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AUTHOR Cazden, Courtney B.; And Others
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ABSTRACT

The purpose of this project was to make a preliminary investigation of the processes of second language acquisition by children, adolescents and adults, and to develop a methodology appropriate to the study of second language learning. In the development of the methodology, applicable techniques from first language acquisition research were incorporated and new techniques appropriate specifically to second language acquisition were devised. The research examined the acquisition of English by six Spanish-speaking subjects over a ten-month period. Two subjects were at each of three target ages: 4-6, 11-14 and over 18. Each subject was visited approximately every two weeks and speech samples were recorded in three situations: spontaneous speech recordings, elicitations and pre-planned sociolinguistic interactions. The subjects were "free" second language learners with very little or no prior or current instruction in English. Thus they acquired their second language mainly by exposure to the English-speaking environment. The analysis focused on the acquisition of the English auxiliary and its related structures, the negative and interrogative. A clear developmental pattern was found for both the negative and interrogative. A highly variable order of acquisition was found for the appearance of auxiliaries. (Author)

Second Language Acquisition Sequences in Children, Adolescents and Adults

Courtney B. Cazden
Herlinda Cancino
Ellen J. Rosansky
John H. Schumann

FINAL REPORT

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U.S. DEPARTMENT OF
HEALTH, EDUCATION AND WELFARE
NATIONAL INSTITUTE OF EDUCATION
OFFICE OF RESEARCH GRANTS

FINAL REPORT

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SECOND LANGUAGE ACQUISITION SEQUENCES IN CHILDREN, ADOLESCENTS AND ADULTS

COURTNEY B. CAZDEN
HARVARD UNIVERSITY
CAMBRIDGE, MASS. 02138
with
HERLINDA CANCINO
ELLEN J. ROSANSKY
JOHN H. SCHUMANN

AUGUST 1, 1975

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Courtney B. Cazden
Harvard University
with
Herlinda Cancino
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John H. Schumann

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We also gratefully acknowledge the cooperation of our 6 subjects and their families, without whom there would be no data to report on.

Introduction

This project, funded by the National Institute of Education (Contract NE-G-00-3-0014) was designed to examine the untutored acquisition of English in the United States by native speakers of Spanish under the direction of Dr. Courtney Cazden.* We undertook a naturalistic longitudinal study of second language acquisition by six subjects living in the Boston area: two children, two adolescents, and two adults. All the subjects had been here for four months or less when the study was begun. The subjects were acquiring English without instruction, merely by exposure to the English-speaking environment. This research examined ten months of the subjects' second language development.

This project attempts to provide a description of selected aspects of the natural sequence of second-language acquisition. This is important to American education for the following reasons:

1. The description of the natural sequences of second-language development provided by such studies will offer a basis for the construction of more effective English-as-a-second language curricula. Since the subjects in this study are all Spanish speakers, the sequences evidenced in the research may have specific implications for the education of Spanish-speaking students in American schools.
2. Because the project is cross-sectional as well as longitudinal, the results will contribute to knowledge of the differences in second-language learning among children, adolescents and adults. This knowledge is important to American education in order to determine the best age at which to provide second language instruction, or the best way to design language-learning environments for different age learners.
3. This research will also show similarities and differences between first and second language learning that are, in turn, relevant to issues of cognitive development, learning strategies and language education in general.

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*The National Institute of Education grant was in my name and therefore my name appears as first author of this final report. But the project was actually designed and carried out by Cancino, Rosansky and Schumann -- all doctoral students at Harvard Graduate School of Education at the time. (Schumann's address as of 9/75: English Department, U.C.L.A.) Responsibility for any weaknesses are mine as project director and student advisor; but full credit for its contributions goes to them -- Courtney B. Cazden.

Objectives

While bilingualism is certainly common in the world, exposure to and instruction in a second language cannot guarantee successful acquisition. Basic questions remain to be answered about the second language learning process:

1. In what ways is second language learning like or different from first language acquisition?
2. Is the second language learning process qualitatively different when begun at different ages?
3. Is there a fundamental change in one's language learning process at some point (or points) in the course of maturation? If so, what is the nature of that change?

To answer these questions, people in the process of acquiring a second language must be studied. As has been done with children learning their first language, careful longitudinal analyses of the second language learning process must be made. This has been the aim of this research.

Review of Related Research

The following review of theoretical and empirical research literature on second language acquisition is restricted to sequential second-language learning where the second language is acquired after the first; it does not include simultaneous bilingualism in which both languages are learned at the same time. In addition it focuses on research on untutored learning.

Theoretical Literature Concerned with the Nature of the Second-Language Learning Process

In recent years a hypothesis has developed that regards the speech of a second language learner at any point in the acquisition process as the product of the learner's systematic attempt to deal with the target language data. The utterances of such a learner are not considered mistakes or deviant forms, but rather as parts of a separate but nevertheless genuine linguistic system. Some writers believe that the acquisition process is essentially the same for both first and second languages; others allow that the two processes may be different; but both groups assert that second language learning, like first language learning, is systematic, and that the goal of psycholinguistic research is to uncover the nature of the sequential development of the learner's linguistic systems.

Corder (1967) proposes that the process of language acquisition is essentially the same for both first and second language learning. He believes that while the biological predisposition to acquire one's native language may be replaced by some other force in the learning of a second language, the basic capacity for language acquisition and the strategies employed in both processes are fundamentally the same.

Within this framework a second language learner's errors are seen to be similar to those of a child acquiring his first language. The errors of both are systematic and as such give evidence of the system to which they belong. Thus errors provide the researcher with evidence of how a second language is acquired, and they provide the learner with feedback on hypotheses he is forming and testing on the nature of the language he is learning.

In a further development of this theory, Corder (1971a) defines the spontaneous speech of a second language learner as a language having a genuine grammar. He calls this learner language an "idiosyncratic dialect". For Corder, the concept

of ungrammaticality does not apply to the second language learner. All utterances in the learner's idiosyncratic dialect (exclusive of performance errors) are therefore acceptable expressions of his own linguistic system. He asserts that longitudinal studies of the successive stages in development of this learner language are necessary in order to begin to understand the process of second language acquisition.

Nemser (1971) identifies the learner language as an "approximative system" which is defined as a structurally cohesive linguistic system distinct from both the source language and the target language. It is by definition transient and is gradually restructured in successive stages from initial through advanced learning. According to Nemser, the ultimate goal of the study of such systems would be the "accurate projection of the approximative system throughout its successive stages of development in each contact situation" (p. 123).

Selinker (1972) suggests that there is a latent psychological structure in the brain which is activated when one attempts to learn a second language, i.e., whenever one tries to produce a set of sentences in the second language using meanings one may already have. When such an attempt is made, the utterances which are realized are not identical to those which would have been produced by a native speaker of the target language. Nor are they identical to the sentences having the same meaning in the learner's native language. Thus a separate linguistic system is hypothesized to account for the actual realized utterances. This system is called "interlanguage". According to Selinker, the evidence for interlanguage is found in fossilizations which are forms, phonological, morphological and syntactic, in the speech of a speaker of a second language that do not conform to the target language norms even after years of instruction in and exposure to the standard forms.

Fossilizations are also those forms which, though absent from a learner's speech under normal conditions, tend to reappear in his linguistic performance when he is forced to deal with very difficult material, when he is in a state of anxiety, or when he is extremely relaxed. This systematic back-sliding of certain linguistic forms toward the interlanguage norms leads Selinker to hypothesize the psychological reality of fossilizations and interlanguages. The goal of a theory of second language learning, according to Selinker, would be to describe the knowledge underlying interlingual behavior and to predict the linguistic shapes (surface structures) of the utterances produced in the learner's successive interlingual systems.

All the theoretical work described above asserts that the language which the learner speaks is systematic. However, a weakness of this hypothesis is that it does not give a clear definition of what is meant by systematic. It is incumbent upon researchers in this field to evolve a workable definition of what would constitute a systematic interlanguage.

Schumann (1973) views the process of pidginization and creolization as models for adult second language acquisition. When the function of language is analysed into three components -- communication, affirmation of social identity, and expression verbal skill -- pidgins are seen as being functionally restricted to the first component -- communication. As a result, pidginization produces interlanguage which is simplified and reduced. When the function of the language of a second language learner is also restricted to communication (as is the usual case in the in the initial stages of learning), we can expect a learner's interlanguage to reflect some of the simplifications and reductions that are found in pidgins. In the process of creolization, the function of language extends to the integrative and expressive uses. Concomitant with this extension in function is the complication and expansion of the language structure. In a parallel fashion, when a second language learner attempts to mark his social identity within the target culture or to use his pidginized interlanguage for expressive purposes, we can expect his interlanguage to complicate and expand in ways similar to those fostered by creolization. Thus Schumann hypothesizes that the second language learning process will reflect the processes of pidginization and creolization. As with the notion of systematicity, the major problem with this hypothesis is that there are varied notions of what constitutes pidginization and creolization.

Dulay (1972), after reviewing the literature on native language interference in second language learning, proposes the "first language acquisition = second language acquisition hypothesis" (commonly referred to as the L1 = L2 hypothesis). This hypothesis asserts that children below the age of puberty will make errors in second language syntax that are similar to first language developmental errors and that they will not make errors that reflect transfer of the structure of their first language onto the second language they are learning.

Rosansky (1973, 1975) uses the work of Chomsky, Lenneberg and Piaget to discuss maturational limitations on second language learning. She finds strong evidence that second language acquisition after puberty may be qualitatively different from first language acquisition and that these differences may be related to the onset of Formal Operations,

the most advanced stage in Piaget's cognitive hierarchy that begins around puberty. Although the acquisition of a second language by older learners may be systematic and may even be governed by universal second language learning strategies, adults may well require specific instruction.

All of the literature described above is theoretical. It presents hypotheses about second language learning which are derived largely from theoretical work in related fields. Empirical research in second language acquisition that has actually been done is described in the following section.

Research in Second Language Acquisition.

Under the influence of the research in first language acquisition a few similar studies have been undertaken of second language acquisition. Ravem (1968, 1970) presents findings on the development of negation and wh- questions (what, when, where, why, who and how) in two Norwegian children acquiring English as a second language and relates them to similar studies of first language acquisitior made by Roger Brown and associates. His conclusion is that there are some striking similarities between both processes. Dato (1970) studied the acquisition of Spanish by one four-year-old in a pilot study and then by four six-year-olds in a follow-up study. His findings indicate that second language learning follows a systematic pattern of development, that the learning of a second language may follow similar psycholinguistic rules within certain broad age limits, and that second language learning is similar to that of native language acquisition. Milon (1972) has examined the acquisition of negation in a six-month study of a seven-year-old Japanese child learning English. He reports that the types of negative utterances his subject produced were similar to those produced by children acquiring English as a native language. He concludes that children well below the age of puberty will acquire English in the same developmental order that native speakers acquire it, and he believes that these similarities in the developmental system of first and second language acquisition are due to language learning heuristics which may be universal.

Huang (1971) studied the acquisition of English syntax by a five-year-old Taiwanese boy. He identified two language learning strategies in his subject. The first involved learning well-formed sentences as unanalyzed units (e.g., "get out of here") and using them in appropriate situations. The second strategy involved joining two words with a pause or juncture between them (e.g., "This ++ kite"). Eventually

the two strategies appeared to merge. The subject did not appear to transfer his knowledge of Taiwanese syntax to the learning of English. Thus his language acquisition appears to support Dulay's L1 = L2 hypothesis.

Butterworth (1972) examined the acquisition of English by a 13-year-old native speaker of Spanish. This was the first study in the research literature of a learner older than ten years of age. Using a combination of experimental elicitation techniques and spontaneous speech collection, he found that this adolescent learner tended to employ two strategies in the acquisition of English. The first was to reduce English syntax to simpler structures; the second was to draw on Spanish syntax for communications which exceeded his knowledge of English syntax.

Hakuta (1973) in a one-year study of the acquisition of English by a five-year-old Japanese girl has analyzed the acquisition of certain grammatical morphemes and compared them with the acquisition order found by Brown (1973) in his studies of children learning English as a native language. Hakuta found that his subject's acquisition order differed in several respects from that described by Brown and attributed these differences to the advanced cognitive development of his subject and to the influence of her prior knowledge of Japanese.

Dulay and Burt (1974) using an elicitation device, The Bilingual Syntax Measure (BSM), conducted a large-scale cross-sectional study of the acquisition of English grammatical morphemes by both Chinese- and Spanish-speaking elementary school students. Their results showed a strikingly similar acquisition order for both groups of subjects. Madden, Bailey and Krashen (1974), also using the BSM, found a difficulty ordering for adult ESL students which was similar to that found by Burt and Dulay for children. Since it has not yet been shown that the BSM yields the same order of acquisition of grammatical morphemes for first language learners as the longitudinal studies of Roger Brown and others, it is unclear to what extent the similarities found among L2 learners from different ages and native languages may be artifacts of the BSM itself.*

Swain, Dumas and Naiman (1974) have investigated the use of elicited imitation and translation as shorthand methods of collecting second language data. They demonstrate that imitation assesses both comprehension and production skills,

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*Controversy over the validity of the BSM results for order of acquisition of individual morphemes in second language acquisition studies do not imply questions about its more widespread use in bilingual education programs as a global index of language growth.

and that translation from L2 to L1 taps second language comprehension skills while translation from L1 to L2 taps production skills.

These studies do throw some significant light on the second language learning process; however, except for the Butterworth study and the Madden, Bailey and Krashen study, they deal only with children and leave the questions about second language learning by adolescents and adults largely untouched.

Subjects

Our most important initial task was to find six subjects to find out criteria of age, current status as a recent immigrant whose native language was Spanish and willingness to learn English during the ten months study as a "free learner", i.e., from natural conversations without the imposition of any structured English instruction.

On August 1, 1973 subject selection was begun. Our initial approach involved three steps: 1) An individual or organization was contacted by telephone and the project was explained. 2) On the same day, after the phone-call, a short description of the study (see Appendix A) was sent to the person who had been contacted. The description included telephone numbers of two research team members. 3) If the person contacted did not call back within ten days to two weeks, we made a follow-up call to see if they had been able to locate any potential subjects.

The persons contacted during this stage of subject search were those working either in social organizations which serve the Spanish-speaking communities, or public school bilingual programs for the Spanish speaking. See Appendix B1 for the names of the people and organizations contacted.

This approach did not yield sufficient results. Therefore, a second approach was tried; personal visits were made to schools, agencies for the Spanish speaking and factories employing Spanish speaking workers. In this way, we were able to get the names of potential subjects. The names of schools, factories and agencies contacted at this stage can be found in Appendix B2.

However, it soon became obvious that it would take a long time to find six subjects in this way. Many people identified were suited for the study in terms of surface qualifications -- Spanish speakers with no previous or current English instruction. But often they were so isolated from English speaking contacts that it was unlikely that they would have adequate exposure to English during the ten-month period of our data collection; some people had been here for more than a year already without learning English. In addition, large families, poor health and inadequate housing would have made our research difficult. The lack of a telephone, for example, would have made it difficult to arrange or change appointments; and lack of space and privacy in the homes would make the collection of adequate speech samples impossible. In addition, and just as important, our research would have been an additional burden on already troubled lives.

Since we were not committed by our proposal to any social class criteria in subject selection, we began a third approach in the academic community when colleges and universities opened in mid-September. Here we hoped to find spouses and children of Spanish-speaking students or faculty. Contacts from this stage of the subject search can be found in Appendix B3.

From the second and third approaches, we found six subjects: two adults, two adolescents and two children.

I. ADULT #1 (Alberto)

Age: 33
Sex: Male. Marital status: Single
Country of Origin: Costa Rica
Time in U.S. at onset of study: Four months
Occupation: Polisher in a frame factory
Education: Through high school
Previous Exposure to English: Two or three hours a week while in high school
Instruction in English in U.S.: None
Ability in English at the onset of study: Knowledge of only a few words and phrases

II. Adult #2 (Dolores)

Age: 25
Sex: Female. Marital status: Married, one child, 18 months old
Country of Origin: Peru
Time in U.S. at onset of study: Three months
Occupation: Housewife, babysitter; was an elementary school teacher in Peru
Education: University graduate, degree in public relations
Previous Exposure to English: Studied English in high school
Instruction in English in U.S.: None
Ability in English at the onset of study: Some passive knowledge of English, the residue of formal instruction in English grammar

III. Adolescent #1 (Jorge)

Age: 12
Sex: Male. Son of a Harvard University Graduate Student
Country of Origin: Colombia
Time in U.S. at onset of study: One month
Occupation: Junior high school student
Previous Exposure to English: Had exposure to English through a tutor in Colombia who came to his home and played games with him and his brothers in English. No formal instruction in English, however

Instruction in English in U.S.: He attended an American public school where the whole curriculum was in English. He received only one hour a week of ESL Instruction
Ability in English at onset of study: Knowledge of a few words and phrases.

IV. ADOLESCENT #2 (Juan)

Age: 10 (became 11 in January); brother of ADOLESCENT #1
Country of Origin: Colombia
Time in U.S. at onset of study: One month
Occupation: Junior high school student
Previous Exposure to English: Had exposure to English through a tutor in Colombia who came to his home and played games with him and his brothers in English. No formal instruction in English, however
Instruction in English in U.S.: He attended an American public school where the whole curriculum was in English. He did, however, use a Bell and Howell Language Master for ESL practice in his classroom
Ability in English at the onset of Study: Knowledge of some words and phrases. Also, a limited productive use of English. He could translate some simple sentences from Spanish to English.

V. CHILD #1 (Marta)

Age: 4 1/2
Sex: Female. Daughter of a professional couple
Country of Origin: Puerto Rico
Time in U.S. at onset of study: One month
Occupation: Attended an all English nursery school
Previous Exposure to English: a) Went to a nursery school in Puerto Rico which was tuaght in Spanish, but had English speakers attending; b) went to a summer camp (six weeks) which was conducted in Spanish but which had English speakers attending; campers sometimes sang songs in English
Instruction in English in U.S.: None
Ability in English at the onset of study: Her mother felt that she had some limited, passive comprehension of simple English phrases. She also knew some English words, largely nouns.

VI. CHILD #2 (Cheo)*

Age: 5
Sex: Male. Son of a medical school student
Country of Origin: Colombia
Time in U.S. at onset of study: Four months
Occupation: Attended kindergarten
Previous Exposure to English: None
Instruction in English in U.S.: None
Ability in English at Onset of Study: None

Herlinda Cancino, a native Spanish speaker, conducted the initial subject interviews. She explained fully and completely what we intended to do and why. Each of these subjects, or their parent in the case of the minors, signed a consent form. The consent form that was used for our subjects and its English translation can be found in Appendices C1 and C2.

Data Collection

Transcribers

The research project needed transcribers who were native speakers of Spanish and who could speak, read and write both Spanish and English fluently. These abilities were essential in order to catch and transcribe correctly any mixing of Spanish and English that might occur in our subjects' speech, and to draw on native Spanish intuitions about language in their work. Since our subjects varied greatly in country or origin, we did not restrict our selection of transcribers on this criterion.

In looking for transcribers, we advertised with the Harvard Student Employment Center, with the Harvard Work-Study Program and with various Harvard Spanish-speaking associations. The job description circulated is given in Appendix D.

In order to test whether applicants filled the bilingual requirements, we gave them five minutes of a tape to transcribe. If their bilingual abilities were satisfactory, we then asked whether their schedules met our needs.

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*We initially started seeing two male children, Cheo and another 5-year-old, in January and saw both once a month through June. At that point we decided to remain with only one child, Cheo, who seemed to be learning more rapidly.

We found three very capable persons, one from the Harvard Student Employment Agency and two from the Harvard Work-Study Program. Two of the transcribers were female; one a Chicana graduate student enrolled in a Master's program at the Harvard Graduate School of Education; and the other, a junior from Radcliffe College whose parents were from Spain and who had worked in Spanish Harlem. The male transcriber was a Chicano junior at Harvard.

We paid the Work-Study people one-third of their salary; the remainder was paid by the Work-Study Program. The third transcriber was paid wholly on our budget. It was the availability of Work-Study students that made it possible for us to hire three transcribers for less than the amount initially budgeted for two. This meant that each transcriber was able to visit and then transcribe the tape for one subject each week. Given the amount of time needed for transcribing an hour of tape (approximately six to seven hours) and the nature of students' schedules, this was an excellent arrangement.

Establishing Optimal Situations For Obtaining English Speech Samples

Research on first language acquisition has made it clear that the most faithful transcription of a tape will be done by a person who was present and taking notes when that tape was made. Our transcribers, who were native speakers of Spanish and fluent Spanish-English bilinguals, were therefore assigned to accompany one of the investigators on each recording session to take field notes consisting of verbatim renditions of the subject's speech and brief descriptions of relevant non-verbal context and activities.

We perhaps naively assumed that it would be possible to ensure that neither experimenter nor transcriber would reveal that he or she spoke or comprehended the subjects' native language, Spanish. As we explained in the proposal, we were studying the acquisition of a second language, not language switching. We assumed that our subjects would occasionally use elements of Spanish in their speech and we intended to analyze this phenomenon. But we wanted to separate this as a temporary and changing aspect of a developmental process from language switching, which remains a natural feature of the speech of bilingual speakers in the presence of bilingual listeners. In other words, we wanted to have as a resource the Spanish language abilities of one of the co-investigators, Herlinda Cancino, and all three transcribers, while at the same time we wanted to maintain an all-English situation for obtaining speech samples from our subjects.

This turned out to be far from easy, especially with the adolescent and adult subjects. Ms. Cancino conducted all the initial interviews with the subjects in Spanish and so was known to them as a Spanish speaker. When she returned for the first taping session, she reminded the subjects of the purpose of our visits and then explicitly switched to English herself, refusing to engage in any Spanish for the duration of the taping session. The first transcriber to go into the field had a harder time controlling her verbal behavior and that taping session contained an abnormal amount of Spanish. We realized that we needed to formalize more explicit rules for the transcribers' behavior before inducting the remaining two transcribers into their job, and so discussed the entire situation with our consultant, sociolinguist Frederick Erickson. The result was the following set of procedures:

1. The transcriber was introduced in English, and spoke only English. If anything in his or her appearance, name, or more subtle aspects of non-verbal behavior made the subject or a member of the family ask "Do you speak Spanish?", the transcriber was to answer "Yes, I do." in English, and not to engage in any conversation in Spanish.

2. When the taping session began, the transcriber attended completely to the tape recorder and his yellow pad for field notes. He usually separated himself in distance and bodily orientation from the investigator and subject, who formed the conversational pair. When necessary, he further separated himself from the conversation and attached himself to the recorder, literally, by wearing the ear plug which monitors the recording as it's being made. Occasionally, particularly during the pre-planned socio-linguistic interaction (described below), the transcriber freely participated in the conversation. Experience has shown that these procedures, while seemingly extreme, are both necessary and effective.

Data Collection Techniques

We collected speech samples in three situations: spontaneous conversations, elicitations, and pre-planned socio-linguistic interactions.

Spontaneous conversation. Spontaneous speech was recorded as it occurred naturally in conversation, with the experimenter as a participant observer. These sessions, which occurred approximately twice monthly, were taped on Sony TC-45 cassette tape recorders while a third person, the transcriber, took field notes of the situation, noting

environment, simultaneously occuring events and the subjects' attitude, emotions, etc., for later insertion into the transcript.

Elicitations. Elicitations were of two kinds: elicited conversations and experimental elicitations. Elicited conversations include speech generated through elicitation instruments, pictures and games. Two elicitation instruments were used: The Bilingual Syntax Measure (Burt, Dulay, Herandaz Chavez, 1975) and the Ilyin Oral Interview (Ilyin, 1972). Both these instruments elicit speech through a set of pictures and a series of questions about the pictures. Elicited conversations were also generated by showing other pictures (e.g. from magazines) to the subjects and asking them to talk about what was happening in the pictures.

