Morphemes gone askew: Linguistic impairment in Inuktitut

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Abstract

In this paper, data from a single language-impaired speaker of Inuktitut (age: 5;4) are described. The child’s language, when compared to that of age-matched and language-matched speakers, shows a restricted lexicon, a paucity of verbal inflections, the improper substitution of a nominal inflection for a verbal inflection, the irregular use of overt pronouns and a lack of passive structures. Findings from this case study are used to address various explanatory theories of specific language impairment, namely the surface hypothesis, the sparse-morphology hypothesis, the missing-features and impaired-rule-construction hypotheses, the optional-infinitive hypothesis and the differential-agreement-checking hypothesis. The importance of cross-linguistic investigations of SLI in languages with diverse morphological structures is emphasised.

1. Characteristics of Inuktitut

Inuktitut is the language of some 25,000 Inuit in northern Canada, and is part of the Eskimo-Aleut family extending across the circumpolar regions from Siberia to Greenland. It is a highly polysynthetic language with an ergative case-marking system and prolific nominal and verbal inflectional paradigms. Verbal inflection agrees with both subject and object for four persons, three numbers, and ten verbal modalities. Nominal inflection represents eight cases and three numbers, and the possessive paradigm encompasses four persons and three numbers. In addition, there are over 1000 verb- and noun-internal productive morphemes which serve as nominalisers, verbalisers, valency-changers, and modifiers. This language has no uninflected infinitival form. In Northern Quebec, Inuktitut is spoken by 95% of the population (Dorais, 1986). It is used on a routine, almost exclusive basis by people of all ages in a number of the communities in this region.

2. Description of the study

In this study we have focused on one monolingual, Inuk girl, aged 5;4. This child, LE, lives in a settlement of approximately 350 people, 1000 km north of Montreal. Inuktitut is the exclusive language of her everyday life. LE was selected for this case study from among several subjects on the basis of her Inuit parents’, her Inuit teachers’, the special education consultants’ and healthcare workers’ reports as well as on one of the authors’ clinical impressions, and the clarity of this child’s disorder. LE’s clinical profile is congruent with the usual criteria for SLI (see Table 1). Despite a difficult start in her first

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adoptive family where she did not remain, she is judged to be normal socially and emotionally with no frank signs of neurological impairment, and is considered by virtue of her play and school achievement (she was in kindergarten at the time of the study) to be intellectually at the level of her age-matched peers. LE has hearing within the normal limits despite the fact that she had recurrent otitis media in the first year of her life. However, 25% of all children in Northern Quebec have also had chronic otitis media (Julien, Baxter, Crago, Iliecki, & Therien, 1987). Her history of chronic otitis media was compared to the histories of other children, including her MLU and chronological age (CA) matches. The number and severity of her episodes were equivalent to those experienced by these peers whose language is not considered to be impaired. Of interest in the study is the fact that this child is a member of a large extended family in which there are more than three first degree relatives with SLI, spread over three generations.

Table 1. Subject characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>LE (SLI)</th>
<th>Language (MLU)</th>
<th>Age (CA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>5:4</td>
<td>2:1</td>
<td>5:4</td>
</tr>
<tr>
<td>Intelligence</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>Hearing</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>Neurological</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Indicators</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>Social/Emotional</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>Status</td>
<td>2.48</td>
<td>2.27</td>
<td>4.28</td>
</tr>
<tr>
<td>MLU</td>
<td>261</td>
<td>200</td>
<td>386</td>
</tr>
</tbody>
</table>

*Total utterances in 34 minutes (for SLI and CA only).

No language tests are presently available for providing normative data in Inuktitut. Instead, a nonstandardised procedure was used to determine the nature and extent of LE’s language abilities. LE was videotaped in her home where she was engaged in a free play situation with a chronologically age-matched, normally developing friend who is exactly four days older than LE. The session lasted approximately one and a half hours, and was taped in its entirety by one of the authors. Of this hour and a half, two sections of approximately 20 minutes in length were selected for transcription, based on the audibility of the utterances and representativeness of the overall sample. An MLU-matched sample of similar length and circumstances was taken from data videotaped for a separate study on the acquisition of Inuktitut in normally-developing Inuit children.

