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City University of New York PH.D. 1982

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ASPECTS OF CODE-SWITCHING IN BILINGUAL CHILDREN

by

OLGA ROMERO

A dissertation submitted to the Graduate Faculty in Speech and Hearing Sciences in partial fulfillment for the requirements for the degree of Doctor of Philosophy, The City University of New York.

1982

This manuscript has been read and accepted for the Graduate Faculty in Speech and Hearing Sciences in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

4 May 1982
date

Chairman of Examining Committee

May 4, 1982
date

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Supervisory Committee

The City University of New York

This dissertation is dedicated to my sister Yolanda, without whom it would have never been a reality.

ABSTRACT

Aspects of Code-Switching
in Bilingual Children

by

Olga Romero

Adviser: Professor Arthur Bronstein

One of the characteristics of the linguistic behavior of language-minority children is the use of what has been commonly termed "bilingual code-switching"(the alternate use of two languages between or within sentences among bilingual speakers).

The fact that bilingual code-switching has been singled out both as the source and the end result of "linguistic confusion" or "semilingualism" among bilingual children, has made it necessary to re-evaluate the role of code-switching in the linguistic development and the educational environment of children who have been exposed since birth to a language other than English.

The purpose of the present study was to ascertain the effects of code-switching in sentence imitation and to discover identifiable developmental trends in the code-switching patterns of bilingual children.

Sixty Spanish/English bilingual children between the ages

of five and ten participated in the study. A group of twenty-four (24) sentences containing code-switches in them was presented to each child for imitation. The sentences represented four syntactical types: (1) Center Embedded Relative Clause, (2)Right Branching Relative Clause, (3) Adverbial Clause Preceding the Main Clause, and (4) Adverbial Clause Following the Main Clause. Two types of code-switches were used: (1) code-switchings encompassing Major Constituents (SVO) within the sentence (Constituent Switches), and code-switches encompassing only the Determiner + Noun combination within the sentence (Lexical Switches). A three-second delay was allowed between presentation of the stimulus sentence and imitation by the child.

The results showed some developmental trends in the acquisition of code-switching skills:

1. Younger children tended to increase the number of Spanish elements in their renditions of the stimulus sentences significantly more often than older children.
2. Code-switches involving major constituents or occurring at major constituent boundaries within the sentence were imitated better by the older children than those which broke up a major constituent. Both groups of children tended to reject Lexical Switches of the type used in the study.
3. Code-switches in the direction Spanish $\longrightarrow$ English were

imitated better by the older children than those occurring in the opposite direction. No direction preference was observed among the younger children.

Four factors which seem to affect the acceptance or rejection by the children of a specific code-switch were isolated:

1. Place of the code-switch in the sentence.
2. Direction of the code-switch.
3. Type of code-switch.
4. Size of the code-switched portion of the sentence.

In addition, it was found that sentence type had also an effect on the children's ability to imitate the sentences.

Observations were made regarding the translation skills of the children and the fact that the presence of code-switching within the sentence did not impair the ability of the children to comprehend the sentences. A "Strong Verb Hypothesis" (the language of the verb determines the language of the elements adjacent to it) was proposed, as well as a "Neutral Determiner Rule" which restricts code-switching within the Determiner + Noun unit, in the direction of English $\longrightarrow$ Spanish. Implications for assessment of language dominance in bilingual children were briefly discussed.

ACKNOWLEDGEMENTS

I wish to express my profound gratitude to Professor Arthur Bronstein whose guidance, concern and kindness, were a motivating force in the completion of this study. His words of encouragement and his knowledge of human nature helped me more than he will ever know.

I also wish to thank the two members of my Dissertation Committee, Professors Margaret Lahey and Herbert W. Seliger, who so generously gave of their time and expertise throughout all the phases of the work, and to Professor Harry Levitt, who helped me with the design and statistics of the study.

My special thanks to Professor Irving Hochberg for his continued help and concern through my years in the program, and to Dean Norma Rees, who was instrumental in my choice of topic for this dissertation.

My thanks are also extended to Mrs. Lyn Reid, the Administrative Assistant of the program, who always had a word of optimism and inspiration.

Finally, I wish to thank my family: my parents, who inculcated in us the love for knowledge and learning; my sister Maria Teresa for her emotional support, my brother Fernando for his indefatigable typing skills, and my husband Ronald I. Rothenberg for his timely ideas, suggestions and constant encouragement.

Muchas gracias.

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CHAPTER I

BACKGROUND INFORMATION

1.1 INTRODUCTION

In spite of the fact that bilingualism has been studied since the beginning of the century, the assessment of the language skills of bilingual children is still a wide open field of research.

The task of educating children of minority-language backgrounds has prompted a great deal of interest in this area. Current research is aimed at finding the best way of dealing with the problems of children who come to the clinics, nursery schools and elementary schools, having been exposed from birth to a language other than English.

One approach that has been used (especially when a language problem is suspected) is to test each of the child's languages separately. Although this approach is theoretically sound and useful in a decision concerning language dominance and/or language proficiency, it has a serious shortcoming: it does not take into account the fact that many bilingual children have difficulty in keeping their two languages separate from one another. In other words, many bilingual children (consciously or subconsciously), mix their two languages in ordinary discourse --- they code-switch.

One of the premises of the present study is that the tendency of these children to code-switch cannot (and should not) be ignored in a language evaluation. As a matter of fact an adequate evaluation of a bilingual child's linguistic

competence should include, not only an observation of each one of his two languages individually, but also a thorough study of the very points where his two systems overlap, i.e., the points at which he code-switches.

It is possible (as Walters 1976, suggests) that a bilingual child's code-switched utterances may be syntactically more complex than utterances in either of his two languages separately.

The phenomenon of code-swithing among children has puzzled teachers and clinicians for a long time. The questions that are often raised by these professionals pertain to the importance of code-switching in the educational environment of the bilingual child. Many disagree as to whether code-switching should be actively discouraged in the classroom and in clinical settings. Their apprehensions are based on the belief that the use of code-switching may promote what some researchers (Toukoumaa & Skutnabb-Kangas, 1977 and Cummins, 1977) call semi-lingualism, a condition in which neither one of the child's languages develops appropriately for his age.

Others argue in favor of code-switching on the following basis: since it is part of the everyday linguistic interaction of adult bilinguals, it should be accepted as part of the bilingual child's linguistic baggage. Some even believe that code-switching should be encouraged in

order to protect the child's linguistic pride and to promote group identification.

On a more theoretical level there are questions concerning the existence of syntactical constraints of code-switching in bilingual children and how these constraints compare with those of bilingual adults. At the base of this query is the notion that code-switching is a skill that develops and becomes prefected as the child grows.

The present study was motivated by the questions expressed above. Some of them have been partially answered by other recent studies while others await further research.

It is apparent that the answers may be found by approaching the problem systematically. First, it is necessary to determine how and why normal bilingual children make use of code-switching in their discourse. These findings will then serve as guidelines in the observation of bilingual children with language difficulties.

The purpose of this study is to answer some of the preliminary questions regarding code-switching performance in normal bilingual children. More specifically, it attempts to ascertain the effects of code-switching in sentence imitation and to help discover some of the rules that make certain code-switches ungrammatical or unacceptable to bilingual speakers. Finally, it hopes to establish whether there are identifiable developmental trends in the use of

code-switching in bilingual children of two different age groups. It is expected that the findings of this study will shed some light on what may constitute normal and deviant language performance in bilingual children.

1.2 CODE-SWITCHING DEFINED AND EXPLAINED

A distinction must be made at the outset between monolingual, bidialectal and bilingual code-switching.

Researchers such as Blom and Gumperz (1972) and Ervin-Tripp (1964) among others, have observed that in the course of an ordinary conversation, the speech events that make up the body of the linguistic exchange will be determined by (a) the participants, (b) the setting, and (c) the topic of the exchange.

The manner in which the speech events take place when the above factors have been taken into account generally follows an established social convention. Such a convention is what the term CODE implies. A change in participants, setting or topic will call for a change in the CODE.

