Don't Forget the Kids:

Documenting the Acquisition of Endangered Languages

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Abstract

The transmission of language to two-year-olds is the key indicator of language vitality and yet many endangered language projects overlook the interaction between children and their caretakers. At a time when no documentation exists for children acquiring 97% of the world's languages it is essential to document the interaction between children and their caretakers. Caretaker speech and their associated cultural practices constitute the key support for language maintenance. This paper explores what the documentation of child language contributes to the documentation of endangered languages, and suggests a practical methodology for documenting child language. Hopefully, these suggestions will inspire linguists to document the child languages of Indonesia.

Keywords: Child language; caretaker speech; endangered language acquisition;

1. Introduction

Linguists are increasingly concerned about the rapid loss of languages around the world [1]-[5]. For this reason linguists have launched a number of initiatives aimed at increasing the documentation of endangered languages. While the language of adult speakers is the primary focus of language documentation projects, the adult focus overlooks the speech of the most endangered speakers of all – two-year-olds. Languages are lost when parents no longer transmit their home language to two-year-olds. The transmission link can be broken in a surprisingly short period of time even in languages with many speakers. For this reason, when it is at all possible, linguists should document the language of children as well as adults. This paper first explores what the documentation of children's language adds to language documentation, and then offers practical suggestions on documenting two-year-old speakers of endangered languages.

2. The Significance of Child Language

The fundamental issue in cognitive science is explaining how children acquire language. The significance of this issue comes into focus when considering the vast differences between the 7,000 languages that humans have evolved over millennia. Evans & Levinson [6] observe that "The diversity of language is, from a biological point of view, its most remarkable property – there is no other animal whose communication system varies both in form and content. It presupposes an extraordinary plasticity and powerful learning abilities able to cope with variation at every level of the language system." Little is presently known about how children acquire the vast majority of the world's languages.

Understanding how children acquire any language requires empirical documentation. David Crystal [7] observed that over 40 years the *Journal of Child Language* only published papers on the acquisition of 20 languages spoken outside Europe. He added that "Given the presence of 6,000+ languages in the world, it seems we have still some way to go to put typological flesh on our hypotheses, with several language families having no representation at all

in this." As Kelly, Forshaw, Nordlinger & Wigglesworth [8] observed "There is a dawning realization that the field of child language needs data from the broadest typological array of languages and language-learning environments."

As yet only a handful of researchers have undertaken the work of documenting the speech of children acquiring endangered languages [9]. Research on language acquisition concentrates on the study of large European and Asian languages. These studies fall within the discipline of psychology, which is blind to the diversity of languages and cultures [10], [11]. While psychologists neglect the study of endangered languages, linguists who research endangered languages neglect the study of child language. In some communities, children may no longer be speaking the endangered language, but in those communities where children are still acquiring language, linguists should make every effort to record a sample of the children's language while it is still possible.

Children's language deserves to be documented like any other language variety. Children produce a slower, abbreviated version of the adult language. As Yuen Ren Chao [12] stated, children's language is "language in the making." Recordings of children's language allow us to see the parts of the adult language that children select to form their early utterances. The diversity across adult languages insures a diversity of child languages. Elements like the passive voice or ergative marking that are rare in most languages may appear frequently in the speech of children acquiring a few languages. Rather than mechanically applying a universal bootstrap in the form of principles and parameters [13] or imitation [14], children in the words of Hippolyte Taine [15] are original geniuses who create their own language varieties. Documenting the selections that children make in diverse languages is necessary to improve current theories of language acquisition.

Studies of children's initial consonants in K'iche' [16] and Dëne Sųłiné [17] show that children's consonant selections are not driven solely by their ease of articulation. Two-year-old children acquiring the Mayan language K'iche' produce the consonants [tʃ] and [l]. Two-year-olds acquiring the Athabaskan language Dëne Sųłiné produce the consonants [tʃ] and [dʒ]. These consonants are typically late acquisitions for children acquiring English [18]. Differences in the sounds that children initially use demonstrate children's sensitivity to the phonological structure of the adult languages. This sensitivity outweighs the effect of a language universal such as the ease of articulation. Data on children's consonant selection in other endangered languages is urgently needed to understand how children assimilate language-specific phonological structures.

