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# Some Language Abilities of Quiché Mayan Preschoolers

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I have been analyzing the language of young children in a Quiché Mayan community for more than a decade now. It occurred to me that this might be a good occasion to provide a summary of some of my findings as a basis for comparison with the other reports in this session. Most of my studies have focused on a nine-month longitudinal record of three Quiché children who were 2;1, 2;9 and 3 years old when I began. I visited the children in their homes approximately once every two weeks for a one-hour period at which time I recorded their speech. My own halting use of Quiché managed to persuade the children that these recording sessions were contexts in which Quiché was the predominant language even though they involved an outsider which normally means Spanish would predominate. At first, the children were very quiet or even somewhat anxious in my presence. It is a common practice among Quiché mothers to warn their children that if they misbehave a tourist will take them away. After several visits, though, the children accepted me as a rather unusual babysitter. Let me, then, describe the linguistic accomplishments of the 4 to 5-year-old Quiché preschooler.

First of all, the typical Quiché 5-year-old has acquired most of the sounds in his/her language. This includes a full range of plain stops and affricates, including a velar/uvelar opposition. A 5-year-old has also acquired the full set of glottalized counterparts to the plain stops and affricates. The l/r distinction may still cause them some difficulty, but /r/ is also notoriously difficult for English-speaking children to acquire. Table 1 shows the 5-year-old's phonological inventory for word-initial consonants.

Table 1. The word-initial consonants of a Quiché 5-year-old.

| | | | | | | |
|---|---|---|---|---|---|---|
| p | t | tz | ch | k | q | 7 |
| b' | t' | tz' | ch' | k' | q' | |
| | s | | (x) | | j | |
| m | n | | | | | |
| w | (r) l | | y | | | |

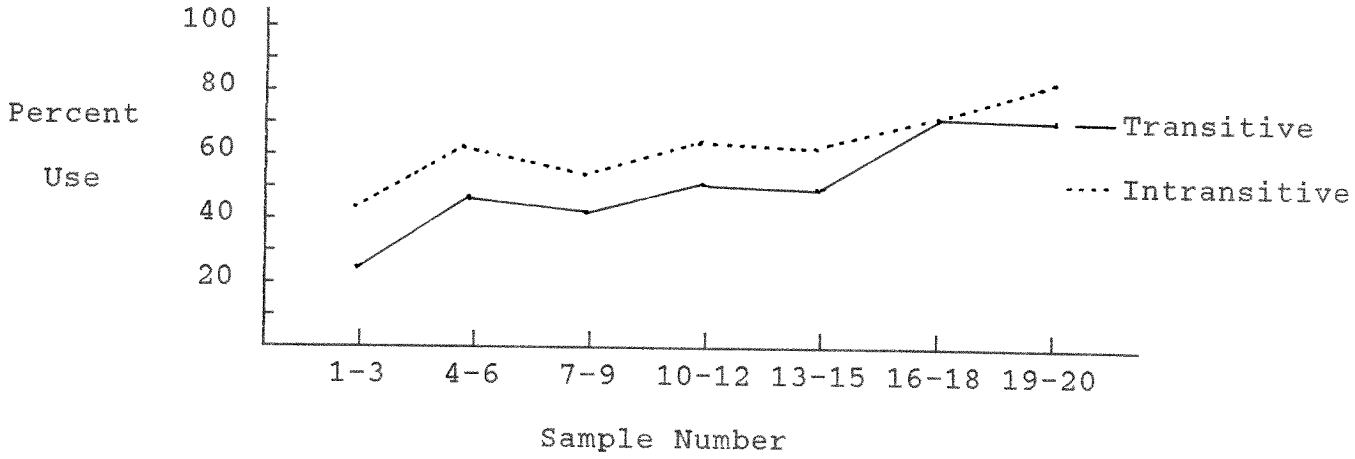
Secondly, five-year-olds have mastered most of the details of the Quiché verb. Some of these details are shown in (1). The initial morpheme marks incompletive or completive aspect and imperative mood. This is the last piece of the verb that children acquire, but by 5 they are reliably using the aspectual markers. The subject and object markers are also acquired late, although they are acquired before the aspectual marker. Two-year-old Quiché speakers use subject markers very irregularly, most often in imperative forms of the verbs <u>go</u> and <u>come</u>. Their frequency of use steadily rises over time between 3 and 4 years of age (see Figure 1).