In one of the games, conversation was elicited by having the experimenter and the subject sit across from each other with a screen between them so that they could not see each other. The subject had a picture in front of him, and in front of the experimenter were all the parts of the picture in a scrambled array. The subject instructed the experimenter on how to construct the picture from its component parts. Another game was "twenty questions", a good situation for eliciting y/n questions, especially from adolescents. The experimenter thinks of a person, place or thing and writes it down. The subject then has twenty questions to determine the correct answer. Then, roles are reversed and the subjects' speech becomes declarative clues to the experimenter rather than questions. Another procedure for eliciting conversations was to have the experimenter direct the subject to interact with transcriber (T) by asking the subject certain questions such as :

Can you tell me T's age?
Can you tell me T's salary?
Can you tell me where T lives?
Can you tell me if T is married?
Do you know what T does?

Experimental elicitations were techniques designed to get the subject to produce certain linguistic structures. The methodology for this type of data collection has been developed for the study of first language acquisition by Brown and Berko (1960), Slobin (1967) and others, and for other second language learning studies (Dato, 1971). Most of these techniques have been used extensively with young children. However, adaptations of these first language methodologies have also been developed for both adolescents and adults (Butterworth, 1972).

The experimental techniques we have used are:

1. Imitation.

The experimenter (E) offers a model utterance and the subject (S) attempts to repeat it.

E. THE BOY IS HERE.
S. The boy is here.

2. Elicited negatives.

The experimenter offers a model utterance and the subject is asked to negate it.

E. HE SPEAKS FOUR LANGUAGES.
S. He doesn't speak four languages.

3. Elicited tags.

This task is demonstrated for the subject by having the experimenter utter the statement and the transcriber provide the appropriate tag ending. The the experimenter offers a model utterance to the subject and the subject supplies the tag.

E. SHE IS GOING TO PARIS --
S. isn't she?

4. Elicited plurals.

The experimenter shows the subject a picture of one item and asks "What's in this picture?" The subject replies "An X". The experimenter then shows the subject a picture with two of the items and asks the same question. If the subject can form the plural he replies "Two X's".

5. Elicited prepositions.

1) Picture task. Experimenter shows subject a picture of a dog sitting on the hood of a car. He then asks "Where is the dog?" The subject answers "On the car".

2) Object task. Experimenter places an object under a table and asks the subject "Where is X?" The subject replies "Under the table".

6. Elicited intuitions.

The experimenter offers the subject a model utterance (usually one which the subject has produced himself in spontaneous speech) and asks the subject whether or not the sentence

is correct. If the subject answers that it isn't, he or she is asked to correct it.

E. IS A BOY. S. Incorrect.
E. Correct it. S. He is a boy.

7. Elicited translations.

The subject is asked to translate from English to Spanish to assess his comprehension, and from Spanish to English to assess his production.

8. Elicited passives.

This task is demonstrated for the subject by having the experimenter utter the active sentence and the transcriber change it to the passive. When the procedure is clear, the subject begins to form the passive.

E. THE BOY CHASED THE DOG.
S. The dog was chased by the boy.

This same technique can be used to elicit:

9. Wh- questions.

E. HE WILL SEE WHAT?
S. What will he see?

10. Particle movement.

E. HE PUT ON HIS COAT.
S. He put his coat on.

11. Elicited subordination and coordination.

The subject is asked to combine two simple sentences and the experimenter observes what kind of subordination nad/or coordination techniques he employs.

E. THE MAN OWNS THE STORE.
THAT SAME MAN IS TALL.

S. The tall man owns the store, or
The man who is tall owns the store, or
The man owns the store and that same man is tall, etc.

12. Elicited reflexives.

The subject is shown two pictures. In one, a boy is washing himself; in the other he is washing a dog. The researcher verbally labels the pictures: "The boy washes the dog" and "The boy washes himself". With a new set of pictures, similarly constructed, the subject is asked to supply the reflexive form.

Pre-planned socio-linguistic interactions. A new technique for collecting speech samples that we worked on specifically for this research is the pre-planned socio-linguistic interaction (PPSI).

Examples are pre-arranged situations in which the subject agrees, for example, to come to a party or go out for dinner at a restaurant. The situation is natural although pre-arranged, and provides the opportunity for collecting specialized language (e.g., language related to ordering food in a restaurant). PPSIs facilitate questions and answers in the context of relaxed and congenial discussions. They differ from spontaneous conversations in being more structured by both the situation and the experimenter, yet are not as highly structured or specific as the experimental elicitations. Examples are:

1. Dinner at a restaurant. Ideally a third party accompanies the experimenter and subject and serves as a catalyst by asking questions and leading the general discussion. We tried this with most of our subjects and found it fruitful as a stimulator of conversation. Particularly with the adults, after a glass of wine or beer. With one of our adult subjects, a lunch at a French restaurant provoked a considerable number of questions -- a linguistic feature with which we were particularly concerned.
2. An afternoon at a museum with the subject, experimenter and a third party. Topics of discussion are built into the museum itself. Discussions are often directed toward the displays which are of interest to the subject. The subject is asked to explain certain exhibits to the experimenter or to the transcriber who accompanies the experimenter to the museum. In one particularly successful PPSI, one of the adolescents was taken to an aquarium. He knew a good deal about fish and gave quite an instructive lesson over ice cream following this visit.

See Table 1 below for the tape sessions which were PPSIs.

All speech samples were recorded by audio-tapes and field notes written on the scene and, less frequently, by video-tape recordings. Video-tapes are especially valuable

for collecting information on non-verbal aspects of second language learning. They yield such information as "talking with the hands", evidence of greater ease during subject's conversation in his native language, with other members of the family, etc., and information about the non-verbal "interaction" or subject and experimenter. Once into the study, however, we realized that video-tape analysis would be too time consuming and so, beyond the initial video-taped sessions, we used audio tapes only, and relied on the bilingual transcribers to make notes on situational variables and non-verbal aspects of the interaction.

Testing

The problem of testing is complicated, especially in bilingual settings. Particularly where attempts have been made to assess "intelligence" in bilinguals, much controversy has arisen. In spite of this, we had two reasons for wanting to test our subjects:

1. We wished to assess their cognitive development for the sake of cross-comparisons with their later language development because Rosansky (1972,1975) has hypothesized that second language acquisition will be different after adolescence and the onset of formal operations, regardless of whether there is neurophysiological evidence to support a critical period theory. Through David Pillemer we found a Piagetian test that is appropriate for all the cognitive stages (Feldman et al., 1974).
2. We wanted to assess the initial level of English competency of our subjects so that if one subject varied considerably from the others in his second language progress, we might be able to account for this variability.

Although we had attempted to obtain subjects who had not studied English formally, who were not currently receiving formal ESL instruction, and who were of similar background, important differences did exist among our subjects in their knowledge of English. None of the subjects was receiving formal instruction except the two adolescents, Juan and Jorge, who received an hour a week (which we considered to be minimal) consisting of reading second grade textbooks. However, at least one of the subjects, Dolores, was an avid reader. In particular, she enjoyed studying English grammar books! When selecting our subjects we inquired as to previous formal instruction and excluded many potential subjects who had had prior instruction. Nonetheless,

one of our subjects (Dolores) revealed only later, that she had read English grammar books, and received some formal instruction. We administered a then experimental version of the Bilingual Syntax Measure (BSM - Burt, Dulay and Hernandez Chavez, 1975) to the four older subjects. Unfortunately, the two children were not available when the BSM testing and scoring could be done.

The sessions when the Piaget test and the BSM were administered to each subject can be found in Table 1.

Piaget Test

The Colored Blocks Test (Feldman et al., 1974) was administered to five of the subjects for the purpose of assessing their cognitive "stage". The test was developed as a set of non-verbal procedures and materials to test for the presence of cognitive abilities central to each of the Piagetian stages. It was designed to capture in test format Piaget's description of the quality of thought characteristic of each stage. There are three advantages to Feldman's format:

1. The test environment is one where the materials are familiar;
2. The experimenter does not have to give complex verbal instructions; and
3. The subject does not have to respond verbally in major portions of the test.

The test consists of colored blocks in two sizes and, for one part of the test, a piece of cardboard with various combinations of the blocks represented on it. The subjects are first familiarized with the sizes, shapes, and colors of the blocks and then presented with a series of test items based on various combinations of the blocks. According to the authors, the test was developed to assess a number of operational abilities including:

1. the ability to infer a relationship from examples of that relationship;
2. the ability to construct another example of a relationship which is known;
3. the ability to evaluate and compare objects in terms of their dimensions; and
4. the ability to select a most appropriate object or response when the best object for responding is not available.

The test, while containing stages (Set I: pre-operations; Sets II and III: concrete operations; and Sets IV and V: formal operations), was not designed for the purpose of individual assessment. Heretofore the test has been used

only to make inferences about pcpulations, and not the abilities of particular individuals. A precise criterion for whether an individual has attained a particular stage (in terms of the number of correct answers in a test section) has not been established. Therefore, the performance of each subject will be discussed in some detail.

The test was administered in English to all subjects but Cheo who was not available when the testing was done. The only person familiar with the test, David Pillemer, one of its developers, does not speak Spanish. We had to choose between taking advantage of his expertise with the test or trying to produce a Spanish translation and then train an inexperienced person to administer the test. Because the language in the test is simple and limited in scope, and the instructions are largely based on the blocks themselves, we retained the English version and the experienced tester. Each subject's test performance should therefore be considered a minimum ability level.

Subject 1, Marta (age 4 1/2)

Subject completed all the questions of set I correctly. She responded incorrectly to all the questions of section II. She responded correctly on the first question of set IV (which can be solved correctly by a non-rule-generated response and often is answered ocrrectly by subjects who answered sectionII questions and all subsequent questions incorrectly). She then responded incorrectly to the two training questions and the operational task (question 2, set IV) which followed. The test was discontinued at this point, since the remaining tasks require the ability to correctly answer preceding questions. Subject 1 demonstrated pre-operational abilities, but her performance on sections II and IV did not suggest that she has attained the stage of concrete operations.

Subject 2, Jorge (age 12)

Subject completed sections I and II without error. Subject missed all the questions of set III, which, like set II, is a concrete operational task. However, set III involves referring to a chart, the use of which requires a verbal explanation. Thus his poor performance on set III may be attributable to communication problems. Subject answered the set IV questions correctly, but when questioned about his response strategy appeared to be performing concretely. (Section IV tasks are ambiguous -- there is a possible concrete operational as well as formal operational strategy, both of which can result in a correct response). Finally, S responded incorrectly to all the set V tasks

(pure formal operational tasks). Subject demonstrated pre-operational and concrete operational abilities, and may be approaching the onset of formal operations (since he was successful on set IV tasks). However, his performance did not demonstrate the presence of complete formal operational ability.

Subject 3, Juan (age 11)

Subject performed correctly on the questions of sets I, II and IV. He answered three of the four set III questions correctly; his success on this task (the one that requires a verbal explanation) in comparison to subject 2 may be attributable to the fact that he seemed more proficient in speaking and understanding English rather than to more advanced cognitive development. In fact Juan was rated at Proficiency Level 4 and Jorge at Level 3 on the BSM which was administered at about the same time to both boys. Finally, subject answered only one of the three set V questions correctly. Subject demonstrated pre-operational and concrete operational abilities, and may be approaching the onset of formal operations (since he was successful on set IV questions). However, his performance did not demonstrate the presence of complete formal operational ability.

Subject 4, Dolores (age 25)

Subject answered every question on the test correctly with the exception of the last question of set IV (which she finally answered correctly after some confusion -- probably due to some extraneous factor such as lack of attention) and the last question of set V. Since the subject answered two of the three pure formal questions correctly, the experimenter followed set V by engaging the subject in a non-specific discussion concerning the nature of the set V questions. Three additional problems (structurally identical to the set V tasks) were then presented. Subject answered all correctly. Subject demonstrated mastery of pre-operational and concrete operational tasks. In addition, her performance on set V and additional similar questions suggested that she has formal operational abilities as well.

Subject 5, Alberto (age 33)

Subject answered every test question correctly with the exception of the last two questions of set V. Unlike Subject 4, Subject 5's ability to communicate in English was very much limited; thus, his failure on set V questions may be due to a lack of understanding of the task. Subject demonstrated pre-operational and concrete abilities and appears to be at the onset of formal operations. However, his performance on set V did not demonstrate complete formal operational ability.

Bilingual Syntax Measure (Description and Rationale)

The Bilingual Syntax Measure (BSM) was designed to determine the level of structural language development of the child. It was prepared for children in preschool through the third grade who have been exposed to English either at home or at school. Although it was designed for use with children, after discussions with the developers, we administered it to our adult and adolescent subjects.

The test has 22 syntax production items which are elicited through the use of six pictures. The decision to measure production and not comprehension is based on the assumption that the ability to produce a language follows the ability to comprehend that language. Thus if the child can produce an utterance appropriately, he must certainly be able to comprehend that structure. To elicit responses that are as spontaneous as possible, the test uses cartoon type pictures and the tester asks questions that require the subject to give thoughtful answers.

There are no "correct" answers to any question in terms of the content of the response. As long as the response is appropriate, the response is accepted and ooded. For example, to the question "Why is he so fat?", either of the following responses are appropriate: "Because he eats too much" or "Because he doesn't exercise". Although the content of responses varies from child to child, certain grammatical features tend to remain constant (a third person present singular verb form in these examples). The responses are scored only for the presence or absence of these features.

In addition to a simple scoring procedure usable by teachers, one designed for more technical research use is available. The scoring counts the semantic features that were expressed grammatically where and when they should be, depending on the child's response. Semantic features include agent, action, object, recipient, time, case, gender, number, etc.. One point is scored for each feature expressed:

Actual Child Response	Response Value	Well-Formed or "Developed" Version	Developed Value
because he too fat 1 2 1 1	5	because he is 1 2 1 too fat 1 1	6

A ratio is then computed of the semantic features that were grammatically expressed (Response Value) and the semantic features that would be obligatory in the well-formed version of the structure (Developed Value). This ratio, 5/6 in the example above, is termed the Proficiency Score. This process is repeated for each appropriate response that the child gives. Finally the Proficiency Scores are converted to percentages and a range established in order to determine the Proficiency Level (from 1-5) of each subject. Appendix E details the Summary of Scores and Functor Ratios for each subject tested.

Dolores was tested at Tape 3. Her Proficiency Score was 89% and her Proficiency Level was 5.

Juan was tested at Tape 2. His Proficiency Score was 74% and his Proficiency Level was 4.

Jorge was tested at Tape 2. His Proficiency Score was 62% with a Proficiency Level of 3.

Alberto was tested at Tape 2. His Proficiency Score was 63% and his Proficiency Level was also level 3.

Thus, early in our study, according to this measure, Dolores was at the highest level, Juan next, and Alberto and Jorge third.

Table 1

Preplanned sociolinguistic interaction sessions and testing sessions

	BSM	Piaget Test	PPSI I	PPSI II	PPSI III
Marta	Tape 1	Tape 4	(School) Tape 5	(Restaurant) Tape 7	(Museum) Tape 9
Cheo			(Museum) Tape 10		
Juan	Tape 2	Tape 7	(Restaurant) Tape 8	(Restaurant) Tape 16	
Jorge	Tape 2	Tape 4	(Car & Restaurant) Tape 10	(Aquarium & Restaurant) Tape 14	(Office & Ice cream Shop) Tape 19
Alberto	Tape 2	Tape 10	(Restaurant) Tape 9	(Restaurant) Tape 14	
Dolores	Tape 3	Tape 6	(Italian Restaurant) Tape 5	(French Restaurant) Tape 9	

Data Analysis

After the transcripts of the tape-recorded sessions were typed, the process of analysis was begun. Our method for analysis grew as we explored new linguistic features. The first step was to go through the transcripts session by session, and find the relevant utterances, e.g. negative utterances, and collect these in a notebook for each subject organized by tape session. An utterance would be recorded as follows:

1;12;25 He don't go.

This indicates Tape Number 1, page 12 of the transcript, and line 25 on that page.

We then categorized and classified the utterances, often based on language analyses in first language acquisition research on these same features. For example, the work of Klima and Bellugi (1966) suggests a stage in the acquisition of the negative which they described as

No + (Nucleus).

In analyzing our data we also looked for evidence of this stage. Similarly, it has been suggested by Klima and Bellugi (1963) for first language learners that there is a stage in the acquisition of the English interrogative by children where the auxiliary is inverted in yes/no questions (Can he open the door?) but not yet inverted in wh- questions (Where he can go?). We examined our interrogative data for the inversions in yes/no and wh- questions, looking at the percentage of inversions of each auxiliary for each question type over time, to determine whether or not there is such a developmental stage among Spanish speakers learning English.

A general problem in the analysis is how to quantify and how to represent or display the data. Since our "data" is speech, it does not lend itself easily to quantification. One could ostensibly look at the linguistic features and assign weighted points for different utterances based on the "degree of correctness", i.e., whether the word is tensed properly and whether there is subject agreement. A major problem with this method is the arbitrariness of the weightings. Furthermore, it is not clear how significant the resulting score would be.

We wanted to establish a developmental sequence for the acquisition of the auxiliary system in general, and the auxiliaries within the negative and interrogative in particular. Thus our goal was to display the data so that one could clearly

see the nature of the linguistic behavior and any changes in the behavior over time. Roger Brown in his study of the acquisition of English morphemes by first language learners (1973) devised a method for establishing criteria for acquisition of these linguistic features. The feature must be correct in 90% of all obligatory contexts in each transcript where five or more obligatory contexts exist, and the 90% correct performance must be maintained for three consecutive sessions. We made an attempt to adapt these extremely stringent criteria to our data but found that L2 speech is far more limited than L1 speech data. Often, we did not find five obligatory contexts even though the subject was performing 100% correctly on a particular linguistic feature. In addition, Brown applied his 90% criteria to morphemes while we were investigating the auxiliary system. We decided, therefore, that Brown's criteria would not yield an accurate picture of our subjects' linguistic development.

Instead, we have displayed our data in terms of percent supplied (or inverted in the case of the interrogative) relative to the total number of possibilities for that feature in each transcript. So as not to be misleading, particularly because we have such small numbers, absolute numbers as well as percents are given. The method we have opted to use in describing our data is not as elegant as Brown's criteria nor as sophisticated as a weighting system. Our method has the advantage of simplicity, and it gives an accurate gauge of linguistic development and of variability from session to session without burying any of the data. It shows not only when the subjects performed correctly, but also the extent to which they did not.

This raises an important issue in the field of second language acquisition research. In examining second language acquisition data one wants not only to consider correct utterances, but also the incorrect utterances. It is equally important to a theory of second language acquisition to know about the instances of non-occurrence and "wrong" occurrences of a linguistic feature. From the steady decline or stable continuing of errors, much can be learned about how the learner approaches the acquisition process.

There are other issues which are critical to the field of second language acquisition research, although this report is not the place to pursue their theoretical implications. One issue in particular arises from a small corpus of linguistic features: How reliable is such data? How does one deal with single instances to the contrary? Can we look at trends and disregard counter examples? Hopefully, from these questions and the experience of other researchers, a firmer methodology for future analysis will develop.

Results

Presentation of results is divided into the negative, interrogative and auxiliary.

The Negative

Acquisition of the negative has been treated extensively in the first language acquisition literature. Klima and Bellugi (1966) found three stages in the development of the negative in a study of three children, Adam, Eve and Sarah. In the first stage the negative particle is sentence-external: no singing song, no the sun shining. In the second stage the negative is placed within the sentence and don't and can't appear: He not little, he big; He no bite you; I don't want it; We can't talk. The third stage is characterized by full realization of the auxiliary. Auxiliaries begin to appear in declaratives and interrogatives and therefore are no longer simply part of the negative element in the sentence: No, it isn't; That was not me; Paul didn't laugh; I am not a doctor.

Most discussion concerning the development of the negative centers around whether or not Klima and Bellugi's stage one exists. Bloom (1970) in a study of three subjects found that the negative element occupied the first position in the early negative utterances of her subjects, but she asserted that this structure was the result of the deletion of sentence subjects. Hence, she did not find Klima and Bellugi's stage one. Lord (1974) also failed to find evidence for stage one-type utterances in a study of the acquisition of the negative by her daughter.

In the second language acquisition literature, Milon (1974) in a study of the acquisition of English by a 7-year-old Japanese boy found a developmental pattern similar to that described by Klima and Bellugi for first language learners. Gillis (1975) studied the acquisition of English by two Japanese children ages seven and eight and found that her subjects showed a developmental pattern that corresponds only to Klima and Bellugi's stages two and three. One of the subjects had utterances which appeared to be a residue of Klima and Bellugi's stage one, but the other had no utterances representing this stage. In a preliminary analysis (Cancino, Rosnasky and Schumann, 1974) of negatives in three of our subjects (Marta, Jorge, Alberto) over a three month period we did not find convincing evidence for the stages described by Klima and Bellugi.

In describing our data, we did not write grammars per se. Brown and Fraser (1963) indicated the difficulties in writing traditional grammars for child speech. The concept of writing grammars derives from linguistics which uses grammar writing as a descriptive tool for presumably static grammars. Writing "grammars" for a dynamic system, however, is not only difficult, but is also not suitable as a developmental descriptive technique.

We did, however, think that perhaps traditional grammatical descriptions in the form of rules could be made of such linguistic subsystems as negative, interrogative or auxiliary. Our attempts to write rules for the negative proved fruitless. The constant development and concomitant variation in our subjects' speech at any one point made the task impossible. The technique to which we turned was to catalogue the various negating devices (no, don't, can't, isn't, etc.) and for each sample to determine the proportion of each negating device to total number of negatives (including negated adjectives, nouns, adverbs, etc.) used by our subjects. We limited our analysis, however, to proposition negating utterances. By this we mean the negative of a verb within an utterance. Thus we are concerned with the use of the negative particle and its relation to the auxiliary system, but not with the indefinite and indeterminate forms of the negative.

For all subjects, we have eliminated the expression "I don't know", which seemed to be a memorized whole (or, using Evelyn Hatch's term, a "routine formula"). In addition and for the same reason, "I don't think so" is excluded from the tally of Marta's don't V constructions.

The "cataloguing" approach produced the following results:

1. The subjects began negating by using no V constructions.

Marta: I no can see.
Carolina no go to play.

Cheo: You no walk on this.
You no tell your mother.

Juan: Today I no do that.
No, I no use television.

Jorge: They no have water.
But no is mine is my brother. (=It's not mine; it's my brother's.)

Alberto: I no understand.
No like coffee. (subject deletion)

This form is found in the early speech of English speaking children. It is also very similar to the way the negative is formed in Spanish (e.g., (yo) no entiendo; (yo) no tengo agual.

2. At the same time or shortly after the no V constructions appear, the subjects began to negate using don't V constructions. Examples of don't V utterances are:

Marta: I don't hear.
He don't like it.

Cheo: I don't understand.
I don't see nothing mop.

Juan: I don't look the clock at this time.
Don't have any monies. (subject deletion)

Jorge: My brother and I don't have more class.
That don't say anything.

Alberto: I don't can explain.
I don't have a woman.

3. Next the subjects used the aux-neg constructions in which the negative is placed after the auxiliary. In general the first auxiliaries to be negated in this way were is and can.

Marta: Somebody is not coming in. (EN)
You can't tell her.

Cheo: It's not danger.
He can't see.

Juan: I haven't seen all of it.
It wasn't so big.

Jorge: No, he's not skinny.
But we couldn't do anything.

Alberto: Ø

4. Finally, they learned the analyzed forms of don't (do not, doesn't, does not, didn't, did not):

Marta: It doesn't spin.
One night I didn't have the light.

Cheo: I didn't even know.
Because you didn't bring.

Juan: We didn't have a study period.
It doesn't make any difference.

Jorge: She didn't believe me.
He doesn't laugh like us.

Alberto: Ø

Dolores: My father didn't let me.
It doesn't matter.

