InuLARSP: An Adaptation of the Language Assessment Remediation and Screening Procedure for Inuktitut

Shanley E. M. Allen, University of Kaiserslautern
Catherine B. Dench, Kativik School Board
Kerry Isakson, Northeastern University

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Introduction

This chapter presents the first adaptation of the Language Assessment Remediation and Screening Procedure (LARSP) for Inuktitut, an Inuit language spoken in the arctic regions of eastern Canada.

The LARSP is a procedure that profiles children’s language ability based on their production of various aspects of grammar such as the structure of noun phrases (e.g., Determiner-Adjective-Noun), the structure of sentences (e.g., Subject-Verb-Object), the structure of questions (e.g., QuestionWord-Auxiliary-Subject-Verb), and the use of words and affixes with grammatical functions (e.g., plural -s). The grammatical structures are organized on a LARSP chart, which is divided into stages according to the order in which the structures are acquired by typically-developing children. Each child’s individual profile is developed on the basis of a sample of spontaneous speech. The LARSP was initially developed to assess the level of linguistic ability of English-speaking children with language disorders (Crystal, Fletcher, & Garman, 1976). Since then, it has been adapted for numerous other languages as diverse as Hebrew (Berman, Rom, & Hirsch, 1982), Irish (Hickey, 1990), and Chinese (Jin, Oh, & Razak, 2012). Reports of many of these adaptations are contained in a set of edited volumes, of which the present volume is the third (Ball, Crystal, & Fletcher, 2012; Fletcher, Ball, & Crystal, 2016; Ball, Crystal, & Fletcher, this volume).

Arctic Quebec Inuktitut (hereafter simply Inuktitut), the language discussed in this chapter, is spoken by some 11,000 Inuit throughout the 14 Inuit communities in Nunavik, the northern region of Quebec, Canada (Dorais, 2010; Statistics Canada, 2011). Virtually all Inuit in this region are native and fluent speakers of the language, using Inuktitut as their main language at home and also usually at work. Inuit children learn Inuktitut at home as their native language, although they later become bilingual in English and/or French through schooling as well as community and media exposure (Allen, 2007). Numerous studies attest to the fluent acquisition of Inuktitut by preschool Inuit children in Nunavik (e.g., Allen, 1996, in press; Crago & Allen, 1998; Swift, 2004), as well as to the strong Inuktitut abilities of school-aged Inuit children in the early grades (e.g., Allen, Crago, & Pesco, 2006; Crago, Annahatak, Doehring, & Allen, 1991; Wilman, 1988; Wright, Taylor, & Macarthur, 2000). However, as noted in a 2010 report published by Speech-Language & Audiology Canada (SAC, 2010), there is a critical lack of tools that can be used by speech-language pathologists to assess language ability and language difficulties in children who speak Inuktitut or other
indigenous languages. This situation provided the main motivation for adapting the LARSP for use in Inuktitut.

In the present chapter we describe the process and outcome of designing the adaptation of the LARSP for Inuktitut, referred to here as the InuLARSP. The InuLARSP was designed on the basis of already existing Inuktitut child language data collected for previous studies (Allen, 1996; Crago, 1988). Certain aspects of the grammatical structure of Inuktitut, described in the next section, required substantial changes in the items selected for the profile compared to the original English LARSP and to the other adaptations developed to date. In particular, more focus was placed on morphology, and less on syntax, than has been the case for other LARSPs.

**Key Grammatical Features of Inuktitut**

Inuktitut has three main grammatical features that we took into account in designing the InuLARSP: agglutination, polysynthesis, and argument ellipsis. Each of these is described in turn in the following paragraphs.

**Agglutination**

Agglutination is a process for forming complex words in which several morphemes are affixed to a given root word. In Inuktitut words are made up of two parts: the root, which comes at the beginning of the word, and the derivational and inflectional morphemes, which are suffixed to the root. Words may contain 10 or more morphemes (Dorais, 2010; Fortescue, 1994). Importantly, each morpheme is relatively easily identified within the complex word because there is little to no phonological change at the morpheme boundaries. This easy identification of morphemes differentiates Inuktitut from some other LARSP languages with complex words like Irish or Hebrew; in the latter languages, the morphemes are often fused together in the process of affixation, and thus not easily distinguishable.

Inuktitut has three classes of roots, as illustrated in the example in (1): noun roots including pronouns and demonstratives (e.g., tuttu ‘caribou’), verb roots (e.g., qukiq- ‘shoot’), and uninflected particles (e.g., ilai ‘right’). (A list of the abbreviations used in the glosses of the examples can be found at the end of the chapter.)

(1)  Tuttualummik  qukilaurqutit  ilai?
tuttu-aluk-mik  quikiq-lauq-vutit  ilai
caribou-EMPH-MOD.SG shoot-PAST-IND.2sS  right
‘You shot the big caribou, right?’

Noun roots and verb roots are often followed by one or more derivational morphemes (e.g., -aluk ‘EMPH’, -lauq- ‘PAST’). They are not considered complete without an obligatory final inflectional morpheme: case for nouns (e.g., -mik ‘MOD.SG’), and cross-referencing inflections for verbs (e.g., -vutit ‘IND.2sS’). Concepts that would be classified as adjectives in English may either be realized as word-internal morphemes like -aluk ‘EMPH’ in (1), or as verbs that take verbal morphology like piu- ‘be good’ in (2).

(2) Piunngituq.
   piu-nngit-juq
   be.good-NEG-PAR.3sS
   ‘It is not good.’

The rich word-internal morphology of Inuktitut includes over 400 derivational morphemes that, as in the morphology of other languages, mark notions such as tense, aspect, emphasis, negation, causation, and passive voice. Inuktitut word-internal morphemes also include adjectival and adverbial modifiers (e.g., -apik ‘little’, -saaq- ‘quickly’) as well as nominalizers and verbalizers that serve to change the syntactic class of a word from noun to verb or vice versa (e.g., -u- ‘be’, -juq ‘that.which’).

The word-final inflectional system includes more than 900 verbal inflections that mark modality (i.e., the speaker’s expressive intent, including questions and commands) and the person and number of subject and object (e.g., -jara ‘PAR.1sS.3sO’). The over 300 nominal inflections mark number (singular, dual, plural), case, and information about the person and the number of the possessor, if applicable (e.g., -ga ‘ABS.1Ssg’). Words may also end with an enclitic – a specific class of morphemes that can be added to either nouns or verbs for various purposes (e.g., -ai ‘greetings’, -li ‘but’, -ttauq ‘also’).