(1) object subject clause-final
aspect-marker-motion-marker -root-termination

e.g. k - in - e: - r - il - a = kenrila

incomp- 1A - go - 3E - see- = 'he is going to see me.'

Figure 1. Development of subject markers for A Carlos (3;0-3;9).




Quiché (and other Mayan languages) have an ergative system of cross-referencing markers. One set of subject markers, the ergative set, is only used to indicate the subject of transitive verbs. The other set, the absolutive set, is used to indicate the subject of intransitive verbs as well as the object of transitive verbs. If you believed some psychology textbooks, you might expect this ergative system of cross-referencing markers to create problems for children acquiring the language. They cannot simply use one form to mark the agent which initiated the action. However, I do not find any indication that Quiché children have any difficulty sorting out the correct forms from the beginning. Table 2 provides data on person-marker overgeneralizations in the data. It is quite clear that the children had little trouble with them.

*Table 2.* Person-marker overgeneralizations.

| | Al Tiya:n | | | | | Al Cha:y | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Session | TV | Err. | IV | Err. | Prop. | TV | Err. | IV | Err. | Prop. |
| 1-3 | 9 | | 6 | | 1.0 | 3 | | - | | 1.0 |
| 4-6 | 5 | | 3 | | 1.0 | 10 | 2 | 9 | 1 | .84 |
| 7-9 | 6 | | 4 | | 1.0 | 12 | 1 | 5 | | .94 |
| 10-12 | 19 | | 6 | | 1.0 | 48 | 2 | 3 | | .96 |
| 13-15 | 25 | 1 | 4 | | .97 | 51 | | 2 | | 1.0 |

This was not the case with the first person possessive marker. This possessive marker has two forms: one form /nu-/ is used in the vast majority of words while the second form /in-/ is used with only

two words in my corpus, tat 'father' and chaq' 'younger sibling'. The children consistently produced the possessed form nu-taat rather than the adult form in-taat, showing that they were quit willing to overextend the regular possessive form despite the adult input. The data in Table 2 persuades me that the children did not find any compelling reason to overextend the ergative subject marker to intransitive verbs or vice versa.

The final suffix on root transitive and intransitive Quiché verbs indicates three things: whether the verb is transitive or intransitive, whether or not the verb is the dependent aspect, and finally, whether or not the verb is in clause-final position. Despite its complexity, this is first part of the verb to appear in the speech of two and three-year-olds. They also use the appropriate termination marker in most situations. Table 3 provides data on transitivity errors which two three-year-olds made in using the termination marker. The table shows the number of termination markers the children used, the number of transitivity errors I could identify and the proportion of correct uses. These results indicate that Quiché children are aware of the transitivity distinctions the termination marker encodes at an extremely early age.

*Table 3.* Verb terminations and transitivity

| | Al Tiya:n | | | | | | Al Cha:y | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Trans. Verb | | | Intrans. Verb | | | Trans. Verb | | | Intrans. Verb | | |
| Samples | Cor. | Err. | Prop. | Cor. | Err. | Prop. | Cor. | Err. | Prop. | Cor. | Err. | Prop. |
| 1-3 | 4 | 1 | .80 | 9 | - | 1.0 | 6 | - | 1.0 | 13 | - | 1.0 |
| 4-6 | 6 | 1 | .86 | 10 | 2 | .83 | 26 | - | 1.0 | 40 | - | 1.0 |
| 7-9 | 5 | - | 1.0 | 27 | 2 | .93 | 17 | 1 | .94 | 45 | 2 | .96 |
| 10-12 | 8 | 1 | .89 | 30 | 3 | .91 | 65 | - | 1.0 | 43 | - | 1.0 |
| 13-15 | 61 | - | 1.0 | 65 | 7 | .90 | 39 | - | 1.0 | 43 | 5 | .90 |

The children were not as sensitive to the clause-final distinction that the termination markers encode. This data is shown in Table 4. This table uses the same data as the previous table, but the 'errors' in Table 4 occurred when the children used a termination in a clause-medial context or did not use the termination in a clause-final context. In fact, most of the errors occurred when children preserved the termination marker on certain, frequently occurring verbs (-e:k 'go'; -okik 'enter'; -petik 'come') in clause-medial contexts.