The relative frequencies of these negating devices can be seen in figures 1-6. The vertical axes indicate the percent of each negating device supplied and the horizontal axes indicate each taping session. In interpreting these graphs it is necessary to consider the span and height of each curve in relation to the other curves. In this way one can determine when each negating device is first used and to what extent it is used in relation to the other negating devices. The orders in which the curves appear and/or peak on the graphs indicate the learners' successive interim hypotheses about the construction of the English negative. An analysis of the curves also indicates when negated do-forms begin to be inflected.

Marta (fig. 1) has a clear no V negating system until tape 6. The slight don't V and aux-neg peaks at tape 3 are accounted for by four utterances out of a relatively small total negative sample (14). At tape 6 don't V becomes the dominant negating strategy and no V is radically diminished. At tape 8 Marta begins to use the aux-neg, and by tape 9 it reaches the same level as don't V. Also at tape 9 analyzed don't begins to appear and after some fluctuation it seems to be increasing by tape 15.

Cheo (fig. 2), as was mentioned earlier, went through a silent period and did not begin to speak English until the third tape. At that point his negation strategy was no V. At tape four he adopted don't V and used it simultaneously with no V until tape 8, where aux-neg seems to be an additional firmly established negation strategy. At tape 9 he begins using the analyzed forms of don't and by tape 10 he appears to have abandoned no V.

Although at tape 1 Juan (fig. 3) appears to have all four negating strategies, no V is clearly attenuating and don't V is the dominant negation strategy. It would appear that no V is dropping off in Juan's speech at the point where we begin our data collection. Don't V continues in the dominant role until tape 3, when aux-neg exhibits a sharp increase in frequency. Analyzed don't seems established by tape 5. In

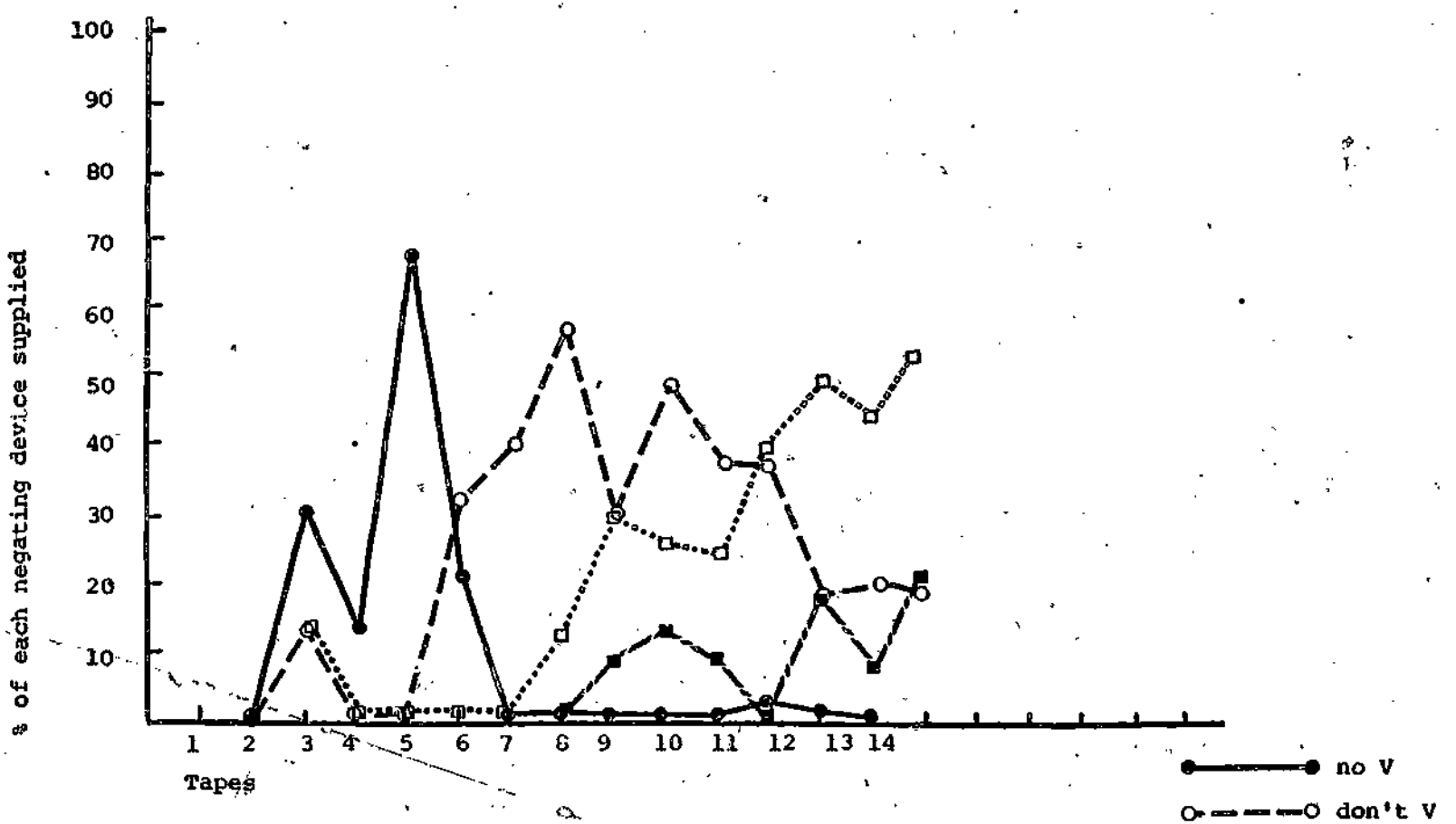


Figure 1. Development of negation in Marta showing proportion of each negating device to total negatives in each sample.

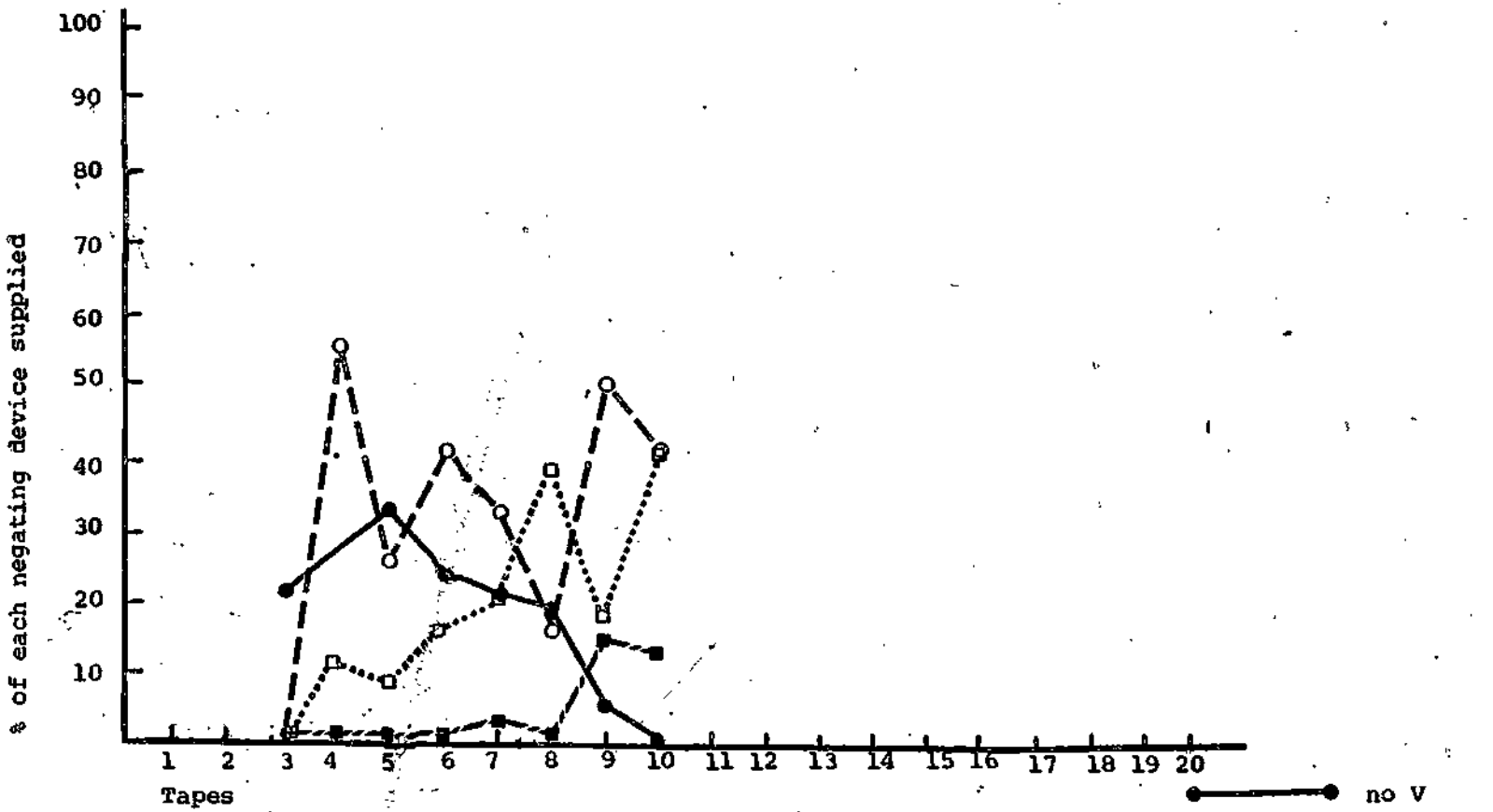


Figure 2. Development of negation in Cheo showing proportion of each negating device to total negatives in each sample.

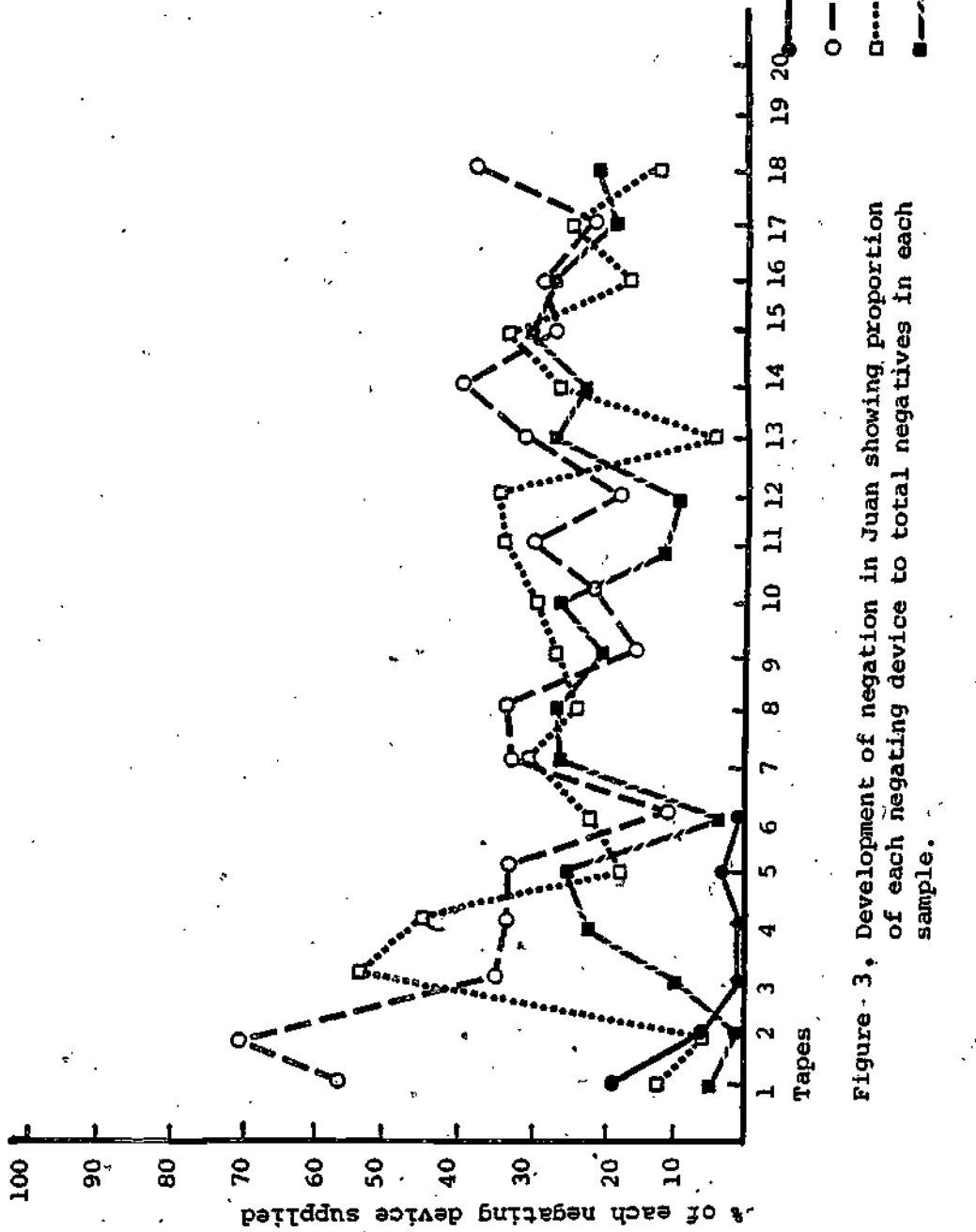


Figure - 3. Development of negation in Juan showing proportion of each negating device to total negatives in each sample.

general, Juan progressed through the interim hypotheses rapidly and by tape 7 his negative is fully formed.

Jorge (fig. 4) clearly exhibits the no V, don't V, aux-neg, analyzed don't developmental sequence. Although no V and don't V appear simultaneously at tape 1, by tape 3 no V clearly dominates and is replaced by don't V in tape 7. Aux-neg becomes firmly established in tape 9 followed by analyzed don't in tape 12.

Alberto (fig. 5) seems to have two competing negation strategies throughout: no V and don't V. However, no V is obviously the more dominant of the two and consistently achieves a higher frequency until the last sample. His interlanguage can be characterized as pidginized (see Schumann, 1974, 1975).

Dolores (fig. 6) knew more English than the other subjects at the beginning of the study and therefore her graphs do not display early development. All that can be said is that her negatives are well formed.

The no V, don't V, aux-neg, analyzed don't sequence exhibited in our subjects' speech suggests that Spanish speakers' first hypothesis is that negation in English is like negation in Spanish, hence the learners place no in front of the verb. The learners' next hypothesis appears to be that the negator in English is not no, but don't, and don't is placed before the verb. At this point, one can argue that don't is simply an allomorph of no and that don't verb constructions are still essentially Spanish negation but with the negator slightly more anglicized. Then when the learners begin using aux-neg, and the analyzed forms of don't it would appear that they have learned that English negatives are formed by putting the negative article (n't, not) after the first auxiliary element. Interestingly, in Marta, Cheo, Juan and Jorge, the two children and two adolescents, no V is not only the first negating strategy but it does not disappear completely until the time that analyzed don't becomes firmly established.

It has been observed (Clyne 1975) that worker immigrants to Australia from various parts of Europe use no V constructions in English negation. It is not clear how long they retain this strategy, but the extent of its duration in the English of Spanish speakers may be due to two factors:
1. All learners of English, we theorize, quickly come to know that no is the general English negator.
2. Since no is the only Spanish negator, this form is transferred to the English of Spanish speakers.
Hence, it is only when a Spanish speaker's English is well developed that he will abandon this strategy entirely.

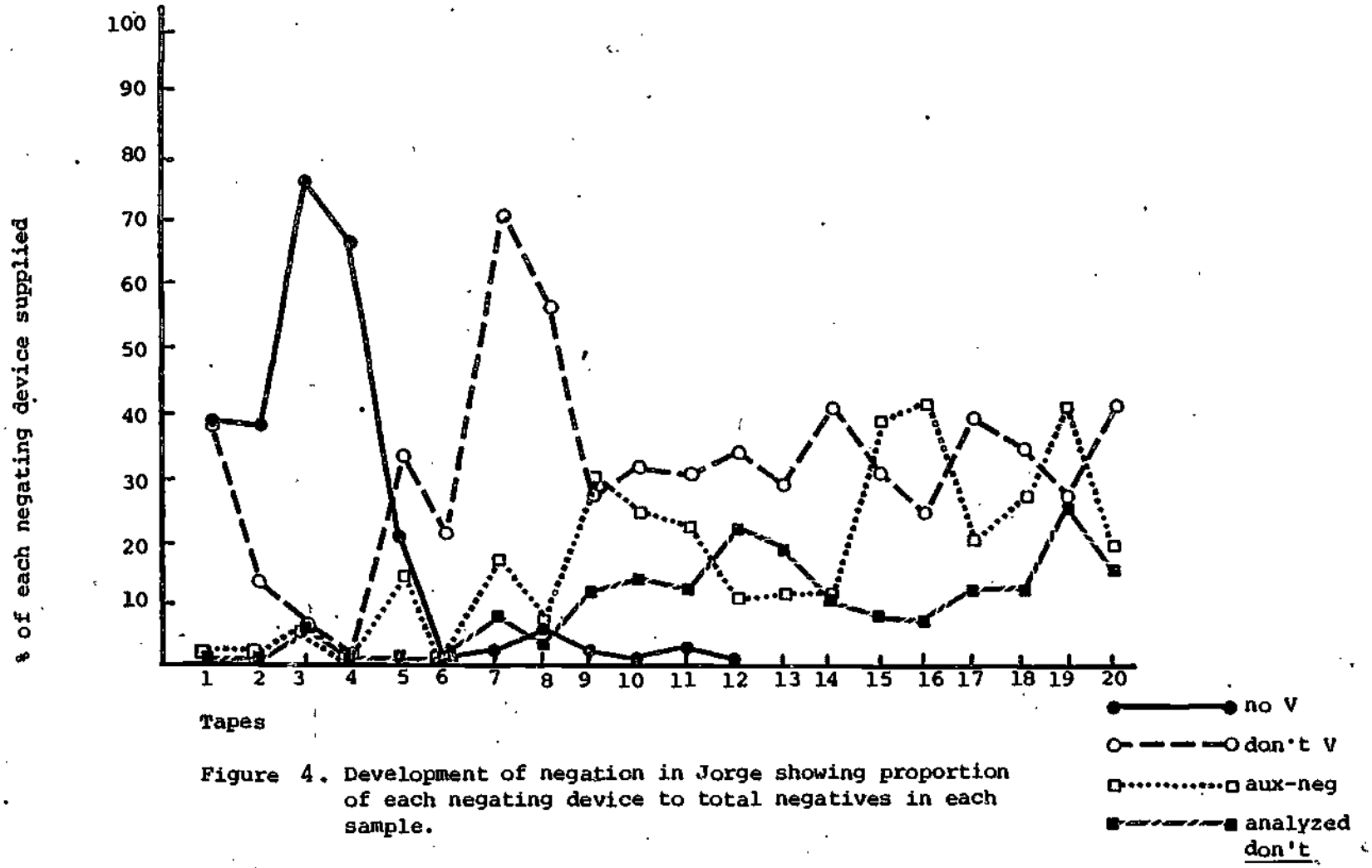


Figure 4. Development of negation in Jorge showing proportion of each negating device to total negatives in each sample.

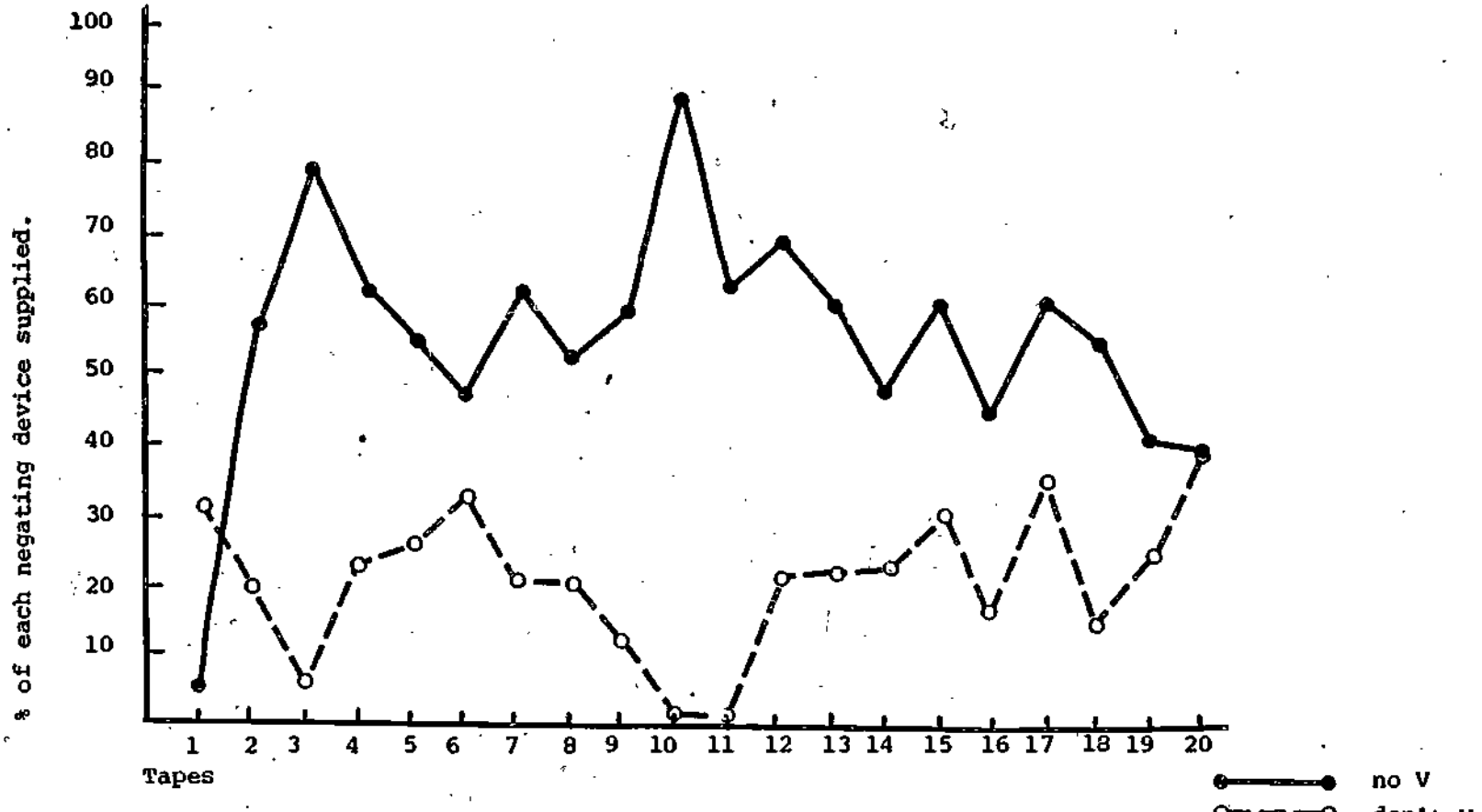


Figure 5. Development of negation in Alberto showing proportion of each negating device to total negatives in each sample.