Every normal speaker of the language has at his disposal a number of codes that he is able to use at will: The codes of everyday conversation and pleasantries, religious ceremonies and other formal occasions, and the person's professional or technical jargon relating to his work are all part of his repertoire and he has ready access to them whenever the circumstances call for any of them to be used. In the words of Hymes (1967):

> "No normal person, and no normal community is limited in repertoire to a single variety or code, to an unchanging monotony which would preclude the possibility of indicating

> respect, mock seriousness, humor, role distance, etc..... by switching from one variety to another." (p. 8)

When two or more linguistic codes are used by a speaker either on separate occasions or within the course of a single conversation, either between or within sentences, such is an instance of what is commonly termed CODE-SWITCHING.

The churchgoer who engages in a prayer such as "Our Father who art in heaven...etc...," and at the end of the service remarks to the minister: "That sure was a fine sermon you preached us today, Reverend," has made a switch between a ritualistic code and an informal code.

The mother who at the end of a meal turns to her husband and says: "Are you finished?" and then to the baby: "Allgone ice cream^" is switching between the formal adult code and a form of baby talk.

Speakers who control more than one dialect within a lang ıge and who have to function among speakers with similar skills are capable of switching not only from one code to another within their own dialect, but also across dialect boundaries.

A black community worker who, when talking to a group of local teen-agers uses both standard English and Black English, is a classic example of cross-dialectal code-switching: "You can tell me how your mother worked twenty hours a day and I can sit here and cry. I mean I can cry

and I can feel for you. But as long as I don't get up and make certain that I and my children don't go through the same I ain't did nothin' for you brother. That's what I am talking about." Gumperz, 1970 (p.8)

1.3 BILINGUAL CODE-SWITCHING DEFINED AND EXPLAINED

When a speaker has access to two or more languages and in his conversation makes use of the two languages, he is engaging in what is ordinarily called BILINGUAL CODE-SWITCHING.

Bilingual code-switching differs from the other types of code-switching already mentioned in that it makes use of two different linguistic systems. Bilingual code-switching borrows alternatively from two different linguistic systems while it strives to maintain the degree of grammatical correctness necessary to make the message intelligible: "Se me hace que I have to respect her porque es mayor." (I think that I have to respect her because she is older) Gumperz and Hernandez, 1972 (p. 87)

A second characteristic of bilingual code-switching is that in making use of two languages it also draws from the stylistic resources of each of the two languages individually so that there may be cases of intra-language style switches within the larger confine of a bilingual code-switch.

Bilingual code-switching has been defined in many ways. In 1917 Espinoza referred to it as "speech mixture." (p. 103) Weinreich (1953) defined at as "...insufficient adherence to one language in a constant speech situation." (p. 145) Matluck and Mace (1973) called it "...what happens when bilinguals seem to randomly alternate languages without

regard for the appropriate situation." (p. 370)
Rayfield's definition (1970): "...the pattern of alternation between two languages when used in conversation between bilinguals " (p. 54) seems to be as close as we can get to a consensus as far as a definition of bilingual code-switching is concerned.

The source of the disagreement stems from the fact that in the alternation of two languages it is sometimes difficult to weed out instances of "borrowing" or "interference" from "true code-switching."

Borrowing or Interference Vs. True Code-Switching.

Haugen (1950) defines "borrowing" as "...the attempted reproduction in one language of patterns previously found in another." (p. 211) He views borrowing more as a continuum than as a static condition in a speaker's language.

At one extreme is the most common type of borrowing which occurs at the phonological level and translates into what native speakers perceive as a foreign accent: "When a native sequence is used to imitate a foreign one." (p. 211)

For example, a native speaker of English may tend to substitute the English /r/ for the Spanish /r̄/* in a word

*/r̄/ trilled r.

such as CARRO /kaR̃o/ (car), simply because the /R̃/ sound does not exist in English.

Moving along in the continuum we get to the morphemic level, where whole morphemes (or parts of a morpheme) are actually transposed into the speaker's native language. In the Portuguese-American word ALVACHUS (overshoes), for example, the native Portuguese prefix AL_____ has been substituted for the English OVER_____.

Further down the continuum Haugen places "loanshifts." These are words which, because of a structural similarity and often even a semantic similarity with words in the native language are sometimes substituted for the semantically appropriate word in the native language. Haugen offers the example of the Portuguese word GROSSERIA (a rude remark) which bears a striking resemblance to the English word GROCERY. In Portuguese-American usage the word GROSSERIA has acquired two homonymous meanings: The original Portuguese meaning and the English meaning.

This kind of phenomenon may also occur at the syntactic level. A good example is the Spanish-American expression RESPONDER PARA ATRAS which is actually a literal translation of TO TALK BACK but which is not an acceptable grammatical form in Spanish.

Borrowing at the phonological, morphemic, semantic or syntactic levels is often referred to as "interference" between two languages.

There are cases of borrowing, however, which are not considered to be caused by interference. Foreign words that through extended use or lack of a satisfactory translation equivalent become part of the lexicon of speakers of a particular language are considered to be instances of borrowing but not of interference. A good example would be the Spanish word MACHO which has become commonplace in the English lexicon and is used and understood by most speakers of English.

As far as code-switching is concerned, there is a broad spectrum of opinion as to what can and cannot be considered to be "true bilingual code-switching."

To Weinreich (1953) the ideal bilingual speaker is one who "...switches from one language to another according to the appropriate changes in the speech situation (interlocutors, topics,etc...) but not in an unchanged situation, and certainly not whithin a single sentence." (p. 13)

According to Thelander(1976), most instances of code-switching occur between clauses. He suggests that "If there is a switch before the clause is finished, the speaker can be expected to discard what has already been said and to replace and complete the same thought in whatever code he is switching to." (p. 111) Available data suggest, however, that there are also many cases in which one or several code-switches occur within a single clause.

Types of Bilingual Code-Switching

In order to account for the distinctions among bilingual code-switches, authors such as Gingras (1974), Thelander (1976) and McLure and Wentz (1975) divide bilingual code-switching into two types: (1) Code-mixing, which refers to the type of switch that occurs within a sentence constituent; for instance EL MOUSE SE COMIO TODO EL CHEESE (the mouse ate all the cheese); and (2) code-changing which applies to:

a. Switches between sentence boundaries or sentence constituents: SHE GOES SHOPPING EVERYDAY, PERO NUNCA ANTES DE LAS CINCO. (She goes shopping everyday, but never before five).

b. Switches that occur in the course of an ordinary conversation between turns of speaking:

Brother's wife: YOU HAVE IT STRAIGHT NOW.
Susie: WELL, TERESA BUT SHE DID IT KIND OF BAD...
Brother: ...POCO CHUECO... (a little crooked).
Valdes-Fallis: 1976, (p. 77-78)

And finally,

c. Switches that take place when the language has to change to accomodate a specific situation as in the case of a group of bilinguals who, when joined by a monolingual, confine themselves to the language of the monolingual as a gesture of deference and politeness.

Speaking about Spanish/English code-switching, Gumperz

and Hernández (1972) point out that not all instances of Spanish words in the text are necessarily examples of code-switching: "Expressions like 'ándale pues' are normally part of the bilingual's style of English...in the same way that Yiddish expressions like 'oi gewalt'...characterize the in-group English style of some American Jews." (p. 90) Apart from exclamations, Gumperz and Hernandez consider sentence connectors and interjections as examples, not of code-switching but of ethnic identity marking.

Lance (1975), however, contends that the code-switching category should include not only phrases and clauses but any single word or term inserted into a sentence. His classification is further refined by including quasi-technical terms such as "...uno podía comer hamburgers" (one could eat hamburgers), brand names, as in "....a veces la Hines " (sometimes Hines), place names, for instance "...en la Bryan (on Bryan street), tag questions "It's about the same, verdad? (It's about the same, isn't it?), interjections such as in "...I'm so tired on Fridays que, jij" (I'm so tired on Fridays that, forget it) and finally, numbers as in the case of "...las dos docenas for thirty." (two dozen for thirty). (p. 139-143)

In spite of the lack of agreement as to what does and does not constitute bilingual code-switching , students of bilingulism, by adhering to one or several of the existing definitions, have managed to collect a substantial amount of

information on the subject.