Studies of children's first words in K'iche' also demonstrate the difficulty of predicting which parts of multisyllabic words children will select. Children are thought to universally select word roots and omit grammatical inflections [19]. Children acquiring K'iche' select the final stressed syllable of words regardless of whether it corresponds to a root or inflection [20]. The two-year-old K'iche' child TIY produced the positional verb *chateloq* 'Leave!' as [loq]. This verb has the root –el 'leave', and the imperative suffix –oq. The child selected the final stressed syllable that contains part of the verb root and the imperative suffix rather than the entire verb root. Data on children's word forms in other endangered languages are needed to assess when children produce roots and when they produce grammatical affixes.

Examples of such cross-linguistic discoveries can be multiplied by the thousands. They demonstrate that the diversity of adult language structures yields a diversity of children's language forms at every level of the language system. Considering that data on children's language has been collected from fewer than 3% of the world's languages, there is an urgent need to document the acquisition of endangered languages.

As important as documenting children's language is, it is also important to document how other family members communicate with two-year-olds. The two sides of the language transmission equation are the children and their caretakers. Childcare practices vary as much as language structures, and the ways that caretakers speak to children also deserve to be documented [21]. Speech to two-year-olds is a specialized register of the language that remains undocumented in many language documentation projects. It is essential to document the caretaker variety of language whenever possible since it is central to language transmission. The transmission process remains one of the least documented aspects of human language.

Two-year-old children are language sponges who soak up the language(s) in their environment. They note the smallest nuances in the adult language(s), and are particularly sensitive to the manner in which older speakers address them. If their parents only use the endangered language when speaking to other adults and a majority

language when speaking to two-year-olds then two-year-olds will infer that they are majority language speakers and not speakers of the endangered language even though they constantly hear their parents using this language. Adults will sometimes use a majority language when speaking to children in the mistaken belief that they are advancing their economic prospects [22]. Sadly, there is no evidence to support this belief. A minority language is only one of the many hurdles that children face when growing up in marginal communities.

Children acquire language naturally in the home as opposed to when they are taught a language in school. Parents have too many other demands on their time to teach verb conjugations and subjunctive moods to their children. Parents focus on understanding what their children are trying to tell them rather than how they say it. Parents do not correct children's grammar and pronunciation. Indeed, parents and older siblings often act as interpreters for their two-year-olds. Parents recognize the intentionality behind their children's attempts at communication in ways that often baffle outside observers. In the following example an adult speaker of the Mayan language Mam asks a two-year-old where a bird went [23].

Mam child (WEN) and adult (A) talking about a bird (MW271006)

A:	xatum maa tʂii xal?	Where did it go?
WEN:	yuk. (= xeekyal.)	I don't know.
A:	maa tʂii ti wiʃik.	The bird went away.
WEN:	tiixh. (= maa tʂii xal.)	It went away.
A:	xatum maa tʂii xal?	Where did it go?
WEN:	nn?	
A:	maa tʂii xal?	It went away?
WEN:	tiixh. (= maa tʂii xal.)	It went away.
A:	xatum maa tʂii xal?	Where did it go?

At the beginning of the conversation, WEN's brother noticed a bird in their yard. The adult asks the child where the bird went. The child responds by saying that she doesn't know where it went. The adult then gives the child the answer by saying the bird went away. The child partially repeats this answer by repeating the verb root, but producing a [t] in place of the retroflexive affricate [tʂ]. The child also omits the preceding recent past marker *maa*. The adult then continues the conversation by asking where the bird went, but WEN doesn't know. The adult then repeats an answer, which WEN repeats. During the course of this small conversation, the adult accepts the child's reduced verb form and shows an awareness of the child's limited understanding of the situation. The adult keeps the conversation moving by giving the child examples of possible responses.