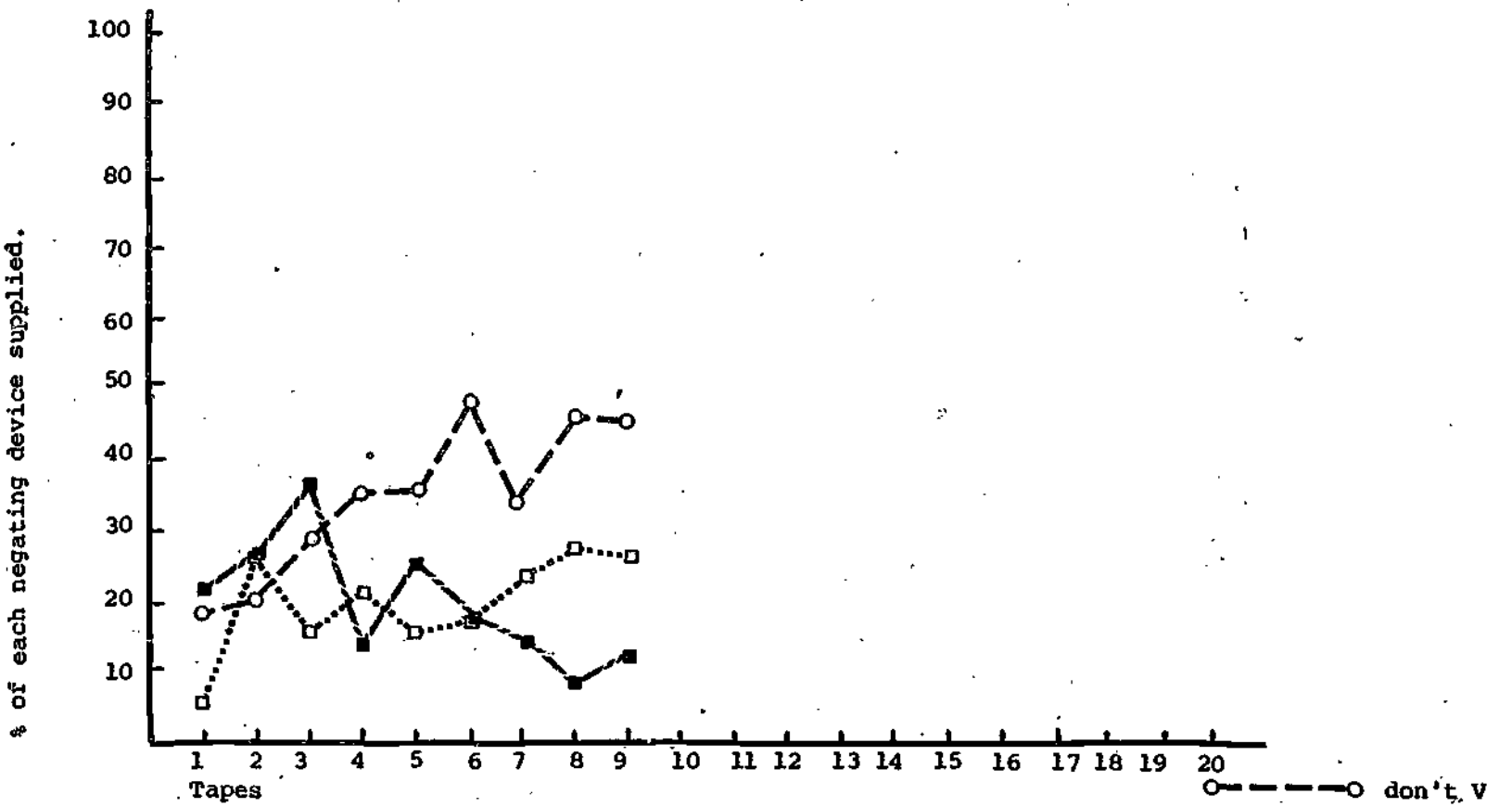


Figure 6. Development of negation in Dolores showing proportion of each negating device to total negatives in each sample.

Summarizing, the preceding analysis yields a developmental sequence of negating devices:

1. no V
2. don't V
3. aux-neg
4. analyzed don't; disappearance of no V

The Interrogative

Interest in the development of the interrogative in studies of first language acquisition was initially motivated by the desire to see whether the acquisition sequence reflected the rules, presented in a transformational analysis of adult English grammar. For our purposes here, the transformational rules for wh- questions (Who, What, Where, When, How) can be summarized as follows:

1. Base (or what we'll call the base), can be exemplified by by the sentence:

   He - is - going - where (someplace)

2. PREPOSING: Where - he - is - going

   (Wh- word is moved to the front of the string)

3. INVERSION: Where - is - he - going?

   (Aux is moved in front of the subject)

Brown (1968) hypothesized the existence of both the base form and the preposed form in the early development of children's interrogatives. Whereas he found no evidence for the base in his subjects' speech, he did find realizations of the second derivation involving preposing without inversion. In addition, Klima and Bellugi (1966) in an analysis of some of the same data describe a stage (C) in which children are inverting in yes/no questions but not in wh- questions. Ingram (1973) in a study involving 21 children questions Klima and Bellugi's result. He found a gradual increase in inversions in yes/no and wh- questions, but found no evidence for a period in which subjects invert in yes/no but not wh- questions.

In the second language acquisition literature Ravem (1970) studied the acquisition of English by two Norwegian children. He found preposing without inversion in wh- questions, thus reflecting Brown's (1968) results. Hatch (1974) examining the data from fifteen studies of 40 second language learners, found: wh- questions begin with wh-fronting without inversion (frequently before the copula has developed); modal inversion (can) is prior to inversion with other auxiliaries; and be inversion occurs before do inversion.

With this literature in mind we examined our interrogative data by asking the following questions:

1. Do wh- questions appear in the uninverted form?
2. Do uninverted wh- questions appear prior to inverted wh- questions?

3. Do y/n questions appear in the uninverted form?
4. Do uninverted y/n questions appear prior to transposed y/n questions?
5. Does Klima and Bellugi's "Stage C" exist for our second language learners?
6. Is there a stage for our second language learners which is the exact opposite of "Stage C", i.e., where wh- questions are inverted and y/n questions are not?

Our interrogative data is displayed in Tables 2-7. The total columns show for each subject the percent inversion for all auxiliaries in each sample, the actual number of inversions and the total number of possibilities for inversion. The other columns give the same information for each auxiliary separately. When we examined each auxiliary separately, no clear pattern emerged in answer to the above questions. However, when we looked at the auxiliaries in total, there does appear to be some clear answers.

1. Wh- questions appear in the uninverted form for all subjects.

2. Uninverted wh- questions do not necessarily appear prior to inverted wh- questions.

3. All subjects use uninverted y/n questions.

4. Uninverted y/n questions consistently appear prior to inverted y/n questions.

5. There is no evidence for Klima and Bellugi's "Stage C" for our second language learners.

6. With the exception of Jorge, there is no stage for our subjects where wh- questions are inverted and y/n questions are not.

The development of the interrogative seems to unfold in the following manner: Both y/n and wh- questions appear in the uninverted form, but there is no stage in which the uninverted form consistently appears and the inverted is not present. Inverted y/n questions do not precede inverted wh- questions or vice versa.

Order of appearance of inverted auxiliary. In wh- questions inversion is always obligatory: What are you doing? *What you are doing?. However, this is not the case with y/n questions: Are you going? You're going?. Therefore, in order to determine the order of appearance of inverted auxiliaries, only the auxiliaries in wh- questions were considered. Is-copula is inverted at 100% from the very beginning for most of the subjects: What is it?. However, there are a number of reasons for questioning

Table 2

Subject/auxiliary inversion in Marta's interrogatives

MARTA

Wh-Questions

Tape No.	TOTAL Wh %Inv.	TOTAL Wh No.Inv.	TOTAL Wh Poss.	DO %Inv.	DO No.Inv.	DO Poss.	CAN %Inv	CAN No.Inv.	CAN Poss	IS (COP) %Inv.	IS (COP) No.Inv.	IS (COP) Poss.	DID %Inv.	DID No.Inv.	DID Poss.
1	1.00	(1)	(1)	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	1.00	(2)	(2)	-	-	-	-	-	-	1.00	(2)	(2)	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	.71	(5)	(7)	0	(0)	(1)	-	-	-	1.00	(5)	(5)	-	-	-
7	.57	(4)	(7)	0	(0)	(2)	-	-	-	1.00	(3)	(3)	-	-	-
8	.50	(5)	(10)	0	(0)	(1)	-	-	-	1.00	(4)	(4)	0	(0)	(1)
9	.91	(30)	(33)	.50	(1)	(2)	-	-	-	1.00	(28)	(28)	-	-	-
10	1.00	(4)	(4)	-	-	-	1.00	(2)	(2)	-	-	-	-	-	-
11	.70	(14)	(20)	.29	(2)	(7)	1.00	(6)	(6)	1.00	(4)	(4)	1.00	(1)	(1)
12	.77	(23)	(30)	.33	(2)	(6)	-	-	-	1.00	(17)	(17)	-	-	-
13	.83	(10)	(12)	.50	(1)	(2)	-	-	-	1.00	(5)	(5)	-	-	-
14	.76	(13)	(17)	.33	(1)	(3)	-	-	-	1.00	(7)	(7)	-	-	-
15	.66	(4)	(6)	0	(0)	(1)	1.00	(1)	(1)	1.00	(2)	(2)	-	-	-

Tape No.	ARE (AUX)			ARE (COP)			DOES			IS (AUX)		
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	0	(0)	(1)	-	-	-	-	-	-	-	-	-
7	0	(0)	(1)	-	-	-	-	-	-	1.00	(1)	(1)
8	-	-	-	1.00	(1)	(1)	-	-	-	0	(0)	(3)
9	0	(0)	(1)	-	-	-	-	-	-	.50	(1)	(2)
10	-	-	-	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)
11	0	(0)	(1)	-	-	-	-	-	-	1.00	(1)	(1)
12	0	(0)	(1)	-	-	-	.50	(1)	(2)	1.00	(3)	(3)
13	0	(0)	(1)	1.00	(3)	(3)	-	-	-	1.00	(1)	(1)
14	0	(0)	(1)	0	(0)	(1)	1.00	(1)	(1)	1.00	(4)	(4)
15	.50	(1)	(2)	-	-	-	-	-	-	-	-	-

Table 2 (cont.)

Subject/auxiliary inversion in Marta's interrogatives

MARTA

Yes/No

Tape No.	TOTAL Yes/No			DO			CAN			IS (COP)		
	% Inv.	No. Inv.	Poss.	% Inv.	No. Inv.	Poss.	% Inv.	No. Inv.	Poss.	% Inv	No. Inv.	Poss.
1	0	0	(2)	-	-	-	-	-	-	0	0	(2)
2	.53	(1)	(3)	0	(0)	(1)	-	-	-	0	0	(1)
3	-	-	-	-	-	-	-	-	-	-	-	-
4	.20	(1)	(5)	1.00	(1)	(1)	-	-	-	.25	(1)	(4)
5	.50	(1)	(2)	1.00	(1)	(1)	0	(0)	(1)	-	-	-
6	.50	(1)	(2)	-	-	-	1.00	(1)	(1)	0	(0)	(1)
7	.20	(2)	(10)	.20	(2)	(10)	-	-	-	-	-	-
8	0	(0)	(5)	0	(0)	(4)	-	-	-	0	(0)	(1)
9	.45	(22)	(49)	.18	(4)	(29)	.94	(15)	(16)	0	0	(1)
10	.08	(2)	(24)	0	(0)	(22)	1.00	(2)	(2)	-	-	-
11	.67	(8)	(12)	.66	(4)	(6)	.66	(4)	(6)	-	-	-
12	.33	(5)	(15)	.10	(1)	(10)	1.00	(3)	(3)	-	-	-
13	.29	(11)	(42)	0	(0)	(28)	1.00	(10)	(10)	0	(0)	(1)
14	.77	(24)	(31)	.74	(14)	(19)	1.00	(5)	(5)	1.00	(1)	(1)
15	.68	(17)	(25)	.12	(1)	(8)	.99	(9)	(10)	-	-	-

Tape No.	DID			ARE (AUX)			ARE (COP)			WILL		
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	1.00	(1)	(1)	-	-	-	1.00	(2)	(2)
10	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)
13	-	-	-	0	(0)	(1)	-	-	-	1.00	(1)	(1)
14	1.00	(3)	(3)	.50	(1)	(2)	0	(0)	(1)	-	-	-
15	1.00	(1)	(1)	-	-	-	-	-	-	1.00	(1)	(1)

Table 3

Subject/auxiliary inversion in Cheo's interroqatives

CHEO

Wh-Questions

Tape No.	TOTAL WH %Inverted	No Inv.	Possible	DO %Inv.	No. Inverted	Poss.	CAN %Inverted	No.Inv.	Possible	IS (COP) %Inv.	No. Inverted	Possible
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	1.00	(1)	(1)	-	-	-	-	-	-	1.00	(1)	(1)
5	.75	(3)	(4)	-	-	-	-	-	-	1.00	(3)	(3)
6	1.00	(11)	(11)	-	-	-	-	-	-	1.00	(11)	(11)
7	.17	(2)	(12)	0	(0)	(5)	0	(0)	(2)	1.00	(2)	(2)
8	.27	(3)	(11)	0	(0)	(3)	.50	(1)	(2)	1.00	(2)	(2)
9	.59	(10)	(17)	0	(0)	(4)	.50	(1)	(2)	1.00	(8)	(8)
10	.31	(10)	(32)	0	(0)	(3)	0	(0)	(1)	.83	(10)	(12)

Tape No	DID			ARE (AUX)			DOES			IS (AUX)		
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	0	(0)	(3)	-	-	-
8	0	(0)	(1)	-	-	-	0	(0)	(1)	-	-	-
9	-	-	-	0	(0)	(1)	0	(0)	(1)	.50	(1)	(2)
10	0	(0)	(6)	0	(0)	(1)	0	(0)	(3)	0	(0)	(2)

Table 3 (cont.)

Subject/auxiliary inversion in Cheo's interrogatives

CHEO

Yes/No

Tape No.	TOTAL YES/NO % Inverted	No inverted	Poss.	DO % Inverted	No inverted	Possible	CAN % Inverted	No inv.	Possible	IS (COP) % Inverted	No Inv.	Possible
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	.33	(2)	(6)	.40	(2)	(5)	-	-	-	-	-	-
5	.10	(1)	(10)	0	(0)	(4)	-	-	-	0	(0)	(1)
6	0	(0)	(14)	0	(0)	(12)	-	-	-	0	(0)	(1)
7	.14	(5)	(36)	.10	(3)	(30)	.67	(2)	(3)	-	-	-
8	.18	(6)	(33)	0	(0)	(21)	.67	(4)	(6)	.33	(1)	(3)
9	.31	(10)	(32)	.11	(2)	(19)	1.00	(7)	(7)	0	(0)	(1)
10	.23	(7)	(30)	.14	(2)	(14)	.67	(2)	(3)	.25	(2)	(8)

Tape No.	DID			ARE (AUX)			ARE (COP)			DOES		
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	0	(0)	(1)	-	-	-	-	-	-	-	-	-
5	0	(0)	(4)	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	0	(0)	(1)	-	-	-	0	(0)	(1)
8	-	-	-	.50	(1)	(2)	-	-	-	-	-	-
9	0	(0)	(1)	.50	(1)	(2)	-	-	-	0	(0)	(2)
10	0	(0)	(2)	-	-	-	.50	(1)	(2)	0	(0)	(1)

Table 4

Subject/auxiliary inversion in Juan's interrogatives

JUAN

Wh-Questions

Tape No.	TOTAL Wh % Inv.	TOTAL Wh No. Inv.	TOTAL Wh Poss.	DO % Inverted	DO No. Inv.	DO Poss.	CAN % Inv.	CAN No. Inv.	CAN Possible	IS (COP) % Inv.	IS (COP) No. Inv.	IS (COP) Possible	DID % Inverted	DID No. Inv.	DID Poss.	ARE (AUX) % Inv	ARE (AUX) No. Inv.	ARE (AUX) Poss.
1	.94	(15)	(16)	1.00	(2)	(2)	-	-	-	1.00	(12)	(12)	-	-	-	-	-	-
2	.92	(22)	(24)	.50	(2)	(4)	-	-	-	1.00	(17)	(17)	1.00	(1)	(1)	1.00	(1)	(1)
3	.88	(15)	(17)	0	(0)	(2)	1.00	(1)	(1)	1.00	(13)	(13)	-	-	-	1.00	(1)	(1)
4	1.00	(4)	(4)	-	-	-	-	-	-	1.00	(4)	(4)	-	-	-	-	-	-
5	.92	(12)	(13)	.75	(3)	(4)	-	-	-	1.00	(4)	(4)	1.00	(4)	(4)	-	-	-
6	1.00	(6)	(6)	1.00	(2)	(2)	1.00	(1)	(1)	1.00	(3)	(3)	-	-	-	-	-	-
7	1.00	(4)	(4)	-	-	-	-	-	-	1.00	(4)	(4)	-	-	-	-	-	-
8	1.00	(14)	(14)	1.00	(3)	(3)	-	-	-	1.00	(8)	(8)	1.00	(2)	(2)	-	-	-
9	1.00	(8)	(8)	1.00	(3)	(3)	-	-	-	1.00	(2)	(2)	-	-	-	1.00	(1)	(1)
10	1.00	(6)	(6)	1.00	(1)	(1)	-	-	-	1.00	(3)	(3)	-	-	-	-	-	-
11	1.00	(4)	(4)	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)	-	-	-
12	1.00	(1)	(1)	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-
13	1.00	(4)	(4)	-	-	-	-	-	-	1.00	(1)	(1)	1.00	(3)	(3)	-	-	-
14	.97	(32)	(33)	1.00	(6)	(6)	0	(0)	(1)	1.00	(10)	(10)	1.00	(5)	(5)	-	-	-
15	.98	(40)	(41)	1.00	(10)	(10)	1.00	(1)	(1)	.92	(11)	(12)	1.00	(3)	(3)	1.00	(2)	(2)
16	.97	(32)	(7)	1.00	(4)	(4)	1.00	(1)	(1)	1.00	(12)	(12)	1.00	(1)	(1)	.86	(6)	(7)
17	1.00	(7)	(7)	1.00	(1)	(1)	-	-	-	1.00	(2)	(2)	-	-	-	-	-	-
18	1.00	(15)	(15)	1.00	(5)	(5)	-	-	-	1.00	(3)	(3)	1.00	(1)	(1)	1.00	(3)	(3)

Tape No.	ARE (COP)			DOES			IS (AUX)			WERE			SHOULD			AM (COP)			AM (AUX)		
1	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-	-	-	-
2	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	1.00	(2)	(2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	1.00	(1)	(1)	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	1.00	(1)	(1)	1.00	(6)	(6)	-	-	-	1.00	(3)	(3)	-	-	-	-	-	-
15	1.00	(2)	(2)	1.00	(3)	(3)	1.00	(1)	(1)	1.00	(2)	(2)	1.00	(2)	(2)	1.00	(1)	(1)	.50	(1)	(2)
16	1.00	(2)	(2)	1.00	(1)	(1)	1.00	(3)	(3)	1.00	(2)	(2)	1.00	(2)	(2)	-	-	-	-	-	-
17	-	-	-	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)	-	-	-	-	-	-	1.00	(1)	(1)
18	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-

Table 4 (cont.)

Subject/auxiliary inversion in Juan's interrogatives

JUAN

Yes/No

Tape No.	TOTAL Yes/No % Inverted	No.	Possible	DO % Inv.	No. Inv.	Possible	CAN % Inv.	No. Inverted	Poss.	IS (COP) % Inv.	No. Inv.	Possible	DID % Inv.	No. Inv.	Possible	ARE (AUX) % Inv.	No. Inv.	Poss.
1	.33	(1)	(3)	0	(0)	(1)	-	-	-	.50	(1)	(2)	-	-	-	-	-	-
2	.50	(2)	(4)	1.00	(1)	(1)	1.00	(1)	(1)	0	(0)	(2)	-	-	-	-	-	-
3	.14	(1)	(7)	0	(0)	(3)	-	-	-	.50	(1)	(2)	0	(0)	(1)	-	-	-
4	0	(0)	(5)	0	(0)	(1)	0	(0)	(1)	0	(0)	(1)	-	-	-	-	-	-
5	.50	(4)	(8)	.50	(2)	(4)	-	-	-	0	(0)	(1)	1.00	(2)	(2)	-	-	-
6	.31	(4)	(13)	.33	(2)	(6)	.16	(1)	(6)	-	-	-	1.00	(1)	(1)	-	-	-
7	.40	(2)	(5)	0	(0)	(1)	0	(0)	(1)	0	(0)	(1)	-	-	-	-	-	-
8	.43	(3)	(7)	.50	(1)	(2)	-	-	-	0	(0)	(3)	1.00	(1)	(1)	-	-	-
9	.25	(2)	(8)	1.00	(1)	(1)	-	-	-	.33	(1)	(3)	-	-	-	0	(0)	(3)
10	1.00	(3)	(3)	-	-	-	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)	-	-	-
11	.75	(6)	(8)	1.00	(4)	(4)	-	-	-	-	-	-	.50	(1)	(2)	1.00	(1)	(1)
12	.74	(25)	(34)	.33	(1)	(3)	.50	(2)	(4)	.88	(22)	(25)	-	-	-	-	-	-
13	.40	(2)	(5)	0	(0)	(2)	-	-	-	1.00	(2)	(2)	-	-	-	-	-	-
14	.66	(8)	(12)	0	(0)	(1)	1.00	(1)	(1)	.75	(3)	(4)	.33	(1)	(3)	-	-	-
15	.71	(36)	(51)	.70	(14)	(20)	1.00	(4)	(4)	.70	(12)	(18)	1.00	(1)	(1)	1.00	(1)	(1)
16	.47	(9)	(19)	.50	(2)	(4)	1.00	(1)	(1)	.60	(3)	(5)	0	(0)	(3)	1.00	(1)	(1)
17	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	0	(0)	(1)	0	(0)	(1)	-	-	-	-	-	-	-	-	-	-	-	-

Tape No.	ARE (COP)			DOES			IS (AUX)			WAS			WILL			WERE			COULD		
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	0	(0)	(1)	-	-	-	-	-	-	-	-	-
4	0	(0)	(2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	(0)	(1)	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	(1)	(1)
9	-	-	-	-	-	-	0	(0)	(1)	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-	-	-	-
11	0	(0)	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	(0)	(2)
13	0	(0)	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	1.00	(2)	(2)	-	-	-	-	-	-
15	0	(0)	(1)	1.00	(2)	(2)	-	-	-	-	-	-	-	-	-	0	(0)	(1)	-	-	-
16	.67	(2)	(3)	0	(0)	(2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 5

Subject/auxiliary inversion in Jorge's interrogatives

JORGE

Wh-Questions

Tape No.	TOTAL Wh % Inverted	TOTAL Wh No. Inv.	TOTAL Wh Poss.	DO % Inv.	DO No. Inverted	DO Possible	CAN % Inv.	CAN No. Inv.	CAN Possible	IS (COP) % Inv.	IS (COP) No Inverted	IS (COP) Poss.	DID % Inv.	DID No. Inverted	DID Poss
1	1.00	(4)	(4)	-	-	-	-	-	-	1.00	(4)	(4)	-	-	-
2	.50	(1)	(2)	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-
3	.25	(1)	(4)	0	(0)	(3)	-	-	-	1.00	(1)	(1)	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	.66	(2)	(3)	1.00	(2)	(2)	-	-	-	0	(0)	(1)	-	-	-
6	1.00	(1)	(1)	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-
7	.33	(1)	(3)	.33	(1)	(3)	-	-	-	-	-	-	-	-	-
8	1.00	(5)	(5)	1.00	(1)	(1)	1.00	(1)	(1)	1.00	(3)	(3)	-	-	-
9	.80	(4)	(5)	0	(0)	(1)	-	-	-	1.00	(3)	(3)	-	-	-
10	.60	(6)	(10)	0	(0)	(1)	-	-	-	1.00	(3)	(3)	-	-	-
11	.88	(7)	(8)	1.00	(4)	(4)	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)
12	.90	(10)	(11)	1.00	(7)	(7)	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)
13	.80	(4)	(5)	-	-	-	-	-	-	1.00	(3)	(3)	1.00	(1)	(1)
14	1.00	(19)	(19)	1.00	(14)	(14)	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)
15	.52	(11)	(21)	1.00	(6)	(6)	-	-	-	1.00	(2)	(2)	.66	(2)	(3)
16	1.00	(4)	(4)	1.00	(2)	(2)	-	-	-	1.00	(1)	(1)	-	-	-
17	.95	(20)	(21)	1.00	(7)	(7)	1.00	(6)	(6)	1.00	(6)	(6)	0	(0)	(1)
18	.86	(19)	(22)	.82	(9)	(11)	1.00	(1)	(1)	1.00	(6)	(6)	-	-	-
19	.87	(13)	(15)	.86	(6)	(7)	-	-	-	1.00	(4)	(4)	1.00	(1)	(1)
20	1.00	(11)	(11)	1.00	(2)	(2)	-	-	-	1.00	(5)	(5)	-	-	-

Tape No	ARE (AUX)			ARE (COP)			DOES			IS (AUX)			WILL		
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	0	(0)	(1)	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	.50	(1)	(2)	-	-	-	1.00	(2)	(2)	0	(0)	(1)	-	-	-
11	1.00	(1)	(1)	-	-	-	-	-	-	0	(0)	(1)	-	-	-
12	-	-	-	-	-	-	.50	(1)	(2)	-	-	-	-	-	-
13	-	-	-	-	-	-	0	(0)	(1)	-	-	-	-	-	-
14	-	-	-	1.00	(2)	(2)	1.00	(1)	(1)	-	-	-	-	-	-
15	-	-	-	-	-	-	0	(0)	(2)	.25	(1)	(4)	0	(0)	(4)
16	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-
18	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)	0	(0)	(1)	-	-	-
19	0	(0)	(1)	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)	-	-	-
20	-	-	-	1.00	(2)	(2)	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)

Table 5 (cont.)