Data from LE, from an MLU-matched normal, and from her age-matched normal friend were then transcribed by native speakers. Reliability was established by consensus verification between the transcriber and a native Inuktitut-speaking colleague who is expert in Inuktitut grammar and Inuktitut child language, and the two authors of this paper. All data were then entered into a computerised database following the CHAT conventions of the CHILDES project (MacWhinney & Snow, 1990) and were coded morphologically. This paper is based on 200 utterances of each of the three children.

3. Lexicon

LE’s lexicon was considerably less developed than that of her age-matched friend (See Table 2). It also differed somewhat from her MLU match. Although LE’s type-token ratio for noun and verb roots was not very different from that of her MLU match, her age-matched playmate had almost twice as many actual types and tokens of verb roots. The type/token ratio for all morphological units, including both inflections and roots, was quite similar for all three of the children. However, again, the age-matched friend had approximately twice as many actual types and tokens of morphemes as LE did. LE also showed two behaviours that neither her age match nor her MLU match showed. She experienced a number of word-finding difficulties evidenced by frequent use of um throughout sentences, and by making multiple attempts at different lexical items in her search for the right word or by attempting to imitate a word just spoken by her friend. She also had an abnormally high frequency of the all purpose word, imaittumiik, meaning ‘thing’ or ‘one like this’ when she was unable to find the correct lexical item as follows:

1. una au uuumunga au imaittumi
   u-na au u-munga au imaittumi
   this.one-1BS.SG um um this.one-ALL.SG um
   one.like.this
   ‘This one um with this one um one like this.’

2. aulla aullangam-i imittumi
   aullaq aullaq-ninguaq-mi imaittumi
   leave leave-pretend-mi one.like.this
   ‘leave, pretend to leave-mi, one like this’

3. qimmiralu qimmira vulli imittumi
   qimmiq-ga-lu qimmiq-ga vut-li imaittumi
   dog-1SG-and dog-ABS.1SG ABS.1PSg-and
   one.like.this
   ‘and my dog, my dog, and our, one like this’
In Inuktut, limitations in the lexicon can represent a lack of lexical items and/or a lack of synthesising skills with which to handle the morphological complexity necessary to construct certain lexical items.

4. Grammatical morphology

4.1 General Characteristics of LE’s Grammatical Morphology

In several categories of grammatical morphology for which frequency counts were made, LE performed quite differently from her age match (See Table 3). She had strikingly fewer tokens of verbal inflections that mark person, number, and modality. LE also had fewer tokens of verb-verb affixes, those morphemes that mark causative, passive and adverbials, and she had fewer verbalisers with which to change verbs into nouns. These kinds of morphemes are verb- and noun-internal. Despite such differences from her age-matched friend, RE’s performance in these same grammatical categories was not much different from her MLU match’s, if we consider only the absolute number of tokens. Nominal inflections and nominalisers showed a different pattern. LE had fewer instances of them than either her age or MLU match. It is interesting to note that LE and her MLU match have more nominal inflections than verbal inflections. The age-matched child has the reverse, showing more verbal than nominal inflections.

Table 3. Number of tokens of grammatical morphology in 200 utterances

<table>
<thead>
<tr>
<th>Grammatical morphology</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SLI</td>
</tr>
<tr>
<td>Verbal inflections</td>
<td>32</td>
</tr>
<tr>
<td>Verbal modifiers</td>
<td>30</td>
</tr>
<tr>
<td>Verbalisers</td>
<td>5</td>
</tr>
<tr>
<td>Nominal inflections</td>
<td>46</td>
</tr>
<tr>
<td>Nominalisers</td>
<td>4</td>
</tr>
<tr>
<td>Passives</td>
<td>0</td>
</tr>
</tbody>
</table>