The morphology following the root is typically affixed in order of accumulating semantic scope from the beginning to the end. This does not follow a rigid order as in some other morphologically complex languages, but rather is affixed according to the relative meaning of the morphemes.

Polysynthesis
Polysynthesis is the ability to say in one word what in other languages would require a full sentence (Evans and Sasse, 2002; Fortescue, 1994). This is possible because Inuktitut has a large number of morphemes within the word that serve grammatical functions normally served by individual words and word order in languages like English. For example, as already noted, certain morphemes can turn a noun into a verb (i.e., verbalizers) or a verb into a noun (i.e., nominalizers), and inflectional suffixes on verbs and nouns serve the function of pronouns and possessives. In addition, adjectival and adverbial morphemes within the word express concepts of degree, tense, aspect, negation, and the like.

The example in (3) illustrates this characteristic of polysynthesis. The word begins as a noun with a nominal root ("illu ‘house’) followed by adjectival affixes (-juaq ‘big’, -aluk ‘EMPH’) and a case affix (-mut ‘ALL.SG’). It then turns into a verb via a verbalizer (-uq- ‘go’). Following this are three derivational affixes realizing tense (-lauq- ‘PAST’), aspect (-simā- ‘PERF’), and negation (-nngit- ‘NEG’). The word ends with an obligatory inflectional suffix (-nama ‘CTG.1sS’), and two enclitics (-li ‘but’, -ttauq ‘also’).

(3) Illujuaraalummuualaurismanginamalittauq.
    illu-juaq-aluk-mut-uq-lauq-sima-nngit-nama-li-ttauq
    house-big-EMPH-ALL.SG-go-PAST-PERF-NEG-CTG.1sS-but-also
    ‘But also, because I never went to the really big house.’ (Dorais, 1988, p. 8)

Importantly, none of the morphemes in this word except the initial noun root ("illu ‘house’) can stand on its own; all of the other morphemes can only appear within a word.

**Subject and Object Omission**

Like in other languages, verbs in Inuktitut require subjects and objects. However, independent subjects and objects are frequently omitted in both speech and writing due to the inflectional morphemes on the verb that mark the person and number of subjects and objects. First and second person subjects and objects are never overtly expressed other than in verbal inflection, while third person subjects and objects are omitted in the majority of instances (Allen, 2000; Allen & Schröder, 2003). This omission is evident in each of the examples earlier. The subject is not realized by an independent word in any of the three examples; rather, it is realized in the inflection at the end of the verbal word. The object in (1) is realized overtly: tut tumik ‘the caribou’. However, the object in (3) appears as part of the verbal word; it is the root of the word ("illu ‘house’) and is followed by a verbalizer (-uq- ‘go’) that turns the noun into a verb.
When subjects and objects are present in the sentence, the predominant word order tends to be subject-object-verb (SOV). However, the word order is fairly flexible since information about the syntactic function of specific elements is encoded in morphology. The actual word order used reflects pragmatic factors.

Taken together, argument omission, polysynthesis, and subject and object omission mean that syntactic relationships in Inuktitut largely play out within the word rather in the relationship between words across word boundaries. This means that Inuktitut is syntactically simpler and morphologically more complex than many other LARSP languages.

**Preparatory Analysis for InuLARSP**

Given the structure of Inuktitut as discussed in the previous section, we began the process of designing the InuLARSP with the expectation that morphology might play a much larger role than in many of the LARSPs so far, and that syntax might play a much smaller role. There are no large-scale normative data on stages of grammatical development in Inuktitut, and no other assessment tools for morphosyntactic development in Inuktitut. Therefore, we had to start from scratch in our design of the InuLARSP based on information about Inuktitut language development from the literature and from analysis of available Inuktitut child language data.

We first consulted the existing literature on morphosyntactic development of Inuktitut. This has mostly focused on specific phenomena such as passives (Allen & Crago, 1996), causatives (Allen, 1998), noun incorporation (Allen, 1996; Parkinson, 1999), argument realization (Allen, 2000; Allen & Schröder, 2003), verbal inflection (Allen, 2013; Crago & Allen, 2001; Wilman, 1988), and temporal reference (Swift, 2004). Two overview articles provide more general information about the overall developmental trajectory of Inuktitut in preschool children (Allen, in press; Crago and Allen, 1998). However, none of this literature offered enough detail about which morphemes and syntactic structures are learned at which age and stage to serve as a basis for designing the InuLARSP. We thus decided to perform further analyses on the original data on which this literature was based.

**Data Analyzed**
The data we analyzed comes from two studies of Inuktitut child language development (Allen, 1996; Crago, 1988). Spontaneous speech samples were recorded from eight monolingual Inuktitut-speaking children living in small communities in northern Quebec. The children were videotaped in naturalistic situations at home, interacting with friends and family members and engaging in their normal daily activities. Four children (Jini, Lucasi, Sarah, Tumasi) were aged between 1;0 and 1;9 at the onset of taping and were taped on four occasions at four-month intervals (Crago, 1988; ages are given as years;months). The other four children (Elijah, Lizzie, Louisa, Paul) were between 2;0 and 2;10 at the onset of taping and were taped on three occasions at four-month intervals (Allen, 1996). All of the speech spoken by and to the eight children during the taping sessions had previously been transcribed by native speakers of Inuktitut using conventions of the CHILDES Project (MacWhinney, 2000), and had been coded for morphology and syntax by trained research assistants and the first author.

Stages

Stages of development are a central part of the LARSP. Therefore, the first step in our analysis was deciding how to determine the relevant stages for our data set, and thus for the InuLARSP.

Two methods for determining stages have been described by the authors of other LARSP adaptations. For languages for which data samples are available for many children, stages are typically assigned by age (e.g., 1;6-2;0, 2;0-2;6, 2;6-3;0), and then morphemes and syntactic structures are assigned to ages using statistical criteria (e.g., structure used by 50% of children in a given age range). For languages for which data samples are available from only a limited number of children, authors have typically (and understandably) been cautious about assigning stages by age, and have rather used the number of elements (i.e., words) as the determining factor for stages. Typically this method assigns one-element sentences to Stage I, two-element sentences to Stage II, and so on.