Subject/auxiliary inversion in Jorge's interrogatives

JORGE

Yes/No

Tape No.	TOTAL YES/NO			DO			CAN			IS (COP)			DID		
	%Inverted	No.Inv.	Poss.	%Inverted	No.Inv.	Poss.	%Inverted	No.Inv.	Poss.	%Inverted	No.Inv.	Poss.	%Inverted	No.Inv.	Poss.
1	0	(0)	(0)	-	-	-	-	-	-	0	(0)	(4)	0	(0)	(1)
2	.60	(3)	(5)	.75	(3)	(4)	-	-	-	0	(0)	(1)	-	-	-
3	.44	(4)	(9)	.57	(4)	(7)	-	-	-	0	(0)	(1)	-	-	-
4	0	(0)	(3)	0	(0)	(1)	-	-	-	0	(0)	(1)	-	-	-
5	.25	(1)	(4)	.33	(1)	(3)	-	-	-	0	(0)	(1)	-	-	-
6	0	(0)	(3)	0	(0)	(1)	0	(0)	(2)	-	-	-	-	-	-
7	.60	(3)	(5)	.75	(3)	(4)	-	-	-	-	-	-	0	(0)	(1)
8	0	(0)	(1)	-	-	-	-	-	-	-	-	-	-	-	-
9	0	(0)	(16)	0	(0)	(3)	0	(0)	(1)	0	(0)	(12)	-	-	-
10	.28	(5)	(19)	.45	(5)	(11)	0	(0)	(4)	0	(0)	(1)	0	(0)	(1)
11	.43	(3)	(8)	.60	(3)	(5)	0	(0)	(2)	-	-	-	0	(0)	(1)
12	.36	(15)	(41)	.27	(3)	(11)	.89	(8)	(9)	.07	(1)	(14)	-	-	-
13	.50	(2)	(4)	0	(0)	(2)	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)
14	.15	(2)	(13)	.20	(1)	(5)	1.00	(1)	(1)	0	(0)	(5)	0	(0)	(2)
15	.53	(8)	(15)	.17	(1)	(6)	1.00	(5)	(5)	.50	(1)	(2)	1.00	(1)	(1)
16	.33	(4)	(12)	.17	(1)	(6)	1.00	(2)	(2)	-	-	-	0	(0)	(1)
17	.58	(7)	(12)	.25	(1)	(4)	1.00	(3)	(3)	0	(0)	(1)	-	-	-
18	.67	(12)	(18)	.71	(5)	(7)	.50	(1)	(2)	1.00	(3)	(3)	.50	(2)	(4)
19	.57	(4)	(7)	.33	(1)	(3)	-	-	-	.50	(1)	(2)	-	-	-
20	.50	(4)	(8)	0	(0)	(1)	-	-	-	0	(0)	(1)	-	-	-

Tape No.	ARE (AUX)			IS (AUX)			WAS (AUX)			WILL			HAVE		
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	0	(0)	(1)
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	0	(0)	(1)	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	0	(0)	(1)	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	1.00	(1)	(1)	-	-	-	0	(0)	(2)	0	(0)	(1)	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	0	(0)	(1)	-	-	-	-	-	-
16	1.00	(2)	(2)	-	-	-	0	(0)	(1)	0	(0)	(1)	-	-	-
17	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)
18	-	-	-	1.00	(1)	(1)	0	(0)	(1)	-	-	-	-	-	-
19	1.00	(1)	(1)	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-
20	1.00	(3)	(3)	1.00	(1)	(1)	-	-	-	0	(0)	(2)	-	-	-

Table 6

Subject/auxiliary inversion in Dolores' interrogatives

DOLORES

Wh-Questions

Tape No.	TOTAL Wh % Inverted	TOTAL Wh No. Inv.	TOTAL Wh Poss.	DO % Inv	DO No. Inv.	DO Poss.	CAN % Inv.	CAN No. Inv.	CAN Poss.	IS (COP) % Inv.	IS (COP) No. Inv.	IS (COP) Poss.
1	.69	(9)	(13)	.50	(1)	(2)	-	-	-	.66	(4)	(6)
2	.86	(25)	(29)	.93	(13)	(14)	-	-	-	.88	(7)	(8)
3	.81	(34)	(42)	.91	(20)	(22)	-	-	-	.75	(9)	(12)
4	.57	(13)	(23)	.44	(7)	(16)	1.00	(1)	(1)	1.00	(2)	(2)
5	.71	(68)	(96)	.45	(20)	(44)	0	(0)	(1)	.94	(30)	(32)
6	.61	(11)	(18)	.38	(3)	(8)	1.00	(1)	(1)	1.00	(4)	(4)
7	.71	(36)	(51)	.46	(12)	(26)	-	-	-	1.00	(10)	(10)
8	.58	(15)	(26)	.33	(4)	(12)	-	-	-	1.00	(8)	(8)
9	.88	(28)	(32)	.63	(7)	(11)	1.00	(1)	(1)	1.00	(12)	(12)

Tape No.	DID % Inv.	DID No. Inv.	DID Poss.	ARE (AUX) % Inv.	ARE (AUX) No. Inv.	ARE (AUX) Poss.	ARE (COP) % Inv.	ARE (COP) No. Inv.	ARE (COP) Poss.	DOES % Inv.	DOES No. Inv.	DOES Poss.
1	1.00	(3)	(3)	1.00	(1)	(1)	-	-	-	-	-	-
2	-	-	-	.50	(1)	(2)	1.00	(3)	(3)	.50	(1)	(2)
3	1.00	(1)	(1)	1.00	(2)	(2)	.33	(1)	(3)	-	-	-
4	-	-	-	-	-	-	-	-	-	1.00	(1)	(1)
5	1.00	(2)	(2)	1.00	(10)	(10)	1.00	(4)	(4)	0	(0)	(1)
6	.50	(1)	(2)	0	(0)	(1)	1.00	(1)	(1)	-	-	-
7	1.00	(1)	(1)	.86	(6)	(7)	1.00	(2)	(2)	1.00	(1)	(1)
8	0	(0)	(2)	-	-	-	.50	(1)	(2)	-	-	-
9	-	-	-	1.00	(7)	(7)	-	-	-	-	-	-

Tape No.	WAS (COP) % Inv.	WAS (COP) No. Inv.	WAS (COP) Poss.	HAVE % Inv.	HAVE No. Inv.	HAVE Poss.	SHOULD % Inv.	SHOULD No. Inv.	SHOULD Poss.	AM (COP) % Inv.	AM (COP) No. Inv.	AM (COP) Poss.
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	1.00	(1)	(1)	-	-	-	-	-	-	0	(0)	(1)
4	1.00	(1)	(1)	-	-	-	1.00	(2)	(2)	-	-	-
5	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)	0	(0)	(1)
6	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-
7	1.00	(1)	(1)	-	-	-	-	-	-	-	-	-
8	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-
9	-	-	-	1.00	(1)	(1)	-	-	-	-	-	-

Table 6 (cont.)

Subject/auxiliary inversion in Dolores' interrogatives

DOLORES

Yes/No

Tape No.	TOTAL Yes/No % Inv.	No. Inv.	Poss.	DO % Inv.	No. Inv.	Poss.	CAN % Inv.	No. Inv.	Poss.	IS (COP) % Inv.	No Inv.	Poss.	DID % Inv.	No Inv.	Poss.
1	.44	(4)	(9)	.40	(2)	(5)	-	-	-	1.00	(2)	(2)	0	(0)	(1)
2	.61	(11)	(18)	.80	(8)	(10)	1.00	(1)	(1)	.75	(3)	(4)	-	-	-
3	.42	(14)	(33)	.27	(3)	(11)	1.00	(3)	(3)	.50	(6)	(12)	0	(0)	(1)
4	.28	(8)	(29)	.09	(1)	(11)	.50	(2)	(4)	0	(0)	(3)	1.00	(3)	(3)
5	.63	(67)	(107)	.66	(33)	(50)	.60	(3)	(5)	.36	(5)	(14)	.78	(7)	(9)
6	.65	(17)	(26)	.50	(8)	(16)	0	(0)	(1)	1.00	(1)	(1)	1.00	(2)	(2)
7	.59	(19)	(32)	.50	(8)	(16)	1.00	(3)	(3)	1.00	(1)	(1)	.43	(3)	(7)
8	.56	(23)	(41)	.48	(10)	(21)	-	-	-	.50	(3)	(6)	.66	(2)	(3)
9	.56	(32)	(57)	.45	(10)	(22)	0	(0)	(1)	.25	(1)	(4)	.75	(3)	(4)

Tape No.	ARE (AUX)			ARE (COP)			DOES			IS (AUX)			WAS		
1	0	(0)	(1)	-	-	-	-	-	-	-	-	-	-	-	-
2	1.00	(1)	(1)	1.00	(2)	(2)	-	-	-	-	-	-	-	-	-
3	.50	(1)	(2)	0	(0)	(1)	0	(0)	(3)	-	-	-	-	-	-
4	0	(0)	(1)	0	(0)	(2)	-	-	-	-	-	-	-	-	-
5	.63	(5)	(8)	.70	(7)	(10)	0	(0)	(2)	-	-	-	0	(0)	(1)
6	-	-	-	.50	(1)	(2)	-	-	-	-	-	-	-	-	-
7	-	-	-	1.00	(2)	(2)	0	(0)	(1)	-	-	-	-	-	-
8	.66	(4)	(6)	1.00	(3)	(3)	-	-	-	1.00	(1)	(1)	-	-	-
9	.71	(5)	(7)	1.00	(5)	(5)	0	(0)	(1)	1.00	(1)	(1)	0	(0)	(1)

Tape No.	WILL			WERE (COP)			HAVE			COULD			SHOULD		
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-
4	1.00	(1)	(1)	0	(0)	(1)	-	-	-	0	(0)	(1)	1.00	(1)	(1)
5	1.00	(5)	(5)	-	-	-	1.00	(2)	(2)	-	-	-	-	-	-
6	1.00	(2)	(2)	-	-	-	-	-	-	1.00	(1)	(1)	1.00	(1)	(1)
7	-	-	-	-	-	-	-	-	-	1.00	(1)	(1)	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	1.00	(2)	(2)	1.00	(1)	(1)	1.00	(5)	(5)	-	-	-	-	-	-

Table 7

Subject/auxiliary inversion in Alberto's interrogatives

ALBERTO

Wh-Questions

Tape No.	TOTAL Wh % Inv.	TOTAL Wh No. Inv.	TOTAL Wh Poss.	DO % Inv.	DO No. Inv.	DO Poss.	CAN % Inv.	CAN No. Inv.	CAN Possible	IS (COP) % Inv.	IS (COP) No. Inv.	IS (COP) Poss.
1	-	-	-	-	-	-	-	-	-	-	-	-
2	1.00	(1)	(1)	0	(0)	(1)	-	-	-	1.00	(1)	(1)
3	1.00	(4)	(4)	-	-	-	-	-	-	1.00	(4)	(4)
4	1.00	(2)	(2)	-	-	-	-	-	-	1.00	(2)	(2)
5	1.00	(2)	(2)	1.00	(2)	(2)	-	-	-	1.00	(1)	(1)
6	1.00	(2)	(2)	0	(0)	(0)	-	-	-	1.00	(2)	(2)
7	.80	(4)	(5)	1.00	(2)	(2)	-	-	-	1.00	(2)	(2)
8	.82	(9)	(11)	0	(0)	(0)	-	-	-	1.00	(8)	(8)
9	1.00	(10)	(10)	1.00	(1)	(1)	-	-	-	1.00	(9)	(9)
10	-	-	-	-	-	-	-	-	-	-	-	-
11	1.00	(2)	(2)	-	-	-	-	-	-	1.00	(2)	(2)
12	.75	(6)	(8)	0	(0)	(1)	-	-	-	1.00	(6)	(6)
13	.57	(4)	(7)	0	(0)	(2)	-	-	-	.80	(4)	(5)
14	.75	(3)	(4)	-	-	-	-	-	-	1.00	(3)	(3)
15	.44	(4)	(9)	.25	(1)	(4)	-	-	-	1.00	(2)	(2)
16	.50	(1)	(2)	-	-	-	-	-	-	1.00	(1)	(1)
17	.42	(5)	(12)	.50	(1)	(2)	-	-	-	.83	(5)	(6)
18	.41	(9)	(22)	0	(0)	(4)	-	-	-	1.00	(9)	(9)
19	1.00	(2)	(2)	-	-	-	-	-	-	1.00	(2)	(2)
20	.40	(6)	(15)	.30	(3)	(10)	-	-	-	1.00	(3)	(3)

Tape No.	DID % Inv.	DID No. Inv.	DID Poss.	ARE (COP) % Inv.	ARE (COP) No. Inv.	ARE (COP) Poss.	DOES % Inv.	DOES No. Inv.	DOES Possible	WERE (COP) % Inv.	WERE (COP) No. Inv.	WERE (COP) Poss.
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	0	(0)	(1)	-	-	-	-	-	-	-	-	-
8	0	(1)	(3)	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	0	(0)	(1)	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	0	(0)	(1)	-	-	-
15	0	(0)	(1)	1.00	(1)	(1)	-	-	-	0	(0)	(1)
16	0	(0)	(1)	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	0	(0)	(4)	-	-	-
18	0	(0)	(4)	-	-	-	0	(0)	(2)	0	(0)	(1)
19	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	0	(0)	(1)	-	-	-	-	-	-

Table 7 (cont.)

Subject/auxiliary inversion in Alberto's interrogatives

ALBERTO

Yes/No

Tape No.	TOTAL Yes/No % Inv	TOTAL Yes/No No. Inv.	TOTAL Yes/No Poss.	DO % Inv	DO No. Inv.	DO Poss.	CAN % Inv.	CAN No. Inv.	CAN Poss.	IS (COP) % Inv.	IS (COP) No. Inv.	IS (COP) Poss.	DID % Inv	DID No. Inv.	DID Poss.
1	0	(0)	(3)	0	(0)	(1)	-	-	-	0	(0)	(2)	-	-	-
2	.13	(1)	(8)	.33	(1)	(3)	-	-	-	0	(0)	(1)	-	-	-
3	0	(0)	(10)	0	(0)	(4)	-	-	-	0	(0)	(3)	0	0	(3)
4	0	(0)	(6)	0	(0)	(2)	-	-	-	0	(0)	(1)	0	(0)	(1)
5	0	(0)	(15)	0	(0)	(3)	-	-	-	0	(0)	(9)	-	-	-
6	0	(0)	(7)	0	(0)	(3)	-	-	-	0	(0)	(2)	0	(0)	(1)
7	.10	(1)	(10)	.14	(1)	(7)	-	-	-	0	(0)	(2)	-	-	-
8	0	(0)	(16)	0	(0)	(13)	-	-	-	0	(0)	(3)	-	-	-
9	0	(0)	(10)	0	(0)	(7)	-	-	-	0	(0)	(2)	-	-	-
10	0	(0)	(5)	0	(0)	(2)	-	-	-	0	(0)	(0)	0	(0)	(2)
11	.15	(2)	(13)	.33	(2)	(6)	-	-	-	0	(0)	(6)	-	-	-
12	0	(0)	(8)	0	(0)	(1)	-	-	-	0	(0)	(6)	-	-	-
13	.18	(4)	(22)	.27	(3)	(11)	-	-	-	0	(0)	(7)	-	-	-
14	0	(0)	(11)	0	(0)	(7)	-	-	-	0	(0)	(4)	-	-	-
15	.05	(1)	(22)	.09	(1)	(11)	-	-	-	0	(0)	(5)	0	(0)	(1)
16	0	(0)	(8)	0	(0)	(3)	-	-	-	0	(0)	(3)	-	-	-
17	.09	(1)	(11)	0	(0)	(6)	-	-	-	.25	(1)	(4)	-	-	-
18	0	(0)	(9)	0	(0)	(4)	-	-	-	0	(0)	(3)	-	-	-
19	0	(0)	(9)	0	(0)	(3)	-	-	-	0	(0)	(5)	-	-	-
20	.10	(1)	(10)	.17	(1)	(6)	-	-	-	0	(0)	(2)	-	-	-

Tape No	ARE (AUX)			DOES			IS (AUX)			WILL			WOULD		
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	0	(0)	(2)	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	0	(0)	(1)	-	-	-	0	(0)	(1)
5	-	-	-	-	-	-	-	-	-	-	-	-	0	(0)	(2)
6	-	-	-	-	-	-	-	-	-	0	(0)	(1)	-	-	-
7	-	-	-	0	(0)	(1)	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	0	(0)	(1)	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	0	(0)	(1)	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	0	(0)	(1)	-	-	-	-	-	-
13	0	(0)	(1)	0	(0)	(1)	-	-	-	-	-	-	1.00	(1)	(1)
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	0	(0)	(3)	0	(0)	(2)	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	0	(0)	(1)	-	-	-
17	-	-	-	-	-	-	0	(0)	(2)	-	-	-	-	-	-
18	-	-	-	0	(0)	(1)	-	-	-	-	-	-	0	(0)	(1)
19	-	-	-	-	-	-	-	-	-	-	-	-	0	(0)	(1)
20	-	-	-	-	-	-	-	-	-	0	(0)	(1)	-	-	-

whether Wh + is (cop) really involves inversion. First, as Ingram suggests, Wh + is (cop) -- e.g., what's, where's -- might simply be learned chunks. In addition, in our data, the early appearance of is (cop) before subject NP's in wh- questions could be simply a direct translation from Spanish, which does not have inversion but nevertheless yields a word order similar to English "is (cop)" wh- questions.

What is? = Qué es?
Who is? (it) = Quién es?
Where is? (it) = Dónde está?
How is? (it) = Cómo es?
When is? (it) = Cuándo es?
Why is? = Porqué es?

The other auxiliaries which are inverted early are can and do. However, can is inverted more consistently than the others, often reaching 100%. This may be due to the fact that in adult English can in an uninverted yes/no question generally carries the notion of ability (You can swim?) whereas in inverted yes/no questions it can mean either request or ability (Can he play soccer?). Thus the learners may sense that when they request with an uninverted form they are somehow doing something semantically inappropriate.

Do. Do differs from other auxiliaries in that it is not usually present in declarative sentences: He goes to school?. In a transformational analysis, do must first be inserted in to the declarative sentence and then be moved in front of the subject in order to form a question, e.g.: Does he go to school?. Other auxiliaries are already present in the declarative form. According to the analysis, questions with do involve two operations whereas only one operation is required for other auxiliaries. Consequently do inversion might be expected to appear late. However, in general, do appears irregularly in the inverted form from the very beginning for most of the subjects: You speak Spanish?, Do you live in Boston?.

Inversion Look of Do. What seems to be the early inversion of do may not be inversion at all. In yes/no questions of our subjects do may be simply placed in front of the declarative utterance as a question marker: You have children., Do you have children?. Another explanation for the "inversion look" of do may be that certain constructions such as Do you like, Do you have, Do you want are prefabricated routines. In general, however, the constructions which are preceded by do also appear without do: you like, you have, you want. Perhaps the best explanation is the former: that do is irregularly placed before declarative utterances in which the verb is in simple present tense in order to make the utterance into a question. Here the learners may be responding to the

nature of the input which is also variable with respect to inversion since inversion is largely optional in yes/no questions:

You go to school?
Do you go to school?

Of course, inversion is obligatory in wh- questions. Thus if the input is consistently inverted in wh-, one would expect that the frequency of inversion in our subjects' wh- questions would be higher than it is in yes/no questions and that over time the frequency would increase, reflecting a closer approximation to the target input. We do find that do is inverted more frequently in wh- than in yes/no but with the exception of Jorge and Juan, who reach 100% inversion, the other subjects' do inversion in wh- remains variable. An explanation for this variability might still lie in the input, however, if we consider the wh- input to include not only wh- questions which are inverted but also embedded wh- questions which are correctly uninverted. Thus the wh- input to which the subject is exposed may well appear to the subject as variably inverted although the overall frequency of inversion in the wh- input is greater than in yes/no since embedded questions probably do not comprise a great percentage of all wh- questions in normal conversation.

Embedded Questions. However, if we consider all wh- questions (both embedded and simple) as forming the same input pool to the learner, then the learner's first hypothesis about wh- questions might be that, like yes/no questions, they are sometimes inverted and sometimes uninverted:

simple: Where are you going?
embedded: I know where you are going,

but with the inverted form being more frequent (since simple wh- questions are probably more frequent in the input). The learner is thus exposed to English input that indicates that wh- questions are variably inverted. If the learner chose the simpler of the two forms, the uninverted form, he might produce mostly uninverted wh- questions in the beginning (see explanation below) with inversion increasing over time. This situation would also account for inversion in embedded wh- questions. Finally, the learner should begin to differentiate between simple wh- questions and embedded wh- questions and invert in the former, but not in the latter. This differentiation may be difficult for Spanish speakers since no such differentiation occurs in their native language.

Hence the following developmental pattern should emerge:

Stage I - Undifferentiation: Learner does not distinguish between simple and embedded wh- questions.

a. uninverted: Both simple and embedded wh- questions are uninverted.

simple: What you study?;
embedded: That's what I do with my pillow.

b. variable inversion: Simple wh- questions are sometimes inverted, sometimes not.

inverted: How can you say it?;
uninverted: Where you get that?

c. generalization: increasing inversion in wh- questions with inversion being extended to embedded questions.

simple: How can I kiss her if I don't even know her name?;
embedded: I know where are you going.

Stage II - Differentiation: Learner distinguishes between simple and embedded wh- questions.

simple: Where do you live?;
embedded: I don't what he had.

As explained earlier, simple wh- questions involving is (cop) may not involve inversion at all and may simply be translations from Spanish which would inflate the percentage of inverted questions and make them look more "correct". In embeddings, is (cop) also inflates the percentage of inversions and thus makes them appear less "correct". Thus we decided to remove all is (cop) constructions from the analysis. When we did so, the developmental pattern described above appeared. See figures 7-11. In the following discussion, the subjects are described in developmental order.

Cheo (fig. 7) goes through Periods "a" and "b" in Stage I. In tapes 4-7 there is no inversion in either simple or embedded wh- questions. After tape 7, he enters Period "b" where there is a slight increase in inversion in simple wh- questions and where embeddings continue to be uninverted.

Marta (fig. 8) also moves through Periods "a" and "b" in Stage I. However, her inversion in Stage Ib is at a higher frequency than Cheo's.

