED (MEAT) (1 point)
Responses
FB: no mentioning (0 points)
HRB: no mentioning (0 points)
LRB: no mentioning (0 points)

d. *Sentence*
ilonnasianga niKijanga asikKitauKattalaungituk allât inaluangit panittitausot ubvalu igallugit.
ilonna-tsiak-nga niKik-jak-nga asikKi-tau-Katta-lauC-ngi-tuk allaat inaluak-ngit paniC-ti-tau-sot ubvalu iga-llugit.
all-really-POSS.3SG.SG meat-piece-POSS.3SG.SG waste-PASS-PLURACT-DPST-NEG-PART.3PL even lower.intestine-POSS.3SG.PL dry-cause-PASS-CAN.3PL or cook-FUT.CONJ.3P.O
'All the meat wouldn't be wasted, even the intestines would be dried or cooked.'
Checklist item
DRIED/COOKED[14] (INTESTINES)[15] (1 point)
Responses
FB: no mentioning (0 points)
HRB: "Cooked the intestines also." (1 point)
LRB: no mentioning (0 points)

e. *Sentence*
NiaKungata Kagitanga mamattomijuk.
NiaKuk-nga-ta Kagitak-nga mamat-tu-u-mi-juk.
Head-POSS.3SG.SG-ta Brain-POSS.3SG.SG delicious-PART.3SG-be-also-PART.3SG
'Also, the brain is tasty.'

[14]Either of "dried" or "cooked" was accepted as correct.
[15]The part that means "All the meat wouldn't be wasted" is ignored here because it was mentioned and scored previously

Checklist item
TASTY (BRAIN) (1 point)
Responses
FB: "Seal heads are delicious." (1 point)
HRB: no mentioning (0 points)
LRB: no mentioning (0 points)

The sum of the points represented a score for a participant for that story. The maximum score for Story 1 was 34, for Story 2, 37, and for the English Story, 29. The raw scores were converted to percentages for ease of interpretation of the results. In addition, the relation between HRBs' performance in the story retelling task and their self-assessment of listening comprehension was explored.

5.3.4 Results

There was no difference between the FB and HRB groups in the percentage of recalled units for any of the three stories, as shown by Wilcoxon rank sum test (for Story 1, W=44.5, p=0.18; Story 2, W=65.5, p=0.91; English Story, W=68.5, p=1). The number of items recalled by fluent speakers and the HRBs is remarkably similar in all three stories, close to 50%. LRBs have lower performance on all three stories, recalling roughly twice as little as the other two groups[16]. The most crucial pieces that weighed two points were successfully recalled by most participants in all groups. Table 5.14 contains mean group percentage of successfully recalled checklist items for each story.

Significant correlations were found between the percentages of recalled information in all stories in the HRB group (Story 1 and Story 2, r_s=0.75, p=0.0005; Story 1 and

[16]It is not clear why LRBs also had low scores on the English story, though English is the only language that they are fluent in. Though the dialect of English was different from what they were used to, the same is true for the other participant groups. It has been argued by Castilla, Restrepo, & Perez-Leroux (2009) that individual differences in psychological characteristics which underlie language learning abilities are the reason for previously documented interdependence between languages of a bilingual (Cummins, 1978), and so it is possible that the characteristics that determined LRBs' low recall score in this task (e.g. working memory) might also be a factor in their maintenance of bilingual skills.

Table 5.14: *Mean percentage of recalled information units in the stories*

	Eng.St.	*SD*	range	St.1	*SD*	range	St.2	*SD*	range
FB	45.91	18.43	13.79-65.52	51.82	12.67	35.29-69.12	53	6.8	40.6-59.5
HRB	48.07	17.06	22.41-79.31	44.2	7.16	32.35-55.88	52.2	10.3	29.7-68.9
LRB	16.09	11.74	6.9-29.31	28.43	5.57	22.06-32.35	21.2	9.6	10.8-29.7

the English story, r_s=0.46, p=0.06 (marginally significant); Story 2 and the English story, r_s=0.58, p=0.02). The correlations presumably reflect the individual memory and retelling style: RBs who recalled more details from English stories also recalled more details from the Inuttitut stories. The correlation between the Inuttitut stories was higher than the correlations of each Inuttitut story with the English story, possibly reflecting differences between the two languages of the RBs, even though they were not reflected in the group means.

Only five HRBs and one FB used the option to request to listen to a story for the second time. However, listening to the same story twice did not influence the recall. In Story 2, the mean percentage of recalled information in the subgroup of HRBs who requested a second attempt was approximately the same as in the subgroup of HRBs who did not (52.4% vs. 51.9%).

Also, HRBs' scores for both Inuttitut stories correlated with their self-assessment of listening comprehension: for Story 1, r_s=0.57, p=0.018; for Story 2, r_s=0.49, p=0.046.

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5.4 A lexical knowledge test: Word translation

The goal of this task is to assess RBs' lexical knowledge. This test measures the participants' receptive vocabulary via translation from Inuttitut to English, focusing mainly on the root morphemes. Comprehension is impossible without knowing at least some roots, thus we can expect that RBs who report good comprehension skills also have a sizable vocabulary, at least a receptive one. Recall that Johns & Mazurkewich (2001) reported

that RBs who were learning Inuttitut in a classroom setting indeed had large receptive vocabularies.

We have already seen that the group of HRBs, while sharing certain characteristics, is not homogeneous, as is often the case in heritage speakers studies. Polinsky & Kagan (2007) suggest using productive vocabulary tests (translation from the dominant language to the heritage language) as a diagnostics of the overall proficiency level of heritage speakers because lexical and grammatical proficiency correlate in heritage speakers. One of the goals of including this task in the study is to find out whether there is also such a relationship between receptive vocabulary knowledge and grammatical proficiency in comprehension. This test provides another measure of proficiency, in addition to the global comprehension measure, the measures of productive skills, and self-assessment.

Translation was selected because it is a natural task, familiar to everybody in a bilingual community - unlike other tasks involving lexical items, especially those that require participants to use a computer (e.g. lexical decision). Such a natural task is a better choice, so that the participants do not have to concentrate on skills that are extraneous to the task, which helps to avoid unnecessary stress. Tasks that involve the use of a computer by the participants are not a good option for this population. Residents of Nain are not like the typical population of psycholinguistic experiment participants (university students and/or residents of a big city). In this small isolated community, education level is lower, and not everybody uses a computer on a daily basis, or has access to a computer.

5.4.1 Materials

Materials consisted of a list of 100 common words, including 50 nouns and 50 verbs. The complete list is provided in Appendix E. Nouns and verbs (and not other parts of speech) were selected because a test for root morphemes requires that materials consist of open-class categories and minimal number of non-root morphemes. According to Dorais

(2010), Inuktitut word classes consist of "nouns, verbs, localizers/demonstratives and small words" (p. 70); content words, therefore, include only nouns and verbs. Fortescue (1984) and Sadock (2003) have a similar position on West Greenlandic content word classes. Compton (2011) argues that Inuktitut also has adjectives, but I chose to stay away from the controversy and use only nouns and verbs in this test.

There are no frequency lists or basic word lists for Inuttitut. I selected words that appear to be very basic, known to all speakers of Inuttitut in that community, and likely to be frequently used. Some of these words are taken from the Swadesh list[17] for English and translated into Inuttitut; other words are specific to Labrador Inuit environment (such as words for local animals and plants) and culture (words related to traditional activities like hunting and fishing, which are still part of their everyday life). Only those words that are unambiguous and have translation equivalents in English were selected.[18] The list does not include any borrowings from English (e.g. *sikitu* 'skidoo') or words borrowed into English from Inuktitut (e.g. *Kajak* 'kayak').

Table 5.15 lists the semantic fields from which the words were drawn, with examples and the number of test items from each semantic field. Nouns are given in the absolutive case form (without overt case markers). For verbs, no unaffixed forms can be used in Inuktitut (see Chapter 3 for details), so they are given in the participial mood, intransitive agreement, third person singular (translated as 's/he is V-ing', 'one who is V-ing' or 'V-ing').

[17]Swadesh list (Swadesh, 1952, 1955) is a list of 100 (short version) or 200 (long version) basic words, which was originally designed for use in historical linguistics, but has also been used for vocabulary testing in a heritage language, for example, by Polinsky (2006).

[18]One noun, *panik* 'daughter', has an ambiguous root that also means 'to dry', but since it is a verbal root, it is not used without an agreement+mood marker except in code-switching. However, some participants translated this item as 'to dry'.

Table 5.15: *Word translation task stimuli*

category	**semantic field**	**#**	**example**
Nouns	kinship	4	*innik* 'son'
	people	5	*annak* 'woman'
	animals	7	*tuttuk* 'caribou'
	plants	4	*kimminak* 'redberry'
	food	4	*mannik* 'egg'
	body parts	4	*niuk* 'leg'
	clothes	3	*nasak* 'hat'
	nature	3	*KakKak* 'hill'
	time	4	*unnuak* 'night'
	transport	4	*umiak* 'boat'
	places	3	*niuvivvik* 'store'
	other	3	*pinguak* 'toy'
Verbs	movement	7	*pisuttuk* 'he is walking'
	directed movement	5	*utijuk* 'he came back'
	bodily needs and reactions	7	*nigijuk* 'he is eating'
	perception	3	*takujuk* 'he sees'
	psychological states	7	*Kaujimajuk* 'he knows'
	activities	10	*nunivajuk* 'he is berry-picking'
	other	11	*ikajujuk* 'he is helping'

5.4.2 Procedure

The participants were instructed to listen to each Inuttitut word and say what it means in English. The stimuli were audio-recorded, read by a fluent Inuttitut speaker from the same community. If the participants could not translate a word after hearing it once, they could request to hear it again, as many times as they wished. After the response, the next word was presented. The stimuli were divided into two blocks consisting of an equal number of items, and the participants took a short break between the blocks.

5.4.3 Data analysis

Three items were excluded from the analysis. One verb has been removed because of a recording error. Two nouns, *niviatsiak* 'girl' and *nukappiak* 'boy', were excluded because they turned out not to be in common use: None of the fluent speakers gave the expected translation for *nukappiak*, and only three fluent speakers gave the expected translation

for *niviatsiak*[19]. Therefore, 97 items remained in the analysis: 48 nouns and 49 verbs.

First, the number of target responses for each participant was counted. Then the remaining, non-target, responses were divided into two categories: partially correct and completely incorrect. Within each category, they were further classified according to their relation to the target. The partially correct answers included morphologically related answers (sharing the root and possibly some derivational morphemes) and semantically related answers (sharing parts of their meaning). Incorrect answers included phonologically related answers (different in one or two sounds, but not related morphologically), unrelated answers, and absence of an answer ("don't know"). The semantically related responses were further classified into the following categories: near-synonym (very close in meaning to the target), hyperonym (the name of a broader category to which the target belongs), co-ordinate (another member of the same category), narrowing (meaning more restricted than the target), and "other semantic relations", the category which comprised the relations that were difficult to classify or the number of which was too small to define as a separate group. The categories and examples are listed in Table 5.16.

Phonologically related translations could result from one of the following: 1) the item was misheard; 2) the item was heard correctly but confused with a phonologically similar word; 3) the item was heard correctly, but the word was unfamiliar, and it was assimilated to a phonologically similar familiar word. There is no way to distinguish between these possibilities in the data. In any case, a phonologically related translation does not demonstrate comprehension of a given lexical item.

Morphologically related translations, however, reveal that the participant recognizes at least the root, and in some cases, derivational morphemes combined with it (or an

[19]Even though *niviatsiak* 'girl' and *nukappiak* 'boy' are present in the recent dictionary of Labrador Inuttitut (Andersen, Kalleo, & Watts, 2007) and in a language learning software Rosetta Stone Inuttitut Level 1 (produced by Torngâsok Cultural Centre, 2008), speakers of Labrador Inuttitut are more likely to use the same word for 'boy' and 'man' (*angutik*), and the same word for 'woman' and 'girl' (*annak*), or express 'boy' and 'girl' by adding a diminutive suffix *-kuluk* to *angutik* or *annak*, respectively: *angutikuluk* 'little boy', *anna-kuluk* 'little girl'. This is reflected in the picture description task (see section 4.4.1 in this chapter), and in my fieldwork.

Table 5.16: *Classification of non-target answers in the word translation task*

type	example	
	target	translation
Partially correct		
morphologically related	*ilinniajuk* 'learning'	'school' (*ilinniavvik*)
semantically related		
near-synonyms	*puitjujuk* 'swimming'	'floating'
hyperonyms	*naujak* 'gull'	'bird'
co-ordinates	*aujak* 'summer'	'spring'
narrowing	*angutik* 'man'	'old man'
other semantic relations	*ujagak* 'rock'	'hill'
Incorrect		
phonologically related	*ijujuk* 'laughing'	'ghost' (*ijuguk*)
unrelated	*nunivajuk* 'berry-picking'	'clothes' (*annugait*)
"don't know"	n/a	n/a

unanalyzed combination of the root and certain derivational morphemes). Since the main purpose of this test is to find out the RBs' knowledge of lexical morphemes, morphologically related translations should receive partial, or, in some cases, even full scores (e.g. the translation 'going to the store' for the verb *niuvi-juk* 'buying, shopping' is very close to the target, and *niuvi-juk* shares the root *niuvi-* with the noun *niuvi-vvik* 'store'). In the case of semantically related translations, it could be argued that these are speech errors, since substitution of a semantically related word is a common speech error (Fromkin, 1973). On the other hand, semantically related translations could reveal incomplete knowledge of lexical items, where only a part of the target meaning is associated with a given word in the mental lexicon of an RB.

Therefore, answers "I don't know", unrelated translations, and phonologically related translations were assigned a score of 0, but morphologically related and semantically related translations were assigned partial scores from 0.25 to 1, depending on how closely they were related. Within each category of semantically related words, and for morphologically related words, the distance between the target and the related translation can vary (e.g. 'understand' is more closely related to the target 'know' (*Kaujimajuk*) than 'listen' is to the target 'singing, praying' (*tutsiajuk*)). To decide on the partial score for

each semantically or morphologically related translation, I and another linguist familiar with Labrador Inuttitut rated the distance between the translation and the target on the scales in Tables 5.17 and 5.18, respectively.

Table 5.17: *Scale for distance between targets and semantically related responses*

Scale	Example	
	Target	Response
0 - unrelated	*uvluk* 'day'	'sit'
0.25 - distant relation	*KakKak* 'hill'	'beach'
0.5 - partial relation	*ilannak* 'friend'	'cousin'
0.75 - closely related	*nutagak* 'baby'	'child'
1 - same meaning	*takujuk* 'see, look'	'watch'

Table 5.18: *Scale for distance between targets and morphologically related responses*

Scale	Example	
	Target	Response
0 - unrelated	N/A	N/A
0.25 - shared root, distant relation	*nunivajuk* 'berry-picking'	'on the land' (*nunami*)
0.5 - shared root, partial relation	*katititaujuk* 'getting married'	'meeting' (*katimak*)
0.75 - shared root, close relation	*ânniasiuvik* 'hospital'	'hurting' (*ânniajuk*)
1 - shared stem	*itsivajuk* 'sitting down'	'getting a chair' (*itsivautak* 'chair')

The inter-rater reliability (determined by a Spearman correlation test) was 0.9 ($p<0.0001$). Where disagreement was no more than 0.25, the average score was assigned (e.g. if one rater gave 0.5, and the other, 0.75, then the score of 0.625 was assigned). Where disagreement was 0.5 or more, a third, expert, rater was consulted, and the score decided on by the third rater was used.

The partial scores for morphologically and semantically related translations were added to the number of target answers for each participant, thus yielding a composite score, in addition to the number of exact translations.

5.4.4 Results

Fluent speakers, as expected, had high scores, with very few non-target answers. HRBs had somewhat fewer target answers, but their composite scores were closer to those of fluent speakers. LRBs had much lower scores. The tables below summarize the results of the word translation task. Table 5.19 contains mean number of target answers for each group, and Table 5.20, the mean composite score for each group (the sum of the number of target answers and the partial scores for morphologically and/or semantically related translations). The raw scores (out of 97) are accompanied by percentages (in parentheses).

Table 5.19: *Mean number (%) of target answers in the word translation task*

group	mean	*SD*	median	range
FB	92.5(95.4%)	3.7(3.9%)	93.5(96.4%)	85-96(87.6-99%)
HRB	82.5(85.1%)	11.1(11.4%)	88(90.7%)	59-95(60.8-97.9%)
LRB	44(45.4%)	2.6(2.7%)	43(44.3%)	42-47(43.3-48.5%)

Table 5.20: *Mean composite scores (%) in the word translation task*

group	mean	*SD*	median	range
FB	93.9(96.8%)	3.3(3.4%)	94.4(97.4%)	87.5-97(90.2-100%)
HRB	88(90.8%)	9(9.3%)	92.5(95.4%)	68.4-96.1(70.5-99.1%)
LRB	50.4(51.9%)	3.9(4%)	50.1(51.7%)	46.6-54.4(48.1-56.1%)

The difference between HRBs' and fluent speakers' number of target answers was significant, as shown by Wilcoxon rank sum test (W=22, p=0.007). However, the smaller difference between HRBs' and fluent speakers' composite scores was only marginally significant (W=39, p=0.098). Individual analysis shows that scores of 10 HRBs were in the range of the fluent speakers.

Among the test items, there were 18 very basic words that all participants (even the lowest proficiency ones) translated correctly, and five more words in which all participants recognized the root (i.e. errors were only morphologically related). They include terms for immediate family members (*anânak* 'mother', *atâtak* 'father', *innik* 'son', *panik*

'daughter'), and members of other various semantic fields. The complete list of these 23 basic words is provided in Appendix E.

The three groups of participants had different distribution of non-target answers. Table 5.21 shows mean percentage of occurrence (from the total number of answers) of each category of non-target items for each group.

Table 5.21: *Mean percentage of non-target answers in the word translation task*

answer	FB(*SD*)	HRB(*SD*)	LRB(*SD*)
Partially correct			
morphologically related	0.64(0.77)	2.61(1.46)	4.12(1.03)
semantically related			
near-synonym	0.26(0.48)	0.43(0.52)	0.69(0.6)
co-ordinates	0.26(0.48)	2.24(1.6)	1.37(0.6)
hyperonyms	0(0)	0.49(0.64)	0.34(0.6)
narrowing	0.13(0.36)	0.67(1.09)	0.34(0.6)
other semantic relations	0.39(0.77)	1.15(1.45)	3.09(1.03)
TOTAL	1.68(1.34)	7.58(4.12)	9.97(1.19)
Incorrect			
phonologically related	1.29(1.43)	1.09(1.34)	3.78(1.19)
unrelated	0.77(0.91)	2.12(3.87)	4.81(3.15)
"don't know"	0.39(0.53)	4(5.11)	35.7(5.68)
TOTAL	2.45(2.46)	7.22(8.4)	44.33(4.49)

Morphologically and semantically related translations do not add much to the score for any group (between 0 and 10%), but their contribution is more noticeable in both HRB and LRB groups, especially for two HRBs with the lowest scores who produced more semantically and morphologically related translations than the rest of the group: Their number of target answers was in the 60-70% range, but their composite scores, in the 70-80 % range.

Among morphologically related translations, recurrent answers in the HRB and LRB groups included, for example, translating *tingijuk* 'flying' and *unikkausik* 'story' as another part of speech with the same root: 'airplane' (*tingijok* in Inuttitut) and 'telling a story' (*unikkajuk* in Inuttitut), respectively. The phonological difference between *tingijuk* and *tingijok* /-juuk/ is minimal (only the vowel length), but all HRBs translated *tingijok*

correctly, and 15 HRBs translated *tingijuk* also as 'airplane'[20]. *Ilinniajuk* 'learning' was translated as 'going to school' (cf. *ilinniavvik* 'school', lit. 'learning place') by eight HRBs and even by one FB. One HRB translated it as 'school'. In the LRB group, the number of morphologically related translations was higher than in the HRB group, which suggests that LRBs recognize the root, not the stem if the stem has derivational suffixes, and not other suffixes, including those that encode word class distinctions.

Among the semantically related answers, co-ordinates were most frequent in the HRB group, especially often substituted for the words that denote seasons, time of day, and body parts. Among the words tested here, the names for seasons seem particularly vulnerable. A typical answer to *aujak* 'summer' is as follows: "Spring? No... I'm guessing. It's one of the seasons, I just don't know which one. I gets mixed up with seasons." One might speculate that RBs might have learned the names for seasons as a set, especially if they learned them at school. In the LRB group, many semantically related answers were distantly related, most falling in the category of "other semantically related".

Instances of underextension (narrowing) and some of the unclassifiable examples in the 'other semantic relation' group are not numerous, but still deserve attention. These are presumably context-bound, restricted to a particular referent or situation in which the RB learned the word. For example, some RBs translated *nutagak* 'baby' as 'brother' or 'son', possibly because they heard *nutagak* as referring to somebody's brother or son, respectively. The word *aullajuk* 'going away' was translated by one RB as 'going on a plane', possibly because this RB hears it most often in connection to leaving on a plane. *Piguttuk* means 'flower', but it is also the name of the family resource centre and daycare in Nain, and the association stuck so that several RBs translated *piguttuk* as 'daycare' or something related to taking care of children.

[20] 'Airplane' is likely a more frequent word for them than 'flying', because airplanes are the main means of transportation between Nain and other places, and thus an important part of everyday life.

Mean percentage of phonologically related answers is similar in the HRB and the FB groups. In fact, it is the type of answer where the two groups' averages are the closest. Thus, chances of mishearing a word, or confusing it with another word are about the same in the two groups. In the LRB group, phonologically related answers were more common.

5.5 Between-task comparisons

In order to compare HRBs' performance in the four tasks discussed above (picture description, elicited imitation, story retelling, and lexical test), a main or representative measure for each task was chosen. For the word translation task, it was simply the percentage of words translated correctly. For the story retelling task, the percentage of recalled items in Story 1 and Story 2 was averaged to obtain a cumulative measure. For the elicited imitation task, I chose the number of correctly repeated morphemes rather than the number of correctly repeated whole words, because the former measure is more informative, showing more differences between RBs. Most RBs repeated only one word correctly, but there is more variation in repetition of morphemes. For the picture description task, two measures were chosen - MLU (Mean Length of Utterance in morphemes) and MLW (Mean Length of Word in morphemes), because both are informative in their own way: MLU differentiates between HRBs and FBs, and MLW differentiates within the HRB group. These five measures were entered into a correlation matrix. The Spearman correlation test results are shown in Table 5.22. Adjusted p-values (by Holm's method) are given in brackets under exact p-values[21].

Of all these measures, a strong, reliable correlation was found only between the results of the word translation task and of the elicited imitation task. That is, those HRBs who understand more words are better at repeating complex words.

[21]Unadjusted p-values were still reported, since in the context of a small sample, as in this study, adjustment of p-values might come at the cost of missing significant correlations.

Table 5.22: *Spearman correlations between tasks*

	Story retelling	Word translation	Elicited imitation
Word translation	0.54, p=0.025* (adjusted p=0.18)	- -	
Elicited imitation	0.51, p=0.038* (adjusted p=0.23)	0.84, p=<0.00001*** (adjusted p=**0.0002*****)	
MLU	0.02, p=0.94 (adjusted p=1)	0.3, p=0.24 (adjusted p=0.94)	0.48, p=0.05* (adjusted p=0.25)
MLW	0.16, p=0.55 (adjusted p=1)	0.29, p=0.26 (adjusted p=0.94)	0.55, p=0.02* (adjusted p=0.17)

Correlations between story retelling and both word translation and elicited imitation, as well as between elicited imitation and picture descriptions measures (MLU and MLW), were significant only before the p-values were adjusted. Notably, correlations between each of the comprehension tasks (word translation and story retelling), on one hand, and the picture description measures, on the other hand, were very low and far from significance. No relation could be found between HRBs' performance in the comprehension tasks and their speech production. Among HRBs, better comprehension does not necessarily correspond to better production.

5.6 General discussion: Comprehension and production in receptive bilinguals

The data in this chapter now allows to construct a preliminary picture of what receptive bilinguals can do with their receptively known language. The two types of receptive bilinguals, HRBs and LRBs, have different profiles. The division into HRBs and LRBs, initially done on the basis of their self-assessment, was confirmed by the test results. Inuttitut HRBs demonstrated good comprehension of stories in Inuttitut and relatively

good receptive knowledge of basic vocabulary. While HRBs usually identify as those who understand but do not speak Inuttitut, they demonstrated some limited production abilities. LRBs' language abilities in Inuttitut are much lower. They demonstrated receptive knowledge of some basic vocabulary and partial comprehension of stories in Inuttitut, including the ability to identify the topic and some main points in each story. Production abilities of LRBs are more limited than those of HRBs: LRBs only produce one-word, mostly monomorphemic utterances.

The results of the two production tasks, picture description and elicited imitation, suggest that no RB is completely incapable of any production - not even the weakest ones or those who say they never speak Inuktitut. As the picture description task showed, all RBs can at least produce some words, and most HRBs can produce sentences, even though they are short, simple, and containing errors - as in heritage speakers' production. Therefore, the lack of speech production in receptive bilingualism is not caused by any phonological or articulatory difficulties that would make speaking impossible. However, RBs' production is obviously different from that of fluent speakers. While RBs and fluent speakers produce a similar number of sentences, HRBs' production shows less complexity and diversity, and LRBs' production, even less. That is, while the number of messages does not differ, the level of elaboration does. RBs produce fewer words (both types and tokens), fewer functional morphemes and less complex syntactic structures than fluent speakers.

In the picture description task, fluent speakers did not produce significantly more morphologically complex words than HRBs, but morphological complexity of words (measured by Mean Length of Words in morphemes) appears a useful measure to distinguish levels of fluency among RBs. The line that distinguishes RBs with the lowest production ability from others is located approximately at the MLW of 2. RBs with the MLW less than 2 (those who tend to use the minimal number of morphemes per word) also tend to produce ungrammatical uninflected forms, very few functional morphemes, with no

postbases at all, and fill gaps in their sentences with English words and/or morphemes, most of which are functional. The RBs with low MLW omitted morphemes rather than produced incorrect ones. The remaining 12 HRBs, whose MLW is more than 2, typically can build a sentence entirely in Inuttitut, and use more functional morphemes, including postbases; however, they produce incorrect functional morphemes, and some of them also produce omissions.

Failure to produce a complete word from the first attempt and repeating it while adding more material until the word is complete occurred in all groups, but affected a larger percentage of words produced by HRBs than by FBs. On average, one in six words produced by HRBs is produced in this manner. In addition to this, RBs' speech production is also characterized by long preparation time and long pauses within and between utterances, hesitation, and difficult or failed lexical retrieval - again, as characteristic of heritage speakers' production. In a real-life conversation (where, unlike in this task, there is no preparation time), such a manner of speech production might not be tolerated by interlocutors, especially by those with negative attitude to non-fluent Inuttitut. Therefore, it is not surprising that many RBs do not use Inuttitut to communicate unless they have no choice, such as when their interlocutor does not understand English.

The elicited imitation task required assisted speech production but the stimuli were more complex than what RBs could produce in the picture description task. There is a substantial difference between the fluent speakers and most receptive bilinguals in terms of their ability to repeat multimorphemic words in Inuttitut. Most HRBs and all the LRBs could not repeat more than the shortest word. RBs omitted and/or replaced morphemes or even sounds in the word they repeated, often altering several morphemes per word. In a very few cases, the result could be a real word of Inuktitut (with a similar or different meaning), but in most cases, it was a non-existing combination of sounds or morphemes. In L1 acquisition of Inuktitut, words of this length (containing three or more

postbases) appear quite late in child speech - after the age of five (Fortescue & Lennert Olsen, 1992), which is typically the age of onset or increase of exposure to English and slowing down of the development of Inuttitut. Thus, it is likely that even those RBs who spoke Inuttitut before the age of five never acquired the skills needed to construct such complex words in production.

Some of the HRBs could provide an accurate, more or less detailed translation for a word that they could not even repeat correctly (let alone produce it on their own), demonstrating exactly the essence of the receptive bilingualism phenomenon: They can understand a word and therefore translate, but cannot produce it even though they have just heard it. They successfully analyze the input and then have difficulty synthesizing the output from the same building blocks. Other RBs gave vague translations for the words that they could not repeat. Unsuccessful imitations with vague translations are easier to explain - it is not surprizing that morphemes that were not interpreted in comprehension are not produced.

Lower fluency is associated with higher frequency of requests to hear and attempt to repeat the same word again. Fluent speakers usually repeated a word immediately, after hearing it once, and only half of the fluent bilinguals used the option to hear a word again (only for a few words). HRBs were more likely to request a second (or third, or even fourth) attempt, and LRBs, even more. However, it did not improve their imitation. Asking for a second attempt then is (apart from any hearing problems) likely a sign of difficulty in either comprehension (requests accompanied by comments such as "I didn't quite get it") or production (accompanied by comments such as "I know what it means, I just cannot say it"), and the difficulty usually persists after additional presentations of the same stimulus.

Not all morphemes in multimorphemic words were repeated equally well. HRBs were less successful than FBs in repetition of all morpheme types, and LRBs, less successful than HRBs. However, there was hardly any difference between the morpheme types in

the fluent speakers group, whereas in the HRB and LRB groups, roots and enclitics were repeated much better than agreement and postbases. In fact, most HRBs were close to fluent speakers with respect to repetition of roots and enclitics. One of the HRBs exclaimed, in frustration, "That middle!", indicating that the postbases (always located in the middle of a word) and possibly agreement markers (located in the middle if there is a sentential enclitic) were the main source of difficulty. One could think that more accurate repetition of roots and enclitics was due to the higher salience of the beginning and the end of the word compared to its middle (the bathtub effect, Aitchison, 1987), but no clear bathtub effect in RBs' repetition of multimorphemic words was found. The reason for better performance on enclitics might be that only one enclitic, *-li* 'but also/too', was used in all four instances; it appears fairly common, takes the salient word-final position, and, unlike agreement+mood markers, does not depend on the phi-features of the subject (or object). For roots, in addition to their word-initial position, there is another, more important reason why they are more salient to an individual with incomplete language knowledge. Roots carry the core of the word's meaning, while postbases and agreement markers add details and serve syntactic functions, so the meaning of the latter morphemes is less obvious to RBs.

In the comprehension tasks - story retelling and word translation, - performance in both RB groups was better than in the production tasks; in the HRB group, especially, it was as good as or close to the performance of the fluent bilinguals. In the story retelling task, HRBs demonstrated good comprehension of the stories in Inuttitut, recalling as much information as fluent speakers from all three stories, both in English and in Inuktitut. This confirms RBs' assertions that they have comprehension abilities at a level high enough that allows them to extract information from input in Inuttitut, even without relying on non-linguistic context. LRBs recalled much less information than fluent speakers and HRBs. In fact, they recalled close to a quarter of the checklist items in the Inuttitut stories - which corresponds to their self-assessment of comprehension skills. Importantly,

LRBs were able to extract at least some information, including at least some of the main points.

The word translation task showed that HRBs have good receptive knowledge of basic Inuttitut vocabulary, and many of them performed in the range of fluent speakers when translating basic words from Inuttitut. However, as a group, HRBs provided slightly fewer correct translations than FBs. LRBs have noticeably smaller vocabularies. Estimating from the word list used in the word translation task, LRBs' receptive vocabularies might be approximately half of the HRBs' lexicon size. In other words, while two-thirds of HRBs recognize almost every word among the basic words tested here, LRBs recognize only about every other word. Since the vocabulary size is an important factor in successful comprehension, the difference between HRBs and LRBs in comprehension can be partly explained by their difference in lexical knowledge. The test also revealed the core vocabulary of 24 words that are known by participants of all proficiency levels.

The presence of morphologically related translations suggests that, in some words, RBs recognize the root, but may not recognize other morphemes. This is characteristic of LRBs and of those HRBs who have lower scores. The number of semantically related translations is relatively low, which means that vague/incomplete/partial word knowledge is not very common for basic words in RBs. In all groups, most of the time, the participants either access the full target representation, or say "I don't know" rather than give semantically related translations, at least for the basic words tested here. In the few cases of partial knowledge, some of the semantic features of the word are present, but others are not. Since the most common semantic substitution in HRBs is substitution of a co-ordinate, the most common type of partial knowledge of a word is knowing the broader category to which the word belongs, but missing semantic features that allow to distinguish between the members of the category. Hyperonyms reflect the same kind of partial knowledge.

There was substantial individual variation in all tasks, especially within the HRB

group, where some HRBs performed in the range of the fluent speakers (especially in comprehension tasks), while other HRBs' performance was close to that of LRBs. HRBs who could repeat more morphemes also had larger receptive vocabularies, and were likely to have higher MLU and MLW, as well as better overall comprehension. The elicited imitation test is unique in that it involves both comprehension and production, and this is why its results bear a relation to both comprehension and production tasks. The measures from the pure production task, the picture description, have no relation to the pure comprehension measures (story retelling and word translation). At the individual level, some HRBs with low performance in the picture description task had higher than average scores in the comprehension tasks, and vice versa. While it would be reasonable to expect better comprehension corresponding to better production, there is no evidence for that in the data; instead, dissociation between comprehension and production is evident.