The use of the passive form by these three children is interesting. Allen and Crago (1993) have previously documented the early and frequent use of passives in very young Inuit children. Normally developing two- and three-year-old Inuit children productively used 3.7 passives per hour in comparison with 0.4 passives per hour reported for American English-speaking children of the same age (Pinker, Lebeaux, and Frost, 1987). The passive in Inuktut is signaled by the use of the single syllable -jau- which never occurs in a final position. Comparisons across the three children in this study showed that the two-year-old MLU match used two passive constructions in his 200 utterances and the five-year-old age match used nine in her 200 utterances. LE, on the other hand used no passives in her 200 utterances or, for that matter, in her entire one and a half hours of taped spontaneous speech. The lack of passives in LE’s language is clearly unusual for a child of either her age or MLU.

4.2 Omitted Inflections

To explore LE’s use of verbal inflections more fully, the potential grammatical contexts for the use of inflections on verbs and locatives were identified. While inflections usually follow verb + locative roots in Inuktut, various other morphemes may also appear in these positions. For this reason, the term “potential” rather than “obligatory” has been used to refer to contexts for the use of particular verbal inflections. LE used verbal inflections correctly in 46% of the potential contexts that were identified (See Table 4). This is less than her MLU match and substantially less than her age match whose inflections were correct nearly 100% of the time. LE’s correct inflections included correct use of person and number. It is important to note, however, that spontaneous naturalistic elicitations, as opposed to experimentally designed elicitations, allow the speaker not to use certain grammatical forms that may be difficult. The present sample of LE’s language is, therefore, constrained to those forms that she chose to use and may, as a result, be a more restrained but perhaps a more correct form of language than she would be capable of when pushed to her limits.

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1 The following abbreviations are used:
For nominal case: ERG = ergative; ABS = absolutive; MOD = modal (oblique case for direct object); LOC = locative (on, at); ALL = allative (to, with, agentic by); ABL = ablative (from); VLA = viatical (through); EQU = equalis (like).
For verbal modality: IND = indicative; PAR = participial (functionally equivalent to indicative in Inuktut dialect); IMP = imperative; INT = interrogative; CSV = causative; CND = conditional; CTR = comparative.
For word-internal morphology: PASS = passive; HABIT = habitual; FUT = future; PAST = past; PRES = present; NEG = negative; PERF = perfective; CAUS = causative; EMPH = emphatic; NOM = nominaliser; DIM = diminutive; POL = politeness (preceding imperative); REF = referential with discourse antecedent; BW = baby word.

For possessed nominal inflection: 1 = 1st person possessor; 2 = 2nd person possessor; 3 = 3rd person (disjoint with referent in main clause); 4 = 4th person (coreferent with referent in main clause); s = singular; d = dual; p = plural; S = subject; O = object.

For possessed nominal inflection: 1 = 1st person possessor; 2 = 2nd person possessor; 3 = 3rd person possessor (disjoint with referent in main clause); 4 = 4th person possessor (coreferent with referent in main clause); S = singular possessor; D = dual possessor; P = plural possessor; sg = singular possessum; du = dual possessum; pl = plural possessum.
Table 4. Number of tokens of verbal inflection used or omitted in 200 utterances

<table>
<thead>
<tr>
<th>Verbal/locative inflection</th>
<th>Subject</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SLI</td>
<td>MLU</td>
<td>CA</td>
</tr>
<tr>
<td>Percentage use in</td>
<td>46%</td>
<td>59%</td>
<td>95%</td>
</tr>
<tr>
<td>potential situations</td>
<td>(32/69)</td>
<td>(26/44)</td>
<td>(136/142)</td>
</tr>
<tr>
<td>No. of correct uses</td>
<td>32</td>
<td>26</td>
<td>136</td>
</tr>
<tr>
<td>No. of incorrect</td>
<td>10</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>omissions on verbal stems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of incorrect</td>
<td>8</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>omissions on locative stems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of potential</td>
<td>5</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>omissions on locative stems</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CA: maunngaruk
ma-unga-aq-guk
here-ALL-go-IMP.2sS
'go to here'

LE's use of the bare-stem locative in obligatory contexts is highly inappropriate in Inuktitut.