For the purposes of this study, bilingual code-switching will be defined as the alternate use of two languages either within or between major sentence constituents. More specifically, a code-switch taking place within a major sentence constituent will be called a LEXICAL SWITCH, while a code-switch occurring between major sentence constituents* will be referred to as an INTRA-SENTENTIAL CONSTITUENT SWITCH.

* "...A constituent is a group of words that can be replaced by a single word without a change in function and without doing violence to the rest of the sentence. The replacement need not have the same meaning." Clark and Clark, 1977, (p. 48)

Dividing a sentence into its Subject-Verb-Object components would render what linguists call "Major Sentence Constituents". It is to this level of constituent structure that the present study will be addressing itself.

Traditionally, the study of code-switching has been carried out with two goals in mind: first, to establish why, where, and when code-switching takes place, and second, to define the syntactical constraints that dictate the actual production of code-switched utterances.

The bulk of the research, however, has concerned itself with the first goal, that is, the sociolinguistic characteristics of code-switching behavior in bilinguals. Morover, adult bilingual speakers have been the main subjects of study while developmental aspects or the characteristics of code-switching in children have only began to appear in the literature.

2.1 SOCIOLINGUISTIC STUDIES OF CODE-SWITCHING IN ADULTS

A study of the linguistic system of a mostly immigrant Norwegian community led Blom and Gumperz (1972) to some interesting conclusions regarding language use in society.

They found that the local people in the town controlled not only a prestigious dialect called Ranamål, but also the standard language of Norway officially called Bokmål. Such a finding was not surprising given the fact that the dialect was acquired within the domestic and familial atmosphere, while the standard language was learned at school and in church.

What Blom and Gumperz questioned was the reason why the

CHAPTER II

REVIEW OF THE LITERATURE

people still preserved the use of the dialect in contrast to most immigrants into urban centers, who, given the appropriate conditions, give up their native language after a generation.

The answer to their question was tied to the very complex and yet subtle class system present in a superficially homogeneous community.

They found that the artisans, merchants and plant managers tended to live and work among their relatives and were strong advocates of local values, while members of other occupations, such as clerks and professionals whose family ties were not directly connected with the town, favored more national values.

In reference to the specific language choices of the members of the community Blom and Gumperz observed that the use of either the dialect or the standard was restricted to certain situations and certain participants in the conversation.

The conscious switch to the standard or the dialect served as a signal to the interlocutor that he or she was expected to respond in a certain way.

> "Although locals show an overt preference for the dialect, they tolerate and use the standard in situations where it conveys meanings of officiality, expertise and politeness toward strangers who are clearly segregated from their personal life." (pp. 433-434)

Blom and Gumperz concluded that as long as a dialect

serves the speaker to identify with members of a particular group it will be maintained.

Haugen (69) had already alluded to the phenomenon described by Blom and Gumperz. He observed the linguistic behavior of Norwegian-Americans and concluded that their persistence in the tendency to code-switch in spite of the criticism and ridicule to which they were subjected at times, was a strong indication that they were responding to a deep need to identify with their own linguistic group.

Gumperz (70) claims that the widely held belief that a bilingual individual's behavior can be compartmentalized into distinct social situations which in turn demand the use of a particular language, does not present an accurate picture of bilingual code-switching.

His own experience with the Chicano community is replete with examples of intra-sentential and inter-sentential code-switches which he claims "...is rarely reported in the literature and frequently dismissed as abnormal."(p.5) Gumperz' explanation of such behavior is that the switches are there for stylistic effect and should not be attributed to a lack of vocabulary on the part of the speaker.

His analysis of various transcripts of conversations between bilinguals is most compelling. He looked not only at the switches themselves in terms of their semantic content and communicative intent but at the changes in volume and affect that accompanied the language switch. A very

effective comparison is drawn between certain instances of code-switching and the literary use of metaphors in which a word, used in a context other than that with which it is usually associated, acquires a new significance and communicates a preferred effect.

For Gumperz, the code-switched word or segment has associated with it a whole array of cultural values which can only be interpreted successfully by those familiar with that particular culture and those particular values.

Gumperz (70) and Gumperz and Hernandez-Chavez (70) do not rule out the possibility that in some cases, code-switching may be other than emotionally motivated. Gumperz explains that it is possible for the bilingual speaker to have associated certain activities with specific speech events (in much the same way that words are associated with objects). In such instances, once the situation arises, the speaker has no choice but to use a certain word. If, on the other hand, an option is present, the choice becomes significant.

In order to prove the meaningful nature of code-switching, Gumperz and Hernandez Chavez (70), set out to make a detailed analysis of conversations among bilinguals.

To get at the speaker's intent during the switch, they looked at several aspects of the conversation:

1. Where exactly in the conversation did the code-switch take place?

2. What were the relevant antecedentes of the switch?
3. What followed it?
4. What was the switch in response to?

Once these questions were answered as satisfactorily as possible, they went on to substitute a phrase from the other language in place of the switched phrase to get an idea of what code-switch contributed to the meaning of the whole passage.

In some cases, where they found no clear reason for the switch, they explained it by saying that the speaker was merely having difficulty in finding the right word.

They also observed that code-switching occurred only when all the participants were Chicanos and mainly while their conversation revolved around personal experiences. That is, when a group of Chicanos are conversing about a subject in a detached manner, code-switching seems to be inappropriate.

Further, Gumperz and Hernandez-Chavez remarked that "... English served to introduce most new information, while Spanish provided stylistic embroidering to amplify the speaker's intent." (p. 94)

Di Pietro (76) challenged Gumperz and Hernandez' interpretations of code-switching behavior among Chicano bilinguals. He argued that the justification presented by Gumperz and Hernandez is just as good as any other, his point being that the study of code-switching in bilingual speakers

is still in its infancy, and that a great deal more detailed research is needed in order to understand why a bilingual code-switches at any given moment.

His own research leads him to believe that not all the code-switches made by a bilingual are intended for stylistic effect, but that some switches are "...totally unintentional". (p. 7)

Although Di Pietro has observed and recorded many exchanges between Italian-English bilinguals, he points out that, in contrast to the "identity marking" intent of code-switching among Chicano bilinguals, Italian-Americans use code-switching more as a line of demarcation between groups with different degrees of "Americanization". In other words, Italian immigrants who grew up in Italy and who still cling to the customs of the Old Country tend to code-switch into Italian, while in first or second generation Italian-Americans this tendency is much less prevalent.

There is another use of code-switching which Di Pietro considers to be very typically Italian: that is, the forced code-switching that takes place when an adult still uses Italian as the main language with a child for whom English is clearly the dominant language.

Finally, Di Pietro considered the type of code-switching that occurs when adults, in order to insure privacy in their conversations, switch to Italian when children are present. Di Pietro observed that "to counter this adult bilingual

strategy, children often develop a receptive competency in Italian." (p. 12)

The last two examples of the use of code-switching identified by Di Pietro are not just characteristic of Italian-Americans. Since Italian-Americans are more assimilated into the Anglo culture than are many Chicano or Puerto Rican speakers, such examples of code-switching are still fairly rare among these Hispanic groups.

In his interview with three generations of a Mexican-American family, Lance (69) observed a marked shift from almost total Spanish preference in the grandparents, to as a situation-bound preference in the second generation "... either English or Spanish can be used exclusively, though there is a tendency to rely on English, particularly when an Anglo is present." (p. 345) The third generation showed an almost exclusive preference for English and occasionally a mixture of Spanish and English. They were insecure and inhibited in their use of Spanish.

Lance concluded that the bilingual's identification with either the Hispanic or the Anglo cultures is the primary determinant in his pattern of usage of the two languages.