Chapter 6

Semantic knowledge in a receptively known language

6.1 A morpheme comprehension task

In the previous chapter, it was shown that HRBs have good overall comprehension and a good knowledge of the basic lexicon, and LRBs have some comprehension and some lexical knowledge. In this and the following chapter, RBs' receptive grammatical knowledge is explored. Do RBs have a grammar, or is their comprehension based only on lexical and pragmatic knowledge? When RBs listen to Inuttitut, do they access elements of grammatical meaning expressed by functional morphemes, such as tense or agreement?

The purpose of this test is to examine RBs' comprehension of specific functional morphemes, namely, tense[1], aspect and agreement markers. While RBs report that they have good comprehension abilities, they admit that they do not understand everything they hear. Recall that in self-assessment, their reported comprehension proficiency varies from "most of what I hear" to "the general idea", but almost no RB claimed full comprehension. The question is, what is more often missed in comprenension: unfamiliar

[1]See also Sherkina-Lieber (2010).

words or elements of meaning supplied by functional morphemes, and which functional morphemes are more vulnerable in incomplete acquisition. Studies of comprehension in incomplete acquisition and attrition suggest that RBs might ignore or misunderstand at least some functional morphemes, as discussed in Chapter 2. In this test, the stimuli are constructed so that the correct interpretation crucially depends on the target morpheme. For example, the time of an event depends on the tense morpheme; which person among those mentioned performs an action depends on the agreement morpheme, and so on.

The morphemes selected for this task carry interpretable features, but differ in their properties, such as time of acquisition in L1, convergence with English, and vulnerability in heritage languages; therefore, their likelihood of being acquired and maintained is also different, as discussed in Chapter 4. They include aspect, tense, and agreement+mood markers (in the latter, only agreement features are tested).

6.2 Materials

One hundred mini-stories (consisting of one or two sentences each) in Inuttitut have been constructed for this task (see Appendix F for the complete list of stimuli). These included 84 target items: 20 mini-stories to test comprehension of agreement, 40 - tense, and 24 - aspect. In addition, there were eight lexical control mini-stories and eight filler mini-stories. All target items were constructed so that if the listener does not process the target morpheme, the sentence is ambiguous for him/her (see examples below). The comprehension question in English asked to resolve this potential ambiguity. The lexical control items had the same comprehension questions as the target items, but the information required to answer it was encoded in lexical items, not functional morphemes. These items were added to make sure that the participants understood the task and the questions.

Table 6.1 shows categories tested in this task, with the number of items within each.

Table 6.1: *Categories tested in the morpheme comprehension task*

category		#
Agreement	indicative/participial intransitive	12
	indicative/participial transitive	8
Tense	past: recent vs. distant	10
	future: near vs. distant	10
	near: past vs. future	10
	distant: past vs. future	10
Aspect	ingressive *-liC*	10
	pluractional -Katta-	14
Lexical control		8
Fillers		8

6.2.1 Materials: Tense

In the tense items, the context is compatible with the opposite tense interpretation if the target morpheme is disregarded. The comprehension questions asked for the time interpretation - when the event took place. Four tense morphemes were targeted: distant past *-lauC-*, recent/same-day past *-kKau-*, near/same-day future *-niaC-*, and distant future *-lâC-* (see Section 3.4.2). Each of the morphemes was tested in two contrasts: time (past vs. future) and remoteness (same-day vs. distant)[2]. The comprehension questions were of the forced-choice type, with two options for the answer. In the time contrasts, the question for the same-day past vs. same-day future contrast was "Did X already V, or will X V soon?", and for the distant past vs. distant future contrast, "Did X already V, or will X V later?". The example below is an item in the past vs. future contrast.

(1) *Past versus future*
IKalu-luvini-Ka-vuk kom-mi. Johnny iKalu-nnia-gia-**niat**-tuk.
Char-a.lot.of-have-INDIC.3SG river-LOC Johnny char-hunt-go.to-NFUT-PART.3SG
'There is a lot of char in this river. Johnny will go fishing for char.'
Question: Did Johnny already go fishing, or will he go fishing soon?
Correct answer: he will go fishing soon

[2]Strictly speaking, same-day future/past vs. distant future/past is also a kind of time contrast, but I reserve the term *time contrast* for the past vs. future distinction, for ease of discussion.

In the remoteness contrasts, the question for the same-day past vs. distant past contrast was "Did X V today or on some other day?", and for the same-day future vs. distant future contrast, "Will X V today or on some other day?". The next example is an item in the same-day vs. distant past contrast.

(2) *Same-day versus distant*
Mary nunivap-vi-mik Kaujima-juk. Nuniva-ppa-kKau-juk.
Mary pick.berries-place-MIK know-PART.3SG pick.berries-a.lot-RPST-PART.3SG
'Mary knows a good place for berry-picking. She picked a lot of berries'
Question: Did Mary pick berries today or on some other day?
Correct answer: Mary picked berries today

The order of conjoined phrases in the English questions was counterbalanced within each condition to avoid a bias towards repetitions of the second conjunct in answers. Each morpheme appeared five times with a question testing time contrast, and five times with a question testing remoteness contrast. The second conjunct was the correct answer two times for each morpheme within each contrast, and three times, the incorrect answer. Table 6.2 summarizes the items that targeted tense markers.

6.2.2 Materials: Aspect

In the aspect items, if the aspectual morpheme is disregarded, another aspectual interpretation is possible. Two suffixes were tested: the pluractional *-Katta-* (which also functions as habitual, and is tested in this meaning here) and the ingressive *-liC-*, which generally means 'to begin V-ing and be V-ing', but which functions as the progressive with telic verbs (see Section 3.4.3). For both suffixes, the contrast is the presence versus the absence of the suffix. The target verbs do not contain any other aspectual or tense suffixes.

In the case of *-Katta-*, in its absence, without any aspectual suffixes, a verb expresses a single eventuality in progress at the speech time, and if *-Katta-* is present, the verb

Table 6.2: *Stimuli targeting tense markers*

contrast	**morpheme**	**meaning**	**competitor**	**question**	**answer**	#
recent:	*-niaC-*	near future	recent past	Did X already V, or will X V soon?	soon	2
past vs.				Will X V soon, or did he already V?		3
future	*-kKau-*	recent past	near future	Will X V soon, or did he already V?	already	2
				Did X already V, or will X V soon?		3
distant:	*-lâC-*	dist. future	distant past	Did X already V, or will X V later?	later	2
past vs.				Will X V later, or did he already V?		3
future	*-lauC-*	distant past	dist. future	Will X V later, or did he already V?	already	2
				Did X already V, or will X V later?		3
future:	*-niaC-*	near future	dist. future	Will X V on some other day or today?	today	2
near vs.				Will X V today or on some other day?		3
distant	*-lâC-*	dist. future	near future	Will X V today or on some other day?	some other	2
				Will X V on some other day or today?	day	3
past:	*-kKau-*	recent past	distant past	Did X V on some other day or today?	today	2
recent vs.				Did X V today or on some other day?		3
distant	*-lauC-*	distant past	recent past	Did X V today or on some other day?	some other	2
				Did X V on some other day or today?	day	2

is interpreted as habitual, as shown in the examples. The comprehension questions, as with tense items, were also of the forced choice type, giving ongoing and habitual interpretations as two options for the answer: "Is X V-ing now, or does X usually V?"

(3) *Habitual versus ongoing: -Katta- is absent*
Sally ikaju-juk Tommy-mik.
Sally help-PART.3SG Tommy-MIK
'Sally is helping Tommy'
Question: Does Sally usually help Tommy, or is she helping him now?
Correct answer: Sally is helping Tommy now

(4) *Habitual versus ongoing: -Katta- is present*
Mary Kimmina-nnik nuniva-Katta-juk KakKa-mi tasi-up Kula-ni.
Mary red.berries-MIK.PL pick.berries-PLURACT-PART.3SG hill-LOC lake-ERG over-LOC
'Mary (habitually) picks red berries on the hill over the lake'
Question: Is Mary picking berries on that hill now, or does she usually pick berries there?
Correct answer: Mary usually picks berries on that hill

Seven items contained *-Katta-*, and seven did not. The order of conjuncts in questions was counterbalanced in the same way as for the tense items. *-Katta-* can apply to all aspectual classes, and is tested with all of them.

In the case of the ingressive *-liC-*, all the verbs used in this task are achievements, because the difference between the presence and the absence of this suffix is most clearly seen with this class of verbs. In the absence of *-liC-* and other aspectual suffixes, an achievement verb expresses immediate past (perfective), and in its presence, progressive. This is illustrated by examples (5) and (6). The comprehension question offers choice between perfective and progressive: "Is X still V-ing, or has X already V-ed?".

(5) *Ongoing versus perfective: -liC- is absent*
Mary pâlla-juk.
Mary fall.from.standing-PART.3SG
'Mary fell down' (on the ground)
Question: Is Mary still falling, or has she already fallen?

Correct answer: already

(6) *Ongoing versus perfective: -liC- is present*
Tommy kata-lit-tuk napâttu-mit.
Tommy fall.from.height-INGR-PART.3SG tree-ABL
'Tommy is falling from a tree'
Question: Has Tommy already fallen from a tree, or is he still falling?
Correct answer: still falling

Five items contained *-liC-*, and five did not. The order of conjuncts in questions was counterbalanced in the same way as in the other conditions.

Table 6.3 gives a summary of the materials used to test comprehension of aspectual morphemes.

Table 6.3: *Stimuli targeting aspectual markers*

morpheme	**presence**	**aspectual interpretation**	**competitor**	**question**	**answer**	#
-Katta-	yes	habitual	ongoing	Does X usually V, or X V-ing now?	usually	4
				Is X V-ing now, or does X usually V?		3
	no	ongoing	habitual	Is X V-ing now, or does X usually V?	now	4
				Does X usually V, or X V-ing now?		3
-liC-	yes	progressive	perfective	Is X still V-ing, or has X already V-ed?	still	3
				Has X already V-ed, or is X still V-ing?		2
	no	perfective	progressive	Has X already V-ed, or is X still V-ing?	already	3
				Is X still V-ing, or has X already V-ed?		2

6.2.3 Materials: Agreement

In the agreement items, the first sentence contained two or more potential antecedents for the subject or both the subject and the object of the next sentence. The second sentence contained a null subject (if it was antipassive) or both a null subject and a null object (if it was ergative; see Section 3.4.1). The identity of the subject (and object, where necessary) must be recovered from the person and number features in the agreement marker on the verb. The comprehension questions asked to pick the right subject and/or object antecedent among the competitors. Unlike with tense and aspect, the questions were not forced-choice. All the questions to the agreement items were of the form "Who P?", where P is any predicate, thus asking for the subject identity. There was one exception: questions to two transitive agreement conditions, namely 1sg.Subject-3sg.Object and 3sg.Subject-1sg.Object, where questions of the form "Who V who?" were used, asking for both the subject and the object identity. For those speakers who disregard agreement morphemes, sentences with null arguments present ambiguity: Any of the noun phrases in the first sentence can be the antecedent for the null argument in question.

Only indicative/participial mood was tested[3]. Example (7) below shows agreement with the subject only, and example (8), with both the subject and the object.

(7) *Indicative/participial intransitive*
Mary-lu ane-lauk-Kuguk ullu natlugu. Kâ-liaKi-lauk-Kuguk
Mary-and go.out-DPST-INDIC.1D day whole hungry-become-DPST-INDIC.1D
'Mary and me were out all day. We two got hungry'
Question: Who got hungry?
Correct answer: both Mary and me/the speaker

(8) *Indicative/participial transitive*

[3]In the pilot study, comprehension of agreement was also tested in the causative mood, with only the intransitive agreement, and only one contrast: whether the subject of the dependent clause is the same as the subject of the main clause or not. The pilot study and other evidence showed that not all fluent speakers maintain this distinction in Labrador Inuttitut, and so items targeting causative mood were excluded from the experimental item set, but kept as fillers, in order to balance the larger number of tense items.

Atâta-ga-lu tuktu-si-lauk-Kuguk. Kuki-laut-tanga.
father-poss.1sg.sg-and caribou-AP-dpst-indic.1d shoot-dpst-part.3sS.3sO
'My father and me saw a caribou. He shot it.'
Question: Who shot the caribou?
Correct answer: father

Table 6.4 lists the agreement morphemes tested in this task[4].

Table 6.4: *Stimuli targeting agreement markers*

category	morpheme	meaning	competitors	#
Indicative/ participial intransitive	*-vunga*	1st singular	3s, 1d	2
	-vuguk	1st dual	1sg, 3sg	2
	-vugut	1st plural	1sg, 3pl	2
	-juk	3rd singular	3pl	2
	-jok/juuk/	3rd dual	3sg, 3pl	2
	-jut/juit	3rd plural	1sg, 1pl.	2
Indicative/ participial transitive	*-vânga*	3rd sg. subj., 1st sg. obj.	1sg. subj., 3sg. obj.	2
	-jaga	1st sg. subj., 3rd sg. obj.	3sg. subj., 1sg. obj.	2
	-janga	3rd sg. subj., 3rd sg. obj.	1sg. subj., 3sg. obj.	2
	-jangit	3rd sg. subj., 3rd pl. obj.	1sg.subj., 3pl./d. obj.	2

6.2.4 Materials: Lexical control items

Eight lexical control items were also included. There were four types of them: one modeled after tense-targeting items, another, after aspect-targeting items, and two remaining, after agreement-targeting items. Two items of each type were created. The difference between the target and the lexical control items was that in the latter, the information encoded by the functional morpheme in question was also encoded lexically (by an adverbial, for tense and aspect, or by a noun phrase, for agreement).

The tense and aspect control items contained (in addition to tense or aspectual morphemes) temporal adverbials. For the tense control items, one contained *ippasak* 'yester-

[4]Recall that in the indicative mood (first and second person), the initial consonant of the agreement morpheme is *v* after a vowel, *K* after a consonant; in the participial mood, the initial consonant of the agreement morpheme is *j* after a vowel, *t* after a consonant, but some variation exists (see Sections 3.2).

day' and the other, *Kauppat* 'tomorrow'. In this pair, the past vs. future contrast was tested. The question was "Did X V already, or will X V later?" in the first case, and "Will X V later, or did X already V?" in the second. Among the aspect control items, one contained *ullutamât* 'every day', and the other, *ullumi* 'today'. The question was "Does X usually V, or is X V-ing today/now?", testing habitual vs. one-time interpretation. In order to answer the questions, it was enough to understand the adverbials[5].

For the two agreement control types, the question was "Who V-ed?", just as for agreement test items. The first of the two types of the agreement control items contained simple sentences where the subject was the only possible agent, and was expressed by a common, familiar noun likely to be known even by the least fluent speakers, as in (9).

(9) Sugusik kappiasu-juk nanu-nnik.
child afraid-3SG.PART polar.bear-PL.MIK
'The child is afraid of polar bears.'
Question: Who is afraid of bears?
Correct answer: child

Items of the second type contained nouns with the enclitic *-lu* 'and' and first person dual inflection on the verb, as in (10) (recall from Section 3.4.1 that this is how a pronominal first or second person event participant conjoined with another event participant is introduced in Inuttitut). This type of control items was added to check if RBs understand the function of *-lu* and notice event participants introduced by *-lu* and verbal inflection, without an overt noun phrase.

(10) Anâna-ga-lu niuvipvi-lia-lauk-Kuguk
Mother-POSS.1SG.SG-and store-go.to-DPST-INDIC.1D
'My mother and me went to the store'
Question: Who went to the store?
Correct answer: mother and me/the speaker

[5]The contrast between a morpheme only and a morpheme plus an adverbial as a lexical cue was used previously by Valian (2006) to test children's understanding of tense in English, and three-year-old participants benefited from the presence of adverbials.

6.3 Procedure

The participants heard a mini-story in Inuttitut and were asked a comprehension question in English. After they answered, they moved on to the next mini-story. The participants were presented with two practice items first, then with the target items. The target items were presented in pseudo-randomised order (no more than two items in a row can be from the same condition) which was the same across participants. The stimuli were divided into two blocks, with a short break between them.

6.4 Results

After the answers were scored as either correct or incorrect, the data was divided into six sets: two for tense (time and remoteness), two for aspect (pluractional *-Katta-* and ingressive *-liC-*), and two for agreement (intransitive (subject-only) and transitive (subject and object)). Each set was analyzed separately by means of a binary multilevel mixed-effect logistic regression with fluency (fluent vs. HRBs) and, where applicable, condition, as fixed effects (crossed), and subject and item as random effects (also crossed).

The total number of correct answers in this task was calculated by adding the number of correct answers in all the sets except intransitive agreement (this set was excluded due to very low performance of fluent speakers). The maximum possible number of correct answers was 72. Table 6.5 presents mean total number of correct answers for each group of participants (mean percentages of correct answers are given in parentheses).

Table 6.5: *Total number (%) of correct answers in the morpheme comprehension task*

	mean	*SD*	minimum	maximum
FB	62.38(86.63%)	6.21(8.62%)	52(72.22%)	70(97.22%)
HRB	54.88(76.23%)	8.99(12.48%)	39(54.17%)	71(98.61%)
LRB	32.67(45.37%)	6.81(9.45%)	25(34.72%)	38(52.78%)

Performance of all groups varied depending on the variables tested, but generally, fluent speakers had high scores, LRBs had low scores (most of the time at chance level),

and HRBs' performance as a group varied: In most cases, it was either at the level of fluent speakers, or slightly lower, with the exception of remoteness contrasts, where it was much lower. More than two-thirds of HRBs had total scores within the range of the fluent speakers. Within-group variation was also found, and there was more variation among HRBs than in the other groups.

In the subsections below, I present the results for each linguistic variable tested in this task.

6.4.1 Results: Lexical control items

Almost all fluent speakers and HRBs gave correct answers for tense and aspect lexical control items. Therefore, in tense and aspect conditions, these participants understood the sentences, the questions, and the task. Among LRB, two gave correct answers to both tense control items, and one failed on both; for the aspect control items, one gave correct answers to both items, and two other, one correct answer each.

For the agreement control items with overt noun phrases as the target, fluent speakers gave correct answers except one speaker who made one error. However, 11 HRBs and all LRBs gave incorrect answers to the first of these items, and three HRBs, to the second. All the errors, in all groups, were of one type: translating a singular noun as plural (e.g. 'children' for *sugusik* 'child'), even though the verb contained a singular agreement marker (as in (9) above). This suggests that at least in some cases, HRBs and LRBs may ignore number marking on nouns and verbs, possibly because of the lack of knowledge.

For the agreement control items where a first person singular participant was introduced by *-lu* 'and' and first person dual inflection on the verb (as in (10) above), most fluent speakers and HRBs gave correct answers (third person + first person), but none of the LRBs did. Two weak HRBs gave incorrect answers to both items. Almost all the errors were of one type: ignoring *-lu*, verbal agreement inflection, and the null argument, as if there was only a third person participant (e.g. 'mother' instead of 'mother

and me'). Therefore, most HRBs, except the weakest ones, know that *-lu* and verbal inflection introduces a participant, but LRBs do not.

The mean number and percentage of correct answers to the lexical control items for each group are presented in table 6.6.

Table 6.6: *Total number (%) of correct answers to lexical control items*

	mean	*SD*	minimum	maximum
FB	6.63(82.81%)	1.06(13.26%)	5(62.5%)	8(100%)
HRB	6.24(77.94%)	1.72(21.44%)	3(37.5%)	8(100%)
LRB	3.33(41.67%)	0.58(7.22%)	3(37.5%)	4(50%)

6.4.2 Results: Tense

Performance on time contrasts (past vs. future) was better than on remoteness contrasts (same-day vs. distant) in the HRB group, even though the morphemes involved were the same. Table 6.7 gives mean number and percentage of correct answers for each group in each time contrast condition (i.e. for each tense marker).

Table 6.7: *Mean number and percentage of correct answers in time contrasts*

	distant future(*SD*)	near future(*SD*)	distant past(*SD*)	recent past(*SD*)	Total(SD)
FB	4.88(0.35)	4.88(0.35)	4.88(0.35)	3.25(1.49)	17.9(1.64)
%	*97.5%(7.1%)*	*97.5%(7.1%)*	*97.5%(7.1%)*	*65%(29.8%)*	*89.38%(8.21%)*
HRB	4.29(1.21)	4.47(1)	4(1.23)	3.59(1.06)	16.35%(3.45%)
%	*85.9%(24.3%)*	*89.4%(20.2)*	*80%(24.5%)*	*71.8%(29.2%)*	*81.8%(17.2%)*
LRB	1.33(1.16)	1.67(0.58)	3.67(1.16)	2.33(0.58)	9(3)
%	*26.7%(23.1%)*	*33.3%(11.6%)*	*73.3%(23.1%)*	*46.7%(11.5%)*	*45%(15%)*

In the fluent speakers' results, the scores in three of the four conditions (with the exception of recent past) were identical and at the ceiling level (97.5%); they did not reach 100% only because in each of them, one speaker made an error (a different speaker in each condition). HRBs had slightly lower scores in these conditions, with a widening

gap from near future to distant future to distant past. Both fluent speakers and HRBs had lowest scores in the sentences with the recent past marker (as in (2) above), and it is in this condition that the difference between the groups was the smallest (looking at individual results reveals that half of each group gave 3(60%) or fewer correct answers in this condition). In fact, numerically, HRBs' mean score was even slightly higher than FBs[6]. Therefore, HRBs' low scores in the recent past condition are likely due not to incomplete knowledge, but rather to other reasons.

In each condition, HRBs' results were significantly different from chance (2.5, or 50%), as shown by Wilcoxon signed rank test: for distant future, V=147, p=0.0006; for distant past, V=143.5, p=0.0014; for same-day future, V=149.5, p=0.0004; for same-day past, V=139.5, p=0.0026. LRBs, however, had scores lower than 50% in all conditions except distant past (i.e. chance level or lower), and did not show comprehension of time contrasts in tense morphemes. They showed a slight bias towards choosing past tense interpretation regardless of the tense morpheme. Individually, each LRB had three or less correct answers in each condition (i.e. chance performance), with one exception. One LRB had a score of 5 (100%) in the distant past condition, and the high group mean in that condition was caused by this participant's score.

A logistic regression was performed on the time contrasts data from HRBs and fluent speakers, with fluency (fluent vs. HRBs), time (future vs. past), and remoteness (distant vs. same-day) as fixed effects. Table 6.8 shows coefficients, standard errors, and p-values for the fixed effects in a model with a three-way interaction (fluency*time*remoteness).

None of the main effects was significant. Of all the interactions, only the interaction between time and remoteness was marginally significant. The reason is likely that performance of both groups in the same-day past condition is different from their performance

[6]For one item (Trp1) in this condition, five FBs' answers were coded as incorrect: Three FBs gave wrong answers, one FB, an irrelevant answer, and another FB's answer was lost. The analysis was repeated with this item removed. This slightly raised the FBs' mean (to 71.88%) and slightly lowered the HRBs' mean (to 70.59%), which led to a smaller difference between FBs and HRBs in this condition. However, the pattern of results did not change, therefore, the analysis without exclusions was retained.

Table 6.8: *A logistic regression with a three-way interaction on the time contrasts data*

	Estimate	*SE*	*p*
(Intercept)	-4.13	1.18	0.00046
fluency(receptive)	1.87	1.26	0.14
time(past)	-0.0004	1.55	0.99
remoteness(same-day)	-0.0003	1.55	0.99
fluency*time	0.49	1.61	0.76
fluency*remoteness	-0.37	1.63	0.82
time*remoteness	3.36	1.94	0.083
fluency*time*remoteness	-2.43	2.03	0.23

in the other conditions. Since the effect of fluency was not significant, and did not interact with any other predictor, it was eliminated from a new, more precise model that was fitted to this data. In the absence of fluency as a predictor, the interaction between time and remoteness reached higher significance, as can be seen in Table 6.9.

Table 6.9: *A logistic regression without fluency on the time contrasts data*

	Estimate	*SE*	*p*
(Intercept)	-2.66	0.41	< 0.0001
time(past)	0.43	0.43	0.32
remoteness(same-day)	-0.32	0.48	0.5
time*remoteness	1.48	0.6	0.014

In order to get a clearer picture, I compared HRBs' and fluent speakers' performance in each condition via a logistic regression on a corresponding subset of the data, with fluency as the only predictor. The coefficients, standard errors, and *p*-values for fluency in each condition are given in Table 6.10.

Table 6.10: *Effect of fluency for each condition in the time contrast data*

	Estimate	*SE*	*p*
distant future	2.06	1.93	0.29
same-day future	1.62	1.62	0.32
distant past	2.51	1.43	0.079
same-day past	-0.34	0.49	0.49

Only in one condition, the distant past, there was a marginal difference between HRBs and fluent speakers. There was no difference in the other conditions.

Individual results showed that 10 HRBs performed exactly as fluent speakers, with four or more correct answers (i.e. 80-100%) in every condition except recent past, and the total score of 17-20 (85-100%). Among these 10 HRBs, four HRBs (and one FB) gave 100% correct answers, and four other HRBs (and three FBs) had 4-5 correct answers in each condition. Among the remaining seven HRBs whose scores were lower, five HRBs with the scores 13-16 had four or more correct answers only in the future tense conditions, with one exception, an HRB who got four or more correct answers in near future and distant past, but not distant future. There was one more exception: One HRB with the lowest score (9, or 45%) on time contrasts had four correct answers only in the near future condition, and low scores in all other conditions. Finally, one of the weakest HRBs, with a score of 10 (50%), had four correct answers in both past tense conditions, and one in both future tense conditions, showing a bias for past.

Since the questions were of the forced choice type, most errors were the choice of the wrong alternative, with very few exceptions: providing a present-time interpretation (one or two in each group), giving ambiguous or irrelevant answers (three fluent speakers), and "don't know"/"don't understand" (two LRBs).

Performance on remoteness contrasts had a different pattern. While fluent speakers had high scores again, and LRBs again performed close to chance level, HRBs had lower scores than on time contrasts, and the difference between HRBs and fluent speakers was larger. Table 6.11 shows the mean number and percentage of correct answers for each group in each condition (each tense marker).

For both HRBs and fluent speakers, performance on remoteness differed depending on the condition (tense morpheme) in the same way: Both groups gave more correct answers in recent past and distant future conditions than distant past and recent future conditions, but in the HRB group, the scores were lower in all conditions. In fact, HRBs' scores on same-day future and distant past were at the chance level, while their scores on the remaining two conditions, distant future and same-day past, were different from

Table 6.11: *Mean number of correct answers in remoteness contrasts*

	distant future(*SD*)	near future(*SD*)	distant past(*SD*)	recent past(*SD*)	Total(SD)
FB	4.63(0.52)	4(1.69)	4.38(1.06)	4.88(0.35)	17.88(2.36)
%	*92.5%(10.4%)*	*80%(33.8%)*	*87.5%(21.2%)*	*97.5%(7.1%)*	*89.4%(11.8%)*
HRB	3.59(1.46)	2.88(1.93)	2.65(1.77)	3.94(1.3)	13.06(4.71)
%	*71.8%(29.2%)*	*57.7%(38.7%)*	*52.9%(35.3%)*	*78.8%(26%)*	*65.3%(23.6%)*
LRB	2(1.73)	2.67(1.53)	1.33(1.53)	3.33(1.16)	9.33(3.79)
%	*40%(34.6%)*	*53.3%(30.6%)*	*26.7%(30.6%)*	*66.7%(23.1%)*	*46.7%(18.9%)*

chance. Wilcoxon signed rank tests were used to test difference from chance in HRBs for each condition, with the following results: for same-day future, V=93.5, p=0.43; for distant past, V=84.5, p=0.72; for distant future, V=129, p=0.012; for same-day past, V=139, p=0.0027.

A logistic regression was performed on the remoteness contrasts data from HRBs and fluent speakers, in the same way as for the time contrasts data. Table 6.12 shows coefficients, standard errors, and p-values for the fixed effects in a model with a three-way interaction (fluency*time*remoteness).

Table 6.12: *A logistic regression with a three-way interaction on the remoteness contrasts data*

	Estimate	*SE*	*p*
(Intercept)	-3.62	0.94	0.00011
fluency(receptive)	2.39	1	0.017
time(past)	1.09	0.97	0.26
remoteness(same-day)	1.77	0.93	0.058
fluency*time	-0.03	1	0.98
fluency*remoteness	-1.03	0.96	0.27
time*remoteness	-3.67	1.55	0.018
fluency*time*remoteness	1.29	1.59	0.42

The effect of fluency was significant, but it did not interact with morpheme types: Fluent speakers performed better than HRBs on remoteness distinctions in all conditions. Time and remoteness, however, did interact. Both groups gave more correct answers to

items containing distant future and same-day past morphemes than to items containing same-day future and distant past. A more precise model, then, is the one where fluency is present as a main effect but is not included in any interactions. This model is given in Table 6.13.

Table 6.13: *A logistic regression with fluency+time*remoteness on the remoteness contrasts data*

	Estimate	*SE*	*p*
(Intercept)	-3.28	0.63	< 0.00001
fluency(receptive)	2	0.64	0.0019
time(past)	1.04	0.43	0.015
remoteness(same-day)	0.94	0.43	0.029
time*remoteness	-2.57	0.63	< 0.00001

In addition, I compared performance of fluent speakers and HRBs in each condition by means of separate logistic regressions on subsets of data corresponding to each condition, with fluency as the only predictor. The coefficients, standard errors and p-values for fluency effect in each of the conditions are given in Table 6.14.

The difference between fluent speakers and HRBs was significant for distant future and distant past, and marginally significant for same-day past. It was not significant for same-day future (probably because one fluent speaker had a score of 0 in this condition).

A look at the fluent speakers' individual results reveals that the difference between conditions in this group is caused by only two participants' low scores, in one condition each. Otherwise, each participant gave 4-5 correct answers in each condition. However, in the HRBs' individual results, the difference between the conditions was real. Only three HRBs had 4-5 (80-100%) correct answers in each condition and a total score of

Table 6.14: *Effect of fluency for each condition in remoteness contrast data*

	Estimate	*SE*	*p*
distant future	2.25	1.04	0.03
same-day future	1.89	1.27	0.14
distant past	2.85	1.06	0.007
same-day past	2.88	1.67	0.088

19-20 (95-100%). Seven HRBs with total scores 14-17 had 4-5 correct answers in the distant future and recent past conditions, but varying lower scores in the near future and distant past conditions. Seven remaining HRBs did not demonstrate knowledge of remoteness distinctions: Six of them had total scores of 10 (50%) or lower, and one had the score of 13, but showed a bias to the "on some other day" answer. Two HRBs with the score of 10 had a bias towards one of the two possible answers (i.e. either always answering "today" or always answering "on some other day"), but the rest of them had low scores in all conditions. Overall, more HRBs have low scores on remoteness than on time contrasts. Only the strongest HRBs distinguished remoteness degrees, while only the weakest did not distinguish between past and future. Some RBs with low scores (50% or less) explicitly stated that they did not know that Inuttitut tense markers encode remoteness distinctions, and did not understand why they were asked to judge if an event happened today or on some other day.

As with time contrasts, the most common error was choosing the wrong alternative, but another common error occurred: identifying time (past or future), but stating that there was no information about the remoteness degree. The typical answer of this kind was: "It already happened but she [the speaker who read the sentence] didn't say when". This error was much less common, though, than the former one: It was limited to five HRBs and one LRB, and never occurred in the fluent speakers' group. Interestingly, the answer "I don't know" was given only by these five HRBs and one LRB. It is likely, therefore, that participants who were not sure about remoteness interpretation chose one of two available strategies: admit their lack of knowledge or guess using pragmatic information. Other errors (present time interpretation, incorrect time interpretation, irrelevant answers) happened only 1-2 times in each group.

There was no correlation between time and remoteness scores (Spearman's r_s=0.15, p=0.57). Better performance on time contrasts does not predict better performance on remoteness contrasts. Two of the weakest HRBs who got 50% or less on time contrasts,

also got 50% or less on remoteness contrasts. Two of the strongest HRBs got 95-100% both on time and remoteness contrasts. Most other HRBs had higher scores in time contrasts than remoteness contrasts. Those HRBs who had high scores on remoteness also had high scores on time, but not all those who had high scores on time also had high scores on remoteness.

6.4.3 Results: Aspect

FBs had scores further away from 100% than on tense contrasts, especially on *-liC-*, but their scores were still high. This was expected, as aspectual contrasts are notoriously difficult to test, and even fluent native speakers do not always give target answers. HRBs' scores on aspect were close to FBs' scores, but LRBs' scores were again low.

Separate analyses for each suffix were conducted. Within each analysis, the fixed effects were fluency and presence vs absence of the suffix. Table 6.15 presents the means for the items in the habitual vs. one-time contrast (*-Katta-* presence vs. absence).