4.3 Additional Irregularities in Grammatical Morphology

Two additional irregularities in LE's use of inflections were most surprising and noticeable to our Inuit colleagues. They were LE's use of the inflection -mi and her use of overt pronouns (See Table 5).

4.3.1 -mi insertions.

On ten different occasions, LE used the inflection -mi incorrectly (See Table 5). She inserted -mi as a filler inflection on verbs and locatives where it does not normally occur. The inflection -mi is most frequently used on nouns as the singular locative ending, 'in', and the singular modalis case ending, and occasionally on verbs as an internal morpheme meaning 'also', but it can never appear on the ends of verbs or locatives as it does in LE's speech.

Table 5. Number of tokens of grammatical irregularities

<table>
<thead>
<tr>
<th>Grammatical irregularity</th>
<th>SLI</th>
<th>MLU</th>
<th>CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insertion of filler inflection -mi</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Overt pronoun in place of inflection</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Examples of her irregular use of -mi and comparisons of correct use by her CA match are as follows:

1. LE: ummali pi-sininnguami
   u-mma-li pi sinik-nguaq-MI
   this.ONE-ERG.SG-and pi sleep-pretend-MI
   'how about this, pi-, pretend to sleep -MI'

CA: inmam sinisijunga
   imaaq sinik-si-junga
   like.this sleep-PRES-PAR.1sS
   'I'm sleeping like this'

2. LE: unali maanimi
   u-na-li ma-ani-MI
   this.ONE-ABS.SG-and here-LOC-MI
   'and this one right here -MI'

LE: maani
ma-ani
here-LOC
'there'

It contrasts with correct constructions used by her age match, such as the following:

CA: maaniittuq
ma-ani-it-juq
here-LOC-be-PAR.3sS
'it is here'
CA: unali maaniittuq.
  u-na-li ma-an-it-juq
this.one-ABS.sg-and here-LOC-be-PAR.3sS
  'and this one is here'

Neither the age match nor the MLU match ever made this type of error and it is highly unusual for normally developing Inuititut speakers of any age.

4.3.2 Overt Pronouns.

Due to the prolific verbal agreement in Inuititut, individual pronouns that stand alone, such as ivvit (you, your) or uvanga (I, me, my), are typically reserved for extreme emphasis or responses to questions which require only the pronoun as an answer. However, LE produced four instances, in her 200 utterances, of individual pronouns in place of the appropriate verbal inflection. These are illustrated as follows:

1. LE: maani ivvit
   ma-an-iti
   here-LOC you
   'here you'

   Correct form: maaniigit
   ma-an-iti-git
   here-LOC-be-IMP.2sS
   'be here'

2. LE: taku ivvit uumaa
   taku ivvit u-mma
   see you this.one-ERG.sg
   'see you this one'

   Correct form: uumunga taku-jauvutil
   u-munga-taku-jau-vutil
   this.one-ALL.sg see-PASS-IND.2sS
   'you were seen by this one'

The use of overt pronouns is so unusual at any age in normally developing Inuit children’s language acquisition that it flabbergasted our Inuit colleagues and made a big enough impression on LE’s family members that they affectionately tease her by calling her the nickname, ivvit-uvangaraapik, ‘adorable little ivvit-uvanga’ or by mimicking her sentences with overt pronouns in them. Her use of overt pronouns left bare verb stems. LE’s use of the bare verb stem in this situation as well as her use of the bare locative stem contradict the polysynthetic nature of her language and are highly irregular in a pro-drop language such as Inuititut.

4.4 Outstanding Properties of LE’s Language

In summary, then, this particular child’s language problems were manifested in the following ways:

1. She had a restricted lexicon with evidence of word-finding difficulties and a lack of specificity.
2. Her grammatical morphology included
   a) a paucity of verbal inflections on both verbs and locatives,
   b) the irregular insertion of the largely nominal inflection -mi in the final position on verbs and locatives,
   c) the improper use of overt pronouns,
   d) the existence of bare verbal and locative stems,
   e) a lack of passive structure.
3. On the other hand, LE showed excellent inter-actional skills at play with her friend.