The most essential feature of caretaker speech to children is the way that caretakers communicate their love and affection to children. Parents frequently use baby words, onomatopoeia and diminutives when speaking to two-year-olds. The affective features of speech to children separate this register from all other linguistic practices and differ widely across cultures. In order to understand language transmission it is essential to document the special features of caretaker speech to two-year-olds.

Projects that document the language of children and their caretakers depend on access to families with children. This access is best attained by someone who has lived in the community for some time, and ideally is a native speaker of the language. Language acquisition projects more than other language documentation projects require the participation of community investigators to record and transcribe the speech of children and their families. Language acquisition projects benefit most by training members of the children's community to carry out the research. With a minimum of training and equipment members of the community can carry out the essential work of documenting children's language.

Recording and transcribing children's speech provides an ideal training exercise for community investigators. The speech of two-year-olds contains short utterances with simple phonemes. Two-year-olds are prone to repeating what they are trying to say, and their caretakers often help by rephrasing what a two-year-old says. A community investigator with knowledge of the language and culture can understand more of what children say than an outside

linguist. Speakers without any computer experience can quickly learn to transcribe children's language on a laptop. A little patience in training a community investigator is quickly rewarded in watching them become expert computer users.

A further benefit of training community investigators is that they soon become ambassadors for linguistic research in their community. They enhance the prestige of their language simply by using computers to write their language. This act shows other speakers that their language can be written and studied like the majority language. Language investigators who live in the community will have opportunities to discuss their work with other community members and explain why it is important to use their language. The community investigator can serve as a resource for teachers who want to develop written materials in the language for use in schools. There are many ways that community investigators can enhance the economy of their community beyond the original goal of documenting children's language.

3. How to Document Child Language

This section of the paper presents practical suggestions for documenting children's language. In contrast to other child language researchers I tailor my suggestions to minimizing the time and expense of documenting children's language. Not all situations of language transmission are equal. Research that is possible in communities with millions of speakers is not possible in communities with two hundred speakers. In order to document how all children acquire language, it is essential to record children in even the smallest of societies. I offer my suggestions from this perspective. Further information about these procedures is available on my webpage < http://pyersqr.org/documenting>.

3.1. Recordings

The number of recordings to make is the first consideration in language acquisition research. There is an obvious relation between the number of recordings and the cost of documentation. Ideally, it would be possible to record several two-year-old speakers in one-hour sessions every two weeks over the course of a year. Such a schedule would produce 24 hour-long recordings for one child. Assuming that it takes a community investigator two weeks to transcribe each hour-long recording results in an estimate of 48 weeks, or approximately one year, to transcribe this record of child language. This length of commitment is seldom practicable in research on endangered languages [8].

Given this reality, it is more important to consider transcribing one hour-long recording than undertaking a year-long project. If, at all possible, it would be best to record and transcribe three hours of a child's speech. These recordings will not show how the child's language develops over the period of a year, but they will provide a snapshot of a child who is acquiring an endangered language. Even this small sample will produce an incomparable contribution of our knowledge of the diversity in child language. It would be good to record another child, but even a recording of a single child is better than nothing.

The main reason that language acquisition researchers encourage "dense" recordings of many hours is that a lengthy recording has a better chance to record children producing linguistic features that are rare in the adult language. All languages have features that are relatively rare in everyday speech, but features that are rare in one language may be relatively frequent in another. Passive voice constructions are rare in colloquial English, but they are not rare in other languages. Recording small samples from all of the world's languages is a better way to observe children using linguistic features that are rare in European languages.

3.2. Transcription

Just as the number of recordings can be reduced dramatically in documenting endangered languages, the level of transcription can also be reduced. This is especially important when transcribing under-documented languages that lack a complete understanding of the relevant phonemic and grammatical contrasts. The child language researcher is under no obligation to offer a complete phonology or grammar for the adult language. The first objective is to record some record of child language. This first pass can always be refined in the following decades when the adult

language becomes better described. The opportunity to refine the phonology or writing system will not be possible without a record of the child's language.