*Table 4.* The clause-final function of verb terminations

| | Al Tiya:n | | | | | | Al Cha:y | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Trans. Verb | | | Intrans. Verb | | | Trans. Verb | | | Intrans. Verb | | |
| Samples | Cor. | Err. | Prop. | Cor. | Err. | Prop. | Cor. | Err. | Prop. | Cor. | Err. | Prop. |
| 1-3 | 4 | 1 | .80 | 9 | 2 | .82 | 3 | 6 | .33 | 5 | 13 | .38 |
| 4-6 | 6 | 1 | .86 | 12 | 6 | .67 | 6 | 4 | .60 | 12 | 6 | .67 |
| 7-9 | 2 | 2 | .50 | 25 | 8 | .76 | 9 | 10 | .47 | 15 | 10 | .60 |
| 10-12 | 8 | 6 | .57 | 33 | 6 | .85 | 15 | 5 | .75 | 19 | 9 | .68 |
| 13-15 | 10 | 3 | .77 | 68 | 10 | .87 | 21 | 15 | .58 | 23 | 7 | .77 |

It is interesting that the children overgeneralized the clause-final marker to clause-medial position, but did not overgeneralize between transitive and intransitive forms. The five-year-old Quiché speaker uses the termination markers correctly for both the clause-final and the transitivity distinctions.

Those of you who know something about the structure of Mayan languages no doubt realize that the verbs can appear with other affixes besides the ones I've already discussed. During my last trip to Guatemala I began to look at how Quiché children acquire the passive and antipassive verb endings.

Although the overwhelming majority of children's utterances are in the Active voice, they begin using the other voices when they are 2 years old. There does not appear to be any difference in the time at which the children first produced passive and antipassive sentences. They also used these verbs in the active voice, an indication that they had not learned just another intransitive verb, but were aware of the alternation between the different voices. Nonactional verbs such as 'say', 'forget', 'cure', 'buy', 'write', 'scare', and 'hear' also show up in the children's early conversations. These also seem to be mostly truncated passives.

These data can best be compared with data on passives in English published in an article by Pinker, Lebeaux & Frost (1987). The Quiché and English production data are summarized in Table 5.

***Table 5.*** Conversational use of nonactive voice in English and Quiché

English (from Pinker, Lebeaux & Frost 1987)

| Children | Ages | MLU | Hours Recorded | No. of Passives |
|---|---|---|---|---|
| Adam | 2;3-4;11 | 2.00-5.20 | 110 | 72 |
| Eve | 1;6-2;3 | 1.50-4.26 | 40 | 10 |
| Sarah | 2;3-5;1 | 1.74-4.10 | 139 | 32 |
| Allison | 1;5-2;10 | 1.73 | 4 | 2 |
| Quiché | | | | |
| Al Tiyaan | 2;1-2;10 | 1.07-3.30 | 16 | 19 |
| Al Chaay | 2;9-3;6 | 1.57-4.31 | 24 | 99 |
| A Carlos | 3;0-3;10 | 1.59-3.69 | 20 | 68 |

The English data is probably exaggerated. Pinker et al. state that they used a very "liberal" definition for passives that included both adjectives (***named***, ***crowded***, ***mixed up***) and possible cases of the simple past tense ('It's stopped in the sky'). In contrast the Quiché data is an underestimate. I have not been able to thoroughly review my transcripts. Still the Quiché children probably produce sentences in a nonactive voice 8 times as often as the English children.

While the production data suggests that Quiché children can produce nonactive verb forms at an early age, it does not show that they are able to process the nonactive morphology grammatically. They might instead be using rote forms in semantically-restricted contexts.

Thus, some experimental procedure is necessary in order to evaluate the productivity of the children's nonactive voice forms.

I performed two experiments to test Quiché children's comprehension of sentences in the active, passive and Agentive voices. I also wanted to see if it made any difference whether the verbs were actional or nonactional in Maratsos et al. (1983) terms. I put together two lists of verbs to test, shown in (2).