In conclusion, this description of this single child has been made with full awareness that specific language impairment has considerable heterogeneity in its expression.

5. Building the case with linguistic theory

In this section of the paper, the Inuititut data will be related to various explanatory hypotheses and linguistic theories pertinent to specific language impairment.

5.1 Surface Hypothesis

The surface hypothesis (Leonard, 1988, 1989) claims that SLI subjects’ difficulties in producing grammatical morphology are directly related to the phonological salience of the particular morpheme or morphemes in question. Phonological salience is defined in terms of relative stress, relative position within the word or utterance, relative vowel duration, and relative vulnerability to syllable or consonant deletion in production. Morphemes which are low in phonological salience are more vulnerable to difficulty for SLI subjects, while morphemes which are high in phonological salience are less vulnerable.

The language learning of normally developing English children reflects difficulty with these unsalient morphemes in terms of their relative tardiness in the acquisition sequence (devilliers & deVilliers, 1985). English-speaking SLI children seem to show even more difficulty with these morphemes as compared to unimpaired children. However, recent cross-linguistic research has shown that SLI subjects experience significantly less difficulty in languages in which the same morphological elements are more phonologically salient (Leonard et al., 1992).

In Inuititut, verbal and nominal agreement morphemes are all word-final (with the exception of those followed by occasional enclitics), and can be monosyllabic (CV or CVC), bisyllabic (CVCCV, CV-CVC, CVCCV, CVCCVC), or trisyllabic (CVC-CV), but are never purely consonantal. Utterance-final syllables are often lengthened, particularly in questions. Word-final consonant deletion is quite common in Inuititut, but deletion of word-final inflectional
units is limited to a constrained set of situations in colloquial speech.

Results from the production data in this case study do not seem consistent with the surface hypothesis. LE omitted more of what might be called "salient" morphological inflections, ones that are polysyllabic and stressed, than her MLU match did. She also had no instances of consonant-only deletions, with all omissions being complete inflectional units. Furthermore, her use of overt pronouns and the insertion of an irregular inflection like -mi are not congruent with this explanation.

5.2 Sparse-Morphology Hypothesis

The sparse-morphology hypothesis (Leonard et al., 1992; Lindner & Johnston, 1992; Dromi, Leonard & Shteyman, 1993) is based on the idea that children pay most attention in their language-learning process to the structural mechanisms that convey the most useful information. These mechanisms include grammatical morphology, word order, and animacy among others. Forms that have the most functional relevance will be acquired first, with others following in more or less descending order (MacWhinney, Bates & Kliegl, 1984; Lindner & Johnston, 1992). Thus, both unimpaired and impaired subjects learning languages in which grammatical morphology carries relatively little information are later in learning or have more difficulty with this morphology (Brown, 1973; Leonard et al., 1992), whereas children learning languages such as Italian, in which grammatical morphology plays an important role, are relatively earlier and more proficient in their learning of the morphology (Hyams, 1986; Leonard et al., 1992).

Inuktitut is a language in which word order, being variable, conveys relatively little information. Animacy also plays little role. Grammatical morphology, however, is extremely prolific and plays a large role in determining structural relationships in Inuktitut.

In LE's production data, her utterances differ from those of both her MLU match and her CA match in omissions of inflections of various kinds, a number of which result in bare stem forms which are ungrammatical in Inuktitut. These results cannot be accounted for by the sparse-morphology hypothesis.

5.3 Missing-Features and Impaired Morphological Rule-Construction Hypothesis

The missing-features hypothesis (Gopnik, 1990) claims that SLI grammar is unusual in that it lacks the notion of obligatory marking of grammatical features. Universal Grammar normally provides unimpaired grammars with grammatical features that produce the rule-governed behaviour observed among normal speakers. These features, which include number, gender, animacy, mass/count, proper names, tense and aspect, are absent from the underlying grammars of individuals with SLI. This claim does not entail that grammatical features will never be marked, but rather that their marking will be perceived as totally optional by SLI individuals.