Both of these approaches were problematic for the InuLARSP adaptation. First, data were available for only eight children, including one linguistically precocious child whose samples would skew any organization by age. Thus, assigning stages by age was not likely to be useful. Second, the number of elements in a sentence is far less relevant as a developmental measure for Inuktitut than for languages such as English, Dutch, and Icelandic. Rather, the number of morphemes in a sentence, as well as the morphological
complexity of the sentence, are more relevant indicators of development in Inuktitut (Allen, in press; Allen & Dench, 2015). As a result, a slightly different approach was used for assigning developmental stages in the InuLARSP.

In their first two taping sessions, the children in the Crago study used only one-morpheme utterances; the data from these sessions was used as the basis for Stage I of the profile. The data from the remaining 20 taping sessions (two each for the four younger children, three each for the four older children), was analyzed to develop Stages II to V. We extracted the first 200 child utterances from each session to create samples of equal size for each child at each age. A mean length of utterance in morphemes (MLU(m)) was calculated for each sample on the basis of the first 100 utterances in the sample (see details in Allen & Dench, 2015). The data samples are listed in Table 1.

*** INSERT TABLE 1 ABOUT HERE ***

We preliminarily grouped the 20 language samples from Table 1 into four stages (Stages II to V) with three to six samples per stage, using a combination of mean length of utterance in morphemes (MLU(m)) and age as determining factors. We then used the distribution of morphemes and syntactic structures across samples to reassess the assignment of samples to stages. This last step is described in the next section.

**Determining Morphemes and Syntactic Structures to Include**

The most important component of the LARSP is the morphemes and syntactic structures that are included in the chart. We selected the morphemes and syntactic structures for the InuLARSP according to three main guidelines. First, we aimed to include enough morphemes and syntactic structures in the chart to adequately represent the diversity present in the language of preschool children, but not so many that it would make the assessment unmanageable. Second, we focused on elements that appeared frequently enough to be representative of typical child speech. Third, we put high priority on morphemes and syntactic structures that would distinguish children’s development across the five stages. In the process of selecting elements to include, we treated morphology and syntax separately.

As noted earlier, morphology in Inuktitut is highly complex with over 1500 derivational and inflectional morphemes available. It would be impossible to list all of the morphemes in the developmental profile. Therefore, we began construction of the morpheme section of the chart by listing all the morphemes that appeared in the child data, and then
determining the frequency of occurrence of each morpheme at each stage. A total of 99 morphemes appeared in the data on at least one occasion.

We then analyzed the twenty 200-utterance language samples for the presence of these 99 morphemes. In order to be a useful item on a profile, an item must be produced frequently and consistently by a variety of children. As a result, we first eliminated any morpheme produced fewer than 10 times in total across the 20 samples. Second, we eliminated any morpheme produced fewer than 15 times unless it was strongly and stably represented across the various samples (e.g., used in at least three of the five samples at a particular stage), and/or if it appeared only at Stages IV and V. Third, we divided each of the 200-utterance samples into two 100-utterance samples (the size of sample typically used for the LARSP), creating two sets of twenty 100-utterance samples. We then eliminated any morpheme that appeared fewer than 10 times in either of these sets of samples. After applying these three criteria, 59 candidate morphemes remained.

For the syntax sections, the twenty 200-utterance samples were analyzed for the presence of multiword utterances with syntactic structures. As expected, there were relatively few of these: the majority of utterances were one word in length, with the longest utterance being only three words in length. A total of 25 syntactic structures were identified. Certain of these structures were observed only once or twice in the data, and these were either removed from the analysis or combined with other similar structures (e.g., all the three-word utterances were collapsed as XYZ), leaving 10 candidate structures.

The selected morphemes and syntactic structures were provisionally placed at the profile stage at which they first appeared consistently. Following inspection of the resulting morphological and syntactic profiles, the language samples were then reclassified into the four stages, with five samples at each stage. Each morphological and syntactic item was then given a final classification into a stage, based on its use by at least three of the five children at that stage.

Description of InuLARSP

As shown in Figure 1, the InuLARSP is divided into three main sections. The first section records demographic information about the participant as well as numbers of utterances of various types in the sample. The second section records numbers of each type of
morpheme and syntactic structure, organized into five stages of development. The final section notes any errors appearing in the data. Each of these sections is described in turn.

*** INSERT FIGURE 1 ABOUT HERE ***

**Demographic and Utterance Information**

The first section of the InuLARSP is very similar to that of most other LARSPs. The top section records the name, date of birth, and age of the child, as well as the name of the therapist, the date of recording, and any remarks that are relevant to the interpretation of the chart. Next, Section A records the number of utterances that were not analyzed due to being unintelligible, deviant, or only containing symbolic noise. It also records the number of utterances that are problematic for analysis due to being incomplete, ambiguous, and stereotypical, all using identical definitions to those described in the 1981 LARSP revision (Crystal, 1982, p.16). Section B records the total number of utterances spoken and the total number of utterances analyzed in the next section, as well as the mean length of utterance in morphemes (MLU(m)).

**Morphological and Syntactic Development**

The second part of the InuLARSP profile begins with a section recording Minor utterances – utterances, or portions of utterances, that are not relevant to grammatical analysis. These include responses to interlocutor questions (e.g., *auka* ‘no’, *aaa* ‘yes’), vocatives (e.g., *Anaana, …; ‘Mom, …’), interjections (e.g., *haa* ‘huh?’, *ilai* ‘right’), greetings (e.g., *ai* ‘hi’), and the like, as well as any problem utterances.

The following section – Stages I through V – is the heart of the chart. Here the relevant morphemes and syntactic structures of Inuktitut are listed according to the stage at which they consistently appear in the data samples. As already noted, the InuLARSP focuses more on morphology than most LARSP adaptations. Statements and commands are differentiated in Inuktitut by morphology rather than different syntactic constructions, and as a result are placed together on the InuLARSP chart.

In the following sections, we describe the elements listed at each stage. We first describe Stage I on its own, since the elements present at this stage are stand-alone roots and thus different from all the other stages. We then describe each of the elements contained in the remainder of the chart (e.g., Questions, Nominal Elements), and present the stages of development separately for each element.
Stage I

Stage I in Inuktitut, as in other languages, is very simple. Language at this stage is typified by one word / one morpheme utterances that consist of a noun root (4a), a verb root (4b), and utterances classified as Other, such as an interactional term (4c) or the early-developing demonstrative pronoun una (4d).