McMenamin (73) reports that when questioned as to the motivation of their code-switches, his subjects gave reasons such as "it is just natural" or "it inspires confidence when talking to friends." (p. 482) The subtlety of the point raised by McMenamin is underlined by Gumperz'(70) claim that

in the majority of his linguistics exchanges, the bilingual is not aware that he has switched languages and will even deny that he did.

It appears that the relationship and degree of familiarity of the interlocutor plays a more important role in whether or not a code-switch is used than just ethnicity itself.

McMenamin's subjects reported that they would code-switch when talking to a bilingual they knew well.

Another factor that seems to influence the use of code-switching within the course of a conversation among bilinguals is the topic being discussed.

Beardsley and Eastman (71) instructed two Tanzanian university students to converse on certain topics in the most spontaneous possible way. The topics were:

1. Skiing
2. Religion
3. Life in Tanzania
4. Education
5. Gossip and ethics
6. Spirits and sorcery
7. Zanziban politics
8. Radical prejudice

The results showed that some topics lent themselves more to the use of English and mixed words (they defined mixed words as "...words having aspects of both Swahili and

English."(p. 18). For instance, the topic of Spirits and Sorcery had a lower proportion of English and mixed words than did the subject of Racial Prejudice. They concluded that "...the more relevant a topic is to Tanzanian life, the lower the proportion of English and mixed words." (p. 23)

Other factors that also seem to play an important role in the frequency and type of switches are explained by McMenamin (73).

Having access to the population of Pajaro Valle (a rural community south of San Francisco) McMenamin set out to find a correlation between switching frequency and variables such as sex, age, place of origin, competency in both English and Spanish, education, and spontaneous versus careful speech.

Fifteen Chicanos, whose ages ranged from 16 to 71, were interviewed.

Results showed that switches to English while speaking Spanish were more prevalent in younger and older subjects than in those between 21 and 40 years of age, while switches to Spanish were only present among older informants. McMenamin points out that the above trends correlate both with the subject's place of birth and his or her linguistic environment up, to age 13.

Informants born in Texas made more switches both from English to Spanish and from Spanish to English than those from Mexico or California. McMenamin also observed that the years lived in Pajaro Valley were directly related to the

number of switches in the bilingual's conversation. He also found that women tended to switch more than men, but was unable to establish the specific reasons for this observation.

An interesting finding was that as the level of education increased, switching frequency decreased. McMenamin did not consider this surprising, given the negative attitude of middle class Chicanos towards code-switching.

A more recent study by Valdes-Fallis (76) confirms the findings of previous research. She recorded six conversational situations among Mexican-American teenagers, and described several types of code-switching patterns:

1. Situational switches: relating to the social role of the speakers.
2. Contextual switches: situation, topic, etc... linked to the other language.
3. Triggered switches: switches due to preceding or following items.
4. Switching of isolated items: in response to a lexical need.
5. Identity markers: stressing in-group membership.
6. Preformulators: linguistic routines.
7. Discourse markers: but , and, of course, etc...
8. Metaphorical switches: obvious stylistic device used for emphasis or contrast.
9. Proper nouns.
10. Quotations, and paraphrases.

11. Sequential responses: speakers use the language last used by previous speaker.
12. Symmetrical switches: blend and proportion of language alternation is made to resemble that of other speakers.

The twelve code-switching types described by Valdes-Fallis could be re-grouped into those that refer to the cause of the switch (types 1,2,4,5,and 8), and those that are merely observational characteristics of the code-switch. Thus, types 1,2,4,5, and 8 can be added to the characteristics already observed by Haugen, Gumperz and Hernández-Chávez: namely that code-switching is situationally and socially determined.

Valdés-Fallis also makes an interesting observation regarding the importance of the role played by the interlocutor's proficiency and preference in the bilingual's choice of code. She also raises the question of the role played by the speaker's proficiency in the two languages in his code-switching pattern.

In summary, many factors seem to play a role in the bilingual's use of code-switching:

Topic, situation, age, sex and relationship of interlocutors, degree of identification with one's ethnic group, length of time and degree of contact with the two languages, and stylistic flexibility. There is, however a

common thread running through all these factors: The speaker's need and desire to communicate successfully.

Di Pietro has expressed this idea quite effectively: "...participation in verbal interaction is vital to the assertion of one's personality-structure. The bilingual has every bit as much a need to do so as a monolingual. Yet, equipped with the functional competence in two or more languages, the bilingual is presented with alternative strategies unavailble to monolinguals ...[C]ode switching provides the bases of these strategies." (pp. 5-6)

2.2 SOCIOLINGUISTIC STUDIES OF CODE-SWITCHING IN CHILDREN

Only a few investigators have looked at the code-switching behavior of children from the sociolinguistic point of view.

McClure and Wentz (76) were the first researchers to focus their research specifically on the code-switching behavior of bilingual children. They collected a number of narratives of Mexican-American children between the ages of 9 and 12 and analyzed them in order to explain the code-switches produced by the children. The narratives were in response to a request to tell a story combining both Spanish and English.

In spite of the fact that the code-switching was not totally spontaneous (the children had been instructed to use both languages) several tendencies were observed: the most important one was that the description of action within the narratives was mostly in English, while Spanish was relegated to secondary uses. The use of Spanish was evident in affect-laden portions of the narrative, such as expressions of pain and surprise.

Some of the formulaic expressions were also in Spanish, as in the case of "había una vez" (once upon a time).

In the use of two languages during a dialogue, the children showed a high level of consistency; although each turn of speech appeared to be solely in one language, the speaker's choice of language (within the narrative) varied

from topic to topic.

In one of the narratives, for example, Spiderman used both English and Spanish, and so did the villains. In other words, the affective load or the topic of conversation and not the character of the speaker, determined the language used.

Some of the code-switched utterances appeared w.thin self-directed queries, simple descriptive narration, and introduction to English quotations.

Because of the lack of consistency exhibited by the children in several occasions, the authors expressed the opinion that in some cases "...switches...seem to be due to an inability, temporary or otherwise, to express a particular idea in the language of the narrative." (p. 10)

Another important observation made by McClure and Wentz is that code-switching is much less prevalent in spontaneous narratives than in those where the children were asked to code-switch. This fact brings up the possibility that the children may have developed the use of different communicative styles for narration and ordinary conversation, and that these styles take into account the appropriateness of code-switching.

In another study McClure (1977) analized spontaneous conversations of 47 Mexican-American children which ranged in age from 3 to 15. They pointed out that in the exchanges among bilingual children, the characteristics of the participants in the conversation play a much more

important role than the topic at hand.

She identified three characteristics of the participants that help determine the degree and type of code-switching that take place: (1) language proficiency, (2) language preference, and (3) social identity.

McClure observed that children seem to judge whether or not a person knows a language in absolute terms. That is, there are no intermediate stages of bilinguality in the mind of a young child. If a person expresses some knowledge of Spanish, the Spanish dominant child will use Spanish with that person. It is as if the child were acting in an egocentric manner, where his own ease with a language is more important than that of his interlocutor.

Older children seem to be able to take into account not only their own ease and proficiency in the two langages but also that of the listener. This makes them more flexible in their choice of language and codes.

Children also seem to take into account the language preference of their interlocutors. McClure observes that in cases in which a child is equally proficient in English and Spanish but prefers to use Spanish, his friends tend to address him only in Spanish.

The ethnicity of the speaker is the third characteristic that children observe when making a decision regarding language use. For instance, the interaction of children with a fluent bilingual Anglo teacher was in English, while their

exchanges with a Mexican-American teacher's aide, fluctuated between Spanish and English.

Among the children themselves it was observed that whenever one of them assumed the position of authority he or she would use Spanish, following the parent-child relationship pattern. That is, Spanish would become the language of commands, and in general, of authority.

The topic of conversation was sometimes found to be influential in the child's choice of language. As with adults, topics that relate to the home and family relations were often discussed in Spanish, while school, holidays, and sports were discussed in English. This was most common among children over the age of 7. Naturally, their experience with the two languages enhances their topic and code range.