*(2)*

| Actional | | Nonactional | |
|---|---|---|---|
| puyij | 'push' | xib'ij | 'scare' |
| q'aluj | 'hug' | il | 'see' |
| ch'ay | 'hit' | siq | 'smell' |
| ti7 | 'bite' | taranej | 'follow' |
| eqaj | 'carry' | tzukuj | 'look for' |
| t'op | 'peck' | sik'ij | 'call' |
| esaj | 'take out' | iye7j | 'wait for' |
| chap | 'grab' | riq | 'find' |
| riq' | 'lick' | k'ol | 'guard' |

As an operational decision I defined a verb as actional if the two participants were touching. I tried to balance the number of monosyllabic and polysyllabic verbs in each set, the number of vowel-initial verb stems, and the general phonological characteristics of each set.

Experiment 1 was a picture identification task using sentences in the active and passive voices. I drew a picture illustrating each action on a cardboard card roughly 4x6 inches. I used a variety of animals as agents and patients to insure that animacy could not be used as a cue for subject. My Quiché associate, Pedro Quixtan Poz, let me know when my concept of a particular action did not match his. I discovered such things as Quiché chickens peck heads - not tails, and while cats find rats under baskets, rats find cats in baskets. Some example sentences are shown in (3).

*(3)*
1. The rat pushed the chicken.
2. The rat scared the chicken.
3. The chicken scared the rat.
4. The chicken pushed the rat.

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5. The turkey sees the rabbit.
6. The turkey hugs the rabbit.
7. The rabbit sees the turkey.
8. The rabbit hugs the turkey.

We began each session with a pictures of a horse, a cow and and pig. We named each animal for the child and then asked the child to point to one or another of the pictures. None of the subjects had any difficulty in this phase of the task.

We then presented each set of 4 cards to the children in different orders and in different arrangements from left to right. There were 9 sets in all (9 verbs x 2 actors x +/- Actional). Three of the 4 pictures in a set were placed in front of the subject. For example, from the first set above we might use nos. 1,3 and 4. We

pointed out the animals in each picture and made sure the child knew their names. We then asked the child to identify the picture showing the chicken pushing the rat in the active voice, using a verb subject object word order. More specifically, we would say to each child, "Where is the chicken pushing the rat? Can you show us? The chicken pushing the rat. Show us." In the passive test we asked each child, "Where is the chicken being pushed by the rat? Can you show us? The chicken being pushed by the rat. Show us."

I only had six weeks in Guatemala to design the experiments and test children. Our results for the 4 and 5-year-olds are shown in Table 6, which also shows the results from Maratsos et al. for English.

***Table 6.*** Children's comprehension of active and passive sentences.

Quiché Fours and Fives, Chance = .333

| Active (n=7) | | Passive (n=10) | |
|---|---|---|---|
| Actional | Nonactional | Actional | Nonactional |
| .333 | .306 | .467 (p=.036) | .443 (p=.066) |

English Maratsos, Fox, Becker, & Chalkley 1983, Chance = .50

| Active (n=38) | | Passive (n=38) | |
|---|---|---|---|
| Actional | Mental | Actional | Mental |
| .89 (p < .001) | .88 (p < .001) | .67 (p=.001) | .40 |

There are a score of methodological differences between the two studies that make direct comparison impossible. I used different sets of verbs and I didn't reject any subjects, no matter how poorly they might be doing on passives. Nevertheless these results suggest some interesting differences between the two groups of children. English-speaking children have no trouble responding to sentences in the active voice, whereas the Quiché children responded at chance levels to sentences in the active voice. English-speaking children have trouble interpreting passive sentences with mental verbs whereas there is no statistical difference between the Quiché children's response to passive sentences with actional and nonactional verbs. The data on individual verbs shows that the nonactional verbs were not clustered at the bottom of the response scores, but were interspersed with the actional verbs. Quiché children were as likely to interpret a passive sentence with *see* correctly as they were a sentence with *push*. Thus, I would argue that comprehension testing shows two important findings for the Quiché children: 1. They do not comprehend sentences in the active voice, and 2. They comprehend passive sentences with nonactional verbs almost as well as they comprehend passives with actional verbs.