Table 6.15: *Mean number and percentage of correct answers in habitual/one-time contrast*

	-Katta-(*SD*)	no *-Katta-*(*SD*)	Total(*SD*)
FB	5.63(1.77)	6.5(0.89)	12.13(1.96)
%	*80.4%(25.3%)*	*92.9%(17.7%)*	*86.6%(14%)*
HRB	5.24(1.89)	6.24(1.3)	11.47(2.74)
%	*74.8%(27%)*	*89.1%(18.6%)*	*81.9%(19.6%)*
LRB	1(1.73)	5.33(0.58)	6.33(1.53)
%	*14.3%(24.7%)*	*76.2%(8.3%)*	*45.2%(10.9%)*

Both in the presence and in the absence of *-Katta-*, HRBs' answers were significantly different from chance (3.5, or 50% in each condition), as demonstrated by Wilcoxon test: in the presence of *-Katta-*, V=134, p=0.0065; in the absence of *-Katta-*, V=151, p=0.0003.

For the habitual/one-time contrast, the difference between FBs and HRBs was not

significant (coefficient estimate 0.44, standard error 0.72, p=0.54). However, the difference between the presence and the absence of *-Katta-* was significant (coefficient estimate 1.57, standard error 0.57, p=0.006). Both groups made more errors on the items where *-Katta-* was present than on those items where it was absent (interpreted a pluractional sentence as a single instance more often than the reverse). Since both groups did it, this is not due to lack of knowledge in heritage language (but to some other reason, which is unclear at present).

The analysis of individual results showed that among fluent speakers, only three got 100%. The lowest score among fluent speakers was 9 (64.3%). Almost all errors in the fluent speakers' group were in the presence of *-Katta-*. In the HRB group, scores ranged from 3 (21.43%) to 14 (100%). Almost all HRBs got more than 70% correct; four of them got 100% correct. LRBs had a larger difference between the presence and the absence of *-Katta-*: All had low scores in the presence of *-Katta-*, but relatively high scores (5-6) in its absence.

Table 6.16 shows the means for the items in the progressive/perfective contrast in telic verbs (*-liC-* presence vs. absence).

Table 6.16: *Mean number and percentage of correct answers in progressive/perfective contrasts*

	-liC-(*SD*)	no *-liC-*(*SD*)	Total(*SD*)
FB	4.25(0.89)	3.5(1.69)	7.75(1.83)
%	*85%(17.7%)*	*70%(33.8%)*	*77.5%(18.3%)*
HRB	3.94(1.09)	4(1)	7.94(1.2)
%	*78.8(21.8%)*	*80%(20%)*	*79.4%(12%)*
LRB	1.33(1.58)	4(1)	5.33(0.58)
%	*26.7%(30.6%)*	*80%(20%)*	*53.3%(57.7%)*

As with *-Katta-*, HRBs' answers were significantly different from chance (here 2.5, or 50%), both in the presence and the absence of *-liC-*. The Wilcoxon test results were as follows: in the presence of *-liC-*, V=146, p=0.0009; in the absence of *-liC-*, V=148,

p=0.0007.

In the progressive/perfective contrast, the difference between HRBs and FBs was not significant (coefficient estimate -0.16, standard error 0.39, p=0.69). There was also no difference between the presence and the absence of -*liC*- (coefficient estimate -0.33, standard error 0.46, p=0.46). Therefore, HRBs fully understand the contrast between the presence and the absence of -*liC*- with telic verbs.

There was one item (Li5) in the no-*liC*- condition, on which five FBs made errors. In a version of logistic regression with this item removed, the pattern of results did not change at all, therefore, the results from the full set of items are reported. FBs' low mean in no-*liC*- condition is caused by unusually low scores in two FBs (one correct answer each).

Looking at individual results shows that most HRBs have good knowledge of telic verbs and their use with and without -*liC*-. Fifteen out of 17 HRBs had 70% or more of correct answers in both conditions involving -*liC*-, seven of them had 90-100%, and there was no difference between the two conditions.

LRBs had results that were different from both FBs and HRBs. Two of them had extremely low scores (0-1) in -*liC*- presence, and high scores (4-5) in no-*liC* condition. Generally, HRBs show good knowledge of aspectual morphology, but LRBs do not.

6.4.4 Results: Agreement

In the transitive agreement (with both the subject and the object) condition, fluent speakers' group mean was in the same range as for other variables in this task. HRBs' performance was close to that of fluent speakers, and LRBs had very low scores. However, in the intransitive agreement (only with the subject) condition, performance in all groups was very low; such a result was due to the item design and processing, and does not reflect knowledge. Therefore, the intransitive agreement condition was excluded from further analysis. Table 6.17 shows mean number of correct items in the two agreement-testing

conditions.

Table 6.17: *Mean number and percentage of correct answers in the agreement data*

	Transitive(*SD*)	Intransitive(*SD*)
FB	6.75(0.71)	5.75(1.91)
%	*84.4%(8.9%)*	*47.9%(15.9%)*
HRB	6.06(1.14)	6.18(2.04)
%	*75.7(14.3%)*	*51.5%(17%)*
LRB	2.67(0.58)	0.67(0.58)
%	*33.3%(7.2%)*	*5.6%(4.8%)*

HRBs' performance in the transitive agreement condition was again different from chance, as with tense and aspectual morphemes. Since each transitive agreement morpheme marked both the subject and the object, and each item contained one competitor for the subject and one competitor for the object, there were four possible combinations of the subject and the object, therefore, chance here was 1 out of 4. Since there were 8 items, chance performance would be 2 (25%). The Wilcoxon test comparing HRBs' performance to chance was significant, V=153, p=0.00029.

A logistic regression on fluent speakers and HRBs' data in the transitive agreement condition showed no significant difference between the two groups (coefficient estimate for fluency 0.59, standard error 0.41, p=0.15). Individual analysis showed that seven of the fluent speakers made one error each (four of them, on the same item, AT3s3p2), and one fluent speaker had a score of 5 (62.5%). In the HRB group, six participants performed at the level of the majority of the fluent speakers: Two had 100% correct answers, and four made one error. The majority of the HRBs group performed slightly lower than the majority of the fluent speakers' group, though this difference did not reach statistical significance. LRBs either answered incorrectly or said they did not know the answer, except for the items where they were not aware of alternative antecedents in sentences with *-lu* 'and'.

6.5 Discussion

Generally, most HRBs have good comprehension of the morphemes tested here, with the exception of remoteness features in tense morphemes. LRBs, however, cannot access any features of the morphemes tested in this task. Below, each variable is discussed in more detail.

6.5.1 Discussion: Tense

Overall, while fluent speakers showed high performance (with the exception of some tense markers) on both time and remoteness contrasts, HRBs were more sensitive to more global time specification (past vs. future) of each morpheme than to its remoteness features, and LRBs did not show any knowledge of tense markers.

On time contrasts, more than half of the HRB group performed at the fluent speakers' level. The rest of the group showed better knowledge of the future markers than of the past markers. This finding parallels production data from acquisition of Inuktitut in Swift (2004): Inuit children start producing future markers before past markers, although children acquiring other languages usually produce past first (see Section 3.5 for more detail). However, LRBs did not show an advantage of future over past. On the contrary, they chose past somewhat more often than future, regardless of the tense morpheme.

The recent past items elicited the largest number of errors in both FBs and HRBs, including present-time interpretation (which was not an option in the forced-choice questions, but in fact is not incorrect for some of the items). A possible reason is that Inuttitut atelic verbs do not have completion entailment; instead, they have an implicature of completion, which is more easily calculated in the distant past, but less so in the same-day past. An event that took place yesterday or earlier is more likely to be completed and/or be entirely in the past than an event that took place earlier on the same day; for example, if Tommy went hunting earlier today, he might still be hunting

at the speech time.

For remoteness contrasts, the difference between HRBs and fluent speakers was bigger than for tense contrasts. Some RBs did not know at all that remoteness was also encoded, though they knew whether the time reference was past or future. Both groups showed lower sensitivity to remoteness in the same-day future marker *-niaC-* and the distant past marker *-lauC-*. The same-day (hodiernal) future marker *-niaC-* also has modal meaning (or is homonymous with) "to intend, plan, set out to do x" (Smith, 1978, p. 77). According to Hayashi (2011), its counterpart in the South Baffin dialect (*-niaq-*) "is ambiguous, indicating either (a) a hodiernal future tense . . . . or (b) a strong modality with future orientation" (p. 76). This could potentially obscure its remoteness feature.

While there was no correlation between performance on time and remoteness contrasts, there is a dependency. Those who could distinguish remoteness contrasts, could also distinguish time contrasts, but not all those who successfully distinguished time contrasts were able to distinguish remoteness contrasts. Time is more likely to be acquired in a heritage language than remoteness, and only those who have acquired and maintain broader past vs. future contrasts can acquire and maintain the more fine-grained remoteness distinctions. At least some HRBs have partial representations for tense morphemes in Inuttitut. For fluent speakers, each tense morpheme is specified for both time and remoteness. For many HRBs, however, each tense morpheme is specified only for time, and contains no information about remoteness. Thus, such HRBs have two markers for past, and cannot distinguish them; the same goes for the two markers for future. This is the most salient instantiation of incomplete grammar in HRBs found in this study.

There are several possible reasons for higher vulnerability of remoteness. The first is simply that past vs. future is a more basic distinction, and remoteness distinctions are more fine-grained, made within past and within future. That is, in Inuttitut, the timeline is first cut into two large chunks, past and future, and then each of these chunks is cut further into smaller chunks reflecting remoteness degrees. Another possibility is that

time contrasts are more universal than remoteness contrasts. Yet another likely reason could be that remoteness features have no equivalents in English, and this is an example of "negative borrowing", as in Dorian's (2006) data on Scottish Gaelic (see Chapter 2). A distinction which is absent from the dominant language (near past or future versus distant past or future) is more likely to be absent from HRBs' grammars than the one that is present in the dominant language (past versus future).

6.5.2 Discussion: Aspect

Most HRBs have fluent-like comprehension of both the pluractional and the ingressive morphemes in Inuttitut. LRBs, in contrast, completely disregard both aspectual suffixes. Not only interpretation of aspectual suffixes was tested, but also lexical aspectual characteristics of verbs without aspectual suffixes. In the -*liC*- vs. no -*liC*- contrast, telicity is crucial, since participants cannot give correct answers in the absence of -*liC*- unless they know which verbs are telic, and that telic verbs are perfective, and therefore interpreted in Inuttitut as immediate past (if there are no tense or aspectual suffixes). While lexical aspectual classes are at least partly universal, their temporal interpretation is not. In English, lexical aspectual class does not change temporal intepretation, and in Slavic languages, perfective verbs in such cases are interpreted as future rather than past. In the -*Katta*- vs. no -*Katta*- contrast, both telic and atelic verbs were used, and telicity was not crucial, but in order to answer correctly, participants had to know that Inuttitut verbs without tense and aspectual suffixes denote one-time eventualities taking place at the speech time. This could be a good candidate for a universal default, but in English, the least complex forms - the simple tenses - can express a habitual meaning, and in fact, the simple present of events and activities does not express a one-time eventuality taking place at the speech time - rather, it expresses a habitual meaning (e.g. *John smokes*). Since most HRBs did well both in the presence and in the absence of the suffixes, it can be concluded that they know both lexical aspect and the two aspectual suffixes tested,

even though Inuttitut and English differ with respect to aspect.

However, for the LRB group, interpretation of the results in the conditions without suffixes is less clear. In these conditions, LRBs had chosen the correct answer ("is V-ing now" in the absence of *-Katta-* and "already V-ed" in the absence of *-liC-*) as often as the other groups. In fact, they chose these answers with about the same frequency both for the items with and without suffixes. While it is clear that they ignored the suffixes, it is not clear whether their preferred response reflects knowledge of lexical aspect and its default interpretation, or simply a bias. In the no-*liC-* condition, the correct answer may also result if LRBs have a bias to choose past interpretation - and this is possible, especially given that they also had this bias in time contrasts. A bias to choose "now" over "usually" is also possible.

HRBs' success in comprehension of aspectual suffixes is surprising, given previous research that showed vulnerability of aspect in incomplete acquisition (Montrul, 2002, for Spanish; Laleko, 2010, and Polinsky, 2008, for Russian). If anything, one would expect those who do not speak to have lower proficiency than the participants in the three studies cited - heritage speakers who produce speech. The most logical answer lies in the differences between the Inuktitut aspectual system and aspectual systems of better-studied heritage languages, particularly Romance and Slavic. Certainly, Inuktitut is very different from Romance languages, where aspect is bundled with past tense. While Inuktitut aspectual system is closer to Slavic, these are still very different systems. Both Inuktitut and Slavic languages have many affixes that cause aspectual change, both encode aspect separately from tense/INFL, and, though the main division in Slavic is perfective/imperfective, Slavic languages also have many aspectual meanings (including ingressive and pluractional) that are induced by certain affixes. However, in Slavic, the majority of these affixes are prefixes, and they are not true aspectual morphemes (Filip, 1999, and others), but rather, morphemes with lexical meaning that bring about aspectual changes indirectly. Suffixes (e.g. Russian has two, imperfective

(pluractional/habitual/progressive) and semelfactive) are more restricted, they do not have extra lexical meaning. In Inuktitut, all aspectual morphemes are suffixes, and they are more like Russian suffixes than prefixes: They only provide aspectual meaning (information about the way an event unfolds), containing no lexical meaning. Habitual and pluractional in, for example, Russian, is expressed by the imperfective, which is still more polysemous than Inuttitut *-Katta-*. While many Inuttitut aspectual suffixes are also polysemous to some extent, they are dedicated aspectual morphemes, less semantically complex than Slavic or Romance aspectual morphemes that mark aspect among other things. It is conceivable that this makes them more robust in incomplete acquisition than the Slavic or Romance morphemes.

6.5.3 Discussion: Agreement

The results showed that most HRBs understand person features encoded by transitive agreement markers on the verbs that agree with both their subjects and their objects, though almost two-thirds of the group make more errors than fluent speakers. This is particularly interesting given that object-verb agreement does not exist in English, and even for subject-verb agreement, English has an impoverished agreement marking system. LRBs, as in other conditions, did not show any comprehension of transitive agreement morphemes.

However, the results in the intransitive agreement condition were not informative because of very low performance in the fluent speakers group. One reason is that the items might not sound natural to an Inuttitut speaker. After the testing was done, one of the language consultants reported that it is preferable to repeat the antecedent noun phrase rather than use a null subject with intransitive agreement. Another reason is processing. Even fluent speakers pay more attention to content morphemes (NPs that are potential antecedents) and to pragmatics rather than to person and number features of the agreement markers, and pick either all possible antecedents or the most salient

one. Johnson, De Villiers, and Seymour (2005) found that English-speaking children could not reliably identify a sentence subject as singular or plural based on agreement alone (when the plural marker on the noun was masked), even though they were able to correctly produce agreement markers. However, it remains unclear why it is different for transitive agreement. It is possible that ergative sentences - in which transitive agreement occurs - sound more natural with null arguments than sentences with intransitive agreement, because intransitive agreement is more likely to be used at the first mention of an event participant, while null arguments whose antecedents were previously mentioned are probably more likely to appear in ergative sentences (see Chapter 3).

To conclude, HRBs do have good comprehension, not only of content morphemes, but also of many - though not all - semantic features of functional morphemes:

- subject-object-verb person agreement
- pluractional aspect
- ingressive/progressive aspect
- time: past/future
- temporal remoteness *(only the most proficient HRBs)*

The HRB group is a proficiency continuum, ranging from the strongest ones who perform exactly as fluent speakers to the weakest ones whose performance sometimes was close to that of LRBs. The semantic features that are the most difficult for HRBs - the remoteness features of tense morphemes - are those that are involved in fine-grained contrasts that do not exist in HRBs' dominant language. LRBs, however, are unable to access any of the semantic features introduced by functional morphemes, and this is yet another reason for the dramatic difference between them and HRBs in self-assessment of comprehension.

Chapter 7

Syntactic knowledge in a receptively known language

7.1 A comparative grammaticality judgment task

In the previous chapter, I showed that RBs are able to process the semantic contribution of interpretable features supplied by functional morphemes. The question addressed in this chapter is whether, in addition to attending to such elements, RBs also pay attention to the morphosyntactic form of the utterances that they hear, and whether they know the morphosyntactic rules according to which those utterances were built[1]. In order to test RBs' morphosyntactic knowledge and sensitivity to violations of morphosyntactic rules, a sentence-preference task was conducted. While grammaticality judgment tasks are not a direct way to test syntactic competence, since performance issues are still involved (Altenberg & Vago, 2002), they make it possible to find out which structures are allowed by RBs' and fluent speakers' systems and which are not, and then compare the target grammar and the RBs' system.

The task chosen was comparative grammaticality judgments, where RBs had to judge

[1]See also Sherkina-Lieber, Perez-Leroux, and Johns (2011).

minimal pairs of sentences and point out which sentence in a pair was bad (if any), rather than offering one sentence at a time for judgments. The participants were presented with pairs of sentences that differed only in the variable under consideration (in one morpheme or in morpheme/word order), either with both sentences grammatical, or one of them ungrammatical. This design helps to reduce factors other than grammaticality that could cause speakers to accept or reject a sentence (Altenberg & Vago, 2002).

If RBs truly have no syntax at all, they would not be able to establish preferences on the basis of grammatical features or rules. In this case, they are likely either to accept all sentences or to perform at chance level. If, on the contrary, they have full syntactic competence in comprehension, they should show performance comparable to that of fluent speakers. An incomplete grammar would result in more accurate judgments on some syntactic violations than the others. In the case of an incomplete grammar, it is also reasonable to expect some degree of inconsistency in judgments within participants, which may indicate some sensitivity to structural violations, but not to full capacity. In other words, inconsistent judgments reflect uncertainty because of incomplete knowledge (as suggested for L2 by Alanen, 1999; Han, 2000; Sorace 1996; and for attrition by Altenberg & Vago, 2002).

7.2 Materials

For this task, 28 pairs of sentences were used, distributed in seven conditions, with four sentence pairs per condition (see Appendix G for the complete list of stimuli). The sentences were generated with the assistance of Inuttitut language consultants; the consultants were instructed to avoid any phrases that were fixed expressions and could be stored as a whole. Conditions 1-6 tested morphosyntactic violations, and condition 7 was a distractor condition. Conditions 1-5 contained one grammatical sentence and one ungrammatical, with a minimal difference in one morpheme or the order of two

morphemes. In the remaining test condition and the distractor condition, both sentences in each pair were grammatical, and could be considered as syntactic or lexical paraphrases of each other. These conditions are as follows:

1. case marker omission
2. case marker oversuppliance
3. number agreement mismatch
4. tense and agreement+mood morpheme order reversal
5. tense and negation morpheme order reversal
6. word order (SOV vs. OSV)
7. distractors

Conditions 1-2 above involve nominal case, and conditions 3-5 involve verbal morphology. Both nominal case and verbal morphology have been reported in previous studies to be vulnerable in attrition and incomplete acquisition (see Chapter 2 for details). The remaining, sixth, condition tested whether RBs allow different orderings of subjects and objects in their grammar. This and the distractor condition were added to remove a bias that one sentence in every pair must be ungrammatical.

The order of sentences within pairs was counterbalanced. In each condition containing ungrammatical sentences, two pairs started with a grammatical sentence, and two, with an ungrammatical one. In the word order condition, two pairs started with SOV, and two, with OSV.

A pre-test was performed on the materials in order to determine the degree of ungrammaticality. A fluent speaker was presented with the pairs of sentences used in the test, and asked to judge whether an ungrammatical sentence was slightly worse or much

worse than its grammatical counterpart[2]. All instances of tense and agreement+mood reversal were judged as a severe violation, while tense and negation reversal together with both conditions involving case were judged inconsistently (sometimes as "slightly worse", sometimes as "much worse"), and number agreement mismatch was judged as a less severe violation.

The purpose of the first condition, case marker omission, was to test whether RBs are sensitive to case morphology, and specifically, to case omission - do they notice when a required morpheme is missing? Recall from Section 3.4.4 that the *-mik* Case appears on the direct object in the antipassive (intransitive agreement) construction. In the sentences used in the case omission condition, the information that *-mik* supplies is not crucial for interpretation. In other words, *-mik* is not necessary to process in order to find out the theta-roles of the arguments, because the sentences were constructed so that the theta-roles could be figured out based on pragmatics (e.g. in a sentence translated as 'Johnny sees a house', only Johnny can be the experiencer). The absence of an overt case marker is equivalent to absolutive case (since the marker for the latter is phonologically null in singular non-possessed nouns). The grammatical sentence contained the subject DP in absolutive and the object DP in the *-mik* Case. In the ungrammatical sentence, both DPs had zero (absolutive) case morphemes; a *-mik* case morpheme was missing on the second of them.

[2]Originally, I planned to ask for this judgment in the experiment as well, but it did not work out well with the participants, making them impatient. Therefore, I stopped asking them for the degree of ungrammaticality.

(1) ***-mik Case omission***
Grammatical: N N-mik V
Ungrammatical: *N N V

a. *Grammatical*
Johnny **illu-mik** taku-juk
Johnny-ABS house-MIK see-PART.3SG
'Johnny sees a house'

b. *Ungrammatical*
*Johnny illuk taku-juk
Johnny-ABS house-ABS see-PART.3SG

The second condition, *-mik* case oversuppliance, also tested sensitivity to case morphology, but in a different way. When RBs hear a pair of sentences in which one sentence has the *-mik* morpheme where the other does not, they might accept the one with *-mik* even without knowing what this morpheme is. Just because fluent speakers produce more morphologically complex forms, RBs might think the more morphemes (the longer the word), the better. However, if they know what the function of *-mik* is, they should be able to correctly reject it when it appears in the wrong environment. In the case oversuppliance condition, verbs had intransitive agreement and were actually intransitive. The subject in the grammatical sentence was in the absolutive case (i.e. did not have any overt case markers), and in the ungrammatical, it had the *-mik* case, thus making the sentence uninterpretable.

(2) ***-mik Case marker oversuppliance***
Grammatical: N V
Ungrammatical: *N-mik V

a. *Grammatical*
Angutik iju-juk.
man-ABS laugh-PART.3SG
'A man is laughing'

b. *Ungrammatical*
*Anguti-mik iju-juk
man-MIK laugh-PART.3SG
'A man is laughing'/'Someone is laughing at the man'

The third condition, number agreement mismatch, contained pairs of sentences different only in one morpheme - the subject-verb agreement marker on the verb. The purpose of adding this condition was to test processing of agreement morphemes where they do not supply information required for interpretation, such as with overt subjects. The question here is whether RBs' grammar can tell which agreement marker is the right one for a given sentence, or whether RBs notice the feature mismatch between the subject and the agreement morpheme. All sentences in this condition had a third person singular subject, and the verb in the grammatical sentence was also in the third person singular (participial mood, intransitive agreement). In the ungrammatical sentence, there was a number feature mismatch - the verb was in the third person plural.

(3) ***Number mismatch in subject-verb agreement***
Grammatical: N-sg V-3sg
Ungrammatical: *N-sg V-3pl

a. *Grammatical*
Sugusik sini-**juk**
child sleep-PART.3SG
'The/a child is sleeping'

b. *Ungrammatical*
*Sugusik sini-**juit**[3]
child sleep-PART.3PL

In the fourth and fifth conditions, the sentences within each pair were different in the order of two morphemes within the verb. The purpose of these conditions was to test RBs' sensitivity to the ordering of different kinds of morphemes. Changing the order of morphemes results either in a different meaning or in ungrammaticality, depending on the morphemes involved. The fourth condition tested sensitivity to the ordering of tense and portmanteau agreement+mood morphemes. In the grammatical sentence, the tense morpheme (distant past) was to the left of the agreement+mood morpheme (participial mood, third person singular). In the ungrammatical sentence, the order was reversed,

[3]Another form of third person plural participial mood is *-jut*; I chose the *-juit* form because it is less similar phonologically to third person singular *-juk*.

resulting in a very severe ungrammaticality (as shown by the pre-test).

(4) ***Morpheme order: tense and agreement+mood***
Grammatical: Root - T - Agr+Mood
Ungrammatical: *Root - Agr+Mood - T

a. *Grammatical*
Mary pualu-mik asiuji-**laut-tuk**.
Mary mitten-MIK lose-DPST-PART.3SG
'Mary lost her mitten'

b. *Ungrammatical*
*Mary pualu-mik asiuji-**ju-lauk**.[4]
Mary mitten-MIK lose-PART.3SG-DPST

The fifth condition tested sensitivity to ordering of tense and negation morphemes. Both these morphemes are postbases, appearing between the root and the inflection. In the grammatical sentence, negation appeared to the right of tense (recent past), between tense and agreement+mood. In the ungrammatical sentence, the order was reversed. While some postbases can appear in different orders, in this particular case, putting negation to the left of tense results in ungrammaticality in Labrador Inuttitut[5]. However, in this case, ungrammaticality is less severe than in the previous condition (as shown by the pre-test).

(5) ***Morpheme order: tense and negation***
Grammatical: Root - T - Neg - Agr+Mood
Ungrammatical: *Root - Neg - T - Agr+Mood

a. *Grammatical*
Sally pingiga-kKau-ngngit-tuk
Sally worry-RPST-NEG-PART.3SG
'Sally didn't worry'

b. *Ungrammatical*
*Sally pingiga-ngngi-kKau-juk
Sally worry-NEG-RPST-PART.3SG

[4]The *-ju/-ttu* alternation conforms to Labrador Inuttitut morphophonological rules.
[5]In some other dialects of Inuktitut, it is possible to have negation to the left of tense (Barkey, 2008).

Two additional conditions contained sentence pairs where both items were grammatical. In the sixth condition, word order flexibility, the members of each pair differed in the order of the subject and the object: one sentence had the more canonical SOV order, the other, less frequent OSV order. While SOV is more felicitous without a context (out-of-the-blue), both orders are grammatical. This condition, beside removing the bias that each pair has an ungrammatical member, tested whether RBs' grammar allows flexibility in word order, or if it is limited to one order only.

(6) ***Word order***

a. SOV
Tommy tuttu-mik Kuki-sima-juk.
Tommy caribou-MIK shoot-PERF-PART.3SG
'Tommy shot a/the caribou'

b. OSV
Tuttu-mik Tommy Kuki-sima-juk.
caribou-MIK Tommy shoot-PERF-PART.3SG
'Tommy shot a/the caribou'/'As for the caribou, Tommy shot it'

The seventh condition contained distractor pairs. In this condition, members of each pair were paraphrases of each other, and both were grammatical. This condition was added to augment the number of pairs in which both members are grammatical, in order to remove the bias for rejection of one of the members in every pair.

(7) ***Paraphrases***

a. Niviatsiak immu-mik imi-juk.
girl-ABS milk-MIK drink-PART.3SG
'A girl is drinking milk'

b. Niviatsiak immu-tut-tuk.
girl-ABS milk-consume-PART.3SG
'A girl is drinking milk'

The summary of the materials for the grammaticality judgment task is presented in Table 7.1.

Table 7.1: *Materials for the grammaticality judgment task*

Pairs with one ungrammatical sentence			
Condition	**grammatical**	**ungrammatical**	#
Case omission	N N-mik V	*N N V	4
Case oversuppliance	N V	*N-mik V	4
Number mismatch	N.sg V-3sg	*N.sg V-3pl	4
Tense/Agr reversal	Root-T-Agr+Mood	*Root-Agr+Mood-T	4
Tense/Neg reversal	Root-T-Neg-Agr+Mood	*Root-Neg-T-Agr+Mood	4
Pairs with both sentences grammatical			
Condition			#
Word order	SOV	OSV	4
Distractor	paraphrase	paraphrase	4

7.3 Procedure

The participants heard a pre-recorded pair of sentences and were asked to decide whether both stimuli items are good/correct/well-formed sentences, of the kind that people can actually say, or whether any of them is bad/incorrect, or contains a mistake. If they answered that one of the sentences was bad, they were asked to point out which one. Once they answered, the experimenter presented the next pair of sentences. After one practice item, the experimental items were presented, in pseudo-randomized order, which was the same for all participants.

7.4 Data analysis

For the set of conditions that contained ungrammatical sentences (case omission, case oversuppliance, agreement mismatch, tense/agreement reversal, and tense/negation reversal), the number of correct answers was counted in each condition for each participant. Answers that were coded as errors included: the opposite answer (e.g. "first is good, second is bad" when the first sentence in that pair was ungrammatical, and the second,

grammatical); accepting both the grammatical and the ungrammatical member of a pair of sentences; rejecting both sentences in a pair (including a grammatical member); and the answers "I don't know" and "I don't understand".

The word order condition elicited large variation even among the fluent speakers, unlike the first five conditions, and was thus analyzed separately. In this condition, the best answer would be "both are correct", but since SOV is more common, especially in the absence of a context, accepting only SOV would be a reasonable answer too. The answers, therefore, were not coded as target vs. non-target, but rather classified into the following five categories: accepting both; accepting SOV only; accepting OSV only; accepting neither; and no answer (i.e. answers "I don't know" or "I don't understand"). The participants were asked about the status of each of the two sentences, so only when they explicitly rejected OSV as incorrect, it was counted as "only SOV"; answers such as "the first one is better (but the second one is OK too)" were counted as accepting both.

7.5 Results

I start by presenting the results for the five conditions containing ungrammatical sentences, first overall, then condition-by-condition, and after that move on to the word order condition (paraphrases were not analyzed because it was a distractor condition). In the conditions with ungrammatical sentences, overall, the fluent speakers performed at the ceiling level (95-100% correct answers), except one participant. Two of the fluent speakers had 100% correct answers, and the other five made one mistake each, all on different items. The remaining FB had the lowest score in the FB group (76.7%), with four errors (two of them in tense/negation reversal condition, see below). Generally, fluent participants consistently gave the expected answers on all items in conditions with ungrammatical sentences, with the exception of one item (TNg3) in the tense/negation reversal condition. Four of the fluent speakers accepted both sentences in that pair (pos-

sibly because the ungrammatical sentence sounded similar to something else). This item has been removed from the analysis, and the weight of the remaining three items in that condition was adjusted for calculation of group means.

For HRBs, there was much variation in individual results. The total score for all conditions with ungrammatical sentences ranged from 15% to 100% (mean 73.3%), with the majority (13 out of 17 HRBs) between 70% and 100%. LRBs' total scores are lower, ranging from 40% to 63%, with the mean 49.5%.

The first question that this study was designed to answer was whether RBs have enough grammatical knowledge to be able to perform grammaticality judgments. Therefore, HRBs' performance on all conditions with ungrammatical sentences was tested for difference from chance. Chance performance here is 33.3%, or the score of 1.33 out of 4 in a given condition, since there are three possible answers (first good, second bad; second good, first bad; both good). Some participants used the fourth option - "neither is good", even though it was not offered in the instructions; therefore, at least for some of them chance would be 25%, which is even lower than 33.3%, and therefore the difference from chance is even larger. The Wilcoxon tests showed significant differences between 33.3% and the mean for each condition in the HRB group (tense/agreement reversal, V=150, p=0.0004; tense/negation reversal, V=146, p=0.0009; agreement mismatch, V=152, p=0.0003; case oversuppliance, V=147, p=0.0008; case omission, V=140, p=0.003). In every condition, HRBs' performance was different from chance. This suggests that HRBs have grammaticality judgments, and thus it cannot be said that they lack grammar. LRBs' performance is close to chance level, with the notable exception of tense/agreement reversal - the only condition in which their group mean is close to that of HRBs and FBs.

The next question posed in our study was whether the grammatical properties tested here have different status in RBs' grammars. The HRBs, as well as LRBs, did exhibit differential sensitivity to morphosyntactic violations tested in this study. Table 7.2 shows

mean number and percentage of correct answers for each condition.

The HRBs' and fluent speakers' data on conditions with ungrammatical sentences were analyzed by means of a binary mixed-effect hierarchical logistic regression with fluency (fluent vs. HRB) and condition as fixed effects (crossed) and subjects and items as random effects. The contrast between the two groups of speakers was highly significant: The coefficient estimate for fluency was 2.03, standard error, 0.6, p=0.0007. HRBs' judgments were significantly less accurate than fluent speakers' judgments. Some contrasts between conditions were also significant; however, an inspection of Table 7.2 shows that it was due to HRBs' uneven performance, since fluent speakers show almost no difference. For more meaningful comparison of conditions, I ran separate analyses on each of the two groups of participants. For both groups, the logistic regression was fitted in two slightly different ways, the only difference being the choice of the reference level (i.e. baseline) for condition - the condition that would be compared to each of the remaining conditions. In the first case, the reference level was the condition with the highest score, tense/agreement reversal (the coefficient estimates, standard errors and p-values for HRBs and fluent speakers are presented in Table 7.3); in the second case, it was the condition with the lowest scores, case omission (Table 7.4). The conditions with medium scores were not compared to each other because they were so close that it was clear no difference could be expected.