Thus, marked forms will be interspersed with unmarked forms in their speech, and impaired speakers will not be reliable in judging the absence of these morphemes in grammaticality-judgement tasks.

Inuktitut has a large number of grammatical features which must obligatorily be marked morphologically. Thus it is a candidate language in which such a hypothesis may be examined.

Production data from LE do show a pattern of optional use of grammatical features in that the same verbal inflection appears in some obligatory contexts and not in others. Thus, while this hypothesis seems to be descriptively adequate, it is not sufficient to predict or explain deficits in LE's grammar such as -mi-insertion, use of overt pronouns, and lexical searching.

Gopnik's more recent hypothesis (Gopnik, this issue, in press), the missing-rule hypothesis, states that the ability to construct implicit rules is impaired in individuals with SLI. This hypothesis postulates that such individuals are able to compensate for this kind of deficit by learning the forms in question as unanalyzed lexical items and by using explicitly learned rules. This proposal predicts that individuals with SLI will not recognize that inflectional markings are obligatory, that they will have problems with producing the correctly inflected forms of nonsense words, and that these abilities will be reflected in their on-line processing. Furthermore, Gopnik's hypothesis predicts that characteristic errors in the misapplication of explicit rules will occur. For instance, forms that encode semantically specified information such as plural will be easy to learn lexically while forms that mark non-semantic information like agreement will be much more difficult to learn. It is therefore hypothesised that when the semantic information carried by these morphological markers is not obligatorily represented, individuals with SLI are likely to use explicit words to carry the important semantic meanings. In this way, the missing-rule hypothesis would account for LE's use of overt pronouns to mark person, as well as her pattern of lexical searching and her omission of obligatory inflections on both nouns and verbs. It does not, however, account for her -mi-insertion.

5.4 Optional-Infinitive Hypothesis

The optional-infinitive hypothesis (Rice, 1993, 1994; Rice & Wexler, 1993) was developed in the framework of a theory of normal first-language acquisition developed by Wexler (1991). It arises out of the observation that very young children typically pass through a stage in which verbal inflection is either not marked at all or not marked consistently. This is linked to a related set of phenomena including placement of negation and presence of overt subjects in the utterance. Wexler claims that these children pass through a period in which they do not recognise the obligatoriness of verbal inflection and optionally permit the presence of infinitive forms in place of finite inflected forms. Wexler links this behaviour with these children's lack of understanding of the concept of tense — since they do not recognise the
difference between finite and nonfinite tense, both these verbal forms are considered interchangeable by the child. The crucial point here is that children are not neglecting to mark verbal inflection and thus leaving a bare root, but rather they are substituting an
infinite form in place of a finite form. Since in English the bare root and the infinitive are homophonous, Wexler provides data from French, German, Dutch, Swedish, Danish and Norwegian which show the infinitive and inflected forms being interchanged by children. He then shows how a similar analysis using the same tests easily extends to
English. Depending on the language involved, children tend to pass out of this stage by about 2;6, once they realise the function of tense and thus realise the obligatoryness of reflecting tense in verbal
inflection.

Rice (1994) and Rice & Wexler (1993) have adapted this analysis as an explanation for difficulty with tense marking in SLI individuals. Their idea is that the optional-infinite stage in these individuals extends beyond the normal 2;6 years. SLI individuals, then, continue to use infinitival and inflected forms interchangeably well into childhood.

Two problems seem evident for the optional-infinite hypothesis in relationship to Inuktitut. First, tense is not implicated in the Inuktitut verbal inflection system, as argued in some detail by Shaer (1989). This is supported by at least two pieces of evidence. Fortescue (1984:272), among others, has pointed out that "[u]nmarked [for tense] indicative verb forms may be interpreted as either past or present ... depending on the stem and the context". Thus it does not seem that the feature [+/- tense] is obligatorily represented within the inflection. Moreover, the representation of tense, or rather time, on the verbal stem is completely independent of the presence of person and number inflection on the verb. Time is represented by verbal adverbs, some even interpreted as verbs, which are affixed to the verb stem. Since Inuktitut verbal inflection is not tied to tense, then, any hypothesis of unpaired or impaired acquisition based on the role of the feature [+/- tense] within the grammar cannot apply to the acquisition of Inuktitut verbal inflection.