Language acquisition researchers have different ideas about the level of glossing and coding to be used in transcribing child language. Coding only becomes necessary when the researcher is analyzing data from ten or more children. If the researcher only collects a three-hour sample from one child then coding is not necessary. I developed a "minimal coding" transcription style for my work documenting the acquisition of indigenous languages in Mesoamerica <http://pyersqr.org/minimal/MINIMAL.htm>. The minimal coding convention uses just three transcription tiers for each child. The first tier should be a broad phonetic transcription of the child's utterance. The second tier contains the equivalent expression in the adult language. This should be a complete adult sentence that remains as close as possible to the words in the child's utterance. The third tier should contain a translation of the adult equivalent in the majority language.

I recommend the ELAN transcription program that is available on the website of the Max Planck Institute for Psycholinguistics [24]. The main advantage of the ELAN program is that it allows the linguist to link the transcriptions directly to the recordings. This makes it easy for the transcriber to select a segment of the recording to play back again during transcription. The link between the recording and transcription also avoids confusion when transcribing a segment with multiple repetitions of the same words or phrases. I provide an example of an ELAN transcription for a child in Fig. 1.
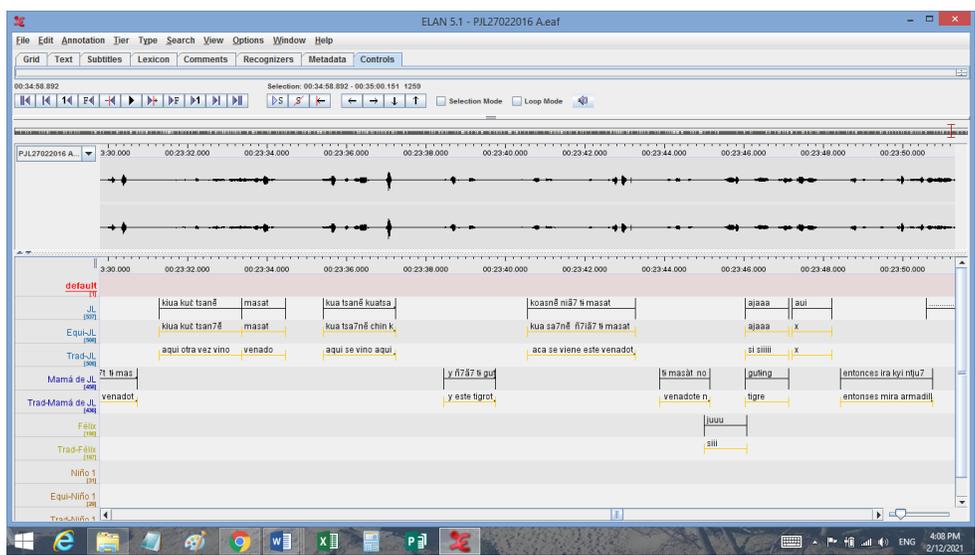

Fig. 1. ELAN transcription for a child acquiring Xi'iùy (Northern Pame)

The minimal coding mode of transcription makes it much easier to train community investigators to transcribe child language samples independently. It also reduces the error of inserting the wrong code into the transcription. Adding morpheme codes in the transcription phase of documentation mixes the transcription phase with the analysis phase. It is cheaper and faster to forego any coding during transcription, and only add these in later phases of the project [25].

3.3. The Child Language Sketch

The recording and transcription of a sample of a child speaking an endangered language already represents an enormous contribution to the field of language acquisition research. Care should be taken to preserve both the recordings and transcriptions for future generations. All of this work should be supplemented by the publication of

an analysis of the child's language. I recommend consulting traditional sketches of child language for ideas on what to include in a child language sketch [12, 15, 26-30].

It is important to transcribe a complete hour of a language sample in order to provide general measures of the frequency of a child's utterances. The sketch should provide measures such as the number of utterances the child produced in an hour, the number of interpretable utterances the child produced, the number of utterances with verbs the child produced, and the number of declarative, imperative and interrogative utterances the child produced.