While there was no difference between conditions for fluent speakers, one can see a continuum of HRBs' sensitivity to different kinds of ungrammaticality. HRBs are most sensitive to the tense/agreement reversal, somewhat less to tense/negation reversal, agreement mismatch, and case oversuppliance (all three at the same level), and the least sensitive to case omission. The difference between the extremes of the continuum (tense/agreement reversal and case omission) was significant; the difference between the lowest-score condition (case omission) and two of the medium-score ones (agreement mismatch and tense/negation reversal) was marginally significant, and the difference

Table 7.2: *Mean number and percentage of correct answers in the conditions with ungrammatical sentences*

	T/Agr reversal(*SD*)	T/Neg reversal(*SD*)	Agr mism.(*SD*)	Case over.(*SD*)	Case omis.(*SD*)	Total(*SD*) (max.20)
FB	3.88(0.4)	3.5(1)	3.88(0.4)	3.88(0.4)	3.63(0.5)	18.75(1.5)
%	*96.9%(8.8%)*	*87.5%(24.8%)*	*96.9%(8.8%)*	*96.9%(8.8%)*	*90.6%(12.9%)*	*93.8%(7.3%)*
HRB	3.35(1.1)	2.9(1.4)	3(0.9)	2.94(1.2)	2.35(1.1)	14.55(4.2)
%	*83.8%(27.9%)*	*72.6%(35.8%)*	*75%(23.4%)*	*73.5%(29.9%)*	*58.8%(27.9%)*	*72.8%(21.1%)*
LRB	3.67(0.6)	0.89(1.5)	2(0)	0.67(1.2)	2.67(1.5)	9.89(2.5)
%	*91.7%(14.4%)*	*22.25%(38.5%)*	*50%(0%)*	*16.7%(28.9%)*	*66.7%(38.2%)*	*49.45%(12.3%)*

Table 7.3: *Contrasts between T/Agr Reversal and other conditions*

	HRBs			FBs		
	Estimate	*SE*	*p*	Estimate	*SE*	*p*
(Intercept (T/Agr Reversal))	-2.03	0.52	<0.0001	<0.0001	<0.0001	0.0009
Agr Mismatch	0.63	0.599	0.296	<0.0001	<0.0001	1
Case Oversuppliance	0.76	0.59	0.2	<0.0001	<0.0001	1
T/Neg Reversal	0.58	0.64	0.37	<0.0001	<0.0001	0.22
Case Omission	1.61	0.58	0.005	<0.0001	<0.0001	0.34

Table 7.4: *Contrasts between Case Omission and other conditions*

	HRBs			FBs		
	Estimate	*SE*	*p*	Estimate	*SE*	*p*
(Intercept (Case Omission))	-0.42	0.45	0.36	-2.39	0.66	0.0003
Agr Mismatch	-0.99	0.55	0.07	-1.18	1.23	0.34
Case Oversuppliance	-0.86	0.54	0.11	-1.18	1.23	0.34
T/Neg Reversal	-1.03	0.59	0.08	0.33	0.89	0.71
T/Agr Reversal	-1.61	0.58	0.005	-1.18	1.23	0.34

between case omission and case oversuppliance was close to marginal.

Individual results confirmed this hierarchy. All participants except three HRBs have 3 (75%) or 4 (100%) correct answers in the tense/agreement reversal condition, while the other conditions show more variation. Therefore, RBs' grammar contains at least the knowledge about the positions of tense and agreement+mood, and for some RBs, more. Four out of six HRBs who had no less than 3 (75%) correct answers in the case omission condition also had the same high score in all the other conditions. That is, only more advanced HRBs detect case omission. The majority of the remaining HRBs had 75-100% correct answers in all conditions except case omission.

The LRBs had a somewhat different pattern of results. They also performed best on the tense/agreement ordering violation - at the same level as HRBs and fluent speakers. However, their scores on agreement mismatch and especially the tense/negation ordering violation were lower than HRBs' scores. All three LRB had three or more correct answers in tense/agreement reversal condition; in all other conditions, the number of target answers was low. One exception to that is case omission, where two LRBs got high scores.

However, this cannot be counted as evidence of their knowledge of case markers. The pattern of LRBs' results in the two case-related conditions is different from the HRBs' pattern. LRBs have an even higher mean score in the missing case condition than HRBs; however, LRBs' scores are extremely low in the case oversuppliance condition. This is because two of the three LRBs accepted sentences with an overt case marker, regardless of whether they were grammatical or not, and rejected almost all sentences with a null case marker, also regardless of grammaticality.

The errors are summarized in the two tables below, Table 7.5 for HRBs, Table 7.6 for LRBs. The tables show, for each type of error, mean percentage of occurences (from the total number of answers) in each condition ("both" means accepting both sentences; "opposite", accepting the ungrammatical sentence; "neither", rejecting both sentences; "no answer" refers to answers "I don't know").

Table 7.5: *Mean percentage of errors in the conditions with ungrammatical sentences, HRB*

	T/Agr reversal(*SD*)	T/Neg reversal(*SD*)	Agr mism.(*SD*)	Case over.(*SD*)	Case omis.(*SD*)	Total(*SD*)
both	1.5(2.9)	1.5(2.8)	2.9(4.4)	2.6(4.4)	4.7(5.4)	13.2(11.2)
opposite	1.5(3.4)	2.4(5.7)	1.8(2.5)	1.8(2.5)	2.4(3.1)	9.7(12.7)
neither	0.3(1.2)	0(0)	0.3(1.2)	0.6(2.4)	0.3(1.2)	1.5(4.9)
no answer	0(0)	1.6(3.7)	0(0)	0.3(1.2)	0.9(2)	2.7(4.8)

Table 7.6: *Mean percentage of errors in the conditions with ungrammatical sentences, LRB*

	T/Agr reversal(*SD*)	T/Neg reversal(*SD*)	Agr mism.(*SD*)	Case over.(*SD*)	Case omis.(*SD*)	Total(*SD*)
both	1.7(2.9)	13(12)	5(5)	0(0)	3.3(2.9)	23.3(20.2)
opposite	0(0)	2.2(3.8)	5(5)	15(8.7)	1.7(2.9)	23.9(18.4)
neither	0(0)	0(0)	0(0)	1.7(2.9)	0(0)	1.7(2.9)
no answer	0(0)	0(0)	0(0)	0(0)	3.3(5.8)	3.3(5.8)

The most common error for HRBs was to accept both the grammatical and ungrammatical sentences in a pair. Sometimes the two sentences were taken as having different meanings, sometimes as different ways to express the same meaning. The next common

error was to accept the ungrammatical member of the pair and reject the grammatical one (either because their grammar tells them so, or because they are guessing). In the LRB group, both types of errors were equally common, with the former prevalent in tense/negation reversal, and the latter, in case oversuppliance. There were very few other errors (answers "I don't know" or rejecting both sentences).

The word order flexibility condition was analyzed separately. There is much variation in all groups, including fluent speakers, both between and within participants. Not all fluent speakers accepted both orders in each pair. Some had strong preferences for only one member of these pairs, to the point that they rejected the other member. Table 7.7 below shows the mean number and percentage of occurrences for each type of answers in the word order condition for each group of participants.

Table 7.7: *Word order preferences*

	accepted both(*SD*)	only SOV(*SD*)	only OSV(*SD*)	none(*SD*)	no answer(*SD*)
FB	2.25(1.7)	1.13(1.6)	0.38(0.5)	0.25(0.5)	0(0)
%	*56.3%(41.7%)*	*28.1%(38.8%)*	*9.4%(12.9%)*	*6.3%(11.6%)*	*0%(0%)*
HRB	1.65(1.5)	1.29(1.4)	0.77(1)	0.24(0.4)	0.06(0.2)
%	*41.2%(36.4%)*	*32.4%(35.1%)*	*19.1%(25.8%)*	*5.9%(10.9%)*	*1.5%(6.1%)*
LRB	1.33(1.2)	2(1)	0.33(0.6)	0(0)	0.33(0.6)
%	*33.3%(28.9%)*	*50%(25%)*	*8.3%(14.4%)*	*0%(0%)*	*8.3%(14.4%)*

While numerically, it seems that there is a tendency for HRBs, and even more for LRBs, to accept both orders somewhat less often, and the more unmarked SOV order, more often than fluent speakers, this difference was not statistically significant.

7.6 Discussion

The results of this task showed differences between the fluency groups. In the conditions where an ungrammatical member of a pair had to be rejected, fluent speakers performed at ceiling. HRBs, though they were capable of grammaticality judgments, judged the

pairs of sentences with less accuracy. Accuracy levels varied depending on the linguistic variable that was the source of ungrammaticality. LRBs' judgments were even further from the target, but accuracy was also different across conditions. Thus, it cannot be said that RBs lack syntax. Neither it is true that RBs have a full grammar. Their syntactic knowledge is different from that of fluent speakers. There is, as expected, wide variation between HRBs, but, generally, HRBs have some - not complete - knowledge of the linguistic properties tested in this task. The lower accuracy and higher variability suggests that they are insecure in their knowledge of morphosyntax. This is consistent with Johns & Mazurkewich's (2001) observation that RBs in a Labrador Inuttitut language class had difficulties when the instruction on grammar started. Unsurprisingly, HRBs performed much better in this task than LRBs. This demonstrated a connection between better comprehension skills and better syntactic knowledge.

The various linguistic properties examined in this task were differentially affected in RBs. On such a basic property as the position of verbal inflection (the agreement+mood morpheme) relative to a separate tense morpheme, HRBs and even LRBs reached the target performance - at the level of fluent speakers. The following schema represents HRBs' differential sensitivity to morphosyntactic violations, from highest to lowest.

(8)

HRBs' sensitivity to morphosyntactic violations

Verbal	Tense/Agr reversal >	Tense/Neg reversal	
		Agreement mismatch	
Nominal		Case oversuppliance	> Case omission

The tense/agreement morpheme ordering violation was the easiest to detect, not only for HRBs, but even for LRBs. This is the only condition where all three groups - including fluent speakers - performed at ceiling. Importantly, the results suggest that this is not the case that ordering violations are easier to detect than other types of ungrammaticality, since the other morpheme ordering violation, tense/negation ordering, was not as salient

to HRBs and especially to LRBs. Rather, the effect arises because this ordering violation involves the core morpheme - agreement+mood. It is the only syntactically obligatory functional morpheme in the Inuttitut verb; no verb in Inuttitut can appear without it. In addition, it is usually in the salient word-final position (unless there are any enclitics). HRBs and even LRBs are clearly able to tell when this morpheme does not appear in its correct position. They might actually even look for it, as they reported in the interviews. Their introspection on the way they process verbs is as follows: first look for the root (what's going on?), then look at the end - that is, at the agreement+mood morpheme (who's doing it (to who)?+sentence type), and after that (if at all), look for the things in between - the postbases (additional information, such as time, manner, etc.). This is how one of the HRBs described it in the interview:

> ...I can pick out the main word, like if they say *niuvivvi* ['store'] or if they say something like a long big *niuvivviliavungali* [store-go-INDIC.1SG-and], I hear *niuvivvi* was the main point, I knew they were talking about a store. At the end, you could tell if it's a question or if it's a story, or if it's a just a comment at the end of the sentence...

In contrast, when it comes to the features borne by the agreement+mood morpheme, the results - in the agreement mismatch condition - show lower levels of accuracy. It is harder for HRBs, and even more so for LRBs, to notice when this morpheme surfaces with incorrect features (number incompatible with the number feature on the subject) than when it appears in an incorrect position.

The other morpheme ordering condition, tense/negation reversal, proved more difficult than tense/agreement reversal. HRBs had lower performance in this condition, at the same level as in the agreement mismatch condition. LRBs had very low scores on tense/negation reversal, so the difference between the two morpheme ordering conditions is quite dramatic for this group. Two of the LRBs always accepted both sentences in this condition. Some of those HRBs who accepted both the grammatical and ungrammatical

orders explicitly said that they thought both orders were good, but the meanings were different. This suggests RBs are aware of the possibility of different orderings of postbases, but some of them are not aware of the ordering restrictions on these particular postbases. Some of these HRBs also translated both sentences, and only the one with the correct order of tense and negation was translated as negative; the other (the ungrammatical one) was translated as its non-negative counterpart (i.e. the negation marker was ignored when in an incorrect position). So, alternatively, it could be, at least for some HRBs, that negation is associated with its position in the structure strongly enough that they "see" it only when it is in that position. The same could be the case with tense/agreement reversal: It is possible that the agreement+mood morpheme is only noticed by RBs when it is in the correct position, and ignored otherwise (i.e. RBs might think it is another morpheme, unfamiliar to them), so that sentences with ungrammatical morpheme order appeared as if they were missing an agreement+mood morpheme.

HRBs' performance on case oversuppliance was at the same level as on tense/negation reversal and agreement mismatch, but on case omission, it was lower. Errors of case omission were harder for HRBs to detect than those of comission (case oversuppliance). This parallels the pattern in child speech production, where omission of functional morphemes is more common than oversupplying, or using incorrect morphology (Borer & Rohrbacher, 2002). For both cases, it can be argued that case is present in their grammars. Otherwise, the selection of answers would be random, and HRBs would perform at a chance level on both conditions involving case, which is not what is seen in the data. Unlike Inuttitut verbs, that cannot appear without the agreement+mood marker, Inuttitut nouns without an overt case marker are still legitimate words, because this is how the absolutive case form of singular non-possessed nouns looks like, with the phonologically null case marker. This is probably one of the factors that makes sentences with a missing *-mik* case marker harder to reject. The lack of overt phonological material might also make it more difficult to notice the contribution of the absolutive case. Alternatively, it can be said

that the absolutive is unmarked and carries no features, while *-mik* does carry a feature. When an incorrect feature is present, it clashes with the rest of the sentence, but when a required feature is missing or not easily accessible (when the marker is phonologically null), it may be less obvious to HRBs.

LRBs showed a different pattern in the two conditions involving case. They preferred sentences with the overt case marker in both conditions, no matter if grammatical or not. The LRBs' pattern of results suggests that their knowledge of case is at the lower level than in HRBs. The LRBs are possibly aware of the requirement for case marking and of the morphosyntactic position for case. They try to fill the position, but without sensitivity to the features carried by different case markers. This is parallel to their (and HRBs) knowledge about the agreement+mood morpheme. They know the position of the morpheme in the sentence structure much better than what exactly it is supposed to be filled with; that is, they do not know what features which morphemes carry. However, the difference between the two levels of knowledge in LRBs is even more pronounced for case markers.

With word order flexibility, there was much variation in all three groups. In languages where, as in Inuttitut, word order is flexible and depends on information structure, acceptability for different word orders may vary among native speakers. There usually is a basic, canonical word order (such as SOV/SVO in Inuttitut), which is acceptable for an out-of-the-blue sentence (like the sentences in this task), but other orders (such as OSV in Inuttitut) may or may not be accepted without an appropriate context. The variation in acceptability of SOV and OSV among the fluent speakers of Inuttitut found in this condition is therefore not surprising. There is even more variation among RBs, and they tend to accept only the basic order more often than fluent speakers. This is reminiscent of overuse of SVO in heritage speakers' speech production (Albirini et al., 2011; Polinsky, 2006a, 2007a) and their reliance on the subject-initial order in comprehension (Polinsky, 2009; see Section 2.3). However, in the case of Inuttitut RBs, this is only a tendency,

and it cannot be said that word order in RBs' grammar is restricted to SOV/SVO.

One possibility is that the type of intuitions underlying RBs' performance reflects knowledge of frequency distributions that is probabilistic but not grammatical in nature. For instance, the finding that performance is better with tense and agreement reversal than with tense and negation reversal could be explained by a relatively higher frequency of the morphemes involved, as agreement is obligatory (and therefore more frequent) but negation is not. Could it be that for agreement, RBs only know that the morpheme appears obligatorily at the end of every verb? It is important to note, when considering this possibility, that although the list of possible agreement morphemes is finite, it is sufficiently large as to limit the plausibility of a purely probabilistic analysis. In Labrador Inuttitut, agreement is a combination of grammatical number, person, and mood; the list of morphemes that agree only with the subject includes 84 of them. Once we include the list of morphemes that simultaneously encode the subject and the object, the actual morpheme list of possible verb endings reaches over 500; according to Sadock (2009), verb paradigms in Inuktitut are "on the order of two thousand forms" (p. 97). Sensitivity to the morpheme despite the general low probability of a specific form suggests that a category has emerged in the grammar of these speakers. Furthermore, the relative probability of the agreement category is higher than that of the negation markers, but the actual probability of a specific morpheme is quite low, so it is not likely that the asymmetry in the data is due to relative frequency of the target form. Similarly, sensitivity to number agreement is not likely to be the result of probabilistic links between the five possible number forms on nominals (singular, and two allomorphs each for dual and plural) and the high number of agreement morphemes described above.

Knowledge of surface distributional associations is not a good account of successful performance in the case omission and case oversuppliance conditions either, since RBs have to know the conditions of insertion for the *-mik* case morpheme. The morpheme itself is the same in both conditions but the question is whether RBs know that it

cannot appear on subjects of intransitive sentences, while it must appear on objects of transitive sentences (*The ball-0 (*-mik) rolled*, but *John-0 rolled the ball-mik/*0*). Here, the difference between the groups is particularly revealing. The LRBs were clearly treating *-mik* as an obligatory component of the word, but the HRBs were sensitive to the contingency between the case marker and the clause configuration. Therefore, I conclude that the successful performance in the grammaticality judgment task is based on aspects of grammar, rather than on probabilistic knowledge.

To summarize, the results of the grammaticality judgment task clearly indicate that RBs possess intuitions about the grammar of their receptively known language, and meet the accuracy levels of fluent speakers in some cases. While RBs show patterns of grammatical deficits, they demonstrate clear knowledge of the core properties of Inuttitut structure. The results suggest that the hypothesis that HRBs (and even LRBs) lack grammar must be rejected. Their grammars are different from the target - as in other cases of incomplete acquisition, with different linguistic variables at different distances from it. In the lowest-comprehension group, the LRBs, we observe that these speakers could detect ungrammaticality only when the most basic properties of Inuttitut grammar were violated.

In the present study, both types of RBs showed better knowledge of the position for a morpheme in the structure than of its features. In addition, features are easier for them to notice when morphemes bearing the features are overt. Also, while fluent speakers' judgments were consistently correct, RBs' judgments were inconsistent or even consistently incorrect, indicating insecurity or lack of knowledge, respectively. This predicts problems with the choice of functional morphemes if RBs try to speak. These problems can manifest as errors, hesitation, long pauses, or inability to produce a constituent because they cannot choose the right morphemes that must be part of it. While RBs are likely to know which paradigm to look in (e.g. case, or agreement+mood), they might not be sure which member of the paradigm to select (which case marker or which

agreement+mood marker, etc.). This may be one source of RBs' limitations in speech production.

7.7 Comparisons to other tasks

In this section, I compare HRBs' results in the two grammar tasks presented in this and the previous chapter to each other and to the other measures. As it was noted above, substantial variability exists between RBs in all measures. It is therefore informative to look for the relations between language skills tested in this study. The first question that between-task comparisons can answer is whether understanding of the semantic contribution of functional morphemes and the capacity for grammaticality judgments are related, and if so, how closely. Given that the relation between lexical knowledge and grammatical knowledge in speech production was previously found in heritage speakers by Polinsky (1997, 2000, 2006a), the second question is whether RBs with larger passive vocabularies perform better on tasks involving grammar. The third, very important, question is the relation between comprehension and production skills - whether RBs who displayed better speech production skills are the ones who have better knowledge of Inuttitut syntax and functional morphology. Finally, the fourth question concerns the reliability of self-assessment with respect to grammatical knowledge.

To answer the first question, performance in morpheme comprehension and grammaticality judgment tasks was compared. A significant Spearman correlation between individual results in the morpheme comprehension and grammaticality judgment tasks was found, r_s=0.74, p=0.0007.

To answer the rest of the questions listed above, the results from each of these two tasks were compared to self-assessment of listening (SA-L) and speaking abilities (SA-S), as well as to the results from the other tasks. The same measures as in Section 5.5 were used for the word translation (WT; the percentage of words translated correctly), story

retelling (SR; the percentage of recalled items in Inuttitut stories, averaged between Story 1 and Story 2), and elicited imitation (EI; the number of morphemes repeated correctly). In order to investigate the relation between comprehension and production of functional morphemes, the results of the two grammatical tasks were compared to several measures from the picture description task that are relevant to morphosyntactic processing: MLU, MLW, FMT (the number of functional morpheme types) and MSI (morphosyntactic inventory). The correlations are presented in Table 7.8. The p-values were adjusted for multiple comparisons by Holm's method.

Table 7.8: *Spearman correlations between grammatical tasks and other measures*

	Morpheme comprehension			Grammaticality judgments		
	r_s	p	adjusted p	r_s	p	adjusted p
EI	0.67	0.003**	0.026*	0.86	< 0.00001***	< 0.00009***
WT	0.68	0.003**	0.023*	0.75	0.0006***	0.0048**
SR	0.52	0.033*	0.23	0.63	0.007**	0.0497*
MLU	0.04	0.89	0.89	0.27	0.297	0.297
MLW	0.37	0.14	0.21	0.32	0.22	0.44
FMT	0.5	0.039*	0.23	0.45	0.073.	0.44
MSI	0.06	0.82	1	0.32	0.21	0.38
SA-L	0.45	0.071.	0.28	0.38	0.12	0.51
SA-S	0.46	0.061.	0.3	0.43	0.085.	0.43

Results from the morpheme comprehension task and the grammaticality judgment task compare in the similar way to the results from the other tasks and self-assessment. The most robust correlations that stayed significant after the adjustment of the p-values were with the elicited imitation and the lexical test scores, and also the correlation between the results from the story retelling task and the grammaticality judgment task. The correlation between the story retelling score and the morpheme comprehension score was significant before the p-values were adjusted. Thus, the morpheme comprehension and grammaticality judgment results correlated with the results from the comprehension tasks and also from the elicited imitation task, which involves both comprehension and production.

A different picture emerged with the picture description task, the only task concerned

exclusively with production. Though several measures from the picture description task were used, only one of them, FMT, significantly correlated with the morpheme comprehension scores before the adjustment of p-values, and marginally, with the grammaticality judgments scores, also before the adjustment. Another morphosyntactic diversity measure, MSI, and two complexity measures, MLU and MLW, did not correlate with either the grammaticality judgments or the morpheme comprehension results, just as they did not correlate with other comprehension measures (word traslation and the story retelling task, see Section 5.5).

Correlations with self-assessment of listening and speaking skills were marginal before the adjustment, except the correlation between the self-assessment of listening skills and the grammaticality judgment results that did not reach even marginal significance.

7.8 General discussion: Syntactic and semantic knowledge

In both the morpheme comprehension and the grammaticality judgment tasks, RBs demonstrated sophisticated, even though incomplete, knowledge of Inuttitut syntax and semantics. Even at the lowest extreme of the bilingualism continuum, in the LRB group, knowledge of most basic grammatical properties does exist. The HRB group spans a continuum of proficiency, from the lowest proficiency participants who were close to LRBs in some cases to the highest proficiency ones who performed at or close to the level of fluent speakers. The distribution within the continuum is far from normal, with more HRBs close to the higher end. Even though the HRB group is a continuum, there is a difference between HRBs and LRBs in comprehension and grammaticality judgments which is not only quantitative, but qualitative. HRBs are capable of grammaticality judgments, and can access semantic features of functional morphemes in comprehension (except more difficult features, such as remoteness), but LRBs ignore all semantic features of func-

tional morphemes, and have grammaticality judgments only on the most basic syntactic properties of Inuttitut, such as tense and agreement+mood morpheme ordering.

The results of the two grammar tasks correlate in the HRB group: Those who perform better on morpheme comprehension also have better grammaticality judgments, and, generally, better grammatical knowledge. However, for HRBs, the morpheme comprehension task proved to be easier than the grammaticality judgment task. While in both tasks, they performed above chance, in the former task, their results were on average higher and closer to the fluent speakers' average results. Individually, too, more HRBs had target performance in comprehension than in grammaticality judgments. One reason is the task itself. Comprehension is a more natural task, while grammaticality judgments require metalinguistic abilities in addition to comprehension; in heritage speakers, metalinguistic abilities are often not well developed, as shown in the studies reviewed in Chapter 2. Another reason is possibly the different nature of the linguistic variables in each task: those contributing semantic information to the sentence (in the morpheme comprehension task) versus those that contribute to syntactic well-formedness of the sentence (in the grammaticality judgment task). The former is more important for comprehension than the latter, but knowledge of both types of variables is needed for speech production. Thus, it is also possible that HRBs have more difficulties with syntax than with semantics. More research is needed to distinguish between these two possibilities, with more linguistic properties tested, and more cross-task comparisons. In this study, there is one linguistic property that was included in both tasks - verbal agreement, though different kinds of agreement were analyzed: subject-verb antipassive agreement in grammaticality judgments, and subject-object-verb ergative agreement in morpheme comprehension[6]. While direct comparison between the two tasks is impossible because different linguistic variables were used, comprehension of agreement by HRBs

[6]Recall that subject-verb antipassive agreement was removed from the morpheme comprehension data because of many errors made by fluent speakers.

was better than detecting agreement mismatch.

Syntactic knowledge of individual HRBs is related to their lexical knowledge and their ability to repeat complex words. Among all the experimental measures, the lexical test and the elicited imitation task results turned out to be the best predictors of HRBs' performance in the grammar tasks, followed by the more general story retelling task results and the number of functional morpheme types produced in the picture description task. The finding that the lexical test results correlate with the results in both grammar tasks is in line with Polinsky (1997, 2000, 2006a), where lexical proficiency (active vocabulary) was found to correlate with grammatical proficiency as demonstrated in spontaneous speech in various populations of incomplete learners and attriters, and is suggested to be used as a quick measure of proficiency for incomplete acquisition and attrition. The results of the current study suggest that the link between lexical and grammatical proficiency can be generalized to include passive vocabulary and grammatical proficiency in comprehension and metalinguistic judgments.

A correlation between the results of an elicited imitation task and a grammaticality judgment task was also found in previous research in second language acquisition by Munnich, Flynn, and Martohardjono (1994). In the current study, the correlation between the grammaticality judgments and the elicited imitation results was the highest of all correlations. In an elicited imitation task, which involves both comprehension and production, use of grammatical knowledge is required both to process the utterance and to reconstruct it for production. Though the performance on functional morphemes in the elicited imitation task was, on average, much worse than in both grammar tasks, HRBs who could reproduce more functional morphemes were also more likely to understand functional morphemes correctly and to notice their incorrect use. The correlations between the results of the story retelling task and the grammar tasks were weaker, but still point to the role of grammatical knowledge as a factor in comprehension.

Notably, only one of the four measures from the picture description task compared

to the grammar tasks results correlated with them, and even this correlation was weaker than the other correlations mentioned above. HRBs who demonstrated greater diversity of functional morphemes (FMT) in their speech production were more likely to perform better in the grammar tasks, especially in the morpheme comprehension task. This is an expected result: If one produces more functional morphemes, one is expected to know what they mean. What was less expected is the absence of correlations between the results of the grammar tasks, on one hand, and, on the other hand, the rest of the picture description measures, namely, MLU, MLW and MSI (morphosyntactic inventory). It would be reasonable to expect the relation between production and comprehension in terms of grammatical proficiency, but the data does not support this expectation. It was also shown in Section 5.5 that MLU and MLW did not correlate with any measures from the comprehension tasks, but correlated only with the results of the other task that involves production - namely, elicited imitation. Thus, there appears to be a dissociation between comprehension and production, as discussed in Section 5.5. HRBs' use of grammatical knowledge appears different in comprehension and in production. Better understanding of the meaning of functional morphemes and better knowledge of syntactic rules are not always reflected in speech production as uttering more complex sentences and words or demonstrating more variety of morphosyntactic structures. This brings back the issue of the difference between the processes of comprehension and production. It is possible that the knowledge of grammar is accessed in different ways during comprehension and production.

The grammar tasks showed that HRBs have a significant amount of grammatical knowledge. However, since mainly basic properties were tested in both tasks, the conclusion that is safe to make is that HRBs have good knowledge of basic properties of Inuttitut. HRBs state that they understand most of the input, but not everything, and their own observations are corroborated by their results in the morpheme comprehension task. HRBs understand agreement, aspect, and whether the time of the event is in the

past or in the future, but miss certain features, such as temporal remoteness degrees, and possibly other less central, more complex features, that might not be supported by English. HRBs also know certain basic syntactic rules of Inuttitut, but it is possible that they would have difficulties with less central, more complex syntactic properties. In other words, HRBs know quite much about Inuttitut, but they need to know much more to become fully competent speakers.

Chapter 8

Conclusion

8.1 What receptive knowledge of language is like

Where do receptive bilinguals as in this study fit in the picture of incomplete language knowledge? The answers to the central questions of this study - whether RBs actually have good comprehension abilities, and whether they have grammatical knowledge - are that RBs do have good overall comprehension, but it is not perfect, and their competence in Inuttitut includes grammatical knowledge, though incomplete. RBs are capable of some production but it is very difficult for them. Overall, RBs, with the exception of very low production abilities, have much in common with heritage speakers.

As predicted, there was variation in language abilities among the RBs, and the RB sample was divided into two sub-groups that clearly differ in their self-assessment and language abilities: HRBs (high comprehension proficiency receptive bilinguals) and LRBs (low comprehension proficiency receptive bilinguals). While HRBs and LRBs shared acquisition history and language attitudes, HRBs claimed that they understand most of the input and have some speaking abilities, but LRBs claimed understanding one quarter of the input and no speaking abilities at all. In all tasks, HRBs performed better than LRBs, but the differences were not only quantitative - they were qualitative as well, and

especially visible in the grammar tasks. Unlike HRBs, LRBs showed no evidence of any knowledge of functional morphology except knowledge of position of the most salient verbal morpheme - the agreement marker. HRBs can function in the language, even though mainly in one direction, but LRBs cannot, as they report extremely limited comprehension, sometimes not even understanding the main points in a conversation. The HRB group is a continuum of proficiency, with strongest HRBs close to fluent bilinguals (or, in some comprehension tasks, performing at the level of the fluent bilinguals), and weakest HRBs close to LRBs.

One of the research questions concerned the process of acquisition that results in receptive-only knowledge. The history of receptive competence development is similar to the history of incomplete L1 acquisition (heritage language) in general, though in most studies, heritage speakers are immigrants, not aboriginal people. As Johns (2009), noted, in the case of immigrants, their family chose to come to a new country where a different language is spoken, but in the case of aboriginal people in communities where language shift occurred, they stayed on their ancestral land, and the majority language came to them. Nevertheless, the situation is similar in terms of the input and use of each language. The incompletely acquired language is a minority language in both cases, and the majority language dominates at school, work, and in everyday life. Inuttitut is a first language for RBs, either the only one or acquired simultaneously with English, and it failed to develop fully, as a result of exposure to English and, more importantly, shift of dominance from Inuttitut to English. The sample contains both those who were RBs from the beginning, and those who were speakers of Inuttitut before school age. Since in both cases, English began to take over before the age of 8-10 - that is, before Inuttitut was fully acquired and stable, - by acquisition history, both types of RBs qualify as heritage speakers. The special feature of acquisition history in RBs who never were speakers is that they grew up as overhearers, that is, their family spoke English to them, and their exposure to Inuttitut typically consisted of hearing older family members speaking

Inuttitut to each other. RBs who were speakers during their childhood grew up in a more typical heritage speaker setting.

The next research question was whether it is possible to elicit speech production from receptive bilinguals. While the lack of production is a defining feature for RBs, no RB lack production abilities completely - and no RB produces fluent speech. The picture description task results showed that RBs can produce at least some words, and more advanced HRBs can even produce sentences, though short, simple, and containing errors, as in the case of heritage speakers. Some RBs fill gaps in Inuttitut with English functional morphemes and words. Even LRBs could produce one-morpheme utterances. But speech production in Inuttitut is difficult for RBs. They take long time to prepare, pause frequently and for a long time, and often cannot produce a word from the first attempt. Not only spontaneous speech production, but also imitation of what they have just heard is difficult for them, as shown in the elicited imitation task. In long multimorphemic words, they tend to produce the beginning of the word - its root - successfully, but then get lost in the morphemes that follow.