As far as the stylistic functions of code-switching, McClure identified eight of them in the discourse of children:

1. Emphasis: when a word or phrase is repeated in the other' language, in order to emphasize a point.
2. Focus: used as a way of highlighting a part of the sentence.

3 & 4. Elaboration and clarification: here, a code-switch is used to extend or clarify the meaning of a sentence.

5. Attention attraction or retention: code-switching is used to maintain or get the attention of the

interlocutor.

6. Mode Shift: code-switching may serve to mark a point of transition within a narrative.
7. Topic Shift: a code-switch may be used to introduce a new topic of conversation.
8. Addressee Shift: the child switches languages to accomodate the addressee.

McClure did not observe a clear developmental sequence in the children's use of code-switching as a stylistic device, but she did remark on some salient patterns. For example:

> Emphasis shift involving commands were observed among the older children.
>
> Children under the age of seven did not use focal or elaborative Code-Switches.
>
> Code-switching for clarification and to attract and retain attention was used quite early by the children.
>
> Mode and topic shift were present only in children older than five.

McClure concluded by refuting the deficit model of bilingualism and pointed out that code-switching involves linguistic creativity and that code-switching is not random but "...proceeds in accordance with grammatical and functional principles." (p. 12)

Another study concerning the code-switching behavior of young children was carried out by Zentella (78). She looked at how the participant's own perception of the interaction

among speakers, and his knowledge of the appropriate rules for the interaction, correlate with his use of code-switching throughout the conversational exchange. Zentella analyzed the code-switching strategies of three third-graders, ages 7, 8 and 9, under two different conditions: (1) individual interview with an adult Puerto Rican female; and (2) group activity consisting of a domino game.

Not surprisingly, given the differences in age, the children demonstrated different levels of understanding of an interview situation. Not all the rules expected during an interview (i.e., a formal situation in which there is an "...asymmetrical relationship between interviwer and interviewee."(p. 8) were observed.

There were only three examples of intra-sentential code-switching in the three children studied during the interviews.

Zentella attributed this finding to the fact that the interviewer was controlling the topic and to a large extent the language in which the interview was conducted. In general, the children (except for the youngest one who knew almost no English) followed the lead of the interviewer in their choice of language.

During the domino game in which no adults were involved, the pattern of linguistic interaction was quite different from that of the interview.

The two bilingual children involved, usually addressed the monolingual Spanish speaking child in Spanish. One of

them, however, seemed to fluctuate and did so in a predictable way: When commanding, contradicting or insulting the Spanish speaking child, she used English. When showing concern or giving advice to him, she used Spanish. This observation runs counter to McClure's claim that children tend to use Spanish as the language of authority.

Zentella also recorded the children's egocentric remarks during play. One of the children's egocentric remarks were in Spanish except when counting to herself, the other child's egocentric remarks were all in English.

Although the two children mentioned above answered upon questioning that they only used English with each other, analysis of the corpus of utterances showed that they addressed each other in Spanish 30% of the time. Most of the uses of Spanish consisted of turn-taking commands during the game ("Tu vas" (you go) p. 20), or the repetition of an utterance previously said in English, for the purposes of emphasis and elaboration. For example: "That's not mine, eso no es mío, that's not mine" (p. 22) This seems to be an important function of code-switching in children which is also borne out by McClure's data.

There were also several instances of intra-sentential code-switching during the domino game, which Zentella attributed to the need for group identification and acceptance "...a badge of community membership that is valued, albeit covertly."(p. 24)

She concluded that bilingual children code-switch with ease and although they do so less than adults, they are capable of using code-switching for stylistic purposes during discourse. Such an ability points to the bilingual child's awareness of social, linguistic and situational variables.

A similar study was carried out by Genishi (77). She described the code-switching behavior of four six-year-old bilingual children in order to demonstrate their social and linguistic competencies.

Her research was aimed at defining the social and linguistic variables affecting the children's choice of languages, and the general rules of code-switching in children.

She found that the linguistic ability of the listener had a clear effect on the language choice of the children. That is, children usually chose the listener's dominant language. The "inertia rule" (which calls for the speaker to use the language in which he/she was last addressed) was also obeyed by the children.

Genishi's findings support McClure's in that neither the physical setting nor the child's activity was associated with a preference of one language over the other. Furtheremore, Genishi found no relationship between the age of the interlocutor or his ethnicity, and the child's use of code-switching.

In conclusion, sociolinguistic studies of code-switching

in children tend to show that topic, situation and age of interlocutor seem to play a very minor role in the young child's decision to code-switch. Older children such as those in McClure and Wentz' (75) study were already making finer distinctions in their narratives. Their characters switched languages according to the affective mood of the situation.

Language proficiency, language preference, and social identity are characteristics of the listener that determine the degree and type of code-switching used both among children and adults.

Language proficiency plays an important role first, because it limits the speaker's linguistic range, and second, because it serves as a basis for judgment. Once the interlocutor has been sized up in the linguistic sense, a decision is made as to what language to use and whether or not it would be appropriate to combine the two.

Language preference seems to be a more elusive concept. It sometimes coincides with language proficiency but often it does not. Children seem to verbalize a linguistic preference based more on the status that the choice confers on them than on their own ease with the language. It is quite common to find Spanish dominant children who say they prefer English and use it almost exclusively, maintaining all the while an unused plethora of linguistic skills in Spanish which are superior to their skills in English.

Social identity appears to be a characteristic that is picked up early by the children, not only in themselves but also in others. A quick decision as to whether the interlocutor is Anglo or Hispanic determines whether the child will or will not code-switch during the course of the conversation.

Stylistically, code-switching seems to serve the same function in children as it does in adults. However, the range of stylistic uses to which code-switching is put is more limited in children. In other words, as the child's linguistic sophistication, (e.g., his control of discourse rules) increases, so does his ability to use code-switching in a stylistically astute way.

Although at times code-switching in children as well as in adults may be a quick solution to a momentary difficulty in word retrieval, the bilingual child, just as the bilingual adult, makes use of his languages to increase his communicative effectiveness and to express his perception of others and of himself as members of a particular ethnic group.

2.3 SYNTACTIC STUDIES OF CODE-SWITCHING IN ADULTS

In spite of the fact that the syntactic aspects of code-switching were touched on by researchers such as Espinoza as far back as 1917, systematic studies in this area are quite sparce.

Haugen (50) remarked that bilingual speakers did not mix their languages in a haphazard way; that in spite of the speed with which they switched, they managed to keep within the grammatical boundaries of one of their languages. Kolers (66) was in agreement with Haugen when he observed that the speech of bilinguals was marked at times by what he called "intrusions" from one language when the other was being spoken. Such intrusions, he claimed, occurred mainly at syntactic boundaries within a sentence and not randomly. Kolers' observation is interesting because he was the first to notice some form of patterning in the occurrence of code-switching.

His belief was not shared by Lance (75) who, after a lengthy and detailed syntactic analysis of the different type of code-switching, suggested that there are perhaps no syntactic restrictions on where the switching can occur for it takes place in the following environments: 1) in compound sentence structures;... 2) between major syntactic elements; ... 3) within major syntactic groups...." (p. 143)

On the other hand, the observations made by Blom & Gumperz (70) and Gumperz and Hernandez-Chavez (70) led them

to claim that there were certain grammatical constructions that did not lend themselves to being code-switched. Some of the examples they presented ("he era regador"--he was an irrigator-- or "que have chamaquitos"-- who have children) were found to be acceptable by more recent studies, but the basic premise remains a valid one.

In 1974 Gingras brought to light some problems inherent to an accurate description of the properties of intra-sentential code-switching. His study was limited to the use of code-switching by Mexican-Americans in New Mexico. He referred to code-switching as "...the alternation of grammatical rules, drawn from two different languages, which occurs within sentence boundaries." (p. 1)

His analysis of intra-sentential code-switching was based on a Transformational Grammar model. He postulated that once we have accepted the premise that code-switching is rule-governed and once the grammar that describes the rules of code-switching have been made explicit, it should be possible to call upon such rules to decide whether an instance of language mixing is also a case of code-switching.