Actually, the results for Quiché sentences in the active voice reveal the effect language structure can have on experiments. Active voice sentences with two third person participants are ambiguous in the adult language. Mondloch (1978) reviews the grammatical devices Quiché speakers use to avoid just the sentences I used in the active voice experiment. Prominant among the devices are alternations in voice. A passive or antipassive sentence disambiguates two third person participants by using an agreement marker on the verb for only one of the participants. The experimental condition was actually one context in which the structure of Quiché would favor responses to sentences in the passive voice. The ambiguity of active sentences should be a primary consideration when designing tests of children's fluency in Quiché.

We asked the children another question in both the active and passive voice experiments as an additional check of their knowledge of the voice morphemes. Once the subject had selected a picture in the first part of the test we would remove the other cards from the table and ask the child, "Who is Xing?" using the focus antipassive. In Quiché, the only difference between a question about the subject and a question about the object is the voice suffix on the verb. Compare the sentences shown in (4).

(4) Jachin ee xpuyixik? "Who was being pushed?"
Jachin ee xpuyanik? "Who was pushing?"

Jachin ee kilik? "Who is being seen?"
Jachin ee kilowik? "Who is seeing?"

The children therefore had a 50-50 chance of picking out the correct participant on the card on the basis of this question. The results from this segment of the experiment are shown in Table 7.

***Table 7.*** Children's comprehension of the focus antipassive.

Quiché Fours and Fives, Chance = .50

| Active (n=7) | | Passive (n=10) | |
|---|---|---|---|
| Actional | Nonactional | Actional | Nonactional |
| .665 | .810 (p=.015) | .768 (p=.004) | .775 (p=.009) |

These results again suggest that Quiché children have worked out voice morphology by the age of five. The result for active sentences with actional verbs may be due to the small number of subjects. There was not a statistical difference between the responses to active sentences with actional and nonactional verbs.

Putting together the experimental and naturalistic data it seems Quiché children begin producing passive and antipassive sentences around two years of age. They produce and comprehend passive and antipassive sentences equally well with actional and nonactional verbs. There does not seem to be any significant developmental difference between the passive and antipassive constructions or the

use of these devices with actional and nonactional verbs. A picture-identification task suggests that Quiché children can comprehend passive and antipassive sentences by the age of four or five years. The few three-year-old children that we tested responded randomly. These results are all the more remarkable in that they come from children who have not been watching Seseme Street or been exposed to books since they were born.

There are plenty of other things that 5-year-old Quiché speakers know about their language, but I may have already given you enough to think about. Most five-year-olds are quite articulate and use language forcefully to manage their younger and older siblings. This is not to say that they have acquired everything an adult speaker knows about the language. Five-year-olds are still in the process of learning to form relative clauses and nominalized forms of verbs. They also have to learn about constraints on the use of causative, passive and antipassive suffixes. This is also a time when the boys begin experimenting with the whistled version of the language. However, a non-native speaker can't help admiring the five-year-old's remarkable facility with his/her language.

## References


Maratsos, M., Fox, D. E. C., Becker, J. A. & Chalkley, M. A. 1983. Semantic restrictions on children's passives. ***Cognition*** 19.167-191.

Pinker, S., Lebeaux, D. S. & Frost, L. A. 1987. Productivity and constraints in the acquisition of the passive. ***Cognition*** 26.195-267.

Pye, C. 1980a. ***The Acquisition of Grammatical Morphemes in Quiché Mayan***. Unpublished doctoral dissertation, University of Pittsburgh.

-----. 1980b. Person Marker Acquisition in Quiché Mayan. ***Papers and Reports on Child Language Development*** (Stanford) 19:53-9.

-----. 1983. Mayan telegraphese: intonational determinants of inflectional development in Quiché Mayan. ***Language*** 59.583-604.

-----. 1985. The acquisition of transitivity in Quiché Mayan. ***Papers and Reports on Child Language Development*** (Stanford) 24.115-122.

-----. 1986. Quiché Mayan Speech to Children. ***The Journal of Child Language*** (1986), 13:85-100.

-----, Ingram, D. & List, H. 1987. A Comparison of Initial Consonant Acquisition in English and Quiché. In Keith Nelson and Anne van Kleeck (Eds.), ***Children's Language, Vol. 6***, Pp. 175-190. Hillsdale, NJ: Erlbaum.

----- & Quixtan Poz, P. 1988. Precocious Passives (and Antipassives) in Quiché Mayan. ***Papers and Reports on Child Language Development*** (Stanford) 27.71-80.