The sketch should include a list of the words that the child produced. Children's first words reveal how children structure their physical and social worlds [31]. The word list should provide both the child's form as well as the adult target. Each word entry should include its grammatical category. It is useful to divide the grammatical categories into subcategories such as proper nouns, common nouns and pronouns for nouns as well as transitive and intransitive verbs for verbs. Any language-specific grammatical categories should be included as well. Baby words such as English *yummers* 'food' and onomatopoetic words such as *choo-choo* 'train' should be analyzed in separate categories. In multilingual communities, the child's words should be separated into a list for each language. Separating words from different languages may be difficult to do, but here again it is important to remember that a preliminary analysis can always be corrected at a later date.

The child's word list provides the necessary data for an analysis of the child's phonology. Children typically have more difficulty producing some sounds than others, but the sounds that they produce with ease differ considerably across languages [16, 17]. The phonological analysis should include inventories of the consonants that the child produced in initial and final positions. The analysis should note the number of word types that contain the consonants in each position. The same analysis should be performed for the vowels in the child's words. Additional analyses can be made of the syllable structures in the child's words. The analysis should note the number of monosyllabic and polysyllabic words the child produced as well as the number of words with CV, CVC and CVCV syllable structures. Finally, the analysis should note where the child places the main stress or tonal accent and how these positions correspond to the stress positions in the adult targets. As the example of the child's word [nana] for the adult English *banana* shows, stress position is often associated with the syllables that a child omits [32, 33].

The child's word list also provides evidence for the child's use of grammatical morphemes. Brown's [19] analysis of children's use of grammatical morphemes in English drew attention to their omission in children's early utterances. Grammatical morphemes are obligatory in their contexts of use. The English noun phrase 'a couple of apples' contains the lexical morphemes *couple* and *apple* as well as the grammatical morphemes *a*, *of* and the plural inflection *–s*. A sketch of child language should note which grammatical morphemes children produce and their percent use in obligatory contexts. The sketch should include examples of where a child omits a grammatical morpheme.

If possible, the investigator might analyze the productivity of the child's inflections [34]. Children are thought to first use grammatical morphemes as unproductive forms. Evidence of productivity can be seen by noting if the child uses an inflection on different stems or produces words with and without an inflection. Evidence of inflectional productivity differs across languages so it is important to note what evidence of morpheme productivity exists in the child's language sample.

Finally, the language sketch should include a brief description of the child's syntax. Most of a two-year-old's utterances may only contain a single word so the general measures should note how many multiword and multimorphemic utterances the child produced. The average length of the child's utterances in words should also be reported in the sketch. One of the main differences between languages depends on whether the language cross-references subjects and objects on the verb or by means of separate subject and object noun phrases. The sketch should note the number of the child's sentences that have subjects and objects [35]. It is important to divide these sentences between those with transitive and intransitive verbs as only transitive verbs will have object arguments. A language with an ergative syntactic structure will use subjects differently for transitive and intransitive verbs [22, 36].

4. Conclusion

Documenting the speech of children acquiring endangered languages is an essential element of language documentation. In many cases it may not be possible to record children speaking an endangered language because the language is no longer being transmitted to children or the community is reluctant to involve their children in the study [37]. These cases underline the importance of recording children whenever possible as another opportunity may not come again. As yet, there is no record of children speaking the majority of human languages. The extant record of child language is woefully inadequate [7, 25].

Documenting the speech of children inevitably includes a record of the speech that parents and other family members address to children. Caretaker speech and their associated cultural practices document a vital link in the chain of language transmission from adults to children. Information about caretaker speech should be incorporated into language maintenance and revitalization projects. The natural practice of language transmission is by far the best environment for language acquisition. Language maintenance initiatives can be strengthened by identifying the best ways to support language in the home.

Research on child language has three components: recording, transcription and publication. It is important to identify the resources needed to support each of these components. Archiving the recordings and transcriptions should be done in ways that make these products accessible to the language community for the next centuries. A sketch of a child's language provides a summary of the language in the making that can inform and strengthen the use of the language in the home as well as in the larger community. I hope that these suggestions inspire the linguists of Indonesia to publish sketches for children acquiring all of the Indonesian languages.

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