(4) a. **Piipi.**
   ‘Baby.’
   (Sarah, 1;3)

   b. **Amaaq.**
   ‘Carry on back.’
   (Sarah, 1;3)

   c. **Atiilu?**
   ‘Again?’
   (Sarah, 1;3)

   d. **Una.**
   ‘This one.’
   (Lucasi, 1;8)

Also common at Stage I are baby words, a nursery vocabulary used by and to children up to about 3 years of age (Crago, Allen, & Pesco, 1998). A baby word typically bears no similarity to the adult equivalent and is often phonologically simpler, as in the example in (5).

(5) **Apaapa.** [adult: *Niqi* OR *Niri-guma-junga.*]

   | food/eat | [ | food | eat-want-PAR.1sS] |
   |----------|----------------------------------|
   ‘Food/eat.’ [ | ‘Food’ | ‘I want to eat.’]
   (Jini, 1;0)

Questions

The first section in Stages II to V of the InuLARSP chart focuses on questions. Three columns appear under the Questions heading: the Syntax column records whether a question word appears alone in the utterance or with another word, the Word column records the presence of particular question words, and the Inflection column records the use of inflections used to mark questions. Each of these are treated in turn in the following paragraphs.

Inuktitut, like other languages, also allows utterances with no question word or interrogative inflection to be used as questions, typically signalled with intonation. As in the English LARSP, this form is not recorded in the Questions section of the InuLARSP because it is not relevant to morphosyntactic ability.

Syntax
Single-word questions are already evident at Stage II, as represented by Q on the chart. These may appear as just a question word alone as in (6a), or a question word with additional verbal (6b) or nominal (6c) morphology. More complex two-word question utterances appear at Stage V – most frequently a question word with a subject as illustrated in (6c). Given the overall low frequency of these structures, however, a question word and any other element is represented as QX.

(6)  
a. *Nauk?*
   nauk
   where
   ‘Where?’  
   (Lizzie, 2;6)
b. *Naniilirqa?*
   nani-it-liq-va
   at.where-be-INCP-INT.3sS
   ‘Where is it now?’  
   (Lizzie, 3;3)
c. *Una kinaup?*
   u-na kina-up
   this.one-ABS.SG who-ERG.SG
   ‘Whose is this?’  
   (Paul, 3;3)

**Word**

Question words are typically used to form content questions. Two question words appear consistently at Stage II: *suna* ‘what’ and *nauk* ‘where’. The latter is illustrated in (6a). A further question word appears at Stage III: *kina* ‘who’, as shown in (6c). The question word *nani* ‘at where’ appears at Stage V, as illustrated in (6b).

**Inflections**

The first nominal and verbal inflections attached to question words begin to appear at Stage II. These may be either interrogative inflections as in (6b), or inflections of other types as in (6c). Since no particular inflection appears consistently enough to merit specific mention on the chart, this is listed as Q+inf on the chart. At Stage III we see the first consistent use of the question-marking enclitic -li ‘where’. This morpheme can be affixed on nominal stems to form a where-question, as shown in (7a). Finally, verbal inflections in the interrogative mood can be used on any verb root to form a yes-no question. At Stage V, the interrogative inflection -vit ‘INT.2sS’, shown in (7b), begins appearing consistently.
a. *Jaikuli?*  
Jaiku-li  
Jacob-where  
‘Where is Jacob?’  
(Elijah, 2;0)  

b. *Aanii atjiliurtaulangaviit?*  
Aani atjiliuq-jau-langa-vit  
Annie film-PASS-FUT-INT.2sS  
‘Annie, are you going to get your picture taken?’  
(Tumasi, 2;1)  

**Commands and Statements: Clause / Phrase**

As noted earlier, commands and statements are recorded together on the InuLARSP chart because they both have the same syntactic structure, unlike in other languages where commands and statements have different syntactic structures. Five aspects of commands and statements are differentiated within the InuLARSP, each recorded in a separate column: *Clause/Phrase, Nominal Elements, Nominal Inflections, Verbal Elements, and Verbal Inflections.* We treat each of these in turn, beginning here with *Clause/Phrase.*

Although Inuktitut syntax is primarily encoded in word-internal morphology, some syntax is signalled through the relationships between words – either within verbal clauses (e.g., subject and verb within a sentence) or within noun phrases (e.g., possessive noun and a second noun representing the thing that is possessed). These syntactic relationships are listed in the *Clause/Phrase* column of the InuLARSP chart. Because word order is flexible in Inuktitut, both possible orderings between words are indicated on the chart (e.g., SV and VS for ordering of subject and verb).

**Verb Clause Constructions**

Verb clause constructions that contain two words begin appearing at Stage III. Four such constructions are common enough to be included on the chart: subject-verb constructions (SV/VS) as in (8a), object-verb constructions (OV/VO) as in (8b), subject-complement constructions (SC/CS) as in (8c), and adverbial constructions where an adverb is used with another element (AX/XA) as in (8d).

(8)  
a. *Maaki langavuq.*  
Maaki langa-vuq  
Maggie FUT-PAR.3sS
‘Maggie will be (coming).’

b. *Imiq pijariirtitara.*

imiq    pi-jartiq-tit-jara
drink    PLEON-already-CAUS-PAR.1sS.3sO

‘I finished the drink.’

(Paul, 2;6)

c. *Ukuait iirqait.*

u-kua-it    iirqak-it
this.one-ABS.PL-ABS.PL   pill-ABS.PL

‘These are pills’.

(Tumasi, 2;1)

d. *Aamutu maani.*

aamu-juq    ma-ani
sleep(BW)-PAR.3sS   here-LOC

‘You are sleeping here’.

(Jini, 1;8)

Three-word verb clause constructions appear consistently for the first time at Stage V. The most frequent structures are subject-verb-adverb (SVA) and verb-adverb-adverb (VAA), but subject-object-verb (SOV) and subject-complement-adverb (SCA) are also seen. Such structures are very rare; we found only 12 in the 4000 utterances coded. Therefore, they have been collapsed together as XYZ. An example of the VAA structure is in (9a). The first subordinate clause structures also appear at Stage V, indicated as V Vsub in the chart, as shown in (9b).