Jorge (fig. 9) progresses through Periods "a", "b" and "c" of the undifferentiated stage. Until tape 3 he is in Period "a"; from tapes 3-8 he is in Period "b" where he shows variable inversion in simple wh- questions and his embeddings remain

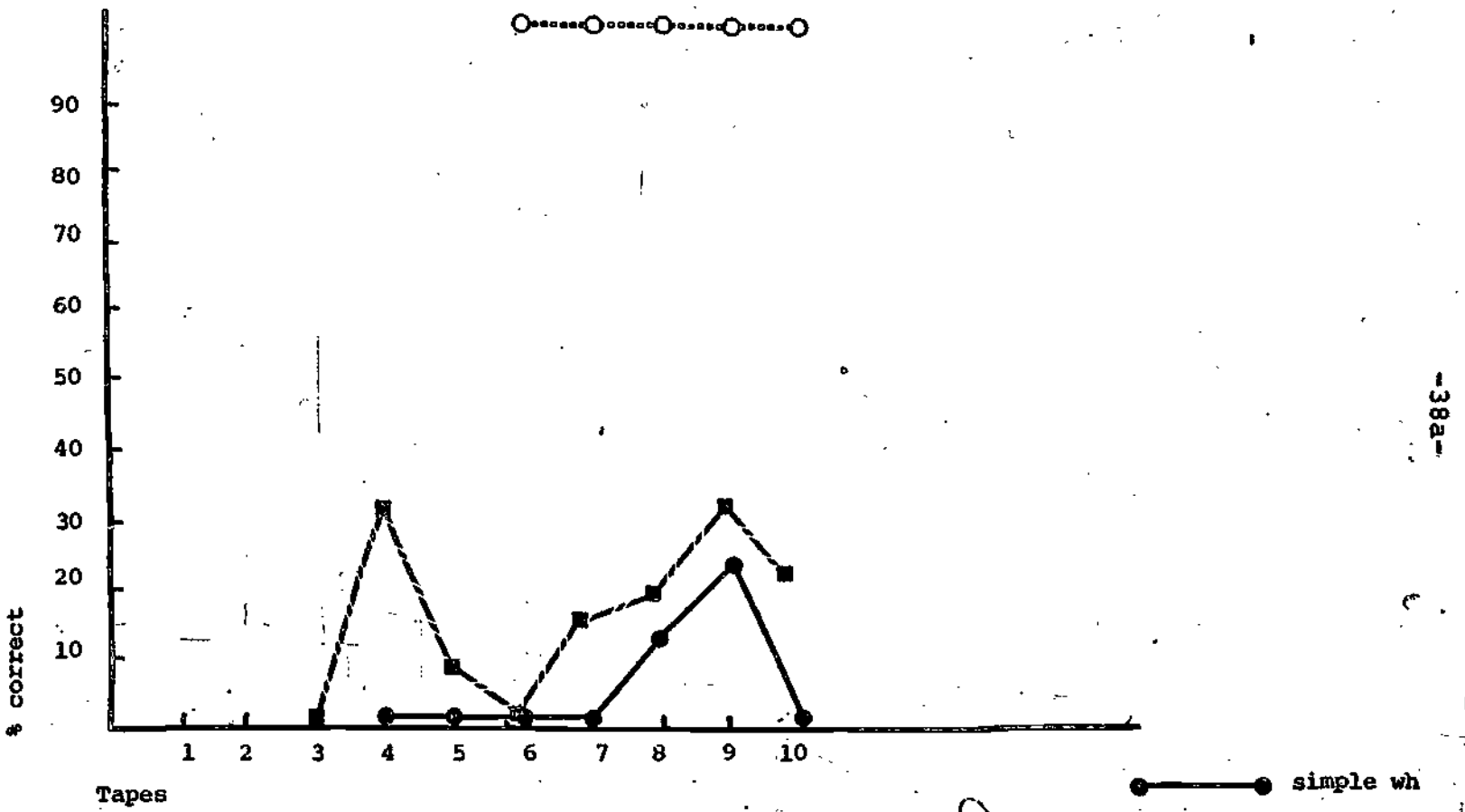


Figure7. Development of the interrogative in Cheo with respect to inversion of subject noun phrase and auxiliary.

uninverted. After tape 8 we see generalization with variable inversion in both simple and embedded wh- questions.

Dolores (fig. 10) starts in Period "b" of the undifferentiated stage (tape 1-4). After tape 4 she enters Period "c" and remains there through tape 9.

Juan (fig. 11) begins in Period "b" (tape 1-4) and then in tape 5 seems to go directly into Stage II. However, due to Christmas vacation, no data were collected on Juan for six weeks between tapes 4 and 5. He may well have progressed through Period "c" at that time. In tapes 12 and 13 he appears to be inverting in embedded questions but here the depression in the graph is accounted for by only two errors.

Alberto inverts only eleven times in yes/no questions and twelve times in wh- questions. He essentially remains in Stage I, Period "a" for the whole period of research. Therefore, no graph is presented for him.

Inversion in yes/no questions. On each of the graphs described above there is a dotted line which represents the percentage of inversions found in yes/no questions. In the subjects who evidenced a Period "a" (Cheo, Marta, Jorge) we find that yes/no questions appear to be inverted at a time when wh- questions are not. This result was not evident (see p. 38) until is (cop) constructions were eliminated from the wh- questions. As mentioned earlier, Klima and Bellugi (1966) found inversion in yes/no questions at a time when there was no inversion in wh- questions in their study of children acquiring English as a first language and labelled this developmental period "Stage C". However, we believe that our subjects only have a Stage C "look" because most of their inversions are accounted for by do (e.g., Do you have one?), whereas Klima and Bellugi's subjects had had inversion with a variety of auxiliaries. Do in our subjects, as discussed earlier, may simply be a question marker that variably appears in front of a declarative sentence:

You go to school?
Do you go to school?

or a prefabricated routine:

Do you want?
Do you like?

Excluding early do-inversion we see two stages in the development of yes/no questions:

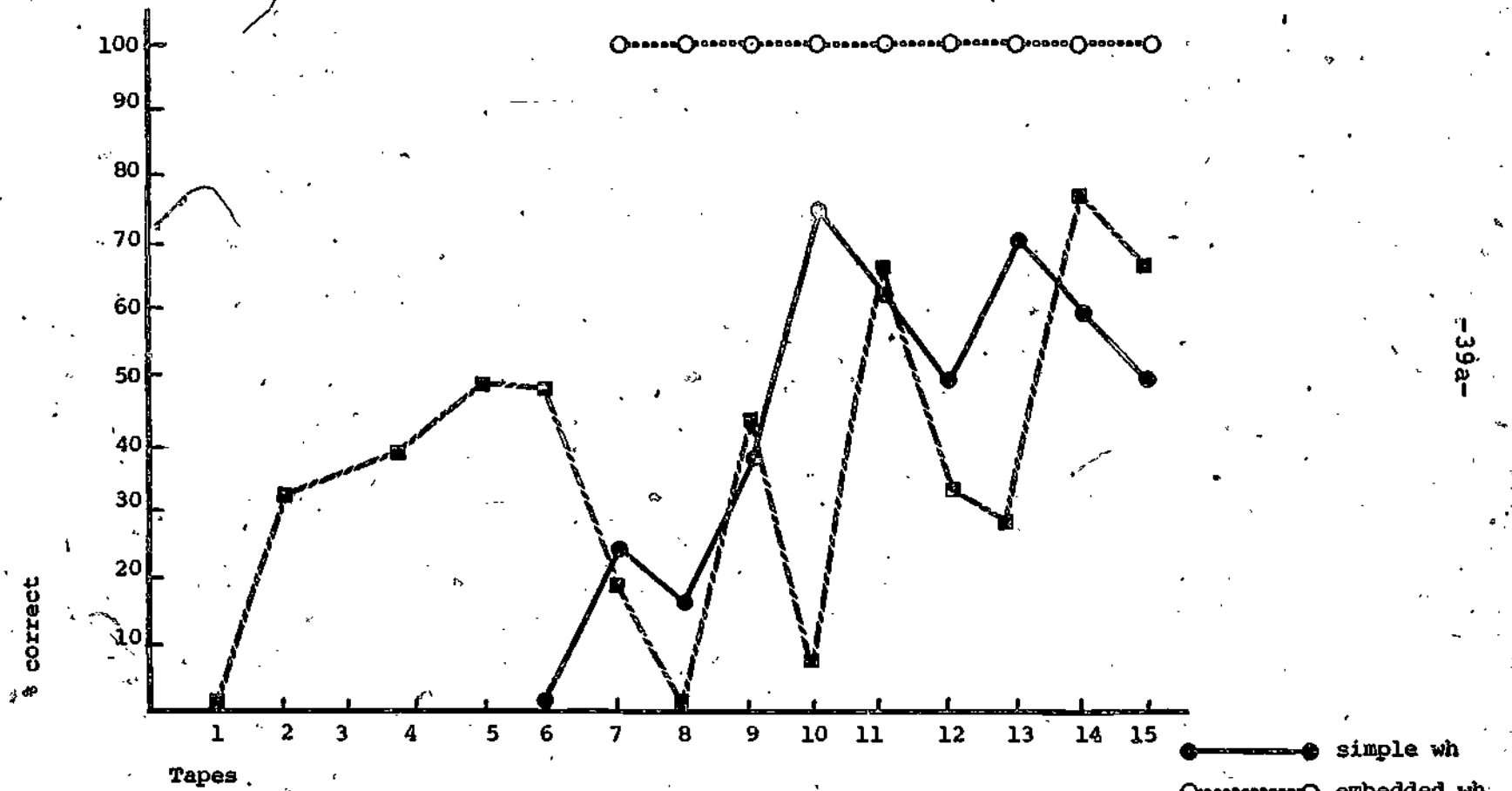


Figure 8. Development of the interrogative in Marta with respect to inversion of subject noun phrase and auxiliary.

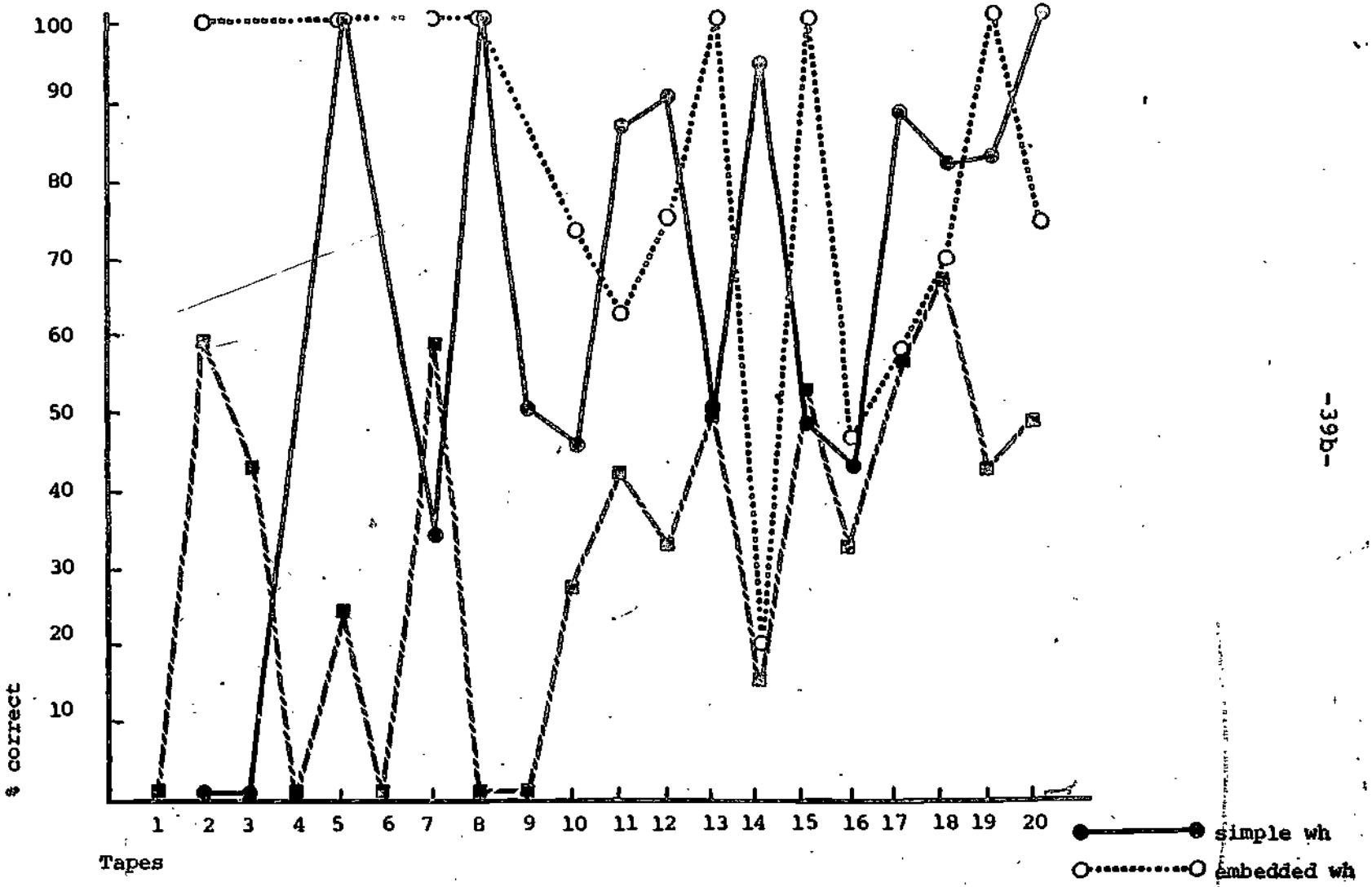


Figure 9. Development of the interrogative in Jorge with respect to inversion of subject noun phrase and auxiliary.

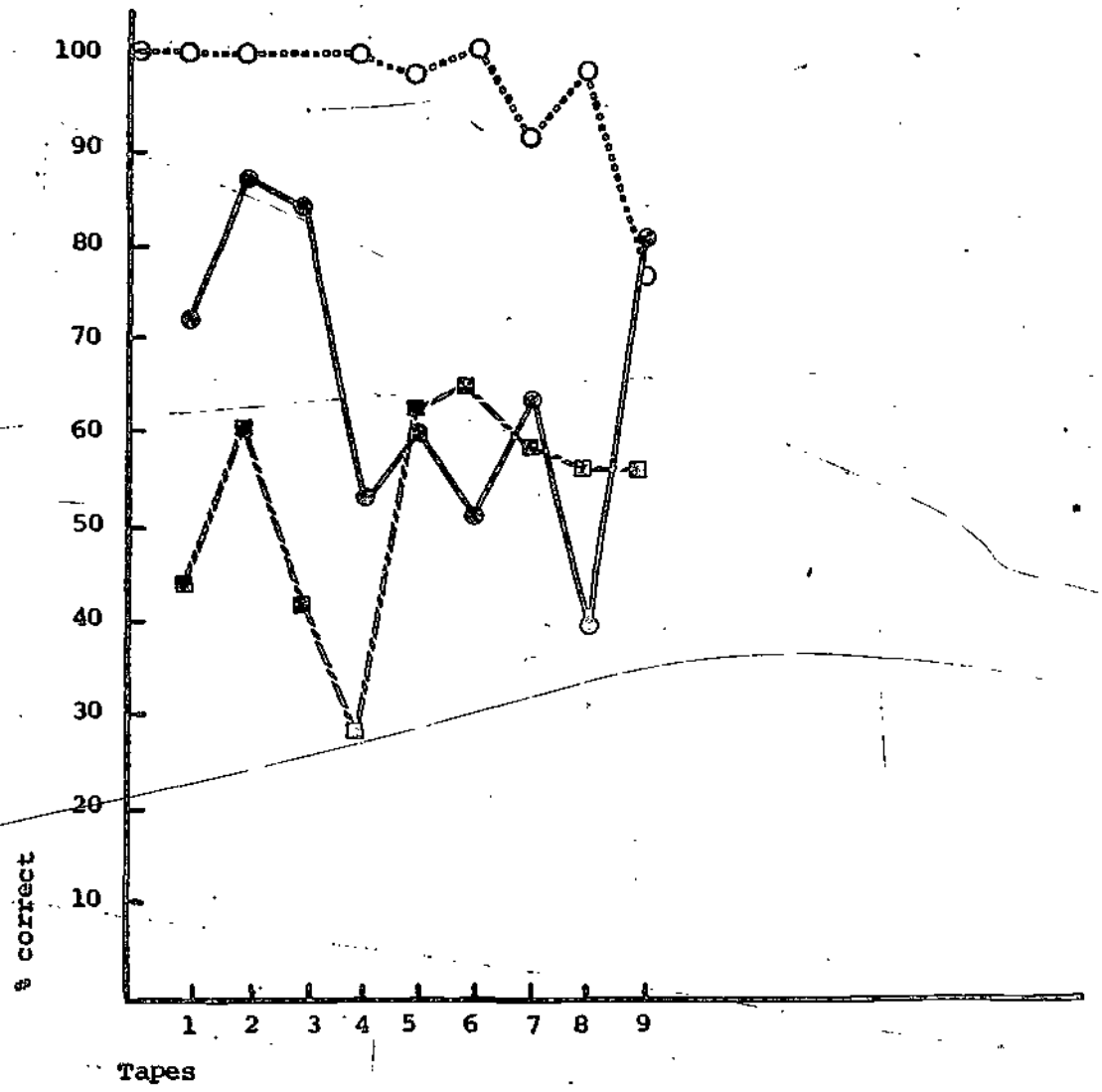


Figure 10. Development of the interrogative in Dolores with respect to inversion of subject noun phrase and auxiliary.

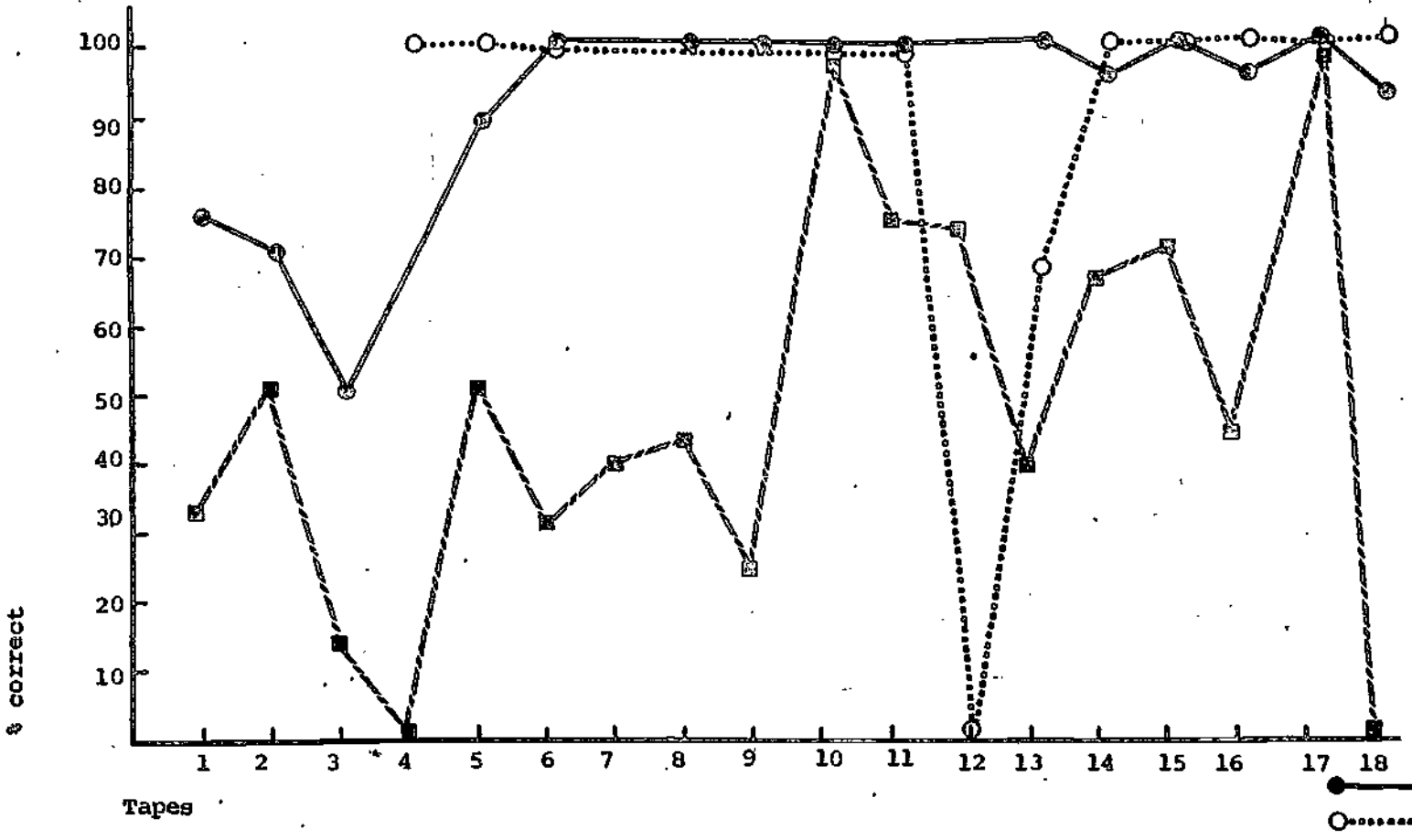


Figure 11. Development of the interrogative in Juan with respect to inversion of subject noun phrase and auxiliary.

i) In the first stage there is no inversion (i.e., sentence with rising intonation);

ii) in the second period there is some inversion gradually increasing, but with variability.

In conclusion, the foregoing analysis yields several important points:

1. is (cop) wh- questions behave differently than do other auxiliaries. They do not involve inversion and may be either translations from Spanish or high frequency habitual patterns conditioned by the input. If they are included in the analysis, the best statement about wh- questions that can be made is that they appear in both the inverted and uninverted forms from the very beginning.

2. The input to the learner for wh- questions is likely to be both inverted and uninverted such that the learner does not differentiate between simple and embedded wh- questions at the outset.

3. If is (cop) wh- questions are eliminated from the data and simple and embedded wh- questions are regarded as a single input pool to the learner, a two-stage developmental pattern evolves. In stage I the learner does not differentiate between simple and embedded wh- questions. This stage can be described as having three periods. In period "a" both simple and embedded wh- questions are uninverted. In period "b" simple wh- questions are sometimes inverted and sometimes not. Period "c" is characterized by increasing inversion in wh- questions with inversions being extended to embedded questions. In Stage II the learner differentiates between simple and embedded wh- questions such that he inverts at least 80% of the time in simple wh- questions and does not invert in wh- embeddings.

4. There is a Stage C "look" in three of the subjects. But the yes/no questions which are inverted prior to inversion in wh- questions, are with the auxiliary do. We speculate that do may simply be a question marker, a prefabricated routine, or a production pattern observed in the input. Excluding "do question markers" as inversion, then two stages emerge in the development of yes/no questions:

i) sentence with rising intonation;

ii) inversion -- gradually increasing but with variability.

The Auxiliary

Our goal in this section is to describe the acquisition of the English auxiliary. The auxiliary system occupies a crucial position in English grammar. It provides the means for the expression of negation and interrogation and less frequently, for the expression of emphasis. Auxiliaries generally carry semantic information and also mark tense and number. Their essential systematicity and their indispensability in the functioning of the English verb make the study of their development an essential focus.

Kypriotaki (1974) examined the acquisition of the auxiliary by children acquiring English as a first language. First, she wanted to see whether a child who had learned the negative question transformation could apply it to any auxiliary configuration which he knew in the positive statement form. Using a repetition exercise involving statements, questions and negative questions, she found that the transformational rules are not globally learned and applied. A child might get all three forms correct (or incorrect), only two correct, or only one correct. Second, she was interested in a controversy within transformational grammar about whether statements or questions are the underlying form in English. The results were not conclusive, but indicated that if a subject got only one form correct, that form was not more likely to be a question than a statement. However, this superior performance on questions was only by a small margin. Finally, Kypriotaki attempted to determine the order of appearance and the development of the auxiliary. This data is still being analyzed.