He was particularly interested in distinguishing instances of borrowing from true code-switching. By borrowing he meant, for example the use of a word in Spanish (within an all English sentence) when that Spanish word has become part of the English lexicon of the speaker. Example: "He is a macho man".

With these conventions in mind, Gingras set out to determine the reasons why some instances of code-switches did not occur while others were very prevalent in the discourse of Mexican Americans.

He presented a group of sentences to 38 Mexican American adults who had been acquainted with both Spanish and English since childhood (the Chicano group), and to 11 subjects who had learned English as a second language as adults (the non-Chicano group). The sentences contained instances of code-switches, and the subject's task was to judge whether the sentence (in its code-switched form) was grammatically acceptable.

In order to elicit a judgment Gingras asked the subjects questions such as: "Which of these sentences sound like something you might have heard?" He found that some sentences had a high degree of acceptability while others either unanimously rejected by both groups, or accepted by one and rejected by the other. He also found that the judgments were determined not only by the type of bilingualism exhibited by the subjects but by the place in the sentence where the code-switch took place (code-switches that took place between major constituents had a higher degree of acceptability than those which took place randomly within a sentence).

Chicano group (early bilinguals) was much more categorical and uniform in its judgments than the non-Chicano group (late bilinguals).

He then looked at the specific problems of how adjectival positioning and relativization were affected by code-switching.

Both Chicano and the non-Chicano groups rejected sentences in which the position of the adjective followed the rules of Spanish (in general, adjective follows noun) and either the adjective or the noun or both were in English.

Examples:

(14)	El man old está enojado (the) (is angry)	5% , 11% *
(15)	El man viejo está enojado (The) (old) (is) (angry)	5% , 11%
(16)	El hombre old está enojado (The)(man) (is) (angry)	0% , 0%

The above percentages represent the percentage of subjects who found the given sentence acceptable. The first percentage represents the Chicano group, the second percentage represents the non-Chicano group.

The Chicano group showed a relatively high degree of acceptability (60%) of sentences in which the position of the adjective followed the rules of English (adjective precedes noun) and either the article or the noun or both were in

* The numbers in front of the sentences are Gingras' own numbering of his stimulus sentences.

Spanish. Examples:

(17) El old hombre está enojado 60%, 0%

(19) El old man está enojado 94%, 27%

Sentence (18) El hombre viejo is mad, was also rated as having a high degree of acceptability by the Chicano group (90%); the non-Chicano group did not find it as acceptable (27%).

Gingras explains that sentences (17), (18) and (19) are acceptable because they present a case of lexical substitution:

> "In the Aspects-model grammars, there are usually two lexical passes. During the first lexical pass the lexical formatives are inserted, while during the second lexical pass those lexical items introduced by transformational rules are inserted. It appears that in code-switching there is a very late third lexical pass that allows substitution (from one lexicon to the other) for certain formatives that were not introduced by the second lexical pass." (p. 173)

Although the key to Gingras' explanation seems to be in the last part of the above quote "...certain performatives that were not introduced by the second lexical pass," it is not clear whether in the first lexical pass the basic language of the sentence is established. If this were the case, the language would determine the structure of the sentence and the nature of the second lexical pass.

This would mean that in sentence (17) El old hombre está enojado, for example, the first lexical pass determined that the lexical items would be in English, otherwise, the second lexical pass, proposed by Gingras, would have allowed for all

but one of the lexical items in the sentence (cld) to have been changed into Spanish.

However, this is not what Gingras proposes, since he points out that in sentences (17), (18) and (19) the determiner must have been changed late in the process because it is not in the same code as the head noun of the noun phrase (Gingras is mistaken regarding sentence (17) where the determiner is in the same language as the head noun of the noun phrase), and because there is gender and number agreement in sentences (17) and (19) and supposedly gender and number agreement are determined prior to adjectival positioning, that is, prior to the third lexical pass.

The unacceptability of (14), (15) and (16) is explained by stating that a structure containing elements in one language has to undergo a movement transformation that belongs to another language, the resulting sentence will be unacceptable.

Gingras theorizes that since lexical entries carry syntactic information they may be marked for a particular transformational rule, therefore

> "....whenever a Spanish movement rule must operate on substantially English structure, the movement transformation is blocked, unless the lexical item being moved is in the same code as the movement rule (particularly in regard to the adjective." (p. 175)

Using this model, Gingras attempts to explain the results of acceptability judgments in sentences containing

a relative clause.

(22) The man que saw el accidente es Cuban. 0%, 10%

(23) El hombre who vio el accidente es cubano. 0%, 0%

(24) El hombre who saw the accident es cubano. 100%, 55%

He states that in sentences (22) and (23) "...a movement transformational rule has operated on a structure containing lexical items belonging to the other code...." (p. 174) Although the explanation is plausible in the case of the adjective, it clearly does not hold here, because the relativization transformation follows exactly the same rules in Spanish as it does in English. The trend that we observe in his sentences is more in the direction of acceptability of main constituent switching (sentence 24) as opposed to within-constituent switching (sentences 22 and 23).

Timm (75) observed that although the explanation as to why bilinguals switch languages could only be found in non-linguistic variables, there are certain syntactic constraints which are adhered to by speakers in their use of the two languages. Her data had two sources: First, she analyzed excerpts from a spontaneous conversation with a bilingual woman, and second, she analyzed a short story written by three Mexican American students entitled "Ese". Once she had formulated hypotheses regarding code-switching constraints, these were tested by presenting test sentences to the three Mexican American students and asking for their acceptability judgments.

The sentences used had code-switches at different points so that a careful determination could be made concerning the level at which switching becomes unacceptable to bilingual speakers. After a careful analysis of the data, Timm formulated several code-switching constraints, that is, code-switches which make the sentence unacceptable:

1. One of the cases in which code-switching was judged strongly as unacceptable was between pronominal subjects or objects (direct or indirect) and the finite verbs to which they belong. For example:

Yo went (I went)

He quiere (He wants)

Dijo to them (said to them) (English word order)

Lo she sees (She sees it)(Spanish word order)

It appears then that subject and object pronouns are strongly linked to their verbs.

2. The judges also found inadmissible a switch between finite verbs and their infinitive complements.

- Example:

They want a venir (they want to come) English word order

Quieren to come (they want to come) Spanish word order

3. Another instance of an inadmissible construction was a

switch between the auxiliaries and main verbs in a verb phrase (unless the main verb has been adapted to Spanish phonology) as in "Estaba TAIPEANDO" I was typing.

Examples:

I must esperar (I must wait)

Ha seen (Has seen)

Estaba walking (He/she was walking)

4. The fourth constraint mentioned by Timm is the negation of verbs: "...the negating elements in each language must correspond in code to the verbs undergoing negation." (p.479)

Examples:

I do not quiero (I do not want) English word order

I no want (I do not want) Spanish word order

5. The fifth constraint is less binding than the previous ones and refers to noun phrases.

Noun phrases of the type DETERMINER + NOUN are highly switchable, but longer noun phrases, containing an adjective (DETERMINER + ADJECTIVE + NOUN) or (DETERMINER + NOUN + ADJECTIVE) are limited in switching potentialities.

Examples:

"Su favorito spot (his/her favorite spot)
His favorito spot
His lugar favorito" (p. 479)

Timm's observations led her to conclude that "...given the tendency of verbs and their auxiliary satellites to maintain their unilingual quality...," the verb may in fact be "...central to the structure of sentences." (p. 480)

Timm's fifth restriction regarding adjectives, although less explicit than Gingras', lends support to Gingras' claims regarding adjective switching.

Timm also makes an interesting observation regarding Prepositional Phrases. She notes that simple Prepositional Phrases of the form:
Preposition + Noun or Preposition + Determiner + Noun
accept a switch only as long as they "...[do] not break up a fixed phrase in one language or the other." (p. 480)

This restriction implies that either the first two or the last two elements of the phrase must be in the same language. She extends these constraints to most idioms in the language (either English or Spanish) which "...would be rendered meaningless by switches cutting through them."