(9)  a. *Qaupasaaq kisiani siqinnilaartu.*

qaupasaaq    kisiani    siqinniq-laaq-juq
day.after.tomorrow   only    be.sunny-FUT-PAR.3sS

‘It’s going to be sunny only in two days.’

(Elijah, 2;5)

b. *Piirunnailugu anilangammat.*

piiq-gunnaq-it-lugu    ani-langa-mmat
remove-can-NEG-ICM.XsS.3sO   go.out-FUT-CTG.3sS

‘It can’t be taken off because she's going out.’

(Lizzie, 2;10)

**Noun Phrase Constructions**

Noun phrase constructions first appear consistently at Stage V, and typically contain only two words. The two constructions represented are possessive noun-noun structures (Nposs N) as in (10a), and determiner-noun phrases (Det N), as in (10b).

(10)  a. *Mirquluup pialuanik.*
Mirquluk-up pi-aluk-nganik
Mirquluk-ERG.SG thing-EMPH-MOD.3Ssg
‘Mirquluk’s thing.’ (Elijah, 2;0)

b. Una siqurngujaq surqajannigituq?
   u-na siqurngujaq suq-qajaq-nngit-juq
   this.one-ABS.SG clock do-can-NEG-PAR.3sS
   ‘This clock doesn't work?’ (Elijah, 2;9)

Commands and Statements: Nominal Elements

The second column under the Commands and Statements heading on the InuLARSP records information about nominal elements. This comprises a range of grammatical words and morphemes related to nouns. We discuss each type of element in turn, including how that element is represented across the developmental stages.

Personal Pronouns (PRO)

Inuktitut has only first and second person personal pronouns; all third person pronoun reference is indicated through demonstrative pronouns. First and second person pronouns are not permitted as subjects or objects of sentences; reference to first and second person subjects and objects is achieved through inflections on verbs. Thus, first and second person pronouns are relatively rare in Inuktitut compared with other languages. They typically appear alone (11a) and in equational constructions (11b), often in response to questions about who will do something or who owns a particular object. Note that the subject, object, and possessive forms of personal pronouns are identical in Inuktitut.

(11) a. Uvangali.
   uvanga-li
   I/me/my/mine-and
   ‘It’s my turn.’ (Paul, 3;3)

b. Una ivvit.
   u-na ivvit
   this.one-ABS.SG you/your/yours
   ‘This is yours.’ (Lizzie, 3;3)

Only the first person pronoun uvunga appears with sufficient frequency to appear on the InuLARSP chart, and then only at Stage IV.
Demonstrative Pronouns (DEM)

Inuktitut has a complex demonstrative system. There are two sets of roots, singular and plural, with ten members each that denote different meanings of proximity, movement, and spatial position (e.g., ma- ‘this moving one here’, pikkut ‘those stationary ones up there’). The roots are also inflected for eight cases (see information on nominal inflections). In our data, the children did not produce all of these forms, but rather used a few very frequently. The most commonly used demonstrative, una ‘this stationary one here (ABS)’, was already present at Stage I as illustrated in (4d); it is placed in the Other category on the chart. Two other demonstratives – uminga ‘this stationary one here (MOD)’, shown in (12a), and ukua ‘these stationary ones here (ERG/ABS)’, shown in (12b) – appear at Stage IV. The only other demonstrative used frequently and consistently enough across children to be useful on the InuLARSP is kanna ‘that stationary one down there (ABS)’, shown in (12c), which appears at Stage V.

(12) a. Aarqisulaurluk uminga Saalati.
   aarqisuk-lauq-luk  u-minga  Saalati
   repair-POL-IMP.1dS  this.one-MOD.SG  Charlotte
   ‘Let’s repair this one, Charlotte.’ (Louisa, 3;2)
b. Ukua sinigumajut.
   u-kua  sinik-guma-jut
   this.one-ABS.PL  sleep-want-PAR.3pS
   ‘These ones want to sleep.’ (Lizzie, 2;10)
c. Kanna paajaulangamijuq.
   katsu-na  paa-jau-langa-mi-juq
   that.one.down.ABS.SG  beat-PASS-FUT-also-PAR.3sS
   ‘That one down there will also get beaten up.’ (Elijah, 2;9)

Localizers (LOC)

Inuktitut has eleven localizer root forms denoting various locations with respect to the speaker. These forms can be inflected with one of four inflections denoting ‘in/at’, ‘to’, ‘from’, or ‘through’ (e.g., kanani ‘at down here’, avungat ‘to there further away’). As with demonstratives, Inuit children use a few forms frequently and the others rarely. Only one localizer is used consistently – maani ‘here’ – which appears at Stage II and is shown in (13).

(13) Maani itsivalaurli.
Nominalizers (NZ)

Nominalizers are used in Inuktitut, as in other languages, to turn words that begin as verbs into nouns. Although several nominalizers are available in Inuktitut, only two are used consistently by the children in our data. The form -juq is the simplest and most frequent, and is also the earliest to develop, appearing at Stage II. The form -jaq carries a passive meaning, and appears at Stage V. These are exemplified in (14).

(14) a. Qangattajuurtualuk.
   qangattajuq-juq-aluk
   fyl.airplane-that.which-EMPH
   ‘The one who is flying the plane.’
   (Elijah, 2;0)

   b. Qimaniartaaluvu?
   qimaq-niaq-jaq-aluk-vut
   leave.behind-FUT-that.which.PASS-EMPH-ABS.1Psp
   ‘(Is it) our one that will be left behind?’
   (Paul, 2;11)

Enclitics (ENCL)

Inuktitut has a number of enclitics – morphemes that can be suffixed to either nouns or verbs for various purposes. Four are used consistently and frequently enough to appear on the InuLARSP, and are salient in samples of child language. The greeting enclitic -ai, which is suffixed to names as in (15a), appears at Stage II. The emphatic (EMPH) enclitic -aluk, used both for emphasis (‘big/very’) and as a pejorative (‘bad’), also appears at Stage II, as illustrated in (14a). Two conjunctions (CONJ) are placed at Stage III: -li ‘and’ and -lu ‘and’. The latter is shown in (15b).