The morpheme studies done on first language acquisition (Brown, 1973; deVilliers, 1972) consider some of the auxiliary forms which we also examined -- the copula and the present progressive auxiliaries. The most general finding was that the copula was acquired before the present progressive auxiliary. Each of these has three forms -- am, are and is, and no clear acquisition order emerged for them. In studies of second language acquisition, Hakura (1974) and Dulay and Burt (1974) both also found that the copula was acquired before the auxiliary.

We will describe the development of the auxiliary as it appears in the declarative, negative and interrogative utterances of our subjects. Finally, an overall picture of auxiliary development will be presented by combining these categories. Throughout our discussion we will be speaking only about the order of appearance of auxiliaries, not their order of acquisition. This is an important distinction. Our analysis answers the question of whether or not a particular auxiliary is present in obligatory context. It does not speak to the issue of whether or not the auxiliary is

correctly inflected (in number and tense) in that context. Thus, if a subject were to say they is boys, he would be given credit for having supplied the copula is. If he were to say they boys, he would be scored "-are, copula". Hence what we will present is a "there-not there" analysis, not a "correct-incorrect" analysis. Future analyses may well include scoring for tense and number. Such analyses would then allow us to talk about order of acquisition.

To determine the order of appearance of the auxiliary in declarative utterances we established the following criterion: to say that an auxiliary has appeared it must be supplied at least 80% of the time in three consecutive samples and in each sample there must be at least two instances of the particular auxiliary under consideration with a total of ten or more auxiliaries in the sample. In scoring modals where obligatory context cannot easily be determined we simply considered an auxiliary to have appeared when it was present at least twice in three successive samples.

For each auxiliary in each sample, a ratio was constructed in which the denominator contained the total possibilities for a particular auxiliary to appear and the numerator contained the actual number of times the particular auxiliary did appear. For example, if a subject in some sample had the following two sentences,

He going;
He is playing baseball,

the ratio 1/2 would be constructed to indicate that out of two obligatory contexts the subject supplied the auxiliary, is, only once. In the tables that follow (8, 9, 10) the auxiliaries achieved 80% criterion in the order presented.

The auxiliary in declaratives. The auxiliary in declaratives includes such forms as She was here yesterday and He is going to the store. On the basis of the criteria cited above, the following order of appearance was found in the declaratives (Table 8). From these results we can make the generalization that is (cop) and can appear very early and in that order. Beyond these two auxiliaries, the order of appearance seems to be quite variable.

The auxiliary in the negative. When determining the appearance order for auxiliaries in negatives we used the same criterion as we did for declaratives. An auxiliary was scored as "present" whether or not it was correctly formed with regard to the position of the negative particle. Thus, He can't go and the less frequent He no can go were both credited for having the auxiliary can present. This analysis resulted in the orders of appearance displayed in Table 9.

Table 8

Appearance Order for auxiliaries in the declarative for each subject

Marta

is (cop)
can
is (aux)
am (aux), are (cop), will
was (cop), are (aux)
could

Cheo

is (cop)
can
was (cop)

Juan

is (cop)
can, are (cop), are (aux), was (cop)
is (aux)
were (cop)
would
were (aux), am (aux), will
have

Jorge

is (cop), am (aux)
can
was (cop)
are (cop)
was (aux), will
is (aux)
am (cop)

Dolores

is (cop), am (cop), are (cop), was (cop), am (aux)
is (aux), will
can, could
were (cop), are (aux), was (aux)
would

Alberto

is (cop)
am (cop)
are (cop)

Table 9

Appearance order for auxiliaries in the negative for each subject

Marta	Cheo
can	can
is (cop)	
do	
did	
Juan	**Jorge**
do	is (cop)
is (cop), can, does	can
did	do, does
was (cop)	did
	will
Dolores	**Alberto**
do, does, did	is (cop)
is (cop)	can
can	
could	

These orders indicate that, as in the declarative, can and is (cop) appear early, but in the negative the order in which they appear varies from subject to subject. Do, which has no chance to appear in declaratives, also shows up in the negative in four of the six subjects as one of the first auxiliaries to appear. However, as was seen in the negative, the early appearance of do in the negative (in the form of don't) is simply a negative marker similar to no and does not yet consist of separate do plus the negative.

The auxiliary in interrogatives. Once again using the criterion of 80% supplied in obligatory context for three consecutive samples, we established the order of appearance of the auxiliary in the interrogative, which is given in Table 10.

The one generalization deriving from this analysis is that is (cop) appears to precede do and can (with the exception of one subject, Juan, where do and is (cop) appear at the same time). The appearance order beyond is (cop), can and do is, once again, variable.

The auxiliary in declaratives, negatives and interrogatives (totaled). When a tally of auxiliaries is made, combining the declarative, negative and interrogative the following appearance order for auxiliary emerges (see Table 11). The order can be more clearly seen in Table 12, which displays the rank orderings for the appearance of auxiliaries.

The most obvious finding is that is (cop) is acquired first, universally, and do and can are the other two auxiliaries that appear early for most of the subjects. As we move beyond these three auxiliaries there is a great deal of variability in order of appearance. The same variability was observed in the order of appearance of the auxiliary when considered separately in the declarative, negative and interrogative.

The early appearance of is (cop), can and do might be explained on the following grounds:

1. is (cop) is a form that exists in Spanish and functions similarly to the English form. (There is a second be form in Spanish, estar. But this does not seem to cause problems; it is generally easy to move from two categories in the native language to one category in the target language.) The Spanish counterpart to is (cop) is es, which is even phonologically similar to the English form. This similarity undoubtedly facilitates positive transfer.

2. The early appearance of can may be explained by its functional utility in early second language acquisition. It allows the learner to express notions of ability and requests -- notions

Table 10

Appearance order for auxiliaries in interrogatives for each subject

Marta	Cheo
is (cop)	is (cop)
do	can
can, is (aux)	
are (aux)	
Juan	**Jorge**
do, is (cop)	is (cop)
did	do, can
can	did
are	is (aux)
Dolores	**Alberto**
is (cop)	is (cop)
can	
will	
are (cop), are (aux)	

Table 11

Appearance order for the auxiliaries (totaled) for each subject

Marta

is (cop)
do
is (aux)
can, am (aux)
did, are (cop)
will
was (cop), are (aux)
could

Cheo

is (cop), do
can
was (cop)

Juan

do, is (cop)
was (aux), can
are (cop)
was (cop), did, is (aux), does, were (cop)
am (aux), have
will
am (cop)
could
are (aux)
were (aux), would

Jorge

is (cop), am (aux)
can
do
does
was (cop)
did
are (cop)
is (aux), will, was (aux)
am (cop)

Dolores

do, does, is (cop), are (cop), was (cop), am (aux), can, am (cop)
did, is (aux), are (aux), was (aux), will, would
could, must
were (cop)

Alberto

is (cop)
am (cop)
can
are (cop)

Table 12

Rank orderings of the appearance of the auxiliaries

	IS(C)	DO	CAN	IS(A)	ARE(C)	DOES	WAS(A)	DID	WERE(A)	WAS(C)	ARE(A)	AM(A)	WILL	HAVE	WERE(C)	AM(C)	COULD	WOULD	MUST
MARTA	1	2	4	3	5			5		7	7	4	6					8	
CHEO	1	1	2							3									
JUAN	1	1	2	4	3	4	2	4	11	5	10	6	7	6	7	8	9	11	
JORGE	1	3	2	8	7	4	8	6		5		1	8			9			
ALBERTO	1		3		4											2			
DOLORES	1	1	1	2	1	1	2	2		1	2	1	2		4	1	3	2	3

which are essential for functioning in the second language even at elementary stages.

3. The early appearance of do can be explained, in part, by the fact that it serves as a negative particle similar to no. In this case, however, although do appears early (in the form of don't) it is not functioning as an auxiliary, but simply as an unanalysed negator. The reason for the early appearance of do in questions could perhaps result from the existence of certain stereotyped forms such as: Do you know what I mean? and How do you say X? or do might simply be placed in front of a statement as a question marker.

After having rank ordered the appearance of the auxiliaries for our subjects, we wanted to determine whether or not the orders for our subjects were at all similar. Clearly from "eye-balling" the data we can see that is (cop) appears early for all subjects. But beyond that, we wished to determine statistically whether or not there were any correlations between the subjects' orders. We analyzed our rank orderings with the Kendall Correlation of Concordance W. With an N (the auxiliaries in this case) as large as 18, the distribution approaches the χ^2 distribution. The H^o was that the orders are independent or unrelated. The correlation was non-significant ($p > .90$). So, not only were we unable to disprove the null hypothesis, but 93% of the time our correlations would not be significant. In other words, we find that our subjects' orders are highly variable.

Had we had a larger sample of subjects there is the possibility that this measure of concordance would have revealed similar orders for the appearance of the subjects' auxiliaries, or at least for auxiliaries appearing in clusters. With a larger sample it is also possible that different orders might have emerged for children, adolescents, and adults. It is equally possible, however, that a larger sample would reveal the same variable orders that we have found in our study to date.

There have been recent claims (Dulay and Burt, 1973) that acquisition of English by speakers of other languages follows an invariant order for certain grammatical morphemes. Our analysis of auxiliaries finds considerable variability. It remains to be determined from future research which pattern other aspects of second language acquisition follow. We believe the most accurate descriptions will be provided by the accumulation of longitudinal investigations, probably each one limited to a small number of subjects.

Summary

Negative. The purpose of this project was to establish developmental sequences in the acquisition of English by Spanish speakers. We examined the negative, interrogative, and auxiliary.

The general sequence in the development of the negative evidenced by our six subjects is as follows:

i. no V (I no understand)

ii. don't V (He don't like it)

iii. aux-neg (You can't tell her)

iv. analyzed don't; disappearance of no V (He doesn't spin)

The above sequence became apparent after the various negating devices (no, don't, aux-neg, and the analyzed forms of don't) were analyzed in terms of the frequency of each negator relative to the total number of negatives (including negated adjectives, nouns, etc.) in each tape sample. When these relative frequencies were graphed and compared across subjects the above sequence emerged. Although all of the subjects did not necessarily reach step iv in the sequence, they all followed the same developmental pattern.

Interrogative. In examining our interrogative data we were interested in the development of inversion. We discovered a developmental sequence in the acquisition of wh- questions and yes/no questions.

In wh- questions the following sequence emerged:

Stage I - Undifferentiation: learner does not distinguish between simple and embedded wh- questions

a. uninverted - both simple and embedded wh- questions are uninverted

b. variable inversion - simple wh- questions are sometimes inverted, sometimes not

c. generalization - increasing inversion in wh- questions with inversion being extended to embedded questions.

Stage II - Differentiation: learner distinguishes between simple and embedded wh- questions, reaching criterion inversion (80%) in simple wh- questions and uninversion in embedded wh- questions

In yes/no questions an acquisition sequence was also observable, after the exclusion of the early do inversion (considered to be an "inversion-look"):

i. sentence with rising intonation

ii. some inversion, gradually increasing, but with variability from session to session.

Auxiliary. In analyzing the development of the auxiliary, we determined an order of appearance, not an order of acquisition. Our analysis was designed to reveal whether or not an auxiliary was present in obligatory contexts, but not whether it was appropriately inflected for number and tense. Thus, we were concerned with which auxiliaries were used, but not with whether they were necessarily the form of the auxiliary which would be supplied in well-formed English. An auxiliary was said to have appeared if it was supplied at least 80% of the time in three consecutive samples in which there were at least two instances of the particular auxiliary and a total of ten or more auxiliaries in the sample.

The major finding of this analysis was that is (cop) is acquired first, universally, and do and can are the other two auxiliaries that appear early for most of the subjects. Beyond that, there is extreme variability in the order in which the other auxiliaries appeared for each subject. When the auxiliaries were rank ordered in terms of the order of appearance, the orders were not correlated ($p > .90$) using the Kendall Correlation of Concordance W.

Discussion

In this section we will attempt to see how our data speaks to the issues raised in the beginning of this report:

1. the similarities and differences between first and second language acquisition

2. differences between child, adolescent and adult second language acquisition.

Second language acquisition vs. first language acquisition

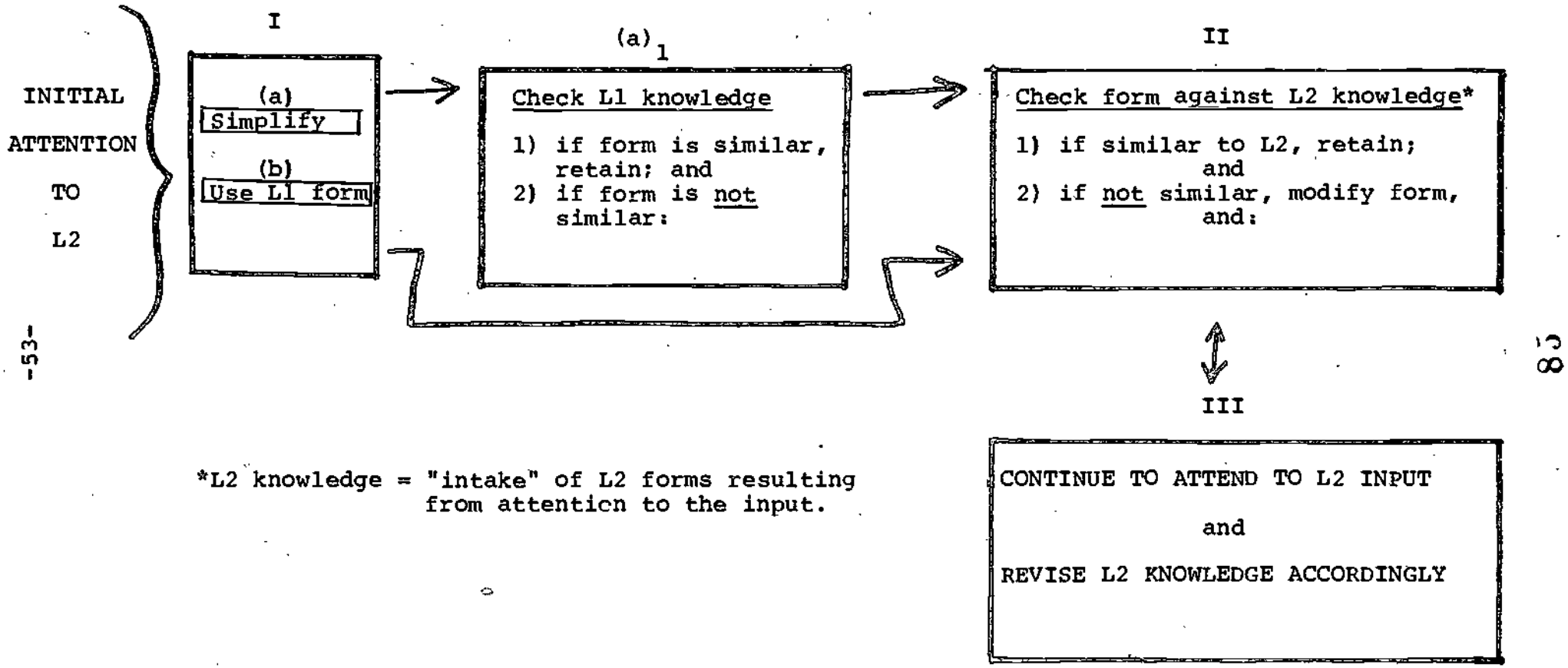
Figure 12 presents a schema which describes the acquisition sequences which were found in our data. The negative, for example, fits into the schema in the following way. The learner's initial attention to L2 data indicates to him that the word, no is used in English. He hears it in such constructions as Are you going to school? No., or No, I'm not.. In the first box I we see that the learner will either simplify the L2 form or use his L1 form. Since no is the uniform negator in Spanish, his first attempt at English negation would be no + V as in, I no go.. Moving on to box II, the learner checks the no V form against his knowledge of L2 at that point in his development. When his awareness of L2 also includes don't V, no V is no longer exactly similar to his conception of L2 and don't V is added to his English negation repertoire. Moving on to box III, he continues to attend to L2 input and revises his English negation system to include aux-neg and analyzed don't. As these new negating devices are acquired they fulfill the functions that no V once served and no V is eventually abandoned.

With wh- questions (excluding wh-word + is (cop) forms) the learner is exposed to inverted (simple) and uninverted (embedded) forms. As indicated in box I, the learner either simplifies or use the L1 form. In this case we see him simplifying by choosing the uninverted form and initially using that exclusively. As a result, in the very beginning his embedded wh- questions are all correct (I know where he is going) and his simple wh- questions are all incorrect (Where he is going?).

Moving on to box $I(a)_1$, he checks the uninverted form with his L1 knowledge and sees that it is not similar to the most frequent Spanish form which has the subject noun phrase and main verb inverted (Cuando viene Juan?). The learner then checks the uninverted wh- question form against his current L2 knowledge. He sees that the uninverted form is sometimes used (embeddings) while other times the inverted form is

Figure 12

A schema of the second language acquisition process



*L2 knowledge = "intake" of L2 forms resulting from attention to the input.

used (simple wh- questions). He then retains the uninverted form but also adopts the inverted form and alternates between the two as indicated in box III, the learner continues to attend to L2 input and revises his L2 knowledge accordingly. He becomes sensitive to the fact that simple wh- questions are the more frequent forms in English and begins to use this form for embedded questions as well, which then appear as incorrect (I know where is he going.). Finally, the learner distinguishes between simple and embedded wh- questions and correctly inverts in the former and not in the latter.

With is (cop) wh- questions, the learner is once again exposed to inverted wh- questions (Where is the book?) and uninverted (I know where the book is?). He checks these forms against his L1 knowledge and finds that the inverted form matches the Spanish equivalent almost exactly. He therefore inverts in both simple and embedded wh- questions. The simple forms emerge as correct while the embedded forms appear as incorrect. Moving to box II, he checks this inverted form against his L2 knowledge and begins to notice some uninverted "wh-word, is (cop)" forms from embedded questions in the input. He then occasionally produces uninverted embedded questions with is (cop). Finally, continuing to attend to L2 input (box III) he learns to distinguish between simple and embedded is (cop) wh- questions, and once again uses the inverted form in the former but not in the latter.

The above model and descriptions attempt to account for second language acquisition. First language acquisition would differ in the following ways: (1) there is no influence from a prior L1; and (2) the simplifications that occur may be similar in form to those that occur in first language acquisition but they may be motivated differently. First language learners may be forced to simplify due to constraints of cognitive development and second language learners may simplify as strategies of communication.

Child vs. adolescent vs. adult second language acquisition. If we consider the linguistic development of all six subjects on three linguistic items (auxiliaries, negatives and interrogatives) examined in this study, and attempt to rank the subjects developmentally in terms of their linguistic progress in each area, an order among subjects does appear.

In determining linguistic progress in the auxiliary, a simple count of the number of different auxiliaries which appeared (80% when required, 3 consecutive samples) over the time the subjects were observed serves as a measure. Table 13 below indicates the number of auxiliaries acquired by each subject.

Table 13

Number of different auxiliaries acquired by each subject

Subjects	Number of Different Auxiliaries
Alberto	4
Cheo	4
Marta	11
Jorge	12
Dolores	17
Juan	18

In determining relative developmental growth in the acquisition of the negative, the measure used is the number of months the subject retained no V as a negating device. Table 14 below shows the number of months each subject retained no V from the time we began collecting our data.

Table 14

Number of months each subject retained no V as a negation device

Subjects	Number of months no V retained
Alberto	9 (entire time)
Cheo	9
Marta	7
Jorge	7
Juan	3
Dolores	0

In establishing the relative linguistic growth for our subjects in the interrogative, the developmental stages achieved in wh- questions were a gauge of their development. Table 15 indicates which interrogative stages the subjects reached.

Table 15

Highest interrogative stage attained by each subject

Subjects	Highest interrogative stage attained
Alberto	Ia
Cheo	Ib
Marta	Ib
Jorge	Ic
Juan	II
Dolores	Ic

These rankings are combined in Table 16.

Table 16

Rank orderings of the subjects' linguistic progress in the Acquisition Of the auxiliary, negative and interrogative

Linguistic Items	Alberto	Cheo	Marta	Jorge	Juan	Dolores
Auxiliary	1	1	2	3	5	4
Negative	1	2	3	3	4	5
Interrogative	1	2	3	4	6	5

Looking at these three orderings it is difficult to make any statements about age differences in either rate or extent of learning. We don't see any age group (children, adolescents or adults) consistently doing better or worse than any other. We can ask who was the "best" learner. In terms of the negative, Dolores would appear to be the "best". However, as was noted earlier, Dolores had had a good deal of English instruction in her native country, had been studying English on her own while in the United States and in general knew more English at the beginning of the study than she let on. If we eliminate her from consideration then Juan was the best learner of the negative because he abandoned the no V strategy earlier than the other subjects.

For the interrogative, in wh- questions Juan also appears to have been the "best" learner because he went through more stages than the other subjects. And for auxiliaries Juan is once again the "best". More auxiliaries appeared in his speech than in that of the other subjects.

Juan's superior performance might be explained by the fact that he was old enough so that his learning was not constrained by language-related cognitive development, and he was young enough so that whatever constraints are concomitant with puberty were not yet in effect. Therefore on the basis of this very limited evidence it would appear that the best age for second language acquisition might be between 7 and 11.

Although our data does not allow us to make statements about whether or not there is a fundamental change in the language learning process at some point in the course of maturation this issue continues to be one of the most important in the field. We have already referred to the work by Rosansky, in this area. More recently Krashen (1973, in press) has been examining the issue. In addition, Schumann (1975) using Alberto, one of our adult subjects, as a case study explores some of the age-related issues.

Conclusion: Directions for the Future

As interest in second language acquisition grows and as more research results appear, it is becoming obvious that in order to make more accurate statements about how a second language is learned, a good deal more must be known about the second language learner as well as about his linguistic product. The following learner variables must be considered.

Affective Variables	Cognitive Processes	Linguistic Product
1. Acculturation	1. Generalization	1. Morphemes
2. Attitude and Motivation	2. Imitation	2. Questions
3. Ego-permeability	3. Inference	3. Negatives
	4. Analogy	4. Auxiliaries
	5. Rote Memory	
etc.	etc.	etc.
I	II	III

In the first box are what have been called affective variables that can be seen as initiators of second language learning and which, to a large degree, regulate the extent of the learning. The second box lists the cognitive operations that the learner performs on the target language input data. The third box represents the linguistic results of these operations in terms of the particular grammatical forms the learner uses when he attempts to speak the target language. We consider these in more detail in the reverse order.

The Linguistic Product

The main emphasis in current research in second language acquisition is on the third box, the linguistic product of the learning process. In various ways, current research examines the learner's utterances and, on the basis of such examination, makes inferences about the sequences of acquisition, the nature of the learner's interlanguages and the nature of the learning process. This product level research seems to fall into three general categories: morpheme studies (Dulay and Burt, 1973, 1974; Madden, Bailey and Krashen, in press; Hakuta, 1974; and Larsen, 1975); auxiliary studies (Evelyn Hatch and her students at U.C.L.A.; and our research at

Harvard); and studies of certain higher order structures (Dumas, Selinker, Swain, 1974).

Most of the morpheme studies have used the Bilingual Syntax Measure (BSM) (see p.23 for details) as an elicitation instrument. These results have shown that the acquisition order is similar for both children and adults as well as for learners speaking such divergent languages as Spanish and Chinese. However, one longitudinal study (Hakuta, 1974) done on spontaneous speech, i.e., without the aid of an elicitation instrument, revealed an acquisition order quite different from that of the cross-sectional studies based on the BSM. Morpheme acquisition will remain of interest because it provides a basis for a comparison of second language acquisition studies with those of first language acquisition. In addition, because of their high frequency of occurrence, morphemes are features of language development that can be quantified and measured, allowing us to make reasonably strong statements about their sequence of development. Therefore, it is essential that future work in this area be done both on spontaneous speech and with alternate instruments which tap the same kinds of knowledge as the BSM. In this way, the results of the work already done can be validated.