Timm's contraints regarding idioms is an appealing one but obviously difficult to test because of the arbitrary nature of idioms within any language. Pfaff's (75) approach to the question of syntactic constraints in code-switching is quite different from Timm's. One of the most interesting aspects of Pfaff's study is her claim that there appear to be several distinct types of code-switching associated with different social situations and having somewhat different syntactic characteristics. Unfortunately, the social situations she describes are not very clearly defined:
1. "...casual interaction between peers, close friends or regular associates when conversation centers around everyday

topics." (p. 5)

2. "...casual or more formal interactions which, for one or several reasons, seem to be mainly in Spanish." (p. 5)

3. "...street talk, the jargon of the bato loco." (p. 6)

She associates the first type of interaction with code-switches that occur at independent or dependent clause breaks, involving especially adverbial and prepositional phrases.

The second type of interaction is associated with a high frequency of lexical switches, particularly noun and noun compounds, as well as whole sentence switches.

Type 3 is characterized by the switching of single nouns, adjectives, verbs and set phrases.

Pfaff's analysis is clearly in its conceptual stages, but could possibly be refined to determine more solid associations between types of interaction and code-switching preferences among speakers.

Pfaff also presents some of the problems associated with the syntactic aspects of code-switching. She points out, for instance, the difficulty that one would encounter in analyzing the code-switching possibilities in a sentence such as "Alla tienen unos traditions muy bonitos." (p. 8)

(Over there they have some) (very nice traditions)

where there is a total of 32 possible combinations if one takes into account Spanish and English word orders.

A different set of problems arises, according to Pfaff,

in trying to identify the switched syntactical constituent. She illustrates her point by means of the following example:

"los...los...uh...your muscles, a veces react." (p. 8)

"the...the...uh...your muscles sometimes react."

In a sentence such as this one, it is extremely difficult to decide not only the exact number of switches present, but whether the sentence should be analyzed at the deep or surface structure level. Pfaff's contention is that code-switching constraints should not be defined exclusively at the surface structure level, because in many cases, the only way to understand the "logic" of code-switching is by getting at the deep structure of the sentence. In the above example it seems that instead of deciding that there are three code-switches (Spanish-English, English-Spanish, and Spanish-English) it may be "...more plausible to regard your muscles react as just one switch at some stage of the derivation and for the adverb a veces to be moved in by a later transformation." (p. 9)

This type of analysis leads us directly into the psycholinguistic correlates of code-switching behavior: do bilingual speakers who code-switch control one grammar with lexical items in two languages, or do they have control of two distinct grammars and a set of rules for switching appropriately?

Pfaff's answer to the question is that the bilingual has control of the grammatical systems of the two languages,

and the ability to mix them in such a way that the result is also a grammatical utterance.

One of the few studies which has concentrated on the use of language by Puerto Ricans is being undertaken by the Language Policy Task Force of the Centro de Estudios Puertorriqueños. As part of this Task Force, Shana Poplack, (78) looked at the portion of the Puerto Rican community whose use of language exhibits a predominance of code-switching.

Poplack concurs with Pfaff in that some extra-linguistic factors play a roŀe in the type of code-switching constraints proposed by Timm by presenting counterexamples from her data. The utterances analyzed by Poplack were all produced by a Puerto Rican woman who had native-like phonological control of both Spanish and English, but whose discourse pattern included a great deal of code-switching, mostly from English into Spanish.

The data were collected during four different recording sessions labelled as follows: 1) a "formal" interview in which the informant had to respond to a questionnaire, 2) an informal session in which social topics were discussed, 3) a "vernacular" session in the street during which the woman spoke to her neighbors, and 4) a "semi-formal" session, which took place when the interviewer and informant first met.

Most of the code-switching took place during the "informal" and "vernacular" sessions. The least number of code-switches were observed during the "formal" session.

On the basis of her analysis, Poplack proposed two syntactical constraints of code-switching which seem to be more inclusive in nature than those proposed by Timm. Poplack's first constraint is the "free morpheme constraint": "Code-switching may occur at any point in the discourse at which it is possible to make a surface constituent cut, and still retain a free morpheme." (p. 11)

A corollary of this constraint is that the more major the constraint, the greater the likelihood that it will be switched. Nouns, however, which are switched more often than any other single element, are excluded from this rule.

Some of Poplack's examples are:

Switch between Verb Phrase and Noun Phrase:

Years ago people SE IBAN A TRABAJAR
(would go to work)

Switch between Noun and Adjective

Cojo mi garlic PURO
(I take my) (pure)

She also gives examples of switches between conjoined sentences, between Verb Phrase and Prepositional Phrase, between Verb and Adverb, between Determiner and Noun, between Auxiliary and Verb, and finally, an interjection embedded in the middle of a sentence.

The second syntactic constraint identified by Poplack is the "equivalence constraint": "Code-switching will tend to occur at points where the juxtaposition of English and Spanish elements do not violate a syntactic rule of either

language. i.e., at points where the surface structures of both languages map onto each other." (p. 14)

Although Poplack is not explicit on this point, it is clear that the second constraint will prevail over the first, in the sense that once the constituent boundaries of the sentence are defined, a comparison must be made between the structures of the two languages to determine the feasibility of code-switching.

Poplack also matched code-switching type with linguistic situation in order to determine the types of code-switching that prevail when the interlocutor is a member of her ethnic group as opposed to a non-group member.

She found that 45% of the full-sentence switches occurred in an in-group situation, while only 23% occurrred with the non-group interlocutor.

31% of the intra-sentential switches occurred with the in-group member and only 12% with the non-group interlocutor.

When only a noun was switched, the situation was reversed. Most of the switches (65%) occurred in the presence of a non-group interlocutor while only 24% occurred in an in-group situation.

In her concluding statements Poplack speculates that the equivalency constraint "...will apply in lower proportions for less coordinate bilinguals... that switch points that are risky in terms of syntactic well-formedness will tend to be avoided altogether." (p. 21)

Another point that should be brought out is the possibility that constraints may be different for the Chicano and the Puerto-Rican communities, and that late English learners might still have a different set of code-switching constraints.

It is obvious that a grat deal of research is required before the syntactical constraints of code-switching are described in a satisfactory way.

Two main issues arise from the literature: first, the problems inherent in the description of inter- and intra-sentential code-switching, especially the level of structure at which the analysis should be made; and second, the level of specificity necessary in the code-switching constraints proposed in order to allow for a large number of possible acceptable variations and at the same time to set the limit of acceptability.

Perhaps rules of the type proposed by Poplack (78) are more appropriate than those proposed by either Timm or Pfaff.

On the other hand, it is indeed possible that the process of exclusion, that is, the analysis of what bilinguals would judge as "incorrect" code-switches may be the best approach.

The ideal description of Spanish-English code-switching constraints would have to account for all the code-switches produced by normal speakers of the two languages. Such a description would be extremely useful to those professionals whose job it is to assess the linguistic proficiency of

bilingual children.

Ultimately, an all inclusive description of Spanish-English code-switching constraints may prove to be an impossible task. Both Gingras and Poplack have hinted at the possibility that the syntactic rules of code-switching may vary according to the community involved, and according to the language learning experience, dominance, preference and proficiency of the speaker. However, regardless of the nature and span of code-switching constraints, there is still a need for their definition because of their potential usefulness.

2.4 SYNTACTIC STUDIES OF CODE-SWITCHING IN CHILDREN

The only studies that have dealt with the syntactic aspects of code-switching in children have been carried out by McClure (77) and by Wentz in his 1977 dissertation study.

McClure (77) follows Pfaff's lead by highlighting the relationship between type of code-switch and linguistic situation. McClure's classification, however, differs from Pfaff's in that it takes into account a subcategorization of code-switching into code-mixing and code-changing. According to McClure, code-changing is highly affected by situational and stylistic factors, and occurs at the level of major constituents. Code-mixing, on the other hand, occurs whenever a bilingual speaker is unable to pull out of memory a laxical item in the language he is currently using. This kind of switching takes place within constituents.