The relation between actual production and self-assessment of production abilities is not straightforward. All RBs identify themselves as non-speakers capable of understanding, though many say that they "can speak a little" and use Inuttitut to reply if they are addressed in Inuttitut, "if it's something simple". Each of the statements "I don't speak Inuttitut" and "I can speak Inuttitut a little" in fact covers a large spectrum. Both statements appear together in almost any interview. "I don't speak" in its strictest sense is supposed to denote a complete lack of speaking ability; however, none of the participants, not even the weakest ones, lack speaking abilities completely (cf. Au et al.(2002): Pure overhearers are difficult to find, and typically overhearers can say a few words). In its least strict sense, "I don't speak" may mean *not using* the language, rather than saying anything about speaking abilities. However, given the information on the attitudes from the interviews, we already know the following two things. First, there is no reason for a

person who has full command of Inuttitut to avoid speaking it, since speaking Inuttitut is viewed as a desirable ability and an asset for the job market. Second, non-fluent speakers have encountered negative reaction to their imperfect speech in Inuttitut, and fear of making an error makes many of them avoid speaking Inuttitut. Thus, non-speaking in this community always implies at least lack of full command of Inuttitut (which still covers a wide range of speaking abilities). It is likely that for some RBs, "I don't speak" means "I am not fully fluent". Such RBs might have a high standard of speaking and be aware that they cannot match it - precisely because it is their L1, and they know what "good Inuttitut" sounds like. At least part of the issue is that "good Inuttitut" has high morphological complexity, and RBs are not able to reach that level of complexity. The meaning of "I don't speak" intended by RBs in this study lies between these two extremes - it probably means limited speaking abilities, as a result of which a person cannot express him/herself in Inuttitut. For some RBs, it also means lack of ability to produce complex and grammatical utterances, and/or the lack of ability to communicate completely in Inuttitut, without the help of English. "I can speak a little", as we can see from comparison of self-assessment of production and actual production, can range from producing only Inuttitut roots embedded in English sentences (and maybe some inflected forms that possibly are unanalyzed combinations for this speaker) to producing simple sentences with only obligatory inflections to producing longer sentences and words consisting of 3-4 morphemes on average.

Comprehension was tested in RBs at several levels: overall comprehension (story retelling), lexical morpheme comprehension (word translation), comprehension of functional morphemes' contribution to meaning (morpheme comprehension), and comprehension of functional morphemes that contribute mostly to well-formedness rather than meaning (grammaticality judgments). In the story retelling task, HRBs' overall comprehension of stories was fluent-like, and LRBs demonstrated partial understanding. Other tasks in this study have a more narrow focus on specific structures, morphemes, or words,

and thus are more likely to show what RBs *do not* know. In contrast, the story retelling task is more likely to show what they *do* know, since even if they do not understand all the structures, morphemes, or words in a piece of discourse, they still can understand much of their input. The more detailed tests of comprehension in the HRB group reflected their self-assessment of comprehension as "most of it, but not everything": translating most but not all words in the word list, understanding semantic contribution of most but not all functional morphemes, and giving correct grammaticality judgments in most but not all cases. The LRBs claimed partial understanding, and demonstrated partial understanding.

Johns and Mazurkewich (2001) observed that Inuttitut RBs enrolled in an Inuttitut language class had sizable vocabularies but experienced difficulties learning grammar (as is also characteristic of heritage speakers), and I took this to predict better lexical than grammatical knowledge in RBs. This prediction was confirmed by the results. First, in the elicited imitation task, RBs repeated the roots better than the functional morphemes. Second, in the word translation task, HRBs translated most words correctly, though there was a slight difference between them and the fluent speakers, which almost disappeared when morphologically and semantically related translations were taken into account. However, their performance in the grammaticality judgment task was worse. Even LRBs translated approximately half of the words in the word translation task, but showed severe deficits in the grammar tasks.

The two grammar tasks, morpheme comprehension and grammaticality judgments, showed that HRBs' knowledge of Inuttitut clearly contains more than a receptive vocabulary coupled with pragmatic knowledge. In the morpheme comprehension task, their comprehension of transitive agreement, two aspectual suffixes - pluractional and ingressive, and future versus past tense contrast was fluent-like; the only exception was comprehension of remoteness contrasts encoded by tense morphemes. Not only can HRBs understand functional morphemes with obvious semantic content, but they also showed

some knowledge of functional morphemes with less semantic content and more contribution to well-formedness, such as case and agreement, as well as knowledge of morpheme ordering within the Inuttitut verb. The grammaticality judgment task in which the latter morphemes were tested is also a metalinguistic task, and heritage speakers were often reported to have difficulty with it, in many cases performing at chance level. For HRBs in this study, this task was more difficult than morpheme comprehension, but they still proved capable of grammaticality judgments, giving correct answers in about three quarters of cases. Their performance varied depending on the type of ungrammaticality and the morphemes involved. It was especially high on the incorrect morpheme ordering that involved the obligatory verbal agreement+mood morpheme, but lower on the incorrect morpheme ordering that involved two postbases (tense and negation), agreement mismatch between the subject and the verb, and *-mik* case marker on a noun that should bear the null absolutive case marker; the most difficult condition was the absence of the required *-mik* case marker.

LRBs, however, showed no evidence of comprehension of any functional morpheme tested in the morpheme comprehension task, performing at chance level. In the grammaticality judgment task, the only condition on which they performed better than chance was the incorrect morpheme ordering that involved the agreement+mood morpheme. Also, LRBs preferred sentences that contained nouns carrying the overt *-mik* case marker to sentences with nouns only in phonologically null absolutive case, regardless of whether they were grammatical (*-mik* on objects in antipassive sentences) or ungrammatical (*-mik* instead of absolutive on subjects of intransitive verbs). That is, LRBs' competence contains only the most basic grammatical properties - they know that verbs must have an agreement marker, and nouns must have a case marker, and also know the positions of these markers, but not which particular markers should appear in a given utterance.

Regarding the question of which morphemes are likely to be retained and which are likely to be affected in RBs' grammar, it was shown that performance in both gram-

mar tasks varied depending on the morphemes involved, similarly to heritage speakers' performance in other studies. Insecure knowledge of case and subject-verb agreement is typical of heritage speakers, and so is retention of time contrasts expressed by tense morphemes. Remoteness degrees expressed by tense morphemes and morpheme order were not previously studied in heritage languages. What is surprising is how well aspect is preserved in Inuttitut RBs, compared to Spanish and Russian heritage speakers who produce speech in their heritage language, and therefore are likely to have higher overall proficiency (Montrul, 2002a; Polinsky, 2008c, respectively). Even more advanced heritage speakers of Russian have difficulties with comprehension of aspect (Laleko, 2010). The reason is likely the difference between the aspectual system of Inuttitut and the aspectual systems of Russian and Spanish. Inuttitut pluractional and ingressive suffixes are dedicated aspectual morphemes with one function each, unlike Russian aspectual affixes that carry extra meaning, or Spanish suffixes in which aspect is bundled with past tense.

The hypotheses discussed in Chapter 2, each based on one factor in language attrition, gave different predictions as to which variables are more likely to be affected. Support for all three families of hypotheses - the regression-type hypotheses, the convergence-type (interlanguage-type) hypotheses, and a language-change-type hypothesis that suggests better retention of morphemes with higher semantic content - is found in the results of this study. This confirms my prediction that all the factors on which these hypotheses are based - age of acquisition, similarity to the dominant language, and the amount of semantic content - play a role.

It is possible that morphemes with higher amount of semantic content are better preserved in HRBs' grammars than morphemes with less semantic contribution that serve more for syntactic well-formedness: HRBs performed better in the morpheme comprehension task (with the exception of remoteness degrees), where morphemes with more semantic content were tested, than in the grammaticality judgment task that tested morphemes with less semantic content. However, since the tasks were different, this is not a

reliable piece of evidence.

For interlanguage/convergence-type hypotheses (that suggest better retention of features of the weaker language that are also present in the stronger language), the clearest piece of evidence in support is the finding that remoteness degrees are not encoded in many RBs' grammars. Remoteness is the most non-convergent property among those tested in this study, since is it completely absent in English. However, other variables, that are partially convergent with English, such as aspectual suffixes and even less convergent verbal agreement with both the subject and the object, are well preserved in RBs' grammar. Other explanations for RBs' difficulties with remoteness degrees are also possible (such as remoteness being a finer distinction within the future or the past, or a less universal distinction than future versus past).

Support for the regression-type hypotheses (that predict better retention of variables that are acquired early) comes from two findings. One is that weaker HRBs, who performed below average on the future versus past contrast in tense morphemes, gave more correct answers for the sentences with future markers than for the sentences with the past markers; this result can be explained by the finding that future marking is acquired before past marking in Inuktitut (Swift, 2004). The other finding that supports the regression hypothesis is the difference in retention of the two categories with the least amount of overlap with English: Verbal agreement with both the subject and the object is preserved well, but remoteness degrees are not. A possible explanation is that agreement in Inuktitut is acquired before postbases - including the postbases that mark tense (Fortescue & Lennert Olsen, 1992; Swift, 2004). It appears that acquisition order and convergence with English interact, and when more factors affect a given linguistic variable, it is less likely to be retained. In the case of object agreement and remoteness, object agreement is affected by one factor (non-convergence), but remoteness is affected by two (non-convergence and later acquisition). Another example is that tense postbases are acquired later than agreement, but time features within them are convergent with

English, while remoteness features are not; two factors are affecting remoteness, but only one (later acquisition) is affecting time.

In the beginning, I asked what kind of knowledge is sufficient for comprehension, but is not enough for production. Two types of incomplete knowledge emerged in this study. One is lack of some specific knowledge, such as missing a whole grammatical category or syntactic structure, often referred to as loss of a category or structure in question, though in the case of incomplete acquisition, it is not always possible to tell if it was lost or never acquired. The other type is partial knowledge of a given category or structure, when the category or structure is present, but is not reliably connected to specific morphemes that express it.

An example of a missing category in most Inuttitut RBs is the remoteness degrees in Inuttitut tense system. Many RBs admitted that they did not even know that such a distinction exists - that is, the whole concept of remoteness degrees is absent from their grammars, and they are not even aware that they do not know it. In comparison to full Inuttitut grammar, RBs' tense morphemes are underspecified, missing the remoteness features. As a result, their grammars contain several past tense markers, without information that distinguishes them; the same applies to several future markers. In comprehension of such categories, RBs process some of their features but miss others. In the case of remoteness, they understand whether an eventuality is in the past or in the future, but not how far it is from the speech time. In production, these categories provide a different sort of difficulties. If an RB's grammar has two or three future suffixes, and no way of distinguishing between them, how can that RB know which future suffix to select for a given utterance?

Examples of partial knowledge include case and agreement. With respect to these categories, it cannot be said that they are completely absent from RBs' grammars. While HRBs' grammaticality judgments of sentences with correct and incorrect case and agreement markers are inconsistent, they are still different from chance, and even LRBs show

some knowledge of these markers, namely, that they are obligatory, plus knowledge of their positions. However, RBs are unsure which agreement markers or which case markers must be used in a given utterance, because they are not sure what features are carried by particular case and agreement markers. In the case of partial knowledge, RBs are aware what they do not know. In comprehension, this is not always relevant, especially if information supplied by such morphemes is redundant, encoded elsewhere in the sentence - for example, if theta-roles can be determined from pragmatic knowledge, it is not necessary to know what case a given marker encodes, or if the subject of the sentence is overt, and carries number marking that RBs understand, it is not necessary to know what features the agreement marker in that clause encodes. However, in production, one must select the correct case and agreement markers in virtually every sentence. RBs are aware that without knowing exactly which morpheme they need, they are likely to make an error. They are also aware that omission is also perceived as an error by their listeners because case and agreement markers are obligatory. A desire to avoid an error (because of negative social attitudes) may lead them to avoid speaking.

This study was designed so that linguistic variables tested in it are basic, core properties of the language. It is possible - even likely - that less basic, more complex structures would present even more difficulties for RBs. Also, all the structures tested in this study are acquired in L1 before school age; it is likely that structures that are acquired late in L1 (during school age) are not present in RBs' grammars.

RBs' performance in comprehension tasks was much better than that in production tasks, as predicted, but in fact, the definition of receptive bilinguals predicted worse production abilities, if not a complete lack thereof. What receptive bilinguals said about their own abilities in Inuttitut, together with the results of the production tasks, suggests that "true receptive bilinguals" - individuals who have perfect comprehension and absolutely no production - likely do not exist. First, it is not true that RBs understand everything, although they do understand much. Second, it is not true that they cannot speak at all,

although they only speak a little. What is true is that there is a substantial asymmetry between their comprehension and production abilities. Such an asymmetry has been attested in heritage speakers, and is likely present in all populations with incomplete knowledge of a language (and, to a lesser extent, even in fluent speakers), but the label *receptive bilingualism* refers to the largest possible asymmetry between comprehension and production.

Not only there is an asymmetry between comprehension and production, but also the relationship between them in RBs is not straightforward. It appears reasonable to expect RBs with better comprehension to also have better production, but the data does not provide clear evidence for it. On one hand, HRBs outperform LRBs both in production and in comprehension. On the other hand, in the HRB group, there is no correspondence between comprehension and production task results. Those with best comprehension abilities are not necessarily those with best production abilities, and some of the HRBs with the lowest production abilities had average or above average comprehension abilities.

8.2 Limitations of this study

The main limitation of this study is that it is based on a relatively small sample. The LRB sample is especially small, so that, unfortunately, it could not be included in statistical analyses; this happened because the differences between HRBs and LRBs that warranted their separation were discovered after the testing was done. However, one needs to consider the research context of this study: the size of the Nain community (1039 residents; 620 of them aged 19 and over, according to the Statistics Canada 2006 census), the relative proportion of the population with the target characteristics of RBs, the difficulties of successful research recruitment, as well as the prohibitive cost of travel and research stays in the Arctic. In addition, many community members experience discomfort about being tested on their ancestral language. The present sample size is a

success made possibly only by extensive networking and the assistance of local community members interested in research that can support Inuttitut revitalization. I greatly appreciate the courage and motivation of those who completed the study.

Another limitation is the relatively small number of items in each condition in the grammar tasks. Because this was an exploratory study of RBs, the small number of items was dictated by a large number of variables in each test, and a large number of tests. It was important to keep the total testing time within reasonable limits to make it possible to complete an individual's testing in one day because all the testing had to be done during one three-week long trip. However, it is important that the number of participants and items was still sufficient to establish reliable differences and similarities between the fluency groups, and demonstrate that in the grammar tasks, HRBs' performance was, in most cases, different from chance. Future research on receptive bilingualism needs to look at more linguistic variables and also at different languages.

8.3 Implications for bilingualism

First of all, this study focuses on an aboriginal language, while studies of psycholinguistically similar populations (heritage speakers) usually focus on immigrant languages. Since this study showed that incomplete acquirers of an aboriginal language share acquisition history and characteristics of linguistic system and processing with incomplete acquirers of immigrant languages, findings from studies on immigrant heritage languages can be extended to aboriginal heritage language and vice versa.

This study contributes data on a new language - Inuttitut, and on a new population - receptive bilinguals. While heritage language studies included participants whose profile was similar to that of receptive bilinguals, such participants were not treated as a separate group. This study showed explicitly that RBs are a subset of low-proficiency heritage speakers, sharing with them such characteristics as incomplete knowledge of functional

morphology and a strong asymmetry between comprehension and production skills, but possessing poorer (for some of them, minimal) production skills than heritage speakers. RBs are not individuals possessing only residual knowledge of the target language; nor do they possess full knowledge of the language that they can access only in comprehension. In fact, RBs with fluent-like comprehension and a complete absence of production at all turned out to be a myth.

While it is often assumed that individuals with better comprehension also have better production skills, this study showed that it is not always the case. In the case of RBs, there is a dissociation - better comprehension skills do not necessarily translate into better production skills. Though production and comprehension make use of the same linguistic knowledge, RBs have much more practice listening to their heritage language than speaking it. Most of the time, they speak their dominant language, English, because it is much easier for them to express themselves in that language, and they often avoid speaking the heritage language because of insecurity in their knowledge. As discussed above, there are two types of incomplete language knowledge: missing a category entirely and possessing a category but having difficulty connecting specific features with their corresponding morphemes. Both types of incomplete knowledge, especially the second one, present more problems in production than in comprehension, as described above.

Since the target language of this study is so different typologically from better-studied heritage languages, this study also provides data on incomplete acquisition of properties not previously studied in heritage languages, namely, remoteness features in tense morphemes and morpheme order. Morpheme order is especially interesting because polysynthetic languages like Inuttitut provide the best testing ground for it. RBs of even the lowest proficiency know the basic morpheme order: The agreement+mood marker comes after all postbases. However, the domain of postbases, where a speaker needs to know restrictions on the ordering of specific postbases, is more difficult for them.

Support was found for several hypotheses that predict which variables will be affected:

the regression-type hypotheses (based on the order of acquisition), the interlanguage-, or convergence-type hypotheses (based on (non-)convergence with the dominant language), and (inconclusively) the hypothesis that morphemes with more semantic content are more likely to be retained. I found that all the factors underlying each of these hypotheses - order of acquisition, convergence with the dominant language, and the amount of semantic content - play a role, and variables affected by more than one of these factors are more vulnerable.

8.4 Implications for language revitalization

A practical contribution of this study contains the tests that I have developed for Labrador Inuttitut. These tests can be used for assessment of RBs and heritage speakers of this dialect, and, with slight adaptation, of other dialects of Inuktitut. In particular, the elicited imitation task that involved multimorphemic words equal to a proposition proved a very powerful test for RBs that correlated with all other measures. This test can be used as screening for extremely low production abilities; together with a comprehension test, such as the word translation task, it would constitute screening for HRBs. Both tasks are easy to conduct and analyze, and are good predictors of grammatical proficiency, as shown in this study; an HRB is an individual who scores low on the elicited imitation task, but high on the word translation task.

In language shift situations, RBs are often the last generation to have some kind of competence that allows them to function in the language. Because their knowledge is incomplete and insecure, RBs, unfortunately, cannot act as language consultants, unless their language is so endangered that no better speakers are available; in that case, the data elicited from them should be treated with caution. Nor can one expect that if RBs are simply encouraged to speak the language as they are, it would put the language back in use. One of the goals of a successful language revitalization program is to increase

the number of speakers through teaching the target language, and do it while fluent speakers are still around. RBs are clearly different from individuals who have not had any exposure to the target language, and from those who were exposed to that language but did not acquire receptive competence. In this study, HRBs and even LRBs have a basic receptive vocabulary and knowledge of certain aspects of Inuttitut grammar, and this, just as in the case of heritage speakers in general, as Benmamoun et al. (2010) state, "puts them years ahead of anyone studying the language from scratch" (p. 83). Since their grammars are missing certain categories and have insecure knowledge of others, RBs will benefit from grammar instruction. However, because they acquired Inuttitut as an L1, in a naturalistic setting, they might resist explicit instruction in grammar or have difficulty with it (as reported in Johns & Mazurkewich, 2001, and in the studies of immigrant heritage speakers in language classes, e.g. Bowles, 2011). To overcome this issue, an immersion program may be recommended. Also, the program should emphasize strengthening speech production skills, while continuing to refine comprehension.

However, a language teaching program alone is not enough (let alone that it is not always available). In order to maintain the skills learned in class, RBs need to practice them in the community. Fluent speakers need to be supportive of RBs' attempts to speak Inuttitut, encourage them and help them if they make an error or do not know how to express their message.

Finally, in order to raise the next generation as speakers and not RBs, parents, teachers, and all fluent speakers need to talk to children in the aboriginal language. This is not new advice, but, given the results of this study, I would like to emphasize that it is not enough for children to be exposed to a heritage language. If they are only overhearers and are not required to participate in the conversation, they are likely to become RBs. If they are spoken to and expected to speak, they are more likely to develop speaking skills, which they will need to maintain through practice and use as they grow up.

Appendix A

Protocol for interviews on language behaviour

A.1 Background (RBs and FBs)

1. When and where were you born? If not in Nain, when did you come to Nain? Where have you lived before?
2. When did you start school? Where? What did you do after school?
3. Are you employed? What do you do?

A.2 Language acquisition history (RBs and FBs)

1. Who did you grow up with? What language did they speak to you? And to each other? If they spoke both Inuttitut and English, how often did they use each language? Did they want you to speak Inuttitut?
2. What language(s) did other relatives/other people speak to you when you were a child?
3. What did you hear more often: people speaking Inuttitut to you, or just speaking it to each other in your presence?
4. Were you expected to participate in conversations in Inuttitut? Were you expected to answer in Inuttitut if people talk to you in Inuttitut?
5. Do you know what was the first language you started to speak?
6. Have you ever spoken Inuttitut fluently? If yes, when?
7. Have you ever been punished for speaking Inuttitut, or discouraged from using it?
8. Did people around you use Inuttitut when they wanted to say something that you were not supposed to hear (secrets, gossips, swearing)? If yes, did you understand what they said?
9. Do you remember what language children around you spoke before you started school? What language did you speak to them?
10. When did you start learning English? How did you learn it?
11. What language did your teachers speak at school? Were you taught Inuttitut at school (as a subject)? What language did students speak to each other? Did you speak Inuttitut to other children during your school age?
12. Have you ever taken any Inuttitut class?
13. Do you speak any languages other than Inuttitut and English?

A.3 Language use (RBs and FBs)

1. Who do you live with? What language do they speak to you?
2. Who speaks Inuttitut to you? Do you have any relatives/friends/acquaintances who speak only Inuttitut, but can't speak English? Do you talk to them often? Do you ever start talking to them first?
3. How often do you hear Inuttitut (whenever you can/every say/several days a week/ once a week/occasionally)?

A.4 Self-assessment of language skills (RBs)

1. How much do you understand in Inuttitut (everything/most of it/the general idea/some of it/just some words)?
2. When two people are talking to each other (not to you) in Inuttitut, how much do you understand? Is it different from when somebody talks directly to you in Inuttitut?
3. When you hear someone you don't know speaking Inuttitut, is it harder to understand than if it was someone you know?
4. Does anybody speaks Inuttitut to you over the phone? Is there a difference for you between hearing Inuttitut over the phone and hearing it when you see the person who is talking?
5. Do you listen to the radio in Inuttitut? How much do you understand?
6. Are you able to translate from Inuktitut to English?
7. How much can you say in Inuttitut?
8. What is stopping you from speaking it now (you don't know enough words/it is difficult to put words together/it is difficult to put the words together quick enough to participate in a conversation/you are afraid of possible reaction of others)?

A.5 Self-assessment of language skills (FBs)

1. How much do you understand in Inuttitut (everything/most of it/the general idea/some of it/just some words)?
2. Do you ever make mistakes when you speak Inuttitut?
3. Can you read and write in Inuttitut?
4. Do you listen to the radio in Inuttitut? How much do you understand?
5. Which language are you more comfortable with/find it easier to speak?
6. If you are talking to a person who is bilingual, which language would you speak?
7. Why do you think some people who understand Inuttitut cannot speak it?

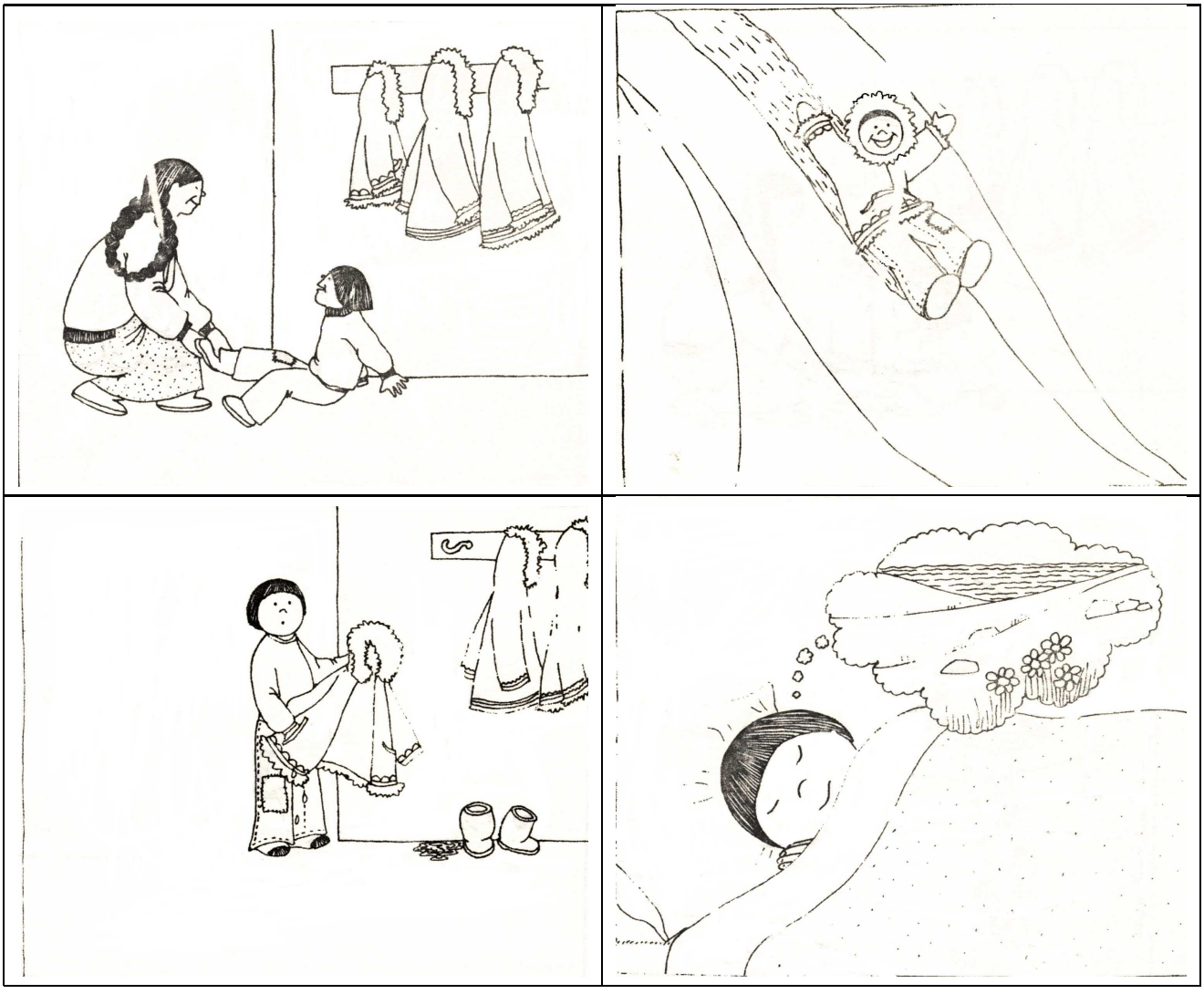
A.6 Language attitudes (RBs and FBs)

1. Should, in principle, all Labrador Inuit be able to speak Inuttitut? If so, what should be done to make this happen?
2. Do you want your (future) children to speak Inuttitut? Do you want them to be fully bilingual in Inuttitut and English?

3. Is it useful to speak to one's children in Inuttitut?
4. Do you think that the Labrador Inuit in the future (your future grandchildren) will speak Inuttitut? How many of them would?
5. How would you feel if Labrador Inuttitut disappeared (if nobody would speak it anymore)?
6. When somebody makes mistakes in Inuttitut, is it good or bad to correct?
7. Here in Nain, if a person tries to speak Inuttitut, but has difficulties, e.g. makes mistakes or takes a long time to say something, how do people react? Are they patient with such a person? Are they annoyed? Do they laugh? Do they switch to English? How does it make you feel?
8. Is it important to understand Inuttitut? Why? In what situations?
9. In what situations is it important to be able to speak Inuttitut? Why?
10. Is it confusing to know two languages?
11. (RBs) Are there problems that you experience because you don't speak Inuttitut? What kind of problems? (FBs) Do people who don't speak Inuttitut have any problems because of that? What kind of problems?
12. (RBs) Would your life be different if you could speak Inuttitut? How?
    (FBs) Would your life be different if you could not speak Inuttitut? How?

Appendix B

Pictures for the picture description task



Appendix C

Elicited imitation stimuli

IKalutsiasimangngilagut
IKalu-tsia-sima-ngngi-lagut
char-nice/much-PERF-NEG-NEGD.1PL
'We hardly had any char at all.'

salummasaigiaKanginnaKattaKugut
salummasa-i-giaKa-nginna-Katta-Kugut
clean-AP-necessary/have.to-always-PLURACT-INDIC.1PL
'We always have to clean up.'

atuagaliulautsimavungali
atuaga-liu-lautsima-vunga-li
book-make-LONG.AGO.PAST-INDIC.1SG-and
'I have written a book before.'

sivannialautsimalugunnaiKunga
sivannia-lautsima-lu-gunnai-Kunga
go.to.church-LONG.AGO.PAST-and-not.anymore-INDIC.1SG
'I haven't been to church in a while.'/'I hardly ever go to church anymore.'

sugusiuKatigilautsimajaga
sugusi-u-Katigi-lautsima-jaga
child-be-together-LONG.AGO.PAST-PART.1SGS.3SGO
'We grew up together with him/her.' (lit.'We were children together')

anenguaKataulautsimangngilangali
ane-ngua-Katau-lautsimangngi-langa-li
go.out-play-do.with.somebody-never-NEGD.1SG-also
I never play outside with them

angiggamekKujaulaugamali
angigga-me-kKu-jau-lau-gama-li
home-be.located.at-tell-PASS-DPST-CAUS.1SG-also
'I was told to stay home.'

nigimmânguagiattuniakKugulli
nigi-mmaa-ngua-giattu-nia-kKugu-lli
eat-plentifully-play-go.in.order.to-NFUT-INDIC.1SG-and
'We will be going for a picnic.'

nipalâttailiKujaunginnalaukKugut
nipalaa-ttaili-Ku-jau-nginna-lau-kKugut
make.noise-prevent-tell-PASS-always-DPST-INDIC.1PL
'We were always told to be quiet.'

ilinniaviliagumaKattangimagikKunga
ilinnia-vi-lia-guma-Katta-ngi-magi-kKunga
learn-place-go.to-want-PLURACT-NEG-real-INDIC.3SG
'I don't really like going to school.'