As Hakuta (personal communication) has pointed out, however, acquisition order is not all there is to look at in studying morphemes. Simple acquisition order does not reveal the course of acquisition of individual morphemes. In order to discover that, subjects must be studied longitudinally to see how they operate on contexts requiring a particular morpheme. Hakuta suggests that order of acquisition be considered "macro-analysis" and that plotting the course of acquisition of any given morpheme within a subject be considered "micro-analysis". He notes that macro-analysis has predominanted in L1 research, but that people like Bloom have demonstrated the value of micro-analysis by showing that it enables one to look more closely at the process involved in acquisition.

The problems with studies of auxiliary development are just the opposite of those involved in morpheme studies. They have generally been made on spontaneous speech and as has become evident, certain structures involving the auxiliary (such as the interrogative) appear relatively infrequently in spontaneous speech protocols in spite of efforts at elicitation. Therefore, in order that enough data be produced to make more definite statements about auxiliary development, more sophisticated instruments will have to be designed which will elicit utterances involving the auxiliary and thus supplement the spontaneous speech

Most second language learners (especially adolescents and adults) rapidly reach this level and therefore, the MLU appears to be inappropriate for our work. Thus, a major contribution to the field of second language acquisition would be the development of such an external measure of linguistic growth. Hakuta (personal communication) points out that Dulay and Burt's (1974) Syntax Acquisition Index (S.A.I.) which correlates well with morpheme performance, might provide such a measure and should be tried.

A good deal remains to be learned about techniques for gathering data in second language acquisition research. Should we rely on spontaneous speech or can we get better information by using experimental elicitation techniques? Despite interesting work by Swain, Dumas and Naiman (1974), the question is far from settled. In one possible research design two experimenters would see the same subject. During the course of the study, one experimenter would visit the subject every other week and administer carefully designed elicitation batteries. On alternate weeks the second experimenter would visit the subject and gather only spontaneous speech. The samples could then be analyzed separately and compared.

Another problem confronting second language acquisition research at the product level is whether or not the subjects have received or are currently receiving instruction in the second language. The issue is generally ignored, and instructed subjects are treated as though they were "free learners". As ESL programs continue to expand either independently or as components of bilingual programs, it will become more and more difficult to find truly "free" learners, particularly in large enough numbers for cross-sectional studies. Therefore, research techniques must be developed by which we can study subjects who are in second language courses and at the same time sort out what is the product of instruction and what is the product of the subject's independent learning. This will be no easy task.

The question of whether a learner is "free" or instructed brings up the important issue of the nature of the learner's input data and its influence on acquisition order. Hatch (1974) pointed out that when input data was available in the studies which she examined, the frequency with which the learner encountered a particular structure often influenced its rate of acquisition. She also noted that the effects of frequency are often modified by the semantic content of the particular form: a form appearing frequently in the input data will be acquired late if its semantic importance is low.

samples. In addition, other higher order structures will have to be examined. We need information on subordination, coordination, passives, embeddings, etc. This might require that we look at learners who already know a good deal of the second language when the study begins (as was the case of our subject Dolores).

Studies of the acquisition of the phonology of a second language are sorely needed. Tarone (1975) has done some preliminary work on interlingual syllable structure and Dickerson (1975) has studied sociolinguistic variation of certain phonological markers. Segalowitz (1975) at McGill University has completed a thesis on the acquisition of English phonology by speakers of French. This work will certainly suggest both elicitation and analysis techniques on which future studies of phonological development can be based. Like phonology, vocabulary acquisition is a relatively unexplored area. Some preliminary efforts have been made by Mary Gillis at McGill, whose primary interest was in the area of syntax, but who used the Peabody Picture Vocabulary Test as an estimate of the vocabulary size of her subjects. It is essential that this work be continued, particularly because it will undoubtedly provide very relevant input to second language teaching. In general, little is known about the development of semantic mapping in second language acquisition.

There are also general issues about second language acquisition and research methodology. The issue of interference or transfer from the learner's native language has in recent years been de-emphasized in discussions of second language acquisition. Dulay and Burt (1973) found that only four percent of the errors in their morpheme study based on the BSM could be attributed to interference. But nevertheless, interference-like errors continue to appear in the protocols of longitudinal studies of spontaneous speech. It may be that morphemes do not lend themselves to interference and that the study of higher order structures will yield a different picture.

In any case, serious search for and quantification of interference errors is required before we can make accurate statements about second language acquisition.

The field of second language acquisition also lacks a global index of linguistic development. Such a measure is essential for comparisons across subjects. Brown and associates at Harvard refined the mean length of utterance in morphemes (MLU) as a technique for comparing language development in first language learners. However, this measure is not very reliable when utterances exceed five morphemes.

Hakuta (1975) found that in utterances involving the catentative "gonna" such as,

I am gonna play.
He is gonna go.
We are gonna make another one,

the auxiliary most frequently omitted was are, producing such utterances as,

We gonna punch you.
They gonna kill the fish.

Hakuta noted that the interrogative form of the aux-gonna construction moves the auxiliary out of its normal environment and produces the construction,

Aux NP gonna VP
Are you gonna type fast?

He speculated that questions in which the reduced auxiliary may not be as perceptually salient, would be asked more frequently about We ans You than about I. If the inverted auxiliary is not perceptually salient to the learner then he is hearing the question,

You gonna type fast?

Thus, it could be the case that the learner's input consists of sentences in which the auxiliary is, in effect, absent.

In order to test this hypothesis Hakuta looked at the interactors' speech in ten of his subjects' protocols and in two transcripts of the deVilliers' (ongoing) study of the speech of 40 first language learners. He found that only 30% of the interactors' gonna constructions with you, we, and they were in the declarative form (as opposed to 88% for the subject I). The rest were interrogatives where the auxiliary, are, did not appear between the subject and gonna. In addition, he found that in terms of absolute frequency the are gonna forms were the most frequent aux + gonna constructions. It is only in relative frequency that gonna forms without are predominate in the input data. By relative frequency is meant the ratio of are gonna interrogatives to total are gonna constructions. This result suggests that the learner may be sensitive to relative frequencies in the input data such that forms with a low relative frequency may be learned late.

Optional rules present an interesting question for the influence of input frequencies. By the end of the study our

subjects were generally inverting in yes/no questions between 40% and 60% of the time. Inversion in English yes/no questions is optional, so one would not expect second language learners to invert 100% of the time. It would be interesting to know how often yes/no inversion takes place in normal spoken English (which we will assume is our learners' input), and follow the course of acquisition toward that probabalistic goal.

Finally, uniform techniques for analysing second language acquisition data must be developed so that results from various studies can be compared. Unless morphemes, negatives, interrogatives, auxiliaries, etc., are pulled from the protocols, scored and displayed in similar ways, comparisons of results across studies will be difficult if not impossible to make. It would appear that at the very minimum every study of second language acquisition should attempt to provide distributional evidence for the forms which the researcher claims to find in his subjects' speech. For example, if it were claimed that the following form were used,

He don't bought a car,

we would want to know how many subjects used this form; whether it was found in spontaneous speech, elicited speech or in writing; how often it was found; whether it co-existed with the correct form (He didn't buy a car.) or with other incorrect forms (He don't buy a car last year.) and which form predominated at which times during the course of the study; and what forms preceded the one under consideration. In other words, did He don't bought a car represent a development of an earlier form such as He no bought a car? Each statement should be quantified so that it is supported with a numerical description of the frequency with which it appeared in relation to similar or competing forms; distributional evidence implies numerical quantification of statements about the appearance of interlingual constructions. Where there is so little data on a particular structure that numerical quantification would be either inappropriate or misleading, an exhaustive list of the utterances containing that structure would constitute distributional evidence and should be given.

The Cognitive Processes

The procedure generally used to hypothesize about cognitive processes involved in second language acquisition is to examine the linguistic product of the learning process and then to intuit backwards about what cognitive operations may have produced the particular forms or sequences which appear. The invariant sequence and small amount of

interference that Dulay and Burt (1973, 1974) have found in their study of the acquisition of English morphemes led to the creative construction hypothesis. Hakuta (1974) observed prefabricated patterns (i.e., memorized chunks of speech) in his subject's speech and is now exploring the possibility that one cognitive strategy that a learner might employ would be to incorporate unanalyzed chunks of speech, use them in linguistically and socially appropriate situations, and then gradually learn the grammar involved in the various parts of the memorized chunks. Hatch (1974) has examined the linguistic product in a relatively large number of learners and on the basis of what she found has explored the possibility of second language acquisition universals. In our study, we hypothesized (Figure 12) such cognitive processes as simplifying, comparing and generalizing.

All these speculations about cognitive processes and learning strategies were arrived at on the basis of an analysis of the linguistic product -- the actual utterances the subjects produced. While this procedure is absolutely necessary and should continue, it might profitably be supplemented by more direct assessment of the learner's cognitive operations. Work by Alison d'Anglejan (1975) at McGill University is one such attempt.

Separate from analyses of the linguistic product, there have been recent theoretical claims concerning cognitive processes and how they relate to second language learning potential after adolescence. Rosansky (1975) based on the biological definition of the critical period, suggests that there may well be a critical period (cognitively, not neurologically) for the acquisition of language, ending with the gradual acquisition of Piagetian Formal Operations, after which the acquisition of language becomes more difficult and may not occur in the same way. Krashen (in press) also suggests that the acquisition of Formal Operations may signal the end of the critical period for language acquisition.

Much additional work must be done before these claims can even be researched, much less verified. Future work in this area must focus on developing a methodology to test such claims empirically.

Initiating Factors

Research done on the affective factors, box I, though quite extensive, has generally been done independently of an examination of the linguistic product or the cognitive processes involved in second language learning. These affective factors include acculturation, attitude, motivation and ego-permeability. Within acculturation (Larsen and

Smalley, 1972; Nida, 1957-1958) are such factors as culture shock and culture stress; these can be defined as anxiety resulting from the disorientation encountered upon entering a new culture. A person entering a new culture brings with him a repertoire of problem-solving and coping mechanisms. But these mechanisms often do not fit. When they are used, they do not get the accustomed results. This condition can produce fear, anxiety and depression. While the extreme symptoms of culture shock may pass relatively quickly, as ways of coping with the new environment are learned, more subtle problems may persist and produce stress that can last for months or even years. Depending on how such issues are resolved, the learner may or may not acquire the target language.

Attitude and motivational factors are involved in Gardner and Lambert's (1972) distinction between instrumental and integrative orientations. An integratively oriented learner is interested in acquiring the second language in order to meet and communicate with valued members of the target language community. A learner with an instrumental orientation is one who has little interest in the people who speak the target language, but nevertheless wants to learn the language for more self-oriented and utilitarian reasons, such as getting ahead in one's occupation or gaining recognition from one's own membership group. The learner's motivational orientation appears to be a powerful determinant of the extent to which he becomes bilingual.

A third possible initiating factor is the concept of ego-permeability. Alexander Guiora (1972) has proposed a psychological construct, "language ego", which he sees as similar to the Freudian notion of body ego. Development of body ego is a maturational process in which the child gradually acquires a body image, becomes aware of his physical boundaries, and is thus able to distinguish himself from the object world around him. Guiora sees language ego as the development of language boundaries. In the course of general ego development the lexis, syntax, morphology, and phonology of the individual's language acquire physical outlines and firm boundaries. In the early formative stages of ego development the language boundaries fluctuate, but once ego development is completed, the permeability of ego boundaries is sharply restricted.

Guiora considers lowering of inhibition as a way of inducing ego permeability. In an experiment conducted at the University of Michigan (Guiora et al., 1972) he found that the consumption of small amounts of alcohol improved the subject's pronunciation of a second language. He views the

lowering of inhibitions via alcohol as a means of "operationally inducing a state of greater permeability of ego boundaries or the ability to partially and temporarily give up one's separateness of identity" (p. 427). Hence another factor related to whether or not a learner becomes a bilingual is the relative rigidity of his ego boundaries.

It is essential that future research in second language acquisition take these affective factors into account and attempt to relate them to both cognitive processes and the linguistic product. This would involve a systematic assessment of the learner's attitude and motivational orientations, ego-permeability and degree of acculturation. For the first two factors (attitude and motivation) there are ample prototypes in the literature on which assessment instruments for second language acquisition research could be based. The measurement of ego-permeability and acculturation may require the construction of new instruments.

In sum, to get a more global look at the learner we need to know more about the acquisition of morphology, syntax, phonology and vocabulary. In addition, numerous issues concerning the cognitive processes underlying second language learning will have to be explored both indirectly by examining the linguistic product of the learning process and directly by assessing the learners on various measures of cognitive performance and cognitive development. Finally, measures of acculturation, attitude, motivation and ego-permeability must be related to cognitive processes and the linguistic product.

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Appendices

Appendix A

Description of Project Used in Subject Search

(originally typed on Harvard University letterhead)

A research group under the direction of Dr. Courtney Cazden at Harvard Graduate School of Education is looking for subjects to participate in a ten-month longitudinal study of second language acquisition. The project is supported by the National Institute of Education. The purpose of the study is to determine the natural sequence of language acquisition and ultimately to use this information for development of English curricula appropriate to Spanish speakers. Native Spanish-speaking subjects at the following ages are needed:

Adults, 18 years or over

Adolescents, 11-14 years

Children, 4-6 years

Subjects who have not previously studied English and who are not currently studying English (in formal classes) are desired. However, people with a minimum of instruction will be considered. Subjects will be interviewed twice a month for the purpose of collecting speech samples. A place will be chosen for interviews that will be both convenient and comfortable for the subjects. One of the interviewers will be a native Spanish speaker. All subjects will be paid for their services.

If you know of any potential subjects please contact:

John Schumann	Office	495-3521 or 3524
	Home	267-2499
Ellen Rosansky	Office	495-3521 or 3524
	Home	876-9885
Herlinda Cancino	Office	495-3521 or 3524
	Home	354-7243

Appendix A1

Un grupo de investigadores de la Escuela de Educación de la Universidad de Harvard está estudiando el proces por el cual personas de diferentes edades aprenden el idioma ingles como su segunda lengua. Al respecto nos gustaría hablar con adultos, adolescentes y niños de 4-6 años que quisieran participar como parte de este interesante estudio sobre El Aprendizaje de Inglés. Este estudio no es para enseñar inglés sino para observar la adquisición del idioma. Buscamos adultos que sean recien llegados a este país y que no esten tomando clases de inglés. Las personas que tengan interés en este estudio pueden communicarse con la Señorita Cancino al número de teléfono 495-3524 de lunes a viernes, 11 de la mañana hasta las 4 de la tarde.

(A copy of this ad was placed with various Spanish-speaking agencies, in a local weekly Spanish newspaper, El Mundo and on several Spanish-speaking radio programs.)

Appendix B1

Individuals and Organizations Contacted by Telephone and Letter

1. Dr. Robert Hemenez
   Family Counseling Center
   Boston, Ma.

2. Mrs. I. Mallon, Director
   Multi-Language Center
   Framingham, Ma.

3. Marie Geddes
   Supervisor, Bilingual Dept.
   Boston Public Schools
   Boston, Ma.

4. Carmen Necheles
   Supervisor, Bilingual Dept.
   Boston Public Schools
   Boston, Ma.

5. John Corcoran, Director
   Bilingual Program
   Worcester, Ma.

6. June Sherman, Director
   Auxiliary Operations
   Children's Hospital
   Boston, Ma.

7. Mrs. Peterson
   Personnel Dept.
   Children's Hospital
   Boston, Ma.

8. Armando Martinez, Director
   Puente Foundation
   Boston, Ma.

9. Anna Maria Rodrigues,
   Supervisor, Bilingual Dept.
   Boston Public Schools
   Boston, Ma.

10. Ms. Sherry Looker
    Consultation Education
    Boston University Medical School
    Boston, Ma.

11. Sr. Angela Garcia,
    Community Worker
    30 Warren Street
    Brighton, Ma.

12. Mr. Rafael Montalvo,
    Director
    Officena Hispana de
    Jamaica Plain
    300 So. Huntington Ave.
    Boston, Ma.

13. Boston Council for
    International Visitors
    Boston, Ma.

14. Ms. Hither Reynolds
    Case Worker,
    Children's Hospital
    Boston, Ma.

15. Alex Gimmon, Coordinator
    for Spanish Speaking
    Research Institute for
    Educational Problems
    Cambridge, Ma.

16. Mr. Ed Dovis
    International Institute
    287 Commonwealth Ave.
    Boston, Ma.

17. Ildeberto L. Pereiera
    Supervisor,
    Dept. of Bilingual Ed.
    State Dept. of Education
    182 Tremont St.
    Boston, Ma.

18. Juan Rodriguez
    Supervisor,
    Dept. of Bilingual Ed.
    State Dept. of Education
    182 Tremont St.
    Boston, Ma.

Appendix B1 (continued)

19. Mrs. Natalie O'Conner,
Director
Spanish Council
905 Main St.
Cambridge, Ma.

20. Mrs. Susan Hevera,
Director
ESL Program for Harvard Employees
Memorial Hall
Cambridge, Ma.

21. Mrs. Nancy Backman
ESL Teacher
Evening Program
Boston Public Schools
Boston, Ma.

22. Mrs. Ernestine Young
Spanish Community Center
Framingham, Ma.

23. Mrs. Sandra Allen
Education and Training
Coordinator
Personnel Dept.
Mass. General Hospital
Boston, Ma.

Appendix B2

Schools, Factories, Agencies Contacted By Personal Visits

1. Mrs. Conchita Rodriguez
PRESS Program
65 W. Brookline St.
Boston, Ma.

2. Mr. Carlos Dios
Youth Activities Commission
Little City Hall
Shawmut Ave.
Boston, Ma.

3. Natti Cotto
Emergency Tenants Council
85 W. Newton St.
Boston, Ma..

4. Mrs. Norma Stanton
Concilio de la Comunidad
12 Jones St.
Boston, Ma.

5. Mr. Sebastion Juredo
Puente Foundation
Mass. Avenue
Boston, Ma.

6. Mr. Frank Ratta,
Director
Personnel
Deran Confectionary
Cambridge St.
Cambridge, Ma.

7. Mr. Jerome Danin
Viking Uniform Company
Cambridge, Ma.

8. Mr. Harriet Rady
Standard-Thompson Corp.
152 Grove St.
Waltham, Ma.

9. Mr. Boylston Beal,
Director
Personnel
Raytheon
Waltham, Ma.

10. Teresa Berry,
Director
Rafael Hernandes School
Dorchester, Ma.

11. Francine Schumann
Cambridge Public Schools
Bilingual Program
Cambridge, Ma.

Appendix B3

Contacts in the Academic Community

Ann Dow, Director
ESL Program for Harvard Students
Harvard University

Dr. Robert Saitz, Director
ESL Program for B.U. Students
Boston University

Dr. Francine Stieglitz, Director
Teacher Corps Program
Boston University

Lucia David
Institute for Learning and Teaching
University of Massachusetts, Boston

Mrs. Christine Connell
Peabody Terrace Nursery School
900 Memorial Drive
Cambridge, Massachusetts

Dr. Martinez-Bernal
Dept. of Romance Languages
Tufts University
Medford, Massachusetts

Mrs. Vivian Katz
Director, Host Family Program
Harvard University

Appendix C1

Subject Consent Form

(originally typed on Harvard University letterhead)

31 Octobre, 1973

Un grupo de investigadores de la Escuela de Educación de la Universidad de Harvard está estudiando el proceso por el cual personas de diferentes edades aprenden el idioma inglés como su segunda lengua. Al respecto, nos gustaría hablra con usted dos veces por mes durante 10 meses. Estas conversaciones seran brabadas, usualmente con grabadoras audio y de vez en cuando con grabadoras audiovisuales. Considerando el valioso tiempo que nos esta brindando, remuneraremos estas visitas cada mes.

Le aseguramos que no revelaremos su identidad en ningún reporte de esta investigación, sino que usaremos un seudónimo. El material audiovisual solo se utilizará para propositos de nuestra investigación. Para su seguridad, toda la información será tratada con absoluta confidencialidad. Le agradecemos mucho su participación, y le pedimos que firme esta forma de consentimiento.

Courtney B. Cazden
Professora de Educacion

Acepto la participación (de) _____
en esta investigación sobre aprendizaje de idiomas como segunda lengua, en los términos señalados anteriormente.

_____

Appendix C2

English Translation of Subject Consent Form

October 31, 1973

A small research group at the Harvard Graduate School of Education is hoping to learn more about how people of different ages learn to speak English as a second language. We would like to talk with you about twice a month for about ten months. We will tape record these conversations, usually with audio tape recorders, and sometimes with video tape-recorders. Because we are asking for your time, we will pay you each month for these visits.

We assure you that in any written reports of this research we will never use your real name, only a pseudonym. We will videotape material only for purposes of the research. Your privacy will be respected at all times.

We are grateful for your participation and ask that you sign the consent form below.

Courtney B. Cazden
Professor of Education

I consent to participate in the research project on second language acquisition on the above terms. I consent (for) _____ to participate in the research project on second language acquisition on the above terms.

_____

Appendix D

Job Description for Transcribers

A research group under the direction of Dr. Courtney Cazden at Harvard Graduate School of Education is undertaking a ten-month longitudinal study of second language acquisition by native speakers of Spanish.

The purpose of the study is to determine the natural sequence of language acquisition and ultimately to use this information for the development of English curricula more effective and more appropriate for Spanish speakers. Native Spanish speaking subjects from the following age groups are being studied:

Adults, 18 years or over

Adolescents, 11-14 years

Children, 4-6 years

Spanish-English bilinguals are need to work as transcribers. S/he must be able to speak, read and write Spanish and English fluently. Work load will average 10 hours per week. Duties involve attending, taping and transcribing interviews with subjects. Therefore, a person with a flexible schedule is required. Interested persons please contact Dr. Courtney Cazden, or Herlinda Cancino at 495-3524.

Appendix E

Summary of Scores for Bilingual Syntax Measure Protocols

	Dolores	Alberto	Juan	Jorge
Response Value	211	74	92	54
Developed Value	236	114	124	87
Proficiency Score	89	63	74	62
Proficiency Level	5	3	4	3
Functor Ratios:				
1. Present Progressive (V-ing)	3.5/4	2/5	1/5	---
2. Regular plural (N-s)	4/5	1/1	2/2	1/1
3. Irregular past	2/2	0/2	1/1	---
4. Possessive (N-s)	2/3	0/3	1/3	---
5. Article (a, the)	17/17	2/4	6/9	4/6
6. 3rd present indicative (V-s)	3/3	0/2	0/1	---
7. Singular copula {NP+be+(NP / Adj)}	7/7	5/5	2/2	6/6
8. Singular aux ((NP)+be+V)	2.5/3	0/1	2/5	---
9. Regular past (V-ed)	2/2	---	---	---
10. Possessive pronoun (his,hers)	---	---	---	1/1
11.*Pronoun case	18/18	7/7	11/11	3/3
12.*Pronoun gender	22/22	4/4	11/12	2/2
13.*Pronoun number	23/23	7/7	11/12	3/3
14. Long plurals (N-es)	5/7	---	---	---
15. Irregular plural	---	---	0/1	0/2
16. Plural copula or aux	4/4	---	---	---
17. Conditional modal (would)	1.5/2	---	---	---
18. Aux (would+have+V-en)	0/2	---	---	---
19. Past participle (V-en)	1/2	---	---	---

*Functors 11, 12 and 13 refer mostly to he. As this may be misleading, one could use an equal number of occasions for all pronouns in the analysis.