McClure's data is based on narratives told by children at her request. In some cases, the children were asked to code-switch within the narrative. She also analyzed spontaneous utterances produced by the children during play or during conversations with adults.

In her analysis McClure found that most code-changes occurred in narratives, and that none of them occurred in a child under nine. These facts led her to hypothesize that code-changing is acquired relatively late by children.

Code-mixing was much more common among younger children,

especially when color terms were involved. Nouns were also frequently switched by the younger group.

McClure concluded that there is a direct relationship between type of code-switch and degree of bilingualism. The balanced bilinguals (generally the older children) were much more apt to code-change, while children who showed uneven proficiency in either of the two languages tended to code-mix, especially at the word level.

Wentz (77) used a different method to get at the constraints of code-switching in children. A set of 29 sentences was presented to a group of children (one sentence at a time) for imitation. The child's task was to listen to the sentence and then go to another room and repeat it to the experimenter waiting there. By having the child go into a different room, Wentz was hoping that the child would have some time to process the sentence so that his/her rendition would conform to his/her internalized rules of code-switching.

The percentage of corrections made by the children would indicate the degree of acceptability of the particular code-switch involved. In Wentz's words: "...sentences which produced a large number of variations among the children in their responses will be considered to be most uncharacteristic of good code-switching." (p. 168)

Wentz's idea of grammatically in code-switching was derived from Gingras', but while Gingras' adult subjects were able to give clear responses as to the grammaticallity of a

particular code-switch, Wentz's subjects could not do so. Wentz's methology is one way of getting around the difficulty of asking children direct grammatical questions.

Although a group of children (about 30) between the ages of 3 and 15 was mentioned at the beginning of his study, it is not clear from Wentz's description whether all the children are represented in the portion of his study that involves imitation of code-switched utterances. There is also no breakdown in terms of age or sex in the study.

One of Wentz's aims was to discover what children would do regarding gender assignment, when presented with a Spanish determiner followed by an English noun. Surprisingly, he found that children tend to assign masculine gender to almost every noun, unless the Spanish translation of the noun is clearly feminine.

Examples:

"A mi no me gusta EL potted meat"
(I don't like THE potted meat) (p. 170)

"Un cracker"
(A cracker) (p. 169)

In the above examples neither POTTED MEAT nor CRACKER has a clearly defined feminine translation, and are, therefore, assigned masculine gender determiners.

Wentz also wanted to observe the reaction of children to sentences containing a code-change either at the Verb Phrase or at the Object Noun Phrase.

Examples:

"The bird made un nido" (Change at the Object NP)
(The bird made a nest) (p. 170)

"The girl le pegó a su hermano" (Change at the VP)
(The girl hit her brother) (p. 171)

He found that children were better able to imitate the sentences when the change occurred at the VP rather than at the Object NP. He offers two explanations for the children's performance:

1. The possibility that the Object NP was too short to be acceptable as a switch, while the VP was long enough.
2. The VP code-change involves a major constituent, while the Object NP switch, breaks up a constituent.

As a more general conclusion he states that code-changing, "...while not impossible at the Object NP is maximally acceptable at the VP." (p. 173)

Another group of test sentences which Wentz considered to be "unlikely" (p. 173) consisted of sentences with code-mixed noun phrases in them.

Examples:

"La cow ate el grass" (p. 173)
(The cow ate the grass)

"The gato rasguñó the muchacho"
(The cat scratched the boy) (p. 174)

These sentences were very difficult for the children to repeat. Apparently there were too many code-mixes and code-changes in them to be acceptable to the children. In most

cases they responded by changing the code of the determiner to match that of the noun in the noun phrase.

Wentz also tested some sentences containing color adjectives in which the code of the adjective was different from that of the nouns present in the sentences.

Examples:

"La señora lleva un blue vestido."
(The lady wears a blue dress)

"My brother gave me una verde shirt."
(My brother gave me a green shirt.) (p. 179)

Some of the adjectives were in English position as in "verde shirt" (green shirt) and others were in Spanish position as in "carro red" (red car).

An interesting finding was that children tended to accept sentences in which the position of the adjective did not match its language. This contradicts Gingras' data which suggest that adjectives are usually placed according to the movement rules of the language of the adjective in question. Wentz explains this discrepancy by stating that color adjectives belong to "...a category which appears to behave at times as a group, both in Spanish and English, whose code is not as well delineated as other semantic categories." (p. 180)

Wentz's explanation is a partial one at best and does not really provide a reason as to why children treat color adjectives in this way.

Other groups of Hispanic children (especially those

who have received all their schooling in this country) show a similar tendency. It may have to do with the fact that these children learn color adjectives in school, and they learn them in English. Having only one label for most colors (outside of the primary range), children use them interchangeably, without taking into account the movement restrictions of the languages involved.

Wentz also tested the effect of combining code-changes and code-mixes within a sentence.

Examples:

"Have you visto my new car?"
(Have you seen my new car?)

"Yo estoy playing with her pelota."
(I am playing with her ball) (p. 183)

The second sentence in the example (Yo estoy playing with her pelota) contains "...a code-mixed present participle, a code-change at the prepositional phrase, with her pelota, and a code-mix in the prepositional phrase, pelota." (p. 183)

The children tended to simplify sentences such as the above by changing the code of the whole prepositional phrase to either Spanish and English.

In general, Wentz concluded that code-mixes (a switch within a constituent) are more difficult for children to imitate than code-changes (a switch of a major constituent of the sentence).

Although Wentz's findings are not presented in a very systematic way, his findings lend support to Pfaff's, Timm's

and Poplack's constraints, and constitutes not only the first study of its kind, but also the bases for future observations regarding code-switching behavior in children.

2.5 THE PROBLEM TO BE STUDIED

The present study proposes to turn the focus of attention to the code-switching abilities of bilingual children viewed from a developmental perspective.

The review of the literature has shown that researchers are in agreement as to the importance of code-switching in the bilingual's total communicative competence. In regard to the developmental aspects of code-switching, however, the research is very sparce. Although studies such as those of Wentz (77) and McClure and Wentz (76) have investigated developmental trends in the code-switching skills of bilingual children, it is evident that available data are not sufficient to advance the theory that code-switching competence increases as the child becomes more and more proficient in his two languages.

The sociolinguistic studies of code-switching in bilingual children have clearly demonstrated that bilingual children are adept at switching languages according to the listener and the social situation. Very little is known, on the other hand, about the bilingual child's ability to switch languages within a sentence.

Through the use of imitation of code-switched sentences this study plans to investigate:

1. Whether younger and older children are equally able to imitate code-switched sentences.
2. Whether intra-sentential code-switching follows a

discernible developmental pattern.

3. Whether certain types of code-switched sentences are easier for children to imitate at specific ages.

It is expected that certain aspects of the sentences will influence the ability of the children to imitate them, and it is also expected that the children's renditions of the sentences will reflect their own code-switching rules.

In general, it seems obvious that the older children will be better than the younger children at imitating the sentences exactly. However, research with multilingual material (Kolers, 1966; Macnamara and Kushnir, 1971) indicates that utterances in which two languages are mixed are more difficult to process than those in which only one language is present. This means that the fact that the sentences will have code-switches in them is certain to make them more difficult to imitate than if they were unilingual sentences, but the extent to which code-switches will affect the imitative skills of children remains to be observed.

Other factors that are expected to have an effect on the children's renditions of the sentences are:

1. The proportion of Spanish and English within the sentence.
2. Type of code-switch.
3. Location of the code-switch in the sentence.
4. Direction of the code-switch.

Of the four factors mentioned above, only the second (type of code-switch) has been investigated by previous studies.

1. Proportion of Spanish and English within the sentence: Regardless of the location of the code-switches within the sentence, the proportion of Spanish and English present in