Appendix D

Stories for the story retelling task

D.1 Story 1

Nainimiungutlunga
Naini-miu-u-tlunga
Nain-resident-be-CONJ.1SG
I am from Nain.
CHECKLIST ITEM: live(I, Nain)

tamâni Nainimi inolilaukKunga.
ta-maani naini-mi inuuli-lauC-Kunga
here Nain-LOC.SG born-DPST-INDIC.1SG
I was born here in Nain.
CHECKLIST ITEM: born(I, Nain)

AllagalâniakKunga pitjutigillugu
Alla-galaa-niaC-Kunga pitjuti-gi-llugu
Write-a.little-NFUT-INDIC.1SG concern/relevance-have.for-OBJ3SG.CONJ.FUT
I'll write a short story about
CHECKLIST ITEM: tell about

aullaKattanigiKattajavuttinik Tasiujammut.
aulla-Katta-ni(k)-gi-Katta-ja-vuttinik Tasiuja-mut
leave-PLURACT-result.of.action-have(for)-PLURACT-TR.PART-POSS.1PLS.SG/D/PLO Tasiujak-ALLAT.SG
our trips we have up to Tasiujak.
CHECKLIST ITEM: trips/going off/being on the land (2 pt)

PannailiaKiKattavugut
Pannai-liaKi-Katta-vugut
Get.ready.to.go-INCEP.-PLURACT.-INDIC.1PL
We start to prepare to go off
CHECKLIST ITEM: prepare(we)

kisiani Kaujimagutta silakKiniammangât.
kisiani Kaujima-gutta silakKi-niaC-mangaat
only know-COND.1PL fine.weather-NFUT-COND.3SG
only when we know the weather will be fine.
CHECKLIST ITEM: IFF(know(we, fine weather))

Ammalu kenaujaKatsiatuagutta
Amma-lu kenaujak-Ka-tsia-tua-gutta
Also-and money-have-well/good-only/as.long.as-COND.1PL
and if we have enough money
CHECKLIST ITEM: if have money

taKuatsavuttinik ammalu kiasalenitsavuttinik.
taKuak-tsak-vuttinik amma-lu kiasaliini-tsak-vuttinik
food-stuff.for-POSS.1PS.S/D/PO also-and gasoline-POSS.1PLS.SG/D/PLOBJ
for our grub and gas.
CHECKLIST ITEM: for food and gas

Faraitâgimi aullaluaKattavugut unuttut Inuit AvungaliaKiKattamata.
Faraitaagi-mi aulla-lua-Katta-vugut unuttut Inuk-it avungnga-liaKi-Katta-mata
Friday-LOC.SG leave-more-PLURACT.-INDIC.1PL lots person-ABS.PL go.north-INCEP-PLURACT-CAUS.3PL.DISJ
We usually go on Friday because that is the time a lot of people go north.
CHECKLIST ITEM: leave(we, on Friday)

SugusikkagumaKattagaluakkunga
Sugusik-kka-guma-Katta-galuak-Kunga
Child-POSS.1SG.PL-want-PLURACT-although-INDIC.1SG
I like to take the children
CHECKLIST ITEM: like(take.along(I, children))

tâvatuak uKumaitsaniagasugigannuk tigusiKattangilagut.
taava-tuak uKumai-tsa-nia-gasugi-gannuk tigu-si-Katta-ngi-lagut
thing-only heavy/hard-be.too-think.that-CAUS.1D take-AP-PLURACT-NEG-NEGD.1PL
but when we think we will have a hard time, we don't take them.
CHECKLIST ITEM: but not if we think we'll have hard time/load will be heavy

Tapâneligatta silakKijâtsiavaKattavugut
Tappaani-i-li-gatta silakKi-jaa-tsia-va-Katta-vugut
Up.there-located-INGR-CAUS.1PL fine.weather-enjoy(weather)-very-a.lot-PLURACT.-INDIC.1PL
When we are up there we really have a great time/enjoy the nice weather
CHECKLIST ITEM: enjoy(we, up there)

pinasuagalatluta
pinasua-gala-tluta
hunt-a.bit-CONJ.1PL
we hunt
CHECKLIST ITEM: hunt (2 pt)

aulasagiatlutalu
aulasa-gia-tluta-lu
catch.fish-go.to-CONJ.1PL-and
and fish.
CHECKLIST ITEM: catch fish (2 pt)

PinasualuaKattavugut aKigginik, tuttunik, illâgusinnik sunatuinnanillu niKitsaginiattavuttinik.
Pinasua-lua-Katta-vugut aKiggik-nik tuttuk-nik illaagusik-nik suna-tuinnak-nik-lu niKik-tsak-gi-niaC-ta-vuttinik
Hunt-mostly-PLURACT-INDIC.1PL partridge-MIK.PL caribou-MIK.PL porcupine-MIK.PL what-INDEF-MIK.PL-and food-stuff.for-have.for-NFUT-TR.PART-POSS.1PS.S/D/PO
We usually hunt for partridges, caribou, porcupine and other animals for food.
CHECKLIST ITEM: (hunt) (we, partridges/caribou/porcupine/other))

AulasagiaKattavugut iKalutuinnanik, ilangani itlonnik piKattagaluatluta
Aulasa-gia-Katta-vugut iKaluk-tuinnak-nik ilangani itluuk-nik pi-Katta-galua-tluta
Fish-go.to-PLURACT-INDIC.1PL arctic.char-just/only-MIK.PL sometimes lake.trout-MIK.PL pi-PLURACT-even-CONJ.1PL
We fish for arctic char, sometimes lake trout.
CHECKLIST ITEM:(fish)(we, arctic char/lake trout/brook trout)

piugitsiaKattangitavut.
Piu-gi-tsia-Katta-ngi-tavut
Good-find/consider-very-PLURACT-NEG-INDIC.1PLS.3PLO
We are not too fussy about them (We don't really like them).
CHECKLIST ITEM: not(like(we, lake trout))

Ânâtlikulunnik piKattagaluagivugut mikijukulutuinnait.
Aanaatlik-kuluk-nik pi-Katta-galua-gi-vugut miki-ju-kuluk-tuinnak-it
Brook.trout-little-MIK.PL pi-PLURACT-even-also-INDIC.1PL small-PART.3SG-little-just/only-ABS.PL
We also get brook trout but they are very small.
CHECKLIST ITEM: small(brook trout)

AvaneKattavugut maggonik ullonik ilangani pingasunik sitamanillonet.
Avani-i-Katta-vugut maggok-nik ullu(k)-unik ilangani pingasut-nik sitamat-nik-luuniit
North-located-PLURACT-INDIC.1PL two-MIK.PL day-MIK.D sometimes three-MIK.PL four-MIK.PL-or
We are usually up north for 2 days, sometimes three or four days.
CHECKLIST ITEM: be.up.north(we, 2 days(smt 3,4 days)

IlagiluaKattatavut atâtakkokka
Ilagi-lua-Katta-tavut ataata-kkuu-kka
Travel.with-mostly-PLURACT-PART.1PS.3PO father-travel.by-POSS.1PL
We usually go out with my father
CHECKLIST ITEM: go with father

ammalu ânakkokka.
amma-lu aanak-kkuu-kka
also-and grandmother-travel.by-POSS.1PL
and grandmother.
CHECKLIST ITEM: go with grandmother

Tappaungagiamut sitamanik sitontinik iniggaKattavugut.
Tappaunga-gia-mut sitamat-nik situuntik-nik ingigga-Katta-vugut
Up.there-go.to-ALLAT four-MIK.PL hour-MIK.PL travel-PLURACT-INDIC.1PL
It takes 4 hours to get there when we travel.
CHECKLIST ITEM: travel(up.there, 4 hours)

Piujualunginna inigigianga.
piu-ju-alu-nginna inik-gi-gia-nga
good-PART.3SG-much/big-always place-have.for-action.of-POSS.3SG.SG
It is a beautiful place to be.
CHECKLIST ITEM: good place/beautiful/nice

Jarinik maggonik Napâttuliakatagivugut, 138 kilometers auka 138 mailitut ininga.
Jarik-nik maggok-nik napaattu-lia-kata-gi-vugut 138 kilometers auka 138 mailik-tut inik-nga
Year-MIK.PL two-MIK.PL Napaattuk-go.to-REPET-also-INDIC.1PL 138 kilometers no 138 mile-PART.3PL distance-POSS.3SG.SG
For the past two years we have been going to Napâttuk. It's 138 kilometers, no, 138 miles away.
CHECKLIST ITEM: go(we, Napaattuk, 2 years)

Piujualommijuk,
Piu-ju-alu-u-mmi-juk
Good-PART.3SG-very-be-also-PART.3SG
It's a beautiful place too;
CHECKLIST ITEM: good place(Napaattuk)

anginitsâluit iKalungit.
angi-nitsa(k)-alu-it iKaluk-it
big-COMPAR-very-ABS.PL arctic.char/fish-ABS.PL
the fish are bigger.
CHECKLIST ITEM: bigger(fish)

Kappianattugalak aiviugianganut
Kappia-naC-tuk-galak aiviu-gia-nga-nut
Fear-can.cause-PART.3SG-a.bit ?-go.to-3s.poss-?
It's a bit scary to get there
CHECKLIST ITEM: scary(at Napaattuk)

Kaningiluatlamut.
Kaningi-lua-tla-mut
far.away-more-too.much-ALLAT
because it is very far.
CHECKLIST ITEM: far(Napaattuk)

TappaungaKattavugut kisiani Kanuiniangituagutta.
Tappaunga-Katta-vugut kisiani Kanui-nia-ngi-tua-gutta
Up.there-PLURACT-INDIC.1PL only of.concern-NFUT-NEG-hope.that-COND.1PL
We only go there when we think we will be ok.
CHECKLIST ITEM: go IFF(think(we, be.ok)

Taimakalauk. Nakummek unikkâtitaugalâgama aulakatannigiKattajavuttinik.
Taima-kalauk nakummiik unikkaa-tit-tau-galaa-gama aulla-kata-ni(k)-gi-Katta-ja-vuttinik
this thanks tell.story-allow-PASS-a.little.bit-CAUS.1SG leave-REPET-result.of.action-have(for)-PLURACT-TR.PART-POSS.1PL.SG/D/PL
That's it. Thank you for allowing me to tell a story about our trips.
CHECKLIST ITEM: thanks

EXTRA CHECKLIST ITEM: -Katta- (pluractional) 'usually'

D.2 Story 2

Taitsumanialuk
Taitsumani-aluk
At.that.time-a.lot
Long time ago
CHECKLIST ITEM: log ago/in old days

Inuit aullâsimaKattasimajuvinet upingasâmi aullâsimavimmini
Inuk-it aullaasima-Katta-sima-ju(k)-vinik-it upingasaak-mi aullaasima-vik-mmi-ni
person-ABS.PL go.on.the.land-PLURACT-PERF-PART.3SG-used.to/former-ABS.PL early.spring-LOC.SG go.on.the.land-place-3POSS-LOC
Inuit used to be out to their spring camp;
CHECKLIST ITEM: go off to camps (2 pt)

illuKagutik illuminedlutik
illuk-Ka-gutik illuk-mi-ne-dlutik
House-have-COND.3PL/D house-3POSS-LOC-CONJ.3D/PL.REFL
if they had houses, they'd stay in their houses,
CHECKLIST ITEM: stay (in houses/cabins)

ilangit tupimmeKattatillugit.
ilangit tupik-me-Katta-tillugit.
some tent-LOC-PLURACT-CONJ.3PL.DISJ
and some stayed in tents.
CHECKLIST ITEM: stay (in tents)

Upingasâmi
Upingasaak-mi
Early.spring-LOC.SG
In the spring time
CHECKLIST ITEM: in spring

aullaKattadlutik Kimutsikut
aulla-Katta-dlutik Kimutsik-kkut
leave-PLURACT-CONJ.3D/PL.REFL dog.team-by
they would travel on dog teams
CHECKLIST ITEM: go(by dog teams)

upingngigiattujut sikuinninganunut.
upingngi-giattu-jut siku-iC-ni-nganu-nut.
wait-go.and-PART.3PL ice-lack-LOC-POSS-ALLAT
going out until open water.
CHECKLIST ITEM: go(till open water)

SikuikKâtinnagu sunatuinnanik omajutsiuKattadlutik
Siku-iC-kKaa-tinnagu suna-tuinna-nik omajuk-siu-Katta-dlutik
Ice-lack-after-CONJ.3SG.DISJ.NEG what-INDEF-MIK animal-look.for-PLURACT-CONJ.3D/P.REFL
Before the ice break-up they would hunt animals
CHECKLIST ITEM: hunt(animals) (2 pt)

sollu niglinik, iKalunik, ogâtsunik puijinillu adjigengitunik.
sollu niglik-nik, iKaluk-nik, ogaatsuk-nik puijik-nik-lu adjige-ngi-tu-nik.
for.example goose-MIK.PL arctic.char-MIK.PL rock.cod-MIK.PL seal-MIK.PL-and same/alike-NEG-PART.3SG-MIK
such as geese, char, rock cods and different species of seals.
CHECKLIST ITEM: geese/char/rock cod/seals

SilakKijaKattadlutik siKinigâtsiaKattatillugu.
SilakKi-ja-Katta-dlutik siKinik-gaa-tsia-Katta-tillugu.
Fine.weather-TR.PART-PLURACT-CONJ.3D/PL.REFL sun-get.a.lot.of-very-PLURACT-CONJ
They would enjoy beautiful sunny days.
CHECKLIST ITEM: beautiful weather/sunny

kimminaKasongummat
Kimminak-Ka-songu-mmat
Redberry-have-usually-CAUS.3PL.DISJ
There would be redberries
CHECKLIST ITEM: redberries

Kuasimajunik aputiup atâni
Kua-sima-ju-nik aputi-up ataa-ni
freeze-PERF-PART.3SG-MIK.PL snow-ERG bottom-3POSS
frozen under the snow
CHECKLIST ITEM: frozen/under snow(redberries)

augutjaumata nunivaKattadlugit jâmmisaliagidlugit.
au-gu-tjau-mata nuniva-Katta-dlugit jaammi-sak-liagi-dlugit.
melt-become-PASS-CAUS.3PL pick.berries-PLURACT-CONJ.3PL.O jam-stuff.for-make.into-conj.3p.obj
and when the snow melt they would pick them for jams.
CHECKLIST ITEM: pick for jams (redberries)

PuijinniaKattadlutik
Puijik-nia-Katta-dlutik
Seal-hunt-PLURACT-CONJ.3D/PL.DISJ
They would hunt seals
CHECKLIST ITEM: seals (2 pt)

sikumi ottunik.
siku-mi ottuk-nik.
ice-LOC.SG basking.seal-MIK.PL
on the ice.
CHECKLIST ITEM: on the ice(seals)

Sikuigutimmalu utakKiuKattadlutik utakKiuviKappat.
Siku-iguti-mmat-lu utakKiu-Katta-dlutik utakKiu-vik-Ka-ppat.
Ice-without-CAUS.3SG.DISJ-and wait.a.long.time-PLURACT-CONJ.3D/PL.REFL wait.a.long.time-place-have-COND.3SG
And when the ice is gone they would wait at their berths for seals.
CHECKLIST ITEM: wait (they, for seals)

Kisingit Kanutuinnak atuttausot
Kisik-ngit Kanuk-tuinnak atu-ttau-sot
Sealskin-poss.3sg.pl how-indef use-pass-can.3pl
You can use the seal skin any way you want
CHECKLIST ITEM: use any way (sealskin)

sollu kamiliagillugit, pualuliagillugit, KalliliagijauKattalaujummijut, atigiliagidlugit, nasaliagidlugit Kanutuinnak annugâtsautillugit atuttauKattadlutik.
sollu kamik-liagi-llugit, pualuk-liagi-llugit, Kallik-liagi-jau-Katta-lauju-mmi-jut, atigi-liagi-dlugit, nasakliagi-dlugit Kanuk-tuinnak annugaak-tsak-u-ti-llugit atu-ttau-Katta-dlutik.
for.example boot-make.into-fut.conj.3pl.O mitt-make.into-fut.conj.3pl.O pants-make.into-pass-pluractat.that.time(pst)-also-part.3pl parka-make.into-conj.3pl.O hat-make.into-conj.3pl.O how-indef clothingstuff.for-be-make-fut.conj.3pl.O use-pass-pluract-conj.3d/pl.refl
to make seal skin boots, mitts, pants, parka, cap, you can make any kind of clothing out of a seal skin.
CHECKLIST ITEM: boots/mitts/parka/cap/clothing

NiKingit
NiKik-ngit
Food.meat-poss.3sg.pl
meat
CHECKLIST ITEM: meat

asikKitauKattalaungitut, panittitausot nikkuliagidlugit,
asikKi-tau-Katta-lauC-ngi-tut, paniC-ti-tau-sot nikkuk-liagi-dlugit,
waste-pass-pluract-dpst-neg-part.3pl dry-cause-pass-can.3pl dried.meat-make.into-conj.3pl.O
the meat would not be wasted, it would be dried
CHECKLIST ITEM: dry(meat)

ilonnasianga niKijanga asikKitauKattalaungituk
ilonna-tsiak-nga niKik-jak-nga asikKi-tau-Katta-lauC-ngi-tuk
all-really-poss.3sg.sg meat-piece-poss.3sg.sg waste-pass-pluract-dpst-neg-part.3pl
all the meat wouldn't be wasted,
CHECKLIST ITEM: not(wasted(meat))

allât inaluangit panittitausot ubvalu igallugit.
allaat inaluak-ngit paniC-ti-tau-sot ubvalu iga-llugit.
even lower.intestine-poss.3sg.pl dry-cause-pass-can.3pl or cook-fut.conj.3p.O
even the intestines would be dried or cooked.
CHECKLIST ITEM: dried/cooked(intestines)

NiaKungata Kagitanga mamattomijuk.
NiaKuk-ngata Kagitak-nga mamat-tu-u-mi-juk.
Head-poss Brain-poss.3sg.sg delicious-part.3sg-be-also-part.3sg
Also the brain is tasty.
CHECKLIST ITEM: tasty (brain)

Taitsumanialuk Kisingit
Taitsumani-aluk Kisik-ngit
At.that.time-augm sealskin-abs.pl
In them days long ago sealskins
CHECKLIST ITEM: sealskins

igunatsitauKattalaummijut KaKuttaulidlutik mikKuidlutinut
iguna-tsi-tau-Katta-lauC-mi-jut KaKuttak-uli-dlutik mikKuk-iC-dlutik-nut
age/ferment-become-PASS-PLURACT-DPST-also-PART.3PL white-become-CONJ.3D/PL.REFL fur/feathers-lack-CONJ.3D/PL.REFL-ALLAT
used to be aged until they turn white and all the fur is off
CHECKLIST ITEM: aged/white/fur comes off

atungatsaliudlugit ubvalu kamingita sinitsagijanginni.
atunga-tsak-liu-dlugit ubvalu kamik-ngita sinik-tsak-gi-ja-nginni.
skin.boot.bottom-stuff.for-make-CONJ.3PL.O or sealskin.boot-POSS edge-stuff.for-have.for-TR.PART-3P.POSS.LOC
to make skin boot bottoms or use them for trimming on top of their boots.
CHECKLIST ITEM: make (boot bottoms/trimming)

SikKungit igunatsitauKattadlutik mamattomata nigigiangit igunautillugit piluattumik utjujait sikKungit igunatsitauKattadlutik, Kisingit atungatsautillugit.
SikKu-ngit iguna-tsi-tau-Katta-dlutik mamat-tu-u-mata nigi-gia-ngit iguna-u-tillugit piluattumik utjujait sikKu-ngit iguna-tsi-tau-Katta-dlutik, Kisik-ngit atungak-tsau-tillugit.
Flipper-POSS.3SG.PL age/ferment-become-PASS-PLURACT-CONJ.3D/PL.REFL delicious-PART.3SG-be-CAUS.3PL eat-go.to-poss age-ferment-be-CONJ.3PL.DISJ piluattumik bearded.seal flipper-POSS.3SG.PL age/ferment-become-PASS-PLURACT-CONJ.3D/PL.REFL sealskin-POSS.3SG.PL skin.boot.bottom-be.able.to.be-CONJ.3PL.REFL
They would age the flippers because they are good to eat when they are aged, especially the square flippers, the skin would be used for boot bottoms.
CHECKLIST ITEM: age/ferment(flippers)

Ammalu Inuit naKitagutiliuKattadlutik,
Ammalu Inuk-it naKitagutik-liu-Katta-dlutik,
Also-and person-ABS.PL sealskin.line-make-PLURACT-CONJ.3D/PL.REFL
Also Inuit would make skin lines
CHECKLIST ITEM: make(skin lines)

Kanutuinnak puijet atuttausot .
Kanuk-tuinnak puiji-it atu-tau-sot
How-INDEF seal-ABS.PL use-PASS-can.3PL
You can use the meat any way,
CHECKLIST ITEM: use(seal meat, any way)

Kimminullu niKitsautillugit
Kimmik-nu-llu niKi-tsak-u-tillugit.
dog-ALLAT-and food/meat-stuff.for-be-CONJ.3PL.DISJ
such as for dog food
CHECKLIST ITEM: use as dog food

Ojuliuttaugamik puijivinet mamattuit topaiKatillugit.
Oju-liu-tau-gamik puijik-vinik-i mamat-tu-it topai-Ka-tillugit.
boiled.meat-make-PASS-CAUS.3PL.REFL seal-former-ABS.PL delicious-PART.3SG-ABS.PL doughboy/dumpling-have-CONJ.3PL.DISJ
When you boil the seal meat they are very tasty with dumplings.
CHECKLIST ITEM: tasty in dumplings(seal meat)

Kisingit anulianguKattadlutik Kimminut, ipigautatsautillugit, allât kamitsautillugit Kimminut
Kisik-ngit anuk-liangu-Katta-dlutik Kimmik-nut, ipigautak-tsau-tillugit, allaat kamik-tsak-u-tillugit Kimminut
sealskin-POSS.3SG.PL harness-be.made.into-PLURACT-CONJ.3D/PL.REFL dog-ALLAT whip-be.able.to.be-CONJ.3PL.DISJ even boot-stuff.for-be-CONJ.3PL.DISJ dog-ALLAT
The skin would be used for dog harnesses, dog whips, even make dog boots
CHECKLIST ITEM: make(dog harnesses/dog whips/dog booties)

upingasâmi imauligaimmat Kimmet itigangit kilialiaKisongummata akuni Kimutuagamik.
upingasaa-mi ima-uli-gai-mmat Kimmik-it itigak-ngit kili-a-liaKi-songu-mmata akuni Kimutuagamik.
early.spring-LOC.SG water-become-x-CAUS.3SG.DISJ dog-ABS.PL foot-POSS.3PL cut-?-INCEP-usually-CAUS.3PL.DISJ a.long.time travel
in the spring time when the ice is watery because the dog's feet would start cutting up from watery ice if they go long distance to travel.
CHECKLIST ITEM: cut on ice(dog feet)

EXTRA CHECKLIST ITEM: -Katta- (pluractional) 'usually'

D.3 Story in English

When I go camping
CHECKLIST ITEM: camping (2 pt)

in Ontario,
CHECKLIST ITEM: Ontario

it's a little different from camping in Labrador.
CHECKLIST ITEM: different from Labrador

We don't hunt, like Inuit in Labrador,
CHECKLIST ITEM: not (hunt)

though we sometimes fish in lakes.
CHECKLIST ITEM: catch fish (2 pt)

Sometimes we catch big fish, like pike, but more often, we get some smaller fish, like bass.
CHECKLIST ITEM: fish(pike/bass)

Then we build a fire and cook them.
CHECKLIST ITEM: cook by fire(fish)

The water in small lakes is usually warm in the summer, and when we don't want to fish anymore, we swim in the lake.
CHECKLIST ITEM: swim

We also pick berries.
CHECKLIST ITEM: pick(berries)

Northern berries like redberries and bakeapples don't grow in Ontario,
CHECKLIST ITEM: not(have(redberries/bakeapples))

but we have wild raspberries and blueberries.
CHECKLIST ITEM: have(raspberries/blueberries)

One needs to be cautious when picking berries, because black bears like them too.
CHECKLIST ITEM: bears

A friend of mine actually met one while picking raspberries - a bear cub who was eating the berries on the other side of the bush!
CHECKLIST ITEM: met(friend, bear)

We also like hiking in the woods
CHECKLIST ITEM: hike

and climbing hills
CHECKLIST ITEM: climb(hills)

to enjoy beautiful views.
CHECKLIST ITEM: enjoy(views)

My husband always brings his camera and takes photos on such trips.
CHECKLIST ITEM: photos

There are many nice places in Ontario where we like to camp. To get to our camping places, we usually drive three or four hours from our city, then hike.
CHECKLIST ITEM: drive to camping places

But if my husband and me take our daughter with us, we just drive and camp next to the car,
CHECKLIST ITEM: take(daughter)

because she is too small for long hikes, but too big to be carried.
CHECKLIST ITEM: can't hike (daughter)

Sometimes we rent a boat and go to places that can be reached only by boat.
CHECKLIST ITEM: rent(boat)/go by boat

Some people don't like camping.
CHECKLIST ITEM: not(like(some people, camping))

They either don't feel comfortable away from town, or are afraid of bad weather.
CHECKLIST ITEM: not(comfortable)/afraid of weather

It's true that the weather can bring surprizes. Once, when I was camping with my family, a serious storm happened. The wind was so strong that a few big trees fell down. Luckily, no one was hurt.
CHECKLIST ITEM: storm

But most of the time, camping is happy time for me.
CHECKLIST ITEM: happy time (camping)

Appendix E

Word lists for the word translation task

E.1 Word translation task stimuli

E.1.1 Nouns

Family
anânak 'mother'
atâtak 'father'
panik 'daughter'
innik 'son'
People
angutik 'man'
annak 'woman'
ilannak 'friend'
sugusik 'child'
nutagak 'baby'
Animals/wildlife
tuttuk 'caribou'
Kimmik '(Husky) dog'
IKaluk 'trout, char'
atlak 'black bear'
ogak 'cod'
nanuk 'polar bear'
naujak 'gull'
Time
uvluk 'day'
unnuak 'night'
ukiuk 'winter'
aujak 'summer'
Food/drink
mannik 'egg'
immuk 'milk'
pitsik 'dried fish'
niaKojak 'bread'
Places
ilinniavvik 'school'

niuvivvik ‘store’
ânniasiuvik ‘hospital’
Clothes
kamik ‘boot’
nasak ‘hat’
pualuk ‘mitten’
Plants
kimminak ‘red berry (lingonberry)’
paungak ‘black berry (crowberry)’
napâttuk ‘tree’
piguttuk ‘flower’
Nature
kok ‘brook, river’
KakKak ‘hill’
ujagak ‘stone, rock’
Transportation
Kamutik ‘sled’
umiak ‘boat’
tingijok ‘airplane’
Body parts
niuk ‘leg’
aggak ‘hand’
niaKuk ‘head’
ijik ‘eye’
Other things
kenaujak ‘money’
pinguak ‘toy’
tupik ‘tent’
unikkausik ‘story’

E.1.2 Verbs

Body needs and functions
nigijuk ‘he/she is eating’
sinittuk ‘he/she is sleeping’
Kanimajuk ‘he/she is sick’
kâjuk ‘he/she is hungry’
imijuk ‘he/she is drinking’
Movement
pisuttuk ‘he/she is walking’
appalijuk ‘he/she is running’
misijuk ‘he/she is jumping’
puitjujuk ‘he is/she swimming’
tingijuk ‘it is flying’
katattuk ‘he/she fell, dropped’
pâllajuk ‘he/she fell down’
siagijuk ‘he/she slipped’
Directed movement
anijuk ‘he/she went out’
Kaijuk ‘he/she is coming/came’
aullajuk ‘he/she went away’
tikijuk ‘he/she arrived’
utijuk ‘he/she came back’

Perception
takujuk 'he/she sees'
tusâttuk 'he/she hears'
nâlajuk 'he/she is listening'
Feelings, psychological states
nalligusujuk 'he/she loves'
Kaujimajuk 'he/she knows'
mamatsajuk 'he/she likes taste'
Kuviasuttuk 'he/she is happy'
puitsajuk 'he/she forgets'
pingigajuk 'he/she worries'
piugijuk 'he/she likes'
ijujuk 'he/she laughs'
Activities
ilinniajuk 'he/she is learning'
igajuk 'he/she is cooking'
atuatsijuk 'he/she is reading'
nunivajuk 'he/she is picking berries'
pinguajuk 'he/she is playing'
Kukijuk 'he/she is shooting'
mitsujuk 'he/she is sewing'
iggutujuk 'he/she is washing clothes'
tutsiajuk 'he/she is singing, praying'
Other
ikajujuk 'he/she is helping'
uKattuk 'he/she is talking'
itsivajuk 'he/she is sitting down'
atsijuk 'he/she is giving'
nukKajuk 'he stopped'
niuvijuk 'he/she is buying'
katititaujuk 'he/she is getting married'
pigujuk 'he/she/it is growing'
siKumijuk 'he/she broke'
napvajuk 'he/she found'
asiujijuk 'he/she lost'

E.2 List of most basic words

E.2.1 Words that are familiar to all participants

anânak 'mother'
atâtak 'father'
panik 'daughter'
innik 'son'
tuttuk 'caribou'
Kimmik 'dog'
nanuk 'polar bear'
immuk 'milk'
kamik 'boot'
nasak 'hat'
Kamutik 'sled'
kenaujak 'money'

tupik ‘tent’
nigijuk ‘he/she is eating’
Kanimajuk ‘he/she is sick’
katattuk ‘he/she fell, dropped’
pâllajuk ‘he/she fell down’
mitsujuk ‘he/she is sewing’

Words with roots that are familiar to all participants

niuvivvik ‘store’
ilinniavvik ‘school’
ilinniajuk ‘he/she is learning’
uKattuk ‘he/she is talking’
itsivajuk ‘he/she is sitting down’

Appendix F

Morpheme comprehension stimuli

F.1 Tense

F.1.1 Recent past vs. near future (*Did X already V or will X V soon?*)

Past

ITEM ID: TRp1
SilakKi-suak ullumi. John ani-kKau-juk.
Weather-nice today John go.out-RPST-PART3SG
'The weather is nice today. John went out.'
QUESTION: Did John already go out, or will he go out soon?
ANSWER: already

ITEM ID: TRp2
Johnny Kaja-liu-sok. Nuta-mik Kaja-liu-kKau-juk.
Johnny kayak-make-one.who.can new-MIK.SG kayak-make-RPST-PART.3SG
'Johnny can make kayaks. He made a new kayak.'
QUESTION: Will Johnny make a kayak soon, or did he already make one?
ANSWER: already

ITEM ID: TRp3
Kimmina-it pigu-sima-lit-tut. Sally nuniva-kKau-juk.
Redberry-ABS.PL grow-PERF-INGR-PART.3PL Sally pick.berries-RPST-PART.3SG
'Redberries are ripe now. Sally picked some berries.'
QUESTION: Did Sally already pick berries, or will she pick some soon?
ANSWER: already

ITEM ID: TRp4
Mary iga-sima-juk manni-nik. Nigi-kKau-jangit.
Mary cook-PERF-PART.3SG egg-PL.MIK eat-RPST-PART.3SGS.3PLO
'Mary has cooked eggs. She ate them.'
QUESTION: Will Mary eat eggs soon, or did she already eat them?
ANSWER: already

ITEM ID: TRp5
Tuktu-luvini-Ka-vuk mâ-ni. Tommy tuktu-nnia-gia-kKau-juk.
Caribou-a.lot.of-have-INDIC.3SG here Tommy caribou-hunt-go.to-RPST-PART.3SG
'There is a lot of caribous here. Tommy went hunting for caribou.'
QUESTION: Did Tommy already go hunting, or will he go hunting soon?
ANSWER: already

Future

ITEM ID: TRf1
Mary-up Katanguti-nga illu-lik ilinniavi-up sanniani. Mary-up pulâ-gia-niat-tanga.
Mary-ERG cousin-POSS.3SG.SG house-has school-ERG beside Mary-ERG visit-go.to-NFUT-PART.1SGS.3SGO
'Mary's cousin has a house beside the school. Mary will visit her.'
QUESTION: Will Mary visit her cousin soon, or did she already visit her cousin?
ANSWER: soon

ITEM ID: TRf2
Johnny aittau-juk. Sini-niat-tuk.
Johnny yawn-PART.3SG Sleep-NFUT-PART.3SG
'Johnny is yawning. He will sleep.'
QUESTION: Did Johnny already sleep, or will he go to bed soon?
ANSWER: soon

ITEM ID: TRf3
Mary ilinnia-juk mitsu-gia-mik. Mary atigi-liu-niat-tuk.
Mary learn-PART.3SG sew-NOMINALIZER-MIK.SG Mary parka-make-NFUT-PART.3SG
'Mary learns to sew. Mary will make a parka.'
QUESTION: Will Mary make a parka soon, or did she already make it?
ANSWER: soon

ITEM ID: TRf4
IKalu-luvini-Ka-vuk kom-mi. Johnny iKalu-nnia-gia-niat-tuk.
Char-a.lot.of-have-INDIC.3SG river-LOC.SG Johnny char-hunt-go.to-NFUT-PART.3SG
'There is a lot of char in this river. Johnny will go fishing for char.'
QUESTION: Did Johnny already go fishing, or will he go fishing soon?
ANSWER: soon

ITEM ID: TRf5
Tommy te-tu-gia-mik mamatsa-juk. Te-tu-niat-tuk immu-lim-mik.
Tommy tea-consume-NOMINALIZER-MIK.SG like.taste-PART.3SG tea-consume-NFUT-PART.3SG milk-have-MIK.SG
'Tommy likes drinking tea. He will have tea with milk.'
QUESTION: Will Tommy have his tea soon, or did he already have it?
ANSWER: soon

F.1.2 Distant past vs. distant future (*Did X already V, or will he V later?*)

Past

ITEM ID: TDp1
Tommy tuktu-vini-tu-laut-tuk
tommy caribou-former-consume-DPST-PART.3SG
('Tommy ate caribou meat.')
QUESTION: Did Tommy already eat caribou meat, or will he eat it later?
ANSWER: already

ITEM ID: TDp2
Tommy sikitu-mik niuvi-laut-tuk
tommy skidoo-MIK.SG buy-DPST-PART.3SG
('Tommy bought a skidoo.')
QUESTION: Will Tommy buy a skidoo later, or did he already buy one?
ANSWER: already

ITEM ID: TDp3
Tommy illu-liu-laut-tuk
tommy house-make-DPST-PART.3SG
('Tommy built a house.')
QUESTION: Did Tommy already build a house, or will he build one later?
ANSWER: already

ITEM ID: TDp4
Mary KakKa-mut appasi-laut-tuk
mary hill-ALLAT run-DPST-PART.3SG
('Mary ran to the hill.')
QUESTION: Will Mary run up the hill later, or did she already run?
ANSWER: already

ITEM ID: TDp5
Johnny Kamuti-liu-laut-tuk
johnny sled-make-DPST-PART.3SG
('Johnny made a dog sled.')
QUESTION: Did Johnny already make a dog sled, or will he make it later?
ANSWER: already

Future

ITEM ID: TDf1
Johnny Kimutsi-lât-tuk.
johnny dog.team-DFUT-PART.3SG
('Johnny will ride a dog sled.')
QUESTION: Will Johnny ride a dog sled later, or did he already ride?
ANSWER: later

ITEM ID: TDf2
Mary pani-mi-nut kenauja-mik atsi-lât-tuk.
mary daughter-POSS.3SG.SG-ALLAT money-MIK.PL give-DFUT-PART.3SG
('Mary will give money to her daughter.')
QUESTION: Did Mary already give money to her daughter, or will she give her money later?
ANSWER: later

ITEM ID: TDf3
Sally nutâ-nik kami-tta-lât-tuk
sally new-MIK.PL boot-get-DFUT-PART.3SG
('Sally will get new boots.')
QUESTION: Will Sally get new boots later, or did she already get boots?
ANSWER: later

ITEM ID: TDf4
Sally niuvipvi-mmu-lât-tuk.
sally store-ALLAT-DFUT-PART.3SG
('Sally will go to the store.')
QUESTION: Did Sally already go to the store, or will she go later?
ANSWER: later

ITEM ID: TDf5
Mary pitsi-liu-lât-tuk.
mary dried.fish-make-DFUT-PART.3SG
('Mary will dry fish.')
QUESTION: Will Mary dry some fish later, or did she already dry some?
ANSWER: later