(15) a. Ataataai.
   atata-ai
   father-hi
   ‘Hi, Dad.’
   (Jini, 2;0)

   b. Pamiuqatsunilu, panik.
   pamiuq-qaq-tsunilu panik
   tail-have-CTM.4sS-and daughter
‘He also has a tail, daughter.’  
(Paul, 3;3)

Adjectival Morphemes (ADJ)

As noted earlier, words that are adjectives in English can be realized either as verbs as shown in (2), or as morphemes suffixed to noun stems. Three of the latter are used consistently enough in child language to appear on the InuLARSP. The morpheme -aluk ‘EMPH’, the same form as the enclitic -aluk mentioned in the previous section, appears at Stage II as illustrated in (14b). The diminutive (DIM) -apik occurs at Stage IV, as shown in (16a). The adjectival morpheme -nguaq- ‘pretend’ also appears at Stage IV, as shown in (16b).

(16) a. Nukaapiga.
   nuka-apik-ga
   sibling-little-ABS.1Ssg
   ‘My little sibling.’  
   (Elijah, 2;9)

   b. Annuraannguanga.
   annuraaq-nguaq-nga
   clothes-pretend-ABS.3Ssg
   ‘Her toy clothes.’  
   (Lizzie, 2;10)

Commands and Statements: Nominal Inflections

The third column on the InuLARSP chart under Commands and Statements is reserved for nominal inflections. The nominal inflection system in Inuktitut is complex. It includes three numbers – single, dual, and plural – as well as eight cases – ergative (subject of transitive verb), absolutive (subject of intransitive verb or object of transitive verb), modalis (second or indirect object), locative (‘at, in’), allative (‘to’), ablative (‘from’), vialis (‘through’), and equalis (‘like’). An additional set of inflections for possession marks case as well as person and number of the possessor(s) and number of the possessed item(s). In general, children begin using singular inflections before plural inflections, while dual inflections are relatively infrequent. Simple inflections also typically appear before inflections marking possession, with one exception: the absolutive first person singular possessive -ga ‘ABS.1Ssg’ (= ‘my’). Note that the most basic inflection, the absolutive singular form, is null and thus is not included in the InuLARSP.
At Stage II, only one nominal inflection is used consistently enough to appear on the chart: the absolutive first person singular possessive -ga ‘ABS.1Ssg’ (= ‘my’) as illustrated in (16a) and (17). At Stage III, three unpossessed singular endings appear: the ergative/possessive singular -up ‘ERG.SG’ (see (6c) and (10a)), the locative singular -mi ‘LOC.SG’ (= ‘in/at’; see (20c)), and the allative singular -mut ‘ALL.SG’ (= ‘to’; see (21c)). One unpossessed plural ending also appears at Stage III: the absolutive plural -it ‘ABS.PL’ (see (8c)). At Stage IV, no new nominal inflections appear. At Stage V, two nominal inflections appear: the second person possessed ending -it ‘ABS.2Ssg’ (= ‘your’; see (21d)) and the third person possessed ending -nga ‘ABS.3Ssg’ (= ‘his/her/its’; see (16b)).

**Commands and Statements: Verbal Elements**

The fourth column of the *Commands and Statements* section of the InuLARSP records information about verbal elements. This comprises a range of grammatical morphemes related to verbs. We discuss each type of element in turn, including how that element is represented across the developmental stages.

**Politeness Marker (POL)**

Inuktitut indicates politeness not by words such as the English *please* but by a politeness marker -lauq-, used preceding imperative inflections, that functions to soften commands. An example is shown in (17). Inuit children use this marker quite early, at Stage II.

(17) *Piipiga qailauruk.*

piipi-ga qai-lauq-guk
baby-ABS.1Ssg come-POL-IMP.2sS.3sO

‘Please bring me my baby.’

* (Lizzie, 2;10)

**Negation (NEG)**

Negation in Inuktitut is indicated most frequently by the morpheme -nngit-, as shown in (18). This morpheme appears by Stage III in the data.

(18) *Nirilangannginama.*

niri-langa-nngit-gama
eat-FUT-NEG-CTG.1sS

‘I will not eat.’

* (Paul, 2;11)
**Verbalizers (VZ)**

Verbalizers are a key characteristic of the polysynthetic structure of Inuktut. They are a set of morphemes that typically appear as independent verbs in other languages, but are suffixes in Inuktut. They suffix onto noun stems, turning the noun stems into verbs. One verbalizer appears at Stage III: the copula -it- which is affixed to locative stems, as shown in (19a). Another form of the copula appears at Stage IV, -u-, which is affixed to all other types of noun stems, as shown in (19b). At Stage V, the verbalizer -qaq- ‘have’ appears consistently, as shown in (19c). Although several other verbalizers are used by the children, none are consistent or frequent enough to be useful in distinguishing stages in the InuLARSP.

(19) a. *Maaniilaurit!*
   ma-ani-it-lauq-git
   here-LOC-be-POL-IMP.2sS
   ‘Be here!’ (Louisa, 3;6)

b. *Mikijuunnginama.*
   miki-juq-u-nggit-gama
   be.small-that.which-be-NEG-CTG.1sS
   ‘I’m not small’.
   (Paul, 2;6)

c. *Nukaapiqarqunga.*
   nukak-apik-qaq-vunga
   younger.sibling-cute-have-IND.1sS
   ‘I have a cute little brother.’ (Elijah, 2;9)

**Affixal Verbs (AV)**

Affixal verbs are a second set of morphemes that typically appear as independent verbs in other languages but are suffixes in Inuktut. They suffix onto verb stems, adding further meaning to the verb. The first affixal verbs appear at Stage III: the desiderative guma- ‘want to’ and the passive -jau- ‘PASS’, both illustrated in (20a). Two more appear at Stage IV: the causative -tit- ‘CAUS’ illustrated in (20b), and the verb -nnguaq- ‘pretend’ illustrated in (20c). The modal -gunnaq- ‘can’ is used at Stage V, as shown in (20d).

(20) a. *Kalijaugumajunga.*
   kalik-jau-guma-junga
   pull-PASS-want-PAR.1sS
'I want to be pulled.'  

(Elijah, 2;9)

b. Niarquatitara?

niarquaq-tit-jara

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

‘Did I bump its head?’

(Louisa, 3;6)

c. Pirsialummi qamulitinnngualaujunga.

pirsiq-aluk-mi qamulitik-nnguaq-lauq-junga

storm-EMPH-LOC.SG ride.sled-pretend-PAST-PAR.1sS

‘I played riding a sled in the big storm.’