Second, and probably closely tied to the first reason, Inuktitut has no infinitive form. Inuktitut does have a gerundive form which appears in both intransitive and transitive conjugations with inflection only for object, but there is no clear infinitival form. Thus there is no possibility for Inuit children to go through a stage of optional infinitives. This means that there are two possibilities: Either children would optionally produce a bare root or they would produce a citation form such as third-person singular in place of the correctly inflected form. Bare roots are ungrammatical in adult Inuktitut.

In both normal (Crago, Allen & Hough-Eymie, 1993) and SLI spontaneous speech, the bare root is produced in place of a correctly inflected form. The normally developing Inuit children do this primarily at the one-word stage. At the two-word stage, their utterances are considerably more inflected than those of English-speaking children at a similar stage of language development. These preliminary analyses of Inuit children's data do show some substitutions of incorrect inflections for correct inflections. These are likely to represent performance errors since the substitution pattern seems to be random rather than showing consistent replacement of a variety of inflections with one citation form. In the impaired data, however, no cases of substitution were observed apart from the incorrect use of the -mi inflection on verbal stems.

The resulting SLI pattern of omission of inflection producing ungrammatical bare roots also seems somewhat surprising in light of recent cross-linguistic research from aggrammatism. Menn & Obler (1990) observe that inflectional substitution always occurs in cases in which omission would produce an ungrammatical form. Obviously the present Inuktitut data sample is small and restricted to only one subject. However, preliminary findings point to the need for further research into this hypothesis in languages such as Inuktitut which handle tense and inflection differently than do the Romance and Germanic languages addressed by Wexler. It is important to note that the Inuktitut findings do not directly contradict the optional-infinite hypothesis. Simply put, this hypothesis cannot be the full explanation across all languages since certain languages do not have the infinitive form.

5.5 Differential Agreement-Checking Relationships Hypothesis

The differential agreement-checking hypothesis (Rice, 1994; Rice, 1993; Rice & Wexler, 1993) is based on the differing types of agreement relationships and methods of representing and checking them in current incarnations of Government-Binding theory (Chomsky, 1992). Basically, two types of agreement checking relationships are currently expounded within the GB literature. The first is a Spec-head relationship. A typical verbal clause is generated as in the tree in (1).

The subject is base-generated in SPEC,V* and subsequently moved to SPEC,AGR-S. The object is base-generated in NP,V* and subsequently moved to SPEC,AGR-O. The verb, fully inflected, is base-generated in V,V* and moved sequentially through all the heads up the tree. In each head position, it checks the features in its inflection with the relevant features of the element in SPEC related to that head. If the checking reveals a nonmatch, the derivation crashes and the sentence is not uttered. If the checking reveals a match, the verb moves up to the next head and the previous head (eventually) disappears, having fulfilled its function. Since the checking of features occurs between items in SPEC and in head, this form of checking is known as SPEC-head agreement. It is generally assumed that SPEC-head agreement is invoked for verbal agreement and for agreement between quantifiers and nouns (Bittner, 1993; Murasugi, 1992; Brannigan, 1992; Johns, 1992).
The second form of checking is known as head-head agreement. Consider the tree in (2).

In this situation it is assumed that the primary head, here the noun, is base-generated as fully inflected. Additionally, the relevant features are marked in the head positions of the respective phrases up the tree. In this case, the entire NP moves up through the SPECs of the respective phrases. In each position, the head N checks its features against those of the respective head of the phrase. If the check reveals a non-match, the construction crashes and is not uttered. If the check reveals a match, the NP moves to the next SPEC and the preceding head (eventually) disappears, having fulfilled its function.

Since checking in this system is between two heads, it is referred to as head-head agreement. It is generally assumed that head-head agreement is invoked for agreement in the nominal system (e.g. Ritter, in press, Travis, 1992, Valois, 1991).