F.1.3 Near future vs. distant future (*Will X V today or on some other day?*)

Near future

ITEM ID: TFn1
Mary atua-tsi-guma-juk. Nutâ-mik atuagat-ta-niat-tuk.
Mary read-AP-want-PART.3SG new-MIK.SG book-get-NFUT-PART.3SG
'Mary wants to read. She will buy a new book now.'
QUESTION: Will Mary buy a new book today or on some other day?
ANSWER: today

ITEM ID: TFn2
Sally Kanima-juk. Ânniasiuvi-lia-niat-tuk
Sally sick-PART.3SG hospital-go-NFUT-PART.3SG
'Sally is sick. She will go to the hospital now.'
QUESTION: Will Sally go to the hospital on some other day or today?
ANSWER: today

ITEM ID: TFn3
Sally manni-si-kKau-juk. Iga-niat-tangit.
Sally eggs-si-RPST-PART.3SG cook-NFUT-PART.3SS.3PO
'Sally brought eggs. She will cook them soon.'
QUESTION: Will Sally cook eggs today or on some other day?
ANSWER: today

ITEM ID: TFn4
Johnny akuninit najam-mi-nik taku-gunnait-tuk. Pulâ-gia-niat-tanga.
Johnny for.a.long.time sister-POSS.3SG.SG-MIK see-not.anymore-PART.3S visit-go.to-DFUT-PART.3SGS.3SGO
'John hasn't seen his sister for a long time. He will visit her today.'
QUESTION: Will Johnny visit his sister on some other day or today?
ANSWER: today

ITEM ID: TFn5
Tommy tuktu-vinit-tu-guma-juk. Tuktu-siu-gia-niat-tuk.
Tommy caribou-former-consume-want-PART.3SG caribou-hunt-go-NFUT-PART.3SG
'Tommy wants to eat some caribou meat. He will go caribou hunting now.'
QUESTION: Will Tommy go hunting today or on some other day?
ANSWER: today

Distant future

ITEM ID: TFd1
Tommi-up Kamutigik siKumi-sima-jok. ÂkKi-lâ-tagik.
Tommy-ERG sled break-PERF-PART.3D fix-DFUT-PART.3SGS.3DO
'Tommy's sled has broken. He will fix it later.'
QUESTION: Will Tommy fix his sled on some other day or today?
ANSWER: on some other day

ITEM ID: TFd2
Sally mânna nukak-ku-mi-ni-juk. Uti-lât-tuk.
Sally now younger.sister-family-POSS.3SG.SG.-LOC.SG-PART.3SG return-DFUT-PART.3SG
'Sally is now at her younger sister's place. She will return later.'
QUESTION: Will Sally come back today or on some other day?
ANSWER: on some other day

ITEM ID: TFd3
Mary-up annugâ-ngit salummait-tuit. Iggutu-lât-tangit.
Mary-ERG clothes-POSS.3SG.PL dirty-PART.3PL wash-DFUT-PART.3SGS.3PLO
'Mary's clothes are dirty. She will wash them later.'
QUESTION: Will Mary wash her clothes on some other day or today?
ANSWER: on some other day

ITEM ID: TFd4
Ukiuk Kai-vallia-vuk. Mary nutâ-mik atigi-liu-lât-tuk.
Winter come-get.closer/more-INDIC.3SG Mary new-MIK.SG parka-make-DFUT-PART.3SG
'Winter is getting closer/coming. Mary will make a new parka.'
QUESTION: Will Mary make a parka today or on some other day?
ANSWER: on some other day

ITEM ID: TFd5
Nilla-tâttu-aluk. Tavatuak, nigumi-tsi-umi-lât-tuk.
Cold-very-AUGM however warm-AP-a.bit.more-DFUT-PART.3SG
'It's really cold. It will warm up later.'
QUESTION: Will it warm up on some other day or today?
ANSWER: on some other day

F.1.4 Recent past vs. distant past (*Did X V today or on some other day?*)

Recent past

ITEM ID: TPr1
AkKute-t siagi-janât-tut. Johhny siagi-kKau-juk.
Road-ABS.PL slip-PASS-make.too.much-PART.3PL Johnny slip-RPST-PART.3SG
'The roads are slippery. Johnny just slipped.'
QUESTION: Did Johnny slip on the road today or on some other day?
ANSWER: today

ITEM ID: TPr2
Johnny ânnia-juk. Niu-mi-nik nakai-kKau-juk
Johnny hurt-PART.3SG leg-POSS.3SG-MIK break-RPST-PART.3SG
'Johnny is in pain. He just broke his leg.'
QUESTION: Did Johnny break his leg on some other day or today?
ANSWER: today

ITEM ID: TPr3
Johnny-up anâna-nga MaKovi-mi-juk. Johnny MaKovi-lia-kKau-juk.
Johnny-ERG mother-POSS.3SG.SG Makkovik-LOC.SG-PART.3SG Johnny Makkovik-go.to-RPST-PART.3SG
'Johnny's mother is in Makkovik. Johnny just went to Makkovik.'
QUESTION: Did Johnny go to Makkovik today or on some other day?
ANSWER: today

ITEM ID: TPr4
Mary nunivap-vi-mik Kaujima-juk. Nunivappa-kKau-juk.
Mary pick.berries-place-MIK.SG know-PART.3SG pick.berries-a.lot-RPST-PART.3SG
'Mary knows a good place for berry-picking. She just picked a lot of berries.'
QUESTION: Did Mary pick berries on some other day or today?
ANSWER: today

ITEM ID: TPr5
Mary kenauja-mik atsi-sima-juk Sally-mut. Sally immu-si-kKau-juk.
Mary money-MIK.SG give-PERF-PART.3SG Sally-ALLAT.SG Sally milk-get-RPST-PART.3SG
'Mary gave Sally money. Sally bought milk.'
QUESTION: Did Sally buy milk today or on some other day?
ANSWER: today

Distant past

ITEM ID: TPd1
Mary akKi-umi-juk. Kanima-laut-tuk
Mary cure-a.bit.more-PART.3SG sick-DPST-PART.3SG
'Mary feels better. She was sick before.'
QUESTION: Was Mary sick on some other day or today?
ANSWER: on some other day

ITEM ID: TPd2
Mary-up angaju-nga nutagat-ta-tainna-sima-juk. Mary taku-giattu-laut-tuk nutaga-mik.
Mary-ERG older.sister-POSS.3SG.SG baby-gather-just.recently-PERF-PART.3SG Mary see-go.in.order.to-DPST-PART.3SG baby-MIK.SG
'Mary's older sister has just had a baby. Mary went to see the baby.'
QUESTION: Did Mary see the baby today or on some other day?
ANSWER: on some other day

ITEM ID: TPd3
Johnny pinasua-ti-suak. Angiju-mik tuktu-laut-tuk
Johnny hunt-one.who-great/very big-MIK.SG caribou-DPST-PART.3SG
'Johnny is a good hunter. He got a big caribou.'
QUESTION: Did Johnny kill a caribou on some other day or today?
ANSWER: on some other day

ITEM ID: TPd4
Tommy kamatsia-ngit-tuk. Itsivauta-mmik siKumi-tsi-laut-tuk
Tommy careful-NEG-PART.3SG chair-MIK.SG break-AP-DPST-PART.3SG
'Tommy is not careful. He broke a chair.'
QUESTION: Did Tommy break a chair today or on some other day?
ANSWER: on some other day

ITEM ID: TPd5
Mary nutâ-mik ulu-tta-gia-lik. Asiuji-laut-tuk ulu-mi-nik
Mary new-MIK.PL ulu-get-need.to-has disappear-DPST-PART.3SG ulu-POSS.3SG-MIK
'Mary needs a new ulu. She lost her ulu.'
QUESTION: Did Mary lose her ulu on some other day or today?
ANSWER: on some other day

F.2 Aspect

F.2.1 Pluractional vs. ongoing single event (*Does X usually (always/often) V, or is X V-ing now?*)

With *-Katta-*: pluractional/habitual

ITEM ID: KiAh1
Tommy illu-liu-Katta-juk
Tommy house-make-PLURACT-PART.3SG
'Tommy builds houses.'
QUESTION: Does Tommy usually build houses, or is he building a house now?
ANSWER: usually

ITEM ID: KAh1
Mary ilinniavvi-mut pisu-Katta-juk
Mary school-ALLAT walk-PLURACT-PART.3SG
'Mary walks to school.'
QUESTION: Does Mary usually walk to school, or is she walking to school now?
ANSWER: usually

ITEM ID: KAh2
Mary iga-Katta-juk illâgusi-mik.
Mary cook-PLURACT-PART.3SG porcupine-MIK.SG
'Mary cooks porcupine.'
QUESTION: Is Mary cooking porcupine meat now, or does she usually cooks porcupine meat?
ANSWER: usually

ITEM ID: KPh1
Sally nâlausija-Katta-juk Inuttitun
Sally radio.listen-PLURACT-PART.3SG in.Inuktitut
'Sally listens to the radio in Inuktitut.'
QUESTION: Does Sally usually listen to the radio in Inuttitut, or is she listening now?
ANSWER: usually

ITEM ID: KPh2
Mary Kimmina-nnik nuniva-Katta-juk KakKa-mi tasi-up Kula-ni
Mary redberry-MIK.PL pick.berries-PLURACT-PART.3SG hill-LOC.SG lake-ERG.SG over-LOC
'Mary picks redberries on a hill.'
QUESTION: Is Mary picking berries on that hill now, or does she usually pick berries there?
ANSWER: usually

ITEM ID: KSh1
Mary mamatsa-Katta-juk te-mik.
Mary taste.like-PLURACT-PART.3SG tea-MIK.SG
'Mary likes tea (in general).'
QUESTION: Does Mary always like tea, or is she enjoying the tea she is drinking now?
ANSWER: always

ITEM ID: KSh2 Tommy Kanima-Katta-juk.
Tommy sick-PLURACT-PART.3SG
'Tommy gets sick often/easily.'
QUESTION: Is Tommy sick now, or does he get sick often?
ASNWER: often

Without -Katta-: one-time, ongoing

ITEM ID: KiAo1
Mary nutâ-mut niuvipvi-lia-vuk.
Mary new-ALLAT.SG store-go.to-INDIC.3SG
'Mary is going to the new store.'
QUESTION: Is Mary going to the new store now, or does she usually go there?
ANSWER: now

ITEM ID: KAo1
Tommy nauja-up manni-nga-nik nigi-juk.
Tommy gull-ERG.SG egg-POSS.3SG.SG-MIK eat-PART.3SG
'Tommy is eating a gull's egg.'
QUESTION: Is Tommy eating a gull's egg now, or does he usually eat gull's eggs?
ANSWER: now

ITEM ID: KAo2
Johnny appali-juk sitja-mut.
Johnny run-PART.3SG sea-ALLAT.SG
'Johnny is running to the sea(shore).'
QUESTION: Does Johnny usually run to the sea shore, or is he running there now?
ANSWER: now

ITEM ID: KPo1
Sally ikaju-juk Tommy-mik.
Sally help-PART.3SG Tommy-MIK.PL
'Sally is helping Tommy.'
QUESTION: Is Sally helping Tommy now, or does she usually help him?
ANSWER: now

ITEM ID: KPo2
Johnny unikka-ngua-juk sannillita sugusi-ngi-nnut.
Johnny tell.story-pretend-PART.3SG neighbour child-POSS.3SG.PL-ALLAT
'Johnny is telling stories to his neighbour's children.'
QUESTION: Does Johnny usually tell stories to his neighbour's children, or is he telling a story now?
ANSWER: now

ITEM ID: KSo1
Sally tatsuma-ni itsivauta-mmi-juk.
Sally this-LOC chair-LOC-PART.3SG
'Sally is sitting in this chair.'
QUESTION: Is Sally sitting in this chair now, or does she usually sit in this chair?
ANSWER: now

ITEM ID: KSo2
Anguti-nga aulla-mmat, Mary pingiga-juk.
Man-POSS.3SG.SG leave-CAUS.3SG.DISJ Mary worry-PART.3SG
'Because her husband is away, Mary worries.'
QUESTION: Does Mary usually worry when her husband is away, or is she worrying now?
ANSWER: now

F.2.2 Progressive vs. perfective with achievement verbs (*Is X still V-ing, or has X already V-ed?*)

With -lik-: progressive

ITEM ID: Lo1
Mary tiki-lit-tuk
Mary arrive-INGR-PART.3SG
'Mary is arriving.'
QUESTION: Is Mary still arriving, or has she already arrived?
ANSWER: still arriving

ITEM ID: Lo2
Johnny ani-lit-tuk
Johnny go.out-INGR-PART.3SG
'Johnny is going out.'
QUESTION: Has Johnny already left, or is he still about to leave?
ANSWER: still about to leave/leaving

ITEM ID: Lo3
Tommy kata-lit-tuk napâttu-mit.
Tommy fall.from.height-INGR-PART.3SG tree-ABL
'Tommy is falling from a tree.'
QUESTION: Is Tommy still falling from a tree, or has he already fallen?
ANSWER: still falling

ITEM ID: Lo4
Tommy anga-lit-tuk.
Tommy go.home-INGR-PART.3SG
'Tommy is going home.'
QUESTION: Is Tommy already at home, or still on his way home?
ANSWER: still on his way

ITEM ID: Lo5
Johnny siaKi-lit-tuk.
Johnny slip-INGR-PART.3SG
'Johnny is slipping.'
QUESTION: Is Johnny still falling, or has he already fallen?
ANSWER: still falling

Without -lik-: perfective

ITEM ID: Li1
Sally umiam-mit nakka-juk.
Sally boat-ABL fall-PART.3SG
Sally fell from the boat
QUESTION: Has Sally already fallen, or is she still falling?
ANSWER: already fallen

ITEM ID: Li2
Mary pâlla-juk.
Mary fall.from.standing-PART.3SG
'Mary fell down (on the ground)'
QUESTION: Is Mary still falling, or has she already fallen?
ANSWER: already fallen

ITEM ID: Li3
Sally uti-juk.
Sally return-PART.3SG
'Sally came back.'
QUESTION: Is Sally back already, or still on her way back?
ANSWER: already back

ITEM ID: Li4
Johnny aulla-vuk.
Johnny leave-PART.3SG
'Johnny left.'
QUESTION: Is Johnny still about to leave, or has he already left?
ANSWER: already left

ITEM ID: Li5
Una Tommy-up pingua-nga. Johnny siKumi-ttanga.
this Tommy-ERG toy-POSS.3SG.SG Johnny break-PART.3SGS.3SGO
'This is Tommy's toy. Johnny broke it.'
QUESTION: Has Johnny already broken the toy, or is he breaking it now?
ANSWER: already broken

F.3 Agreement

F.3.1 Indicative/participial transitive (*Who V (who)?*)

ITEM ID: ATm1
Ilanna-ga-nik taku-kKau-vunga. Ikaju-kKau-Kânga
Friend-POSS.1SG.SG-MIK see-RPST-INDIC.1SG help-RPST-PART.3SGS.1SGO
'I met my friend. He helped me.'
QUESTION: Who helped who?
ANSWER: the friend helped the speaker

ITEM ID: ATm2
Uma anguti-up piugi-ngngi-lânga. Pijâgi-Katta-Kânga.
This.ERG man-ERG like-NEG-NEGD.3SGS.1SGO tease/bug-PLURACT-INDIC.3SGS.1SGO
'This man doesn't like me. He teases me.'
QUESTION: Who teases who?
ANSWER: the man teases the speaker

ITEM ID: AT1s3s1
Kaujima-jaga una angutik. Inuktitut ilinnia-ti-laut-taga
Know-PART.1SGS.3SGO this man Inuktitut learn-cause-DPST-PART.1SGS.3SGO
'I know this man. I taught him Inuktitut.'
QUESTION: Who taught who?
ANSWER: the speaker taught the man

ITEM ID: AT1s3s2
Sally Kai-lât-tuk nigimmaligutta. Taku-lautsimangi-taga.
Sally come-DFUT-PART.3SG gathering.for.food see-never-PART.1SGS.3SGO
'Sally will come to the feast. I have never seen her before.'
QUESTION: Who has never seen who?
ANSWER: the speaker has never seen Sally

ITEM ID: AT3s3s1
Atâta-ga-lu tuktu-si-lauk-Kuguk. Kuki-laut-tanga.
Father-POSS.1SG.SG-and caribou-AP-DPST-INDIC.1D shoot-DPST-PART.3SGS.3SGO
'My father and me saw a caribou. He shot it.'
QUESTION: Who shot the caribou?
ANSWER: father

ITEM ID: AT3s3s2
Tommi-lu Mary-mik taku-giu-kKau-vuguk. Piugi-kKau-ngi-tanga.
Tommy-and Mary-MIK see-for.first.time-RPST-INDIC.1D like-RPST-NEG-PART.3SGS.3SGO
'Tommy and I met (saw for the first time) Mary. He didn't like her.'
QUESTION: Who didn't like Mary?
ANSWER: Tommy

ITEM ID: AT3s3p1
Ani-ga-lu taku-lauk-Kuguk kiguttanginna-nik. Nuniva-laut-tangit.
sibling.opposite.gender-POSS.1SG.SG-and see-DPST-INDIC.1D blueberries-MIK.PL
pick.berries-DPST-PART.3SGS.3PLO
'My brother and I saw blueberries. He picked them.'
QUESTION: Who picked the blueberries?
ANSWER: brother

ITEM ID: AT3s3p2
Atâta-ga-lu paunga-tu-kKau-vuguk. Mamagi-jangit.
Father-POSS.1SG.SG-and crowberry-consume-RPST-INDIC.1D like.taste-PART.3SGS.3PO
'My father and me ate crowberries. He liked them.'
QUESTION: Who liked the berries?
ANSWER: father

F.3.2 Indicative/participial intransitive (*Who P?*)

ITEM ID: AI1s1
Anguti-ga-lu pinasua-giattu-lauk-Kuguk. Atlam-mik taku-lauk-Kunga.
man-POSS.1SG.SG-and hunt-go.in.order.to-DPST-INDIC.1D black.bear-MIK see-DPST-INDIC.1SG
'My husband and me went hunting. I saw a black bear.'
QUESTION: Who saw a bear?
ANSWER: the speaker

ITEM ID: AI1s2
Pani-ga-lu misi-tta-tlutta appali-ga-lauk-Kuguk. Imi-gusu-li-lau-kKunga.
daughter-POSS.1SG.SG-and jump-repeatedly-CONJ.1D run-repeatedly-DPST-INDIC.1D drink-need-INGR-DSPT-INDIC.1SG
'My daughter and me were running and jumping. I got thirsty.'
QUESTION: Who got thirsty?
ANSWER: the speaker

ITEM ID: AI1d1
Ilanna-ga-lu Kakka-lia-lauk-Kuguk. Paunga-nik napva-lauk-Kuguk.
Friend-POSS.1SG.SG-and hill-go-DPST-INDIC.1D blackberries-MIK.PL find-DPST-INDIC.1D
'My friend and me went up a hill. We found black berries'
QUESTION: Who found berries?
ANSWER: both the friend and the speaker

ITEM ID: AI1d2
Anâna-ga-lu ane-lauk-Kuguk uvlu natlugu. Kâ-liaKi-lauk-Kuguk.
Mother-POSS.1SG.SG-and go.out-DPST-INDIC.1D day whole hungry-become-DPST-INDIC.1D
'My mother and me were out all day. We got hungry.'
QUESTION: Who got hungry?
ANSWER: both the mother and the speaker

ITEM ID: AI1p1
Angaju-kka pingasuit pulâ-laut-tut uvan-nik. Tavatuak, Kuviasu-lau-ngi-lagut.
Older.sister-POSS.1SG.3PL three visit-DPST-PART.3PL 1SG-MIK however happy-DPST-NEG-NEGD.1PL
'My three older sisters visited me. But we were not happy.'
QUESTION: Who was not happy?
ANSWER: both the sisters and the speaker

ITEM ID: AI1p2
Ilanna-ka-nnik taku-giattu-lauk-Kunga. Oga-nnia-guma-lauk-Kugut.
Friend-poss.1sg.3pl-mik see-go.in.order.to-dpst-indic.1sg cod-hunt-want-dspt-indic.1pl
'I went to see my friends. We wanted to fish for cod.'
QUESTION: Who wanted to fish?
ANSWER: both the friends and the speaker

ITEM ID: AI3s1
Ilanna-ga sitama-nik sugusi-lik. NukKa-lautsimangngi-tuk.
Friend-poss.1sg.sg four-mik.pl child-has stop-never-part.3sg
'My friend has four children. She is always busy (never stops).'
QUESTION: Who is always busy?
ANSWER: friend

ITEM ID: AI3s2
Sally angaju-ngi-llu nâlausija-ttuit. Tusagatsa-nik tusa-guma-juk.
Sally older.sisters-poss.3sg.pl-and listen.to.the.radio-part.3pl news-mik.pl hear-want-part.3sg
'Sally and her older sisters are listening to the radio. She wants to hear the news.'
QUESTION: Who wants to hear the news?
ANSWER: Sally

ITEM ID: AI3d1
John angajuKa-mi-nik pulâ-gia-laut-tuk. Mingu-laut-tok.
John parents-poss.3sg.pl-mik visit-go.to.-dpst-part.3sg tired-dpst-part.3d
'John visited his parents. They two were tired.'
QUESTION: Who was tired?
ANSWER: his parents

ITEM ID: AI3d2
Niviatsiak ani-min-nut uKala-KatiKa-laut-tuk. Inu-tsia-ngu-lau-ngi-tok.
girl sibling.opposite.gender-poss.3sg.pl-allat.pl talk-have.company-dpst-part.3sg human-nice-be-dpst-neg-part.3d
'A girl talked to her two older brothers. They were not nice.'
QUESTION: Who was not nice?
ANSWER: the brothers

ITEM ID: AI3p1
Inni-kka-lu iKalu-nnia-gia-lau-kKugut. IKalu-lau-ngi-ttut.
son-poss.1sg.3pl-and char-hunt-go.to-dpst-indic.1pl char-dpst-neg-part.3pl
'I went fishing with my sons. They didn't catch any fish'.
QUESTION: Who didn't catch any fish?
ANSWER: the sons

ITEM ID: AI3p2
Ilanna-kka-lu ani-lauk-Kugut silalugi-tainna-tillugu. Salummai-li-lau-ttut.
Friend-poss.1sg.3pl-and go.out-dpst-indic.1pl rain-just.recently-conj dirty-ingr-dspt-part.3pl
'My friends and me went out right after the rain. They got dirty.'
QUESTION: Who was dirty?
ANSWER: the friends

Appendix G

Grammaticality judgment stimuli

G.1 Agreement mismatch

Item ID	*Grammatical*	*Ungrammatical*
Ag1	Sugusik sini-juk. Child sleep-PART.3SG 'A/the child is sleeping.'	*Sugusik sini-juit. child sleep-PART.3PL
Ag2	Tommy Kanima-juk. Tommy sick-PART.3SG 'Tommy is sick.'	*Tommy Kanima-juit. Tommy sick-PART.3PL
Ag3	Annak appali-juk. Woman run-PART.3SG 'A/the woman is running.'	*Annak appali-juit. Woman run-PART.3PL
Ag4	Mary ani-juk. Mary go.out-PART.3SG 'Mary went out.'	*Mary ani-juit. Mary go.out-PART.3PL

G.2 Case omission

Item ID	*Grammatical*	*Ungrammatical*
Cm1	Tommy te-mik mamatsa-juk. Tommy tea-MIK like.taste-PART.3SG 'Tommy likes his tea.'	*Tommy te mamatsajuk. Tommy tea like.taste-PART.3SG
Cm2	Johnny illu-mik taku-juk. Johnny house-MIK see-PART.3SG 'Johnny sees the house.'	*Johnny illuk takujuk. Johnny house see-PART.3SG
Cm3	Mary iKalu-mik iga-juk. Mary char-MIK cook-PART.3SG 'Mary is cooking char.'	*Mary iKaluk igajuk. Mary char cook-PART.3SG
Cm4	Sally sikitu-mik niuvi-juk. Sally skidoo-MIK buy-PART.3SG 'Sally bought a skidoo.'	*Sally sikitu niuvijuk. Sally skidoo buy-PART.3SG

G.3 Case oversuppliance

Item ID	*Grammatical*	*Ungrammatical*
Ci1	Angutik iju-juk. Man laugh-PART.3SG 'A man is laughing.'	*Anguti-mik iju-juk man-MIK laugh-PART.3SG
Ci2	Tommy Kai-juk. Tommy come-PART.3SG 'Tommy is coming.'	*Tommy-mik Kai-juk tommy-MIK come-PART.3SG
Ci3	Kimmik misi-juk. Dog jump-PART.3SG 'A dog is jumping.'	*Kimmi-mik misi-juk. dog-MIK jump-PART.3SG
Ci4	Nanuk puitju-juk. Polar.bear swim-PART.3SG 'A polar bear is swimming.'	*Nanu-mik puitju-juk polar.bear-MIK swim-PART.3SG

G.4 Ordering of tense and agreement morphemes

Item ID	*Grammatical*	*Ungrammatical*
Tag1	Tommy Kuviasu-lau-ttuk. Tommy happy-DPST-PART.3SG 'Tommy was happy.'	*Tommy Kuviasu-ttu-lauk. Tommy happy-PART.3SG-DPST
Tag2	Nukappiak pisu-laut-tuk. Boy walk-DPST-PART.3SG 'A/the boy walked.'	*Nukappiak pisu-ttu-lauk. Boy walk-PART.3SG-DPST
Tag3	Sally kata-laut-tuk. Sally fall-DPST-PART.3SG 'Sally fell down.'	*Sally kata-ttu-lauk. Sally fall-PART.3SG-DPST
Tag4	Mary pualu-mmik asiuji-laut-tuk Mary mitten-MIK.SG lose-DPST-PART.3SG 'Mary lost her mitten.'	*Mary pualu-mmik asiuji-ju-lauk. Mary mitten-MIK lose-PART.3SG-DPST

G.5 Ordering of tense and negation morphemes

Item ID	*Grammatical*	*Ungrammatical*
TNg1	Tommy nanu-mik taku-kKau-ngngit-tuk. Tommy polar.bear-MIK.SG see-RPST-NEG-PART.3SG 'Tommy didn't see a polar bear.'	*Tommy nanu-mik taku-ngngi-kKau-juk. Tommy polar.bear-MIK.SG see-NEG-RPST-PART.3SG
Tng2	Tommy paunga-nik nuniva-kKau-ngngit-tuk. Tommy berry-MIK.PL pick-RPST-NEG-PART.3SG 'Tommy didn't pick berries.'	*Tommy paunga-nik nuniva-ngngi-kKau-juk. Tommy berry-MIK.PL pick-NEG-RPST-PART.3SG
Tng3	Sally pâlla-kKau-ngngit-tuk. Sally fall-RPST-NEG-PART.3SG 'Sally didn't fall.'	*Sally pâlla-ngngi-kKau-juk. Sally fall-NEG-RPST-PART.3SG
Tng4	Sally pingiga-kKau-ngngit-tuk. Sally worry-RPST-NEG-PART.3SG 'Sally didn't worry.'	*Sally pingiga-ngngi-kKau-juk. Sally worry-NEG-RPST-PART.3SG

G.6 Word order

Item ID	*SOV*	*OSV*
Wo1	Sugusik pingua-mik siKumi-tsi-juk. Child toy-MIK break-AP-PART.3SG 'A child broke a toy.'	Pingua-mik sugusik siKumi-tsi-juk. toy-MIK child break-AP-PART.3SG
Wo2	Tommy tuttu-mik Kuki-tsi-sima-juk. Tommy caribou-MIK shoot-ap-perf-part.3sg 'Tommy shot a caribou.'	Tuktu-mik Tommy Kuki-tsi-sima-juk. caribou-MIK Tommy shoot-AP-PERF-PART.3SG
Wo3	Ilinniatitsijik Tommy-mik ikaju-juk Teacher Tommy-MIK help-PART.3SG 'The teacher is helping Tommy.'	Tommy-mik ilinniatitsijik ikaju-juk. Tommy-MIK teacher help-PART.3SG
Wo4	Sally Tommy-mik nalligusu-juk. Sally Tommy-MIK love-PART.3SG 'Sally loves Tommy.'	Tommy-mik Sally nalligusu-juk. Tommy-MIK Sally love-PART.3SG

Appendix H

Abbreviations

ABL - ablative case
ABS - absolutive case
ALLAT - allative case
AP - antipassive
CAUS - causative mood
COND - conditional mood
D - dual number
DFUT - distant future
DPST - distant past
ERG - ergative Case
INDIC - indicative mood
INGR - ingressive
LOC - locative Case
MIK - the *-mik* Case, oblique that functions similarly to accusative in the antipassive construction
NFUT - near future
NEG - negation
NEGD - negative declarative mood
NREF - non-reflexive
O - object
PL - plural
PART - participial mood
PASS - passive
PERF - perfective
PLURACT - pluractional
POSS - possessed
POSS.1SG.SG. - a singular noun possessed by first person singular possessor
POSS.1SG.PL. - a plural noun possessed by first person singular possessor
REF - reflexive
RPST - recent past
S - subject
SG - singular
V - verb

Bibliography

Aitchison, J. (1987). *Words in the mind.* Oxford: Blackwell.

Akhtar, N., Jipson, J., & Callanan, M. A. (2001). Learning words through overhearing. *Child development, 72*(2), 416-430.

Alanen, R. (1999). *Grammaticality judgments and reaction time measurements: A tool for analyzing the use of second language knowledge.* Dissertation Abstracts International, Section C: Worldwide, 60(1).

Albirini, A., Benmamoun, E., & Saadah, E. (2011). Grammatical features of Egyptian and Palestinian Arabic heritage speakers' oral production. *Studies in Second Language Acquisition, 33*(2), 273-303.

Allen, S. E. M. (1996). *Aspects of argument structure acquisition in Inuktitut.* Amsterdam: John Benjamins.

Allen, S. E. M., Crago, M., & Pesco, D. (2006). The effect of majority language exposure on minority language skills: The case of Inuktitut. *The International Journal of Bilingual Education and Bilingualism, 9*(5), 578-596.

Altenberg, E. P. (1991). Assessing first language vulnerability to attrition. In H. W. Seliger & R. M. Vago (Eds.), *First Language Attrition* (pp.189-206). Cambridge: Cambridge University Press.

Altenberg, E. P., & Vago, R. M. (2002). The role of grammaticality judgments in investigating first language attrition. In M. S. Schmid, B. Köpke, M. Keijzer, & L. Weilemar (Eds.), *First Language Attrition. Interdisciplinary perspectives on methodological issues* (pp. 105-129). Amsterdam: John Benjamins.

Ammerlaan, T. (1996). *"You get a bit wobbly". Exploring bilingual lexical retrieval processes in the context of first language attrition.* Unpublished Doctoral Dissertation, Katholieke Universiteit Nijmegen.

Andersen, A., Kalleo, W., & Watts, B. (2007). *Labradorimi Ulinnaisigutet: An Inuktitut-English dictionary of Northern Labrador Dialect (with an English-Inuktitut index).* Nain, NL: Torngâsok Cultural Centre.

Andersen, C. (2004). *Literacy and Language Revitalization in Labrador Inuttitut.* Unpublished manuscript, Torngâsok Cultural Centre, Nain, NL.

Andersen, C. (2009). *A sociolinguistic survey of language behaviours and attitudes in Nain, Nunatsiavut*. Unpublished M.A. thesis, Memorial University of Newfoundland, St.Johns, NL.

Andersen, C., & Johns, A. (2005). *Labrador Inuttitut: Speaking into the future, 29*, 187-205.

Andersen, R. W. (1982). Determining the linguistic attributes of language attrition. In R. D. Lambert & B. F. Freed (Eds.), *The Loss of Language Skills* (pp. 82-118). Rowley, MA: Newbury House.

Au, T. K., Knightly, L. M., Jun, S. A., & Oh, J. S. (2002). Overhearing a language during childhood. *Psychological Science, 13*(3), 238-243.

Baayen, R. H. (2008). *Analyzing linguistic data: A practical introduction to statistics using R.* Cambridge: Cambridge University Press.

Barkey, M. (2008). *The syntax of negation in Inuktitut*. Unpublished Master's Thesis, University of Toronto, Toronto.

Bar-Shalom, E., & Snyder, W. (1998). Root infinitives in child Russian: A comparison with Italian and Polish. In A. Sorace, C. Heycock, & R. Shillcock (Eds.), *Proceedings of the GALA '97 Conference on Language Acquisition*. Human Communication Research Centre, Edinburgh, Scotland.

Bates, E., Marchman, V., Thal, D., Fenson, L., Dale, P., Reznick, J. S., Reilly, J., & Hartung, J. (1994). Developmental and stylistic variation in the composition of early vocabulary. *Journal of Child Language, 21*, 85-124.