(Elijah, 2;9)

d. Makitagunnatuq.

makit-taq-gunnaq-juq

stand-repeatedly-can-PAR.3sS

‘It can stand up.’

(Lizzie, 3;3)

Tense (TNS)

Inuktitut has multiple morphemes to denote the past and future tense, encoding distinctions in how close to the present the event took place. In general, the children in our data indicated the future more frequently and earlier than the past (Swift, 2004). Two future morphemes appear at Stage IV: -langa- (near future; see (17d) and (18)) and -laaq- (tomorrow or later; see (9a)). An additional future morpheme appears at Stage V: -niaq- (later today; see (14b)). Two past morphemes also appear at Stage V: -kainnaq- (very recent past; see 21b)) and -lauq- (yesterday or earlier; see (20c)).

Commands and Statements: Verbal Inflections

The fifth and final column on the InuLARSP chart under Commands and Statements is reserved for verbal inflections. The verbal inflection system in Inuktitut consists of some 900 portmanteau morphemes that mark subject and object agreement for four persons – first, second, third, and fourth (= a third person different from the third person referent in the main clause) – and three numbers – singular, dual, and plural. In addition, they mark one of ten moods: indicative, participial (used as an indicative in this dialect of Inuktitut), imperative (command), interrogative (question), contingent (reason or cause), conditional (condition), dubitative (signalling doubt), contemporative (two events occurring at the same time), incontemporative (two events occurring at different times), and contemporative negative. As
a general rule, the children use inflections marking only subject agreement earlier and more frequently than inflections marking both subject and object agreement. Not surprisingly, they use more forms for first person subjects than for the other persons. They also use imperative and indicative (including participial) inflections earlier than they use inflections for the other moods.

**Imperative Verbal Inflections (IMP)**

There are 72 possible imperative inflections in Inuktitut, but the children only produced a few of them. However, these are some of the first verbal inflections to be used with frequency and variety. Two imperative endings appear at Stage II: -git ‘IMP.2sS’ (see (19a)) and –guk ‘IMP.2sS.3sO’ (see (17)). Other forms -luk ‘IMP.1dS’ (see (12a)) and -li ‘IMP.3sS’ (see (13)) appear at Stage III and Stage IV respectively.

**Participial Verbal Inflections (PAR)**

The participial inflection is known by this term since it forms participles in some Inuit languages such as West Greenlandic. However, in the language we are dealing with here (Inuktitut as spoken in northern Quebec), the so-called participial inflection is used as an indicative form and appears much more frequently in both child and adult speech than the indicative form itself. The first participial ending appears at Stage II: -juq ‘PAR.3sS’ (see (17c) and (20d)). Two more endings are added at Stage IV: -junga ‘PAR.1sS’ (see (20a) and (20c)) and -jara ‘PAR.1sS.3sO’ (see (8b) and (20b)).

**Indicative Verbal Inflections (IND)**

Indicative inflections do not appear in the chart until relatively late. The inflection -vunga ‘IND.1sS’ (see (19c)) appears at Stage IV, while -vuq ‘IND.3sS’ (see (8a)) appears at Stage V.

**Contingent Verbal Inflections (CTG)**

Contingent inflections first appear consistently at Stage III with the form -gama ‘CTG.1sS’ (see (18) and (19b)). This is followed at Stage IV by -mmat ‘CTG.3sS’ (see (9b)).

**Interrogative Verbal Inflections (INT)**
As noted earlier, only one interrogative inflection appears consistently enough to be noted on the InuLARSP. This is the inflection –vit ‘INT.2sS’, which appears at Stage V and is exemplified in (7b).

**Highest Number of Morphemes per Word**

As previously stated, the bulk of grammatical development in Inuktitut occurs in the use of increasingly complex morphology. Up to this point in the chart, we have focused on the particular morphemes that appear at different stages. Another indicator of development is the number of morphemes children produce on each root, regardless of what the morphemes are. This number increases as children develop – both the average number of morphemes produced per root, and the absolute number of morphemes produced per root. The absolute number of morphemes produced with a root is included in the chart since it is the easiest of these two figures to record.

At Stage II, children typically produce utterances consisting of a root word plus a maximum of three morphemes, as illustrated in (21a). At Stage III, the maximum number of morphemes added increases to four, as shown in (21b). At Stage IV, the number slightly increases to six morphemes, as exemplified in (21c). Words with 7 or more added morphemes start appearing at Stage V, as illustrated in (21d).

(21) a. *Angijualumii?*
angi-juq-aluk-mik
be.big-that.which-EMPH-MOD.SG
‘Is it a big one?’  
(Jini, 2;0)

b. *Qiniriakainnanginakku.*
qiniq-giaq-kainnaq-nngit-gakku
look.for-begin.to-PAST-NEG-CTG.1sS.3sO
‘I didn’t begin to look for it.’  
(Lizzie, 3;3)

c. *Imamuutupalliajuq.*
imaq-mut-uq-juq-u-vallia-juq
water-ALL.SG-arrive.at-that.which-be-gradually-PAR.3sS
‘It’s gradually going into the water.’  
(Paul, 2;11)

d. *Kililangangitaaluinuna?*
kiliq-langa-nngit-jaq-aluk-it-u-na
cut-FUT-NEG-that.which.PASS-EMPH-ABS.2Ssg-this.one-ABS.SG
‘You're not gonna get cut?’ [lit. ‘this will not be your cut one’] (Elijah, 2;5)

Errors

The final section on the InuLARSP is the Errors section. The original LARSP contains an error line that reflects mistakes made by typically-developing English-speaking children. Typically-developing children learning Inuktitut generally do not make errors of this sort, because of differences in the language typologies of English and Inuktitut (Crago & Allen, 1998). However, numerous errors were recorded in one study of an Inuktitut-speaking girl aged 5;4 with specific language impairment (Crago & Allen, 2001). This child, named Lina, had normal hearing, no history of chronic middle ear disease, and no signs of social and emotional disabilities or neurological deficit. She was considered comparable to her peers in cognitive and motoric domains by her teachers and family. She was not tested on any standardized tests since none existed for language development in Inuktitut. However, she was considered significantly language impaired by her family and community members (Inuit nursing assistant, special education teacher, and pedagogical counselor). As compared to an age-matched peer and an MLU-matched peer, she had a restricted lexicon with word-finding difficulties, frequent use of an all purpose word meaning ‘thing’, missing verbal inflections on both verbs and locatives, missing tense morphemes, overuse of pronouns, use of filler morphemes, and a lack of passive constructions. Representative examples of her utterances are provided in (22) through (25), where (a) is the child’s utterance and (b) is the target utterance.