Rice (1993, 1994) has applied this notion to explain the parts of the grammar at risk for SLI individuals. She finds her evidence in the observation that English-speaking individuals with SLI perform much better on determiner-noun agreement than on either quantifier-noun agreement or verb-noun agreement (Oetting & Rice, 1993; Rice & Oetting, 1993; Rice, 1993, in press). This is quite consistent with the different patterns of agreement-checking, since the former is checked by head-head agreement and the latter two are checked by SPEC-head agreement. Thus the claim is that SLI subjects have particular difficulty with SPEC-head agreement relationships.

Rice’s Differential Agreement Checking hypothesis is most intriguing in that it represents a creative approach to the explanation of SLI within Chomsky’s Minimalist Program (Chomsky, 1992). However, one must beware that these theories of agreement are relatively new, still hotly debated within the theory, and not even wholly accepted by their proponents. In addition, it is not yet clear how these configurations work out across languages, and it is not yet clear which phrasal categories appear in which languages. For instance, in some languages negation is treated as a phrasal category and in others solely as a head without a phrasal projection (deFreitas, 1993). There are currently at least four ideas as to the construction of Inuktitut within the Minimalist Project (Bittner, 1993; Bobaljik, 1992; Johns, 1992; Murasugi, 1992), only one of which uses the notion of agreement-checking that Rice does. So while an agreement relationship analysis seems an interesting explanation for English data, it is not clear that it can be directly applied cross-linguistically at this early stage.

Putting the issue of the recency and the potential incompleteness of the theoretical basis aside, there are a variety of issues in Inuktitut that would be interesting to address in association with Rice’s hypothesis. First, Inuktitut does not have overt determiners such as articles or demonstratives. While it would not be surprising for there to be agreement features in the head of DP position, the agreement between these and the NP cannot be verified in transcripts since they are not overtly represented. Second, nominal ellipsis in Inuktitut, for both subjects and objects, is extremely common. This makes it hard to search for noun-verb agreement in the transcripts in other than a discourse sense. Third, case is a very important feature of Inuktitut while it is not in English. Thus a theory of agreement marking that would serve cross-linguistically must include reference to case agreement. Since case is presumed to be checked within the verbal paradigm in a SPEC-head configuration, we would predict substantial difficulty with case-marking on behalf of SLI children. Fourth, Inuktitut is an ergative language, different from the accusative languages which have been addressed so far in the SLI literature. It is quite likely that the agreement marking in ergative languages is mediated somewhat differently than in accusative languages, and it would be important to address this. Fifth, Inuktitut reflects on the verb for both subject and object, unlike the subject-only agree-

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[^2]: Demonstratives occur in Inuktitut but only as full NP pronominals, never as modifiers in determiner position.
ment present in the languages in which SLI has been studied so far. Therefore, it would be interesting to see whether these two agreements were somehow disassociated in SLI production in Inuktitut, something which has not been attested to by the present data.

5.6 Summary

In this section of the paper we have focused on various theoretical analyses of SLI data in light of linguistic theory and with reference to Inuktitut data. The primary result of this discussion concerns the importance of continuing cross-linguistic research in SLI. Cross-linguistic research has been of substantial importance in research on language acquisition of normally developing children over the last two decades (e.g. Slobin, 1985, 1992, and the vast body of literature cited therein). Theories derived from one language or typological group have been substantially broadened and enhanced by undergoing application to other languages or typological groups. Wexler's (1992) Optional-Infinitive Hypothesis is just one example.

In the field of SLI research, cross-linguistic work has been undertaken primarily in the area of phonological and stress saliency by Leonard and his colleagues in their work on Italian and Hebrew, with most interesting results. Discussion in this section of our paper has alluded to some of the interesting issues in cross-linguistic SLI research that can be addressed in terms of morphological and syntactic concerns across languages, and to the potential significance of such research, as has been seen in work of Clahsen (1989) in German and forthcoming work of Rice and LeNormand in French. Work in languages of increasingly diverse structures such as Inuktitut will continue to aid in fitting together pieces of the puzzle of specific language impairment.

References


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