Benmamoun, E., Montrul, S. & Polinsky, M. (2010) *White paper: Prolegomena to heritage linguistics*. Ms., Harvard University.

Berko-Gleason, J. (1982). Insights from child language acquisition for second language loss. In R. D. Lambert & B. F. Freed (Eds.), *The Loss of Language Skills* (p. 13-23). Rowley, MA: Newbury House.

Bernardini, P., & Schlyter, S. (2004). Growing syntactic structure and code-mixing in the weaker language: The Ivy Hypothesis. *Bilingualism: Language and Cognition, 7*(1), 49-69.

Bittner, M. (2005). Future discourse in a tenseless language. *Journal of Semantics, 22*(4), 339-387.

Bok-Bennema, R. (1991). *Case and Agreement in Inuit.* Dordrecht: Foris Publications.

Bolonyai, A. 2007. (In)vulnerable agreement in incomplete bilingual L1 learners. *International Journal of Bilingualism, 11*, 3-21.

Borer, H., & Rohrbacher, B. (2002). Minding the absent: Arguments for the Full Competence Hypothesis. *Language Acquisition, 10*, 123-175.

Bowles, M. (2011). Measuring implicit and explicit linguistic knowledge: What can heritage language learners contribute? *Studies in Second Language Acquisition, 33*(2), 247-271.

Brown, R. (1973). *A first language: The early stages*. Cambridge, MA.: Harvard University Press.

Bruhn de Garavito, J. (2002). Verb raising in Spanish. A comparison of early and late bilinguals. *Proceedings of the 26th Annual Boston University Conference on Language Development*, 84-94. Somerville MA: Cascadilla.

Carreira, M., & Kagan, O. (2011). The results of the national heritage language survey: Implications for teaching, curriculum design, and professional development. *Foreign Language Annals, 44*(1), 40-64.

Castilla, A. P., Restrepo, M. A., & Perez-Leroux, A. T. (2009). Individual differences and language interdependence: A study of sequential bilingual development in Spanish-English preschool children. *International Journal of Bilingual Education and Bilingualism, 12*, 1-16.

Chartrand, J. P. (1985). *Inuktitut language retention among Canadian Inuit: An analysis of 1971 and 1981 Census data.* Ottawa: Carleton University.

Choi, H.-W. (2003). Paradigm leveling in American Korean. *Language Research, 39*, 183-204.

Chomsky, C. (1969). *The acquisition of syntax in children from 5 to 10*. Cambridge, MA.: MIT Press.

Chomsky, N. (1995). *The Minimalist Program*. Cambridge, MA.: MIT Press.

Clark, E. V. (2003). *First language acquisition*. Cambridge: Cambridge University Press.

Clarke, S. (2009). The manifestation of viewpoint aspect in Inuktitut. *Studia Linguistica, 63*(3), 292-322.

Compton, R. (2003). *The intonational melodies of Baffin Island Inuktitut*. Unpublished manuscript, University of Toronto.

Compton, R. (2011). *Polysynthetic word-internal adjectives and verb-like adjectives in Inuit.* Paper presented at the annual conference of Canadian Linguistic Association, University of New Brunswick, May 28-30, 2011.

Cook, C., & Johns, A. (2009). Determining the Semantics of Inuktitut postbases. In M. A. Mahieu & N. Tersis (Eds.), *Variations on Polysynthesis: The Eskaleut Languages* (pp. 149-170). Amsterdam: John Benjamins.

Cowper, E. (1998). The simple present tense in English: a unified treatment. *Studia Linguistica, 52*(1), 1-19.

Crago, M., & Allen, S. E. M. (1999). Acquiring Inuktitut. In O. L. Taylor & L. Leonard (Eds.), *Language acquisition across North America: Cross-cultural and cross-linguistic perspectives* (pp. 245-279). San Diego: Singular.

Crago, M., & Allen, S. E. M. (2001). Early finiteness in Inuktitut: The role of language structure and input. *Language Acquisition, 9*(1), 59-111.

Crago, M., Allen, S. E. M., & Hough-Eyamie, W. P. (1997). Exploring innateness through cultural and linguistic variation. In M. Gopnik (Ed.), *The inheritance and innateness of grammars* (pp.70-90). New York: Oxford University Press.

Crago, M., Allen, S. E. M., & Pesco, D. (1998). Issues of complexity in Inuktitut and English Child Directed Speech. In Clark, E. (Ed.), *The proceedings of the twenty-ninth annual child language research forum* (pp. 37-46). Stanford: Center for Study of Language and Information.

Cummins, J. (1978). Education implications of mother tongue maintenance in minority language groups. *The Canadian Modern Language Review, 34*, 395-416.

De Bot, K. (1996). Language loss. In H. Goebl, P. H. Nelde, Z. Stary, & W. Wlck (Eds.), *Contact Linguistics. An international handbook of contemporary research*, Vol. I (pp. 579-585). Berlin/New York: Mouton de Gruyter.

De Bot, K., Gommans, P. & Rossing, C. (1991). L1 loss in an L2 environment: Dutch immigrants in France. In H. W. Seliger & R. M. Vago (Eds.), *First Language Attrition* (pp. 87-98). Cambridge: Cambridge University Press.

De Groot, A. M. B., & Keijzer, R. (2000). What is hard to learn is easy to forget: The roles of word concreteness, cognate status, and word frequency in foreign language learning and forgetting. *Language Learning, 50*(1), 1-56.

de Leeuw, E., Schmid, M., & Mennen, I. (2010) The effects of contact on native language pronunciation in a migrant context. *Bilingualism: Language and Cognition, 13*(1), 33-40.

Dorais, L.-J. (1990). *Inuit uqausiqatigiit: Inuit languages and dialects*. Iqaluit: Arctic College.

Dorais, L.-J. (2010). *The language of the Inuit: Syntax, semantics, and the society in the Arctic.* Montreal and Kingston: McGill-Queen University Press.

Dorian, N. C. 1982. Language loss and maintenance in language contact situations. In R. D. Lambert & B. F. Freed (Eds.), *The Loss of Language Skills* (p. 44-59). Rowley, MA: Newbury House.

Dorian, N. C. (2006). Negative borrowing in an indigenous language shift to the dominant national language. *The International Journal of Bilingual Education and Bilingualism, 9*(5), 557-577.

Dresher, B. E., & Johns, A. (1995). The Law of Double Consonants in Inuktitut. *Linguistica Atlantica, 17*, 79-96.

Dulay, H., & Bert, M. (1974). Natural sequences in child second language acquisition. *Language Learning, 23*, 245-258.

Eubank, L. (1994). Optionality and the initial state in L2 development. In T. Hoekstra & D. Schwartz (Eds.), *Language Acquisition Studies in Generative Grammar* (p. 369-388). Amsterdam: John Benjamins.

Filip, H. (1999). *Aspect, eventuality types and noun phrase semantics*. New York: Garland.

Fromkin, V. (Ed.) (1973). *Speech errors as linguistic evidence*. The Hague: Mouton.

Fortescue, M. (1980). Affix ordering in West Greenlandic derivational processes. *International Journal of American Linguistics, 46*(4), 259-278.

Fortescue, M. (1983). Intonation contours across Inuit dialects. *Etudes/Inuit/Studies, 7*(2), 113-124.

Fortesque, M. (1984). *West Greenlandic*. Croom Helm.

Fortescue, M. (1985). Learning to speak Greenlandic: A case study of a two-year-old's morphology in a polysynthetic language. *First Language, 5*, 101-114.

Fortescue, M., & Lennert Olsen, L. (1992). The acquisition of West Greenlandic. In D. I. Slobin (Ed.), *The crosslinguistic study of language acquisition*, Vol.3 (pp. 111-220).

Fortescue, M., Jakobson, S., & Kaplan, L. (1994). *Comparative Eskimo dictionary (with Aleut cognates)*. Alaska Native Language Center, University of Alaska Fairbanks.

Godson, L. (2004) Vowel production in the speech of Western Armenian heritage speakers. *Heritage Language Journal, 2*. Retrieved from http://www.heritagelanguages.org

Goldin-Meadow, S., Seligman, M. E. P., & Gelman, R. (1976). Language in the two-year-old. *Cognition, 4*, 189-202.

Golinkoff, R. M., Hirsh-Pasek, K., & Schweisguth, M. A. (2001). A reappraisal of young children's knowledge of grammatical morphemes. In J. Weissenborn & B. Hoehle (Eds.), *Approaches to bootstrapping: Phonological, syntactic and neurophysiological aspects of early language acquisition* (pp. 176-188). Amsterdam-Philadelphia: John Benjamin.

Grammont, M. (1902). *Observations sur le langage des enfants*. Paris: Melanges Meillet.

Guasti, M. (1993). Verb syntax in Italian child grammar. *Language acquisition, 3*, 1-40.

Hagen, A. M. & de Bot, K. (1990). Structural loss and levelling in minority languages and dialects. *Sociolinguistica, 4*, 136-149.

Hakansson, G. (1995). Syntax and morphology in language attrition: A study of five bilingual expatriate Swedes. *International Journal of Applied Linguistics, 5*(2), 153-171.

Han, Y. (2000). Grammaticality judgment tests: How reliable and valid are they? *Applied Language Learning, 11*, 177-204.

Hardy, V. (2009) *Intonation in Inuktitut*. Unpublished manuscript, University of Toronto.

Harper, K. (1974) *Some aspects of the grammar of the Eskimo dialects of Cumberland Peninsula and North Baffin Island*. Ottawa: National Museums of Canada.

Hayashi, M. (2011). *The structure of multiple tenses in Inuktitut*. Ph.D. dissertation, University of Toronto.

Hayashi, M., & Spreng, B. (2005). Is Inuktitut tenseless? In C. Gurski (Ed.), *Proceedings of the 2005 Annual Conference of the Canadian Linguistic Association*.

Hendriks, P., & Spenader, J. (2006). When production precedes comprehension: An optimization approach to the acquisition of pronouns. *Language Acquisition, 13*(4), 319-348.

Hirsh-Pasek, K., & Golinkoff, R. M. (1996). The preferential looking paradigm reveals emerging language comprehension. In D. McDaniel, C. McKee, & H. Cairns (Eds.), *Methods for assessing children's syntax* (pp. 105-124). Cambridge, MA: MIT Press.

Hulsen, M. (2000). *Language loss and language processing. Three generations of Dutch migrants in New Zealand*. Unpublished Doctoral Dissertation, Katholieke Universiteit Nijmegen.

Hulsen, M., de Bot, K., & Weltens, B. (1999). Language shift, language loss and language processing: An investigation of three generations of Dutch immigrants in New Zealand. In E. Huls & B. Weltens (Eds.), *Artikelen van de Derde Sociolinguistische Conferentie* (pp. 221-232). Delft: Eburon.

Hyltenstam, K., & Abrahamson, N. (2003). Maturational constraints in SLA. In C. Doughty & M. Long (Eds.), *The Handbook of Second Language Acquisition* (pp. 539-588). Oxford: Blackwell.

Jaeger, T. F. (2008). Categorical data analysis: Away from ANOVAs (transformation or not) and towards logit mixed models. *Journal of Memory and Language, 59*(4), 434-446.

Jakobson, R. (1941). *Child Language, Aphasia, and Phonological Universals*. English translation reprinted in 1968, Hague: Mouton.

Jeddore, R. (1976). *Labrador Inuit: Uqausingit*. Nain: Labrador Inuit Committee on Literacy.

Jia, G. & Aaronson, D. (2003). A longitudinal study of Chinese children and adolescents learning English in the United States. *Applied Psycholinguistics, 24*, 131-161.

Johns, A. (1995). On some mood alternations in Labrador Inuttut. In C. Burgess, K. Dziwirek, & D. Gerdts (Eds.), *Grammatical Relations: Theoretical Approaches to Empirical Questions* (pp. 131-151). Center for the Study of Language and Information, Stanford University.

Johns, A. (1999). The decline of ergativity in Labrador Inuttut. In L. Bar-el, R.-M. Dechaine & C. Reinholtz (Eds.), *Papers from the Workshop on Structure and Constituency in Native American Languages, MIT Occasional Papers in Linguistics, 17*, 73-90.

Johns, A. (2001). An inclination towards accusative. *Linguistica Atlantica, 23*, 127-144.

Johns, A. (2009). Aboriginal languages - heritage languages? *Paper presented at Heritage Language Workshop*, University of Toronto, May 7, 2009.

Johns, A., & Mazurkewich, I. (2001). The role of the university in the training of Native language teachers. Labrador. In L. Hinton & K. Hale (Eds.), *The Green Book of Language Revitalization in Practice* (pp. 355-366). San Diego: Academic Press.

Jordens, P., de Bot, K., van Os, C., & Schumans, J. (1986). Regression in German case marking. In B. Weltens, K. de Bot, & T. van Els (Eds.), *Language Attrition in Progress* (pp. 159-176). Dordrecht: Foris.

Kaufman, D., & Aronoff, M. (1991). Morphological disintegration and reconstruction in first language attrition. In H. W. Seliger & R. M. Vago (eds.), *First Language Attrition* (pp. 175-188). Cambridge: Cambridge University Press.

Knightly, L., Jun, S., Oh, J., & Au, T. (2003) Production benefits of childhood overhearing. *Journal of the Acoustic Society of America, 114*, 465-474.

Köpke, B. 1999. *L'attrition de la premire langue chez le bilingue tardif: Implications pour l'étude psycholinguistique du bilinguisme.* Unpublished Doctoral Dissertation, Universit de Toulouse-Le Mirail.

Köpke, B., & Schmid, M. (2004) Language attrition. The next phase. In Schmid, M., Köpke, B., Keijzer, M., & Weilemar, L. (Eds.), *First Language Attrition: Interdisciplinary Perspectives on Methodological Issues* (pp. 1-143.) Amsterdam: John Benjamins.

Kroll, J. F., & Dussias, P. E. (2004). The comprehension of words and sentences in two languages. In T. K. Bhatia & W. C. Ritchie (Eds.), *The Handbook of Bilingualism* (pp. 169-200). Blackwell.

Laleko, O. (2010). *The syntax-pragmatics interface in language loss: Covert restructuring of aspect in heritage Russian.* Ph.D. dissertation, University of Minnesota.

Lambert, R. D. (1989). Language attrition. *Review of Applied Linguistics, 83-84*, 1-18.

Lambert, W. (1975). Culture and language as factors in learning and education. In A. Wolfgang (Ed.), *Education of Immigrant Students* (pp. 55-83). Toronto: Ontario Institute for Studies in Education.

Lambert, W. E. (1990). Issues in foreign language and second language education. *Proceedings of the 1st Research Symposium on Limited English Proficient Student Issues*. Washington, DC: Office of Bilingual and Multicultural Education.

Lambert, R. D., & Moore, S. J. (1986). Problem areas in the study of language attrition. In B. Weltens, K. de Bot, & T. van Els (Eds.), *Language Attrition in Progress* (pp. 177-186). Dordrecht: Foris.

Laufer, B. (1998). The development of passive and active vocabulary in a second language: Same or different? *Applied Linguistics, 12*, 255-271.

Laufer, B., & Paribakht, T. S. (1998). Relationship between passive and active vocabularies: Effects of language learning context. *Language Learning, 48*, 365-391.

Levine, G. 2000. *Incomplete L1 acquisition in the immigrant situation: Yiddish in the United States*. Tübingen: Niemeyer.

Lust, B., Flynn, S., & Foley, C. (1996). What children know about what they say: Elicited imitation as a research method for assessing children's syntax. In D. McDaniel, C. McKee & H. Smith Cairns (Eds.), *Methods for assessing children's syntax* (pp.271-356). Cambridge, MA: MIT Press.

Maher, J. (1991). A crosslinguistic study of language contact and language attrition. In H. W. Seliger & R. M. Vago (Eds.), *First Language Attrition* (pp. 67-84). Cambridge: Cambridge University Press.

Major, R. C. (1992). Losing English as a first language. *Modern Language Journal, 76*, 190-208.

Martinez Mira, M. I. (2009). Spanish heritage speakers in the southwest: Factors contributing to the maintenance of the subjunctive in concessive clauses. *Spanish in context, 6*(1), 105-126.

Mazurkewich, I. 1991. Language maintenance in Labrador: trying to hold the line. *Linguistica Atlantica, 13*, 57-69.

Meisel, J. M. (1994). Getting FAT: Finiteness, Agreement and Tense in early grammars. In J. Meisel (Ed.), *Bilingual first language acquisition* (pp. 89-130). Amsterdam: John Benjamins.

Meisel, J. M. (2007). The weaker language in early child bilingualism: Acquiring a first language as a second language? *Applied Psycholinguistics, 28*, 495-514.

Montrul, S. (2002a). Incomplete acquisition and attrition of Spanish tense/aspect distinction in adult bilinguals. *Bilingualism: Language and Cognition, 5*, 39-68.

Montrul, S. (2002b). Convergent outcomes in L2 acquisition and L1 loss. In M. S. Schmid, B. Köpke, M. Keijzer, & L. Weilemar (Eds), *First Language Attrition. Interdisciplinary perspectives on methodological issues* (pp. 259-279). Amsterdam: John Benjamins.

Montrul, S. (2004). Subject and object expression in Spanish heritage speakers. A case of morphosyntactic convergence. *Bilingualism: Language and Cognition, 7*, 125-142.

Montrul, S. (2005). Second language acquisition and first language loss in adult early bilinguals: Exploring some differences and similarities. *Second Language Research, 21*(3), 199-249.

Montrul, S. (2007). Interpreting mood distinctions in Spanish as a heritage language. In K. Potowsky & R. Cameron (Eds.), *Spanish Contact. Policy, Social and Linguistic Inquiries* (pp. 23-40). Amsterdam: John Benjamins.

Montrul, S. (2008). *Incomplete acquisition in bilingualism: Re-examining the age factor*. Amsterdam/Philadelphia: John Benjamins.

Montrul, S., Foote, R., & Perpiñán, S. (2008a). Gender agreement in adult second language learners and Spanish heritage speakers: The effects of age and context of acquisition. *Language Learning, 58*, 3-54.

Montrul, S., Foote, R., & Perpiñán, S. (2008b). Knowledge of wh-movement in spanish L2 learners and heritage speakers. In M. Almazán, J. Bruhn de Garavito, & E. Valenzuela (Eds.), *Selected Papers from the 8th Hispanic Linguistics Symposium* (pp. 93-106). Somerville, MA: Cascadilla Press.

Munnich, E., Flynn, S., & Martohardjono, G. (1994). Elicited imitation and grammaticality judgment tasks: What they measure and how they relate to each other. In E. E. Tarone, S. M. Gass & A. D. Cohen (Eds.), *Research methodology in second language acquisition* (pp. 227-243). Lawrence Erlbaum.

Nieminen, L., & Torvelainen, P. (2003) Index of Productive Vocabulary - A Finnish Version. *Ruhe ja Kiel/Tal och Sprak, 23*(3), 119-132.

O'Grady, W., Lee, M., & Choo, M. (2001). The acquisition of relative clauses by heritage and non-heritage learners of Korean as a second language; A comparative study. *Journal of Korean Language Education, 12*, 283-294.

Oh, J., Jun, S., Knightly, L., & Au, T. (2003). Holding on to childhood language memory. *Cognition, 86*, B53-B64.

Olshtain, E., & Barzilay, M. (1991). Lexical retrieval difficulties in adult language attrition. In H. W. Seliger & R. M. Vago (Eds.), *First Language Attrition* (pp. 139-150). Cambridge: Cambridge University Press.

Pallier, C., Dehaene, S., Poline, J.-B., LeBihan, D., Argenti, A.-M., Dupoux, E., & Mehler, J. (2003). Brain imaging of language plasticity in adopted adults: can a second language replace the first? *Cerebral Cortex, 13*(2), 155-161.

Parkinson, D. J. (2000). *The interaction of syntax and morphology in the acquisition of noun incorporation in Inuktitut.* Dissertation Abstracts International, A: The Humanities and Social Sciences, 60, 8, Feb, 2896-A.

Pereltsvaig, A. (2005). Aspect lost, aspect regained: Restructuring of aspectual marking in American Russian. In P. Kempchinsky & R. Slabakova (Eds.), *Aspectual Inquiries* (pp. 369-395). Dordrecht: Kluwer.

Perez-Leroux, A., Cuza, A., & Thomas, D. (2011). Clitic placement in Spanish-English bilingual children. *Bilingualism: Language and Cognition, 14*(2), 221-232.

Polinsky, M. (1997). American Russian: Language loss meets language acquisition. In W. Browne, E. Dornisch, N. Kondrashova, & D. Zec (Eds.), *Annual Workshop on Formal Approaches to Slavic Linguistics: The Cornell meeting 1995* (pp. 370-406). Ann Arbor, MI: Michigan Slavic.

Polinsky, M. (2000). The composite linguistic profile of speakers of Russian in the U.S. In O. Kagan & B. Rifkin (Eds.), *The learning and teaching of Slavic languages and cultures* (pp. 437-465). Bloomington, Indiana: Slavica.

Polinsky, M. (2005). Word class distinctions in an incomplete grammar. In D. Ravid & H. Shildrkrodt (Eds.), *Perspectives on language and language development* (pp. 419-436). Dordrecht: Kluwer.

Polinsky, M. (2006a). Incomplete Acquisition: American Russian. *Journal of Slavic Linguistics, 14*, 191-262.

Polinsky, M. (2006b). Acquisition of Russian: Uninterrupted and incomplete scenarios. *Glossos, 8*, 1-64.

Polinsky, M. (2007a). Reaching the end point and stopping midway: different scenarios in the acquisition of Russian. *Russian Linguistics, 31*, 157-199.

Polinsky, M. (2007b). *A glass half-full? Finding empirical and theoretical value in incompletely acquired languages.* Invited talk presented at Formal Approaches to Slavic Linguistics 16, May 2007, SUNY at Stony Brook.

Polinsky, M. (2008a). Gender under incomplete acquisition: Heritage speakers' knowledge of noun categorization. *Heritage Language Journal, 6*(1). Retrieved from http://www.heritagelanguages.org.

Polinsky, M. (2008b). Relative clauses in heritage Russian: Fossilization or divergent grammar? In A. Antonenko, J. F. Bailyn, & C. Y. Bethin (Eds.), *Proceedings of the 16th Workshop on Formal Approaches to Slavic Linguistics* (pp. 333-358). Ann Arbor: Michigan Slavic Publications.

Polinsky, M. (2008c). Without aspect. In G. Corbett & M. Noonan (Eds.), *Case and grammatical relations* (pp. 263-282). Oxford: Oxford University Press.

Polinsky, M. (2009) *What breaks in A- and A-bar chains under incomplete acquisition.* Poster presented at CUNY Sentence Processing Conference, March 27, University of California at Davis.

Polinsky, M. (2011). Reanalysis in adult heritage language: New evidence in support of attrition. *Studies in Second Language Acquisition, 33*(2), 305-328.

Polinsky, M. & Kagan, O. (2007). Heritage languages: In the 'wild' and in the classroom. *Language and Linguistics Compass, 1*(5), 368-395.

Poplack, S. (1980). Sometimes I'll start a sentence in English y termino en espagnol: Towards a typology of code-switching. *Linguistics, 18*, 7-8, 581-618.

Prevost, P. & L. White. (2000). Accounting for morphological variation in L2 acquisition: Truncation or missing inflection? In M. A. Friedemann & L. Rizzi (Eds.), *The acquisition of syntax: Issues in comparative developmental linguistics* (pp. 232-235). London: Longman.

Romaine, S. (1989). *Bilingualism.* Oxford: Blackwell.

Ronjat, J. (1913). *Le developpement du langage observé chez un enfant bilingue.* Paris: Champion.

Sadock, J. (2003). *A grammar of Kalaalisut (West Greenlandic Inuttut).* Languages of the World/Materials: Vol.162. Muenchen: Lincom Europa.

Scarborough, H. (1990). Index of Productive Syntax. *Applied Psycholinguistics, 11*, 1-22.

Schlegel, J. R. 2004. *Pennsylvania German overhearers: Living with language maintenance and language loss.* Dissertation Abstracts International, A: The Humanities and Social Sciences, 2005, 65, 11, May, 4249-A.

Schlyter, S. (1993). The weaker language in bilingual Swedish-French children. In K. Hyltenstam & A. Viberg (Eds), *Progression and regression in language: Sociocultural, neuropsychological and linguistic perspectives* (pp. 289-308). Cambridge: Cambridge University Press.

Schmid, M. S. (2002). *First language attrition, use and maintenance: The case of German Jews in Anglophone countries.* Amsterdam/Philadelphia: John Benjamins.

Schmitt, E. (2004). No more reductions! To the problem of evaluation of language attrition data. In M. S. Schmid, B. Köpke, M. Keijzer, & L. Weilemar (Eds.), *First Language Attrition. Interdisciplinary perspectives on methodological issues* (pp. 105-129). Amsterdam: John Benjamins.

Seliger, H. W. (1991). Language attrition, reduced redundancy, and creativity. In H. W. Seliger & R. M. Vago (Eds.), *First Language Attrition* (pp. 227-240). Cambridge: Cambridge University Press.

Seliger, H. W. & Vago, R. M. (1991). The study of first language attrition: An overview. In H. W. Seliger & R. M. Vago (Eds.), *First Language Attrition*, 3-15. Cambridge: Cambridge University Press.

Shaer, B. (1997). Universal grammar and parameterization of temporal marking. In *Proceedings of the 33rd Annual Meeting of the Chicago Linguistic Society: The Panels*, 271-286. Chicago: Chicago Linguistic Society.

Shaer, B. (2003). Towards the tenseless analysis of a tenseless language. *Proceedings of SULA 2*, 139-156.

Sharwood Smith, M. A. (1989). Crosslinguistic influence in language loss. In K. Hyltenstam & L. K. Obler (Eds.), *Bilingualism across the lifespan* (pp. 185-201). Cambridge: Cambridge University Press.

Sherkina-Lieber, M. (2005). Fronting of wh-words in Inuktitut as focus movement. In S. Armoškaite & J. J. Thompson (Eds.), *Proceedings of WSCLA 10*, University of British Columbia Working Papers in Linguistics, 17 (pp. 191-202).

Sherkina-Lieber, M. (2008a). *An aspectual suffix -liC- in Inuktitut.* Poster presented at the Canadian Linguistics Association Annual Conference, University of British Columbia, May 31-June 2, 2008.

Sherkina-Lieber, M. (2008b). *Iterativity, habituality, and the suffix -Katta- in Labrador Inuttitut.* Paper presented at Chronos 8 International Conference on Tense, Aspect, Mood and Modality, University of Texas at Austin, October 2-5, 2008.

Sherkina-Lieber, M. (2010) Comprehension of functional morphemes by Labrador Inuttitut receptive bilinguals. In Franich, K., Iserman, K. M., & Keli, L. L. (eds.), *Proceedings of the Annual Boston University Conference on Language Development, 34*, 351-362. Sommerville, MA: Cascadilla Press.

Sherkina-Lieber, M., Perez-Leroux, A., & Johns, A. (2011). Grammar without speech production: The case of Labrador Inuttitut heritage receptive bilinguals. *Bilingualism: Language and Cognition*, 14(3), 301-317.

Silva-Corvalan, C. (1994). *Language contact and change: Spanish in Los Angeles.* Oxford: Oxford University Press.

Silva-Corvalan, C. (2003). Linguistic consequences of reduced input in bilingual first language acquisition. In S. Montrul & F. Ordonez (Eds.), *Linguistic Theory and Language Development in Hispanic Languages. Papers from the Fifth Hispanic Linguistics Symposium and the 4th Conference on the Acquisition of Spanish and Portuguese* (pp. 375-397). Sommerville, MA: Cascadilla Press.

Skarabela, B. (2007). Signs of early social cognition in children's syntax: The case of joint attention in argument realization in child Inuktitut. Lingua, 117, 1837-1857.

Skarabela, B., & Allen, S. E. M. (2010). How newness and joint attention work together in child Inuktitut: Assessing discource-pragmatic models of early argument realization. In Franich, K., Iserman, K. M., & Keli, L. L. (eds.),*Proceedings of the Annual Boston University Conference on Language Development, 34*, 385-396. Sommerville, MA: Cascadilla Press.

Smith, L. (1978). *A survey of the derivational postbases of Labrador Inuttut (Eskimo).* Ottawa: National Museums of Canada.

Song, M., O'Grady, W., Cho, S., & Lee, M. (1997). The learning and teaching of Korean in community schools. In Y.-H. Kim (ed.), *Korean Language in America* (pp. 111-127). American Association of Teachers of Korean.

Sorace, A. (1996). The use of acceptability judgments in second language acquisition research. In W. C. Ritchie & T. K. Bhatia (Eds.), *Handbook of Second Language Acquisition* (pp. 375-409). San Diego, CA: Academic Press.

Sorace, A. (2000). Differential effects of attrition in the L1 syntax of near-native L2 speakers. *Proceedings of the 24th Boston University Conference on Language Development*, 719-725. Somerville, MA: Cascadilla Press.

Spreng, B. 2001. Little v in Inuktitut: Antipassive revisited. *Linguistica Atlantica, 23*, 159-194.

Statistics Canada. (2006). www.12statcan.ca/census-recensement/2006/dp-pd/prof/92-594/details/page.cfmLang=E&Geo1=CSD&Code1=1011035&Geo2=BAND&Code2=10640001&Data=Count&SearchText=Nunatsiavut&SearchType=Begins&SearchPR=10&B1=Language&Custom= (accessed January 9, 2010).

Sturner, R. A., Kunze, L., Funk, S. G., & Green, J. A. (1993). Elicited imitation: Its effectiveness for speech and language screening. *Developmental Medicine and Child Neurology, 35*(8), 715-726.

Swadesh, M. (1952). Lexico-statistic dating of prehistoric ethnic contacts. *Proceedings of American Philosophical Society, 96*, 452-463.

Swadesh, M. (1955). Towards greater accuracy in lexico-statistic dating. *International Journal of American Linguistics, 21*, 121-137.

Swift, M. (2004). *Time in Child Inuktitut: A developmental study of an Eskimo-Aleut Language*. Berlin: Mouton de Gruyter.

Thal, D., Bates, E., Goodman, J., & Jahn-Samilo, J. (1997). Continuity of language abilities in late- and early-talking toddlers. *Developmental Neuropsychology, 13*, 239-73.

Thal, D., Bates, E., Zappia, M. J., & Oroz, M. (1996). Ties between lexical and grammatical development: Evidence from early talkers. *Journal of Child Language, 23*, 349-68.

Tsimpli, I., Sorace, A., Heycock, C., & Filiaci, F. (2004) First language attrition and syntactic subjects: A study of Greek and Italian near-native speakers of English. *International Journal of Bilingualism, 8*(3), 257-277.

Turian, D. & Altenberg, E. (1991). Compensatory strategies of child first language attrition. In H. W. Seliger & R. M. Vago (Eds.), *First Language Attrition* (pp. 207-226). Cambridge: Cambridge University Press.

Valdes, G. (2000). *Spanish for native speakers*. AATSP Professional Development Series, Handbook for Teachers K-12. Fort Worth: Harcourt College Publishers.

Valian, V. (2006). Young children's understanding of present and past tense. *Language Learning and Development, 2*(4), 251-276.

Ventureyra, V. (2005). *A la recherche de la langue perdue. Etude psycholinguistique de l'attrition de la première langue chez des coréens adoptés en France.* Ph. D. dissertation, Ecole des Hautes Etudes en Sciences Sociales, Paris.

Ventureyra, V., Pallier, C., & Yoo, H.-Y. (2004). The loss of first language phonetic perception in adopted Koreans. *Journal of Neurolinguistics, 17*, 79-91.

UNESCO. *Interactive Atlas of the World's Languages in Danger*. http://www.unesco.org/culture/languages-atlas/index.php?hl=en&page=atlasmap. Accessed on March 22, 2011.

UNESCO. (2003). *Language Vitality and Endangerment*. Retrieved from http://unesdoc.unesco.org/images/0018/001836/183699E.pdf. Retrieved on March 21, 2011.

Warter, P. (2001). *Lexical identification and decoding strategies in interscandinavian communication*. Working Papers on Multilingualism, 21, Hamburg.

Watts, B. (2007). Introduction. In Andersen, A., Kalleo, W., & Watts, B. *Labradorimi Ulinnaisigutet: An Inuktitut-English dictionary of Northern Labrador Dialect (with an English-Inuktitut index)*. Nain, NL: Torngâsok Cultural Centre.

Wexler, K. (1994). Optional infinitives, head movement and the economy of derivations. In D. Lightfoot & N. Hornstein (Eds.), *Verb movement* (pp. 305-363). Cambridge: Cambridge University Press.

Wexler, K. & Hirsh, C. (2006). By the way, children don't know by. *Proceedings of the Annual Boston University Conference on Language Development, 30*, 249-261.

Wright, S. C., Taylor, D. M. & Macarthur, J. (2000). Subtractive bilingualism and the survival of the Inuit language: Heritage- versus second-language education. *Journal of Educational Psychology, 92*(1), 63-84.