(22) a. *Maani ivvit.*

ma-ani ivvit
here-LOC you/your/yours
‘Here you.’

(Lina, 5;4)

b. *Maaniigit.*

ma-ani-it-git
here-LOC-be-IMP.2sS
‘Be here.’

(target utterance; Crago & Allen, 2001, p. 95)

(23) a. *Sininngua.*

sinik-nnguaq-
sleep-pretend-
‘Pretend to sleep.’ (Lina, 5;4)

b. Sininngualuk.
sinik-nguaq-luk
sleep-pretend-IMP.1dS
‘Let’s pretend to sleep.’ (target utterance; Crago & Allen, 2001, p. 92)

(24) a. Aaa, qaisi.
   aaa qai-si-
   yes come-PRSP-
   ‘Yes, is coming.’ (Lina, 5;4)

b. Aaa, qaisijuq.
   aaa qai-si-juq
   yes come-PRSP-PAR.3sS
   ‘Yes, he/she/it is coming.’ (target utterance; Crago & Allen, 2001, p. 93)

   puitjuk-ku-MI anaana-ganut ma-unnga
   swim-?-FILLER mother-ALL.1Ssg here-ALL
   ‘Swim to my mother to right here.’ (Lina, 5;4)

b. Puutjutuq anaanaganut.
   puitjuq-juq anaana-ganut
   swim-PAR.3sS mother-ALL.1Ssg
   ‘He/she/it swims to my mother.’ (target utterance; Crago & Allen, 2001, p. 94)

Although based on a single case study, these possible errors have been listed in the Errors section of the InuLARSP in the expectation that they might also reflect errors found in atypical language development of other Inuit children.

**Application**

In order to illustrate how the InuLARSP is implemented with actual data, we have provided two examples of completed profiles in Figures 2 and 3. The first profile (Figure 2) shows data from Louisa, a typically-developing child aged 3;1 years. A 100-utterance language sample, from a different session than the one used to develop the InuLARSP
profile, was analyzed according to the principles described above. The profile shows strong representation of grammatical features at Stage III with the exception of questions (which depend on context) and nominal inflections. There is also fairly strong development at Stage IV, particularly in the area of nominal elements, and even evidence of development at Stage V.

The second profile (Figure 3) is that of Lina, the child aged 5;4 with specific language impairment mentioned earlier. Although Lina is more than two years younger than Louisa, the two children have similar mean lengths of utterance, and thus Louisa can be considered a language match for Lina.

Given the similarity in mean length of utterance, one might expect the InuLARSP profiles of the two children to also be similar. Indeed, they do have fairly similar patterns in the profile’s Sections A and B as well as for the Minor utterances, although Lina has twice as many responses (yes, no, alright) as Louisa. The two children also share similar patterns in the Questions section, both in terms of syntax and in terms of words and inflections used. However, clear differences in the profile are evident in the remaining sections of the InuLARSP. In the Commands/Statements section, the child with language impairment seems to be more advanced in terms of syntax, producing more three-word utterances. In terms of morphology, however, the profile of the language match, Louisa, shows greater variety and overall use of nominal and verbal elements than that of Lina. Their use of nominal and verbal inflections is similar in terms of the range of inflections used, but once again the typically-developing Louisa uses the inflections more frequently. Louisa also uses more morphemes per word: she regularly produces words with four and five morphemes in addition to the root while Lina, the child with language impairment, rarely uses words with more than three morphemes in addition to the root. Another major difference relates to errors. Louisa makes few errors, generally restricted to occasional missing inflections. In contrast, Lina, the child with language impairment, makes multiple errors including missing inflections on both verbs and locatives, omission of other required morphemes, inappropriate overuse of pronouns, and the use of filler morphemes.

In general, we conclude that the InuLARSP profile can be used to document the stages of language development of both typically-developing and language-impaired children. We also see that the InuLARSP profile brings to light a variety of differences in the language competence of the two children that might not be expected from examining a measure like the mean length of utterance alone.
Conclusion

In order to serve language impaired children who speak Inuktitut as their first language, assessment tools for Inuktitut are of great value. Creating a LARSP for Inuktitut is an important step in that direction. In the present chapter, we reported the steps in creating the InuLARSP and the resulting chart. Although we had a limited data sample on which to base this first version of the InuLARSP, we nonetheless expect that the tool will serve as a solid basis for assessing the language development of Inuit children and developing further relevant assessment instruments. Future research should verify the stages and entries in the InuLARSP with more children in the relevant age ranges, both typically and atypically developing.

Abbreviations

The following abbreviations are used in glosses throughout this chapter:

**Nominal Case**: ABS = absolutive; ALL = allative; ERG = ergative; LOC = locative; MOD = modalis.

**Verbal Modality**: CTG = contingent; CTM = contemporative; ICM = incontemporative; IMP = imperative; IND = indicative; INT = interrogative; PAR = participial (functionally equivalent to indicative in Inuktitut).

**Word-Internal Morphology**: BW = baby word; CAUS = causative; EMPH = emphatic; FUT = future; INCP = incipient aspect; NEG = negative; PASS = passive; PAST = past; PERF = perfective aspect; POL = politeness softener; PLEON = pleonastic; PRSP = prospective aspect.

**Verbal Inflection (e.g. PAR.3sS)**: 1 = first person; 2 = second person; 3 = third person; 4 = fourth person; X = any person; s = singular; d = dual; p = plural; x = any number; S = subject; O = object

**Nominal Inflection (e.g., ABS.SG)**: SG = singular; DU = dual; PL = plural.

**Possessed Nominal Inflection (e.g., ERG.3Ssg)**: 1 = first person possessor; 2 = second person possessor; 3 = third person possessor; 4 = fourth person possessor; S = singular possessor; D = dual possessor; P = plural possessor; sg = singular possessum; du = dual possessum; pl = plural possessum.

Acknowledgements
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References


Table 1: *Data used for analysis, including age in months and mean length of utterance in morphemes*

<table>
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<th>Child</th>
<th>Age in Years; Months</th>
<th>Mean Length of Utterance in Morphemes</th>
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<td>1.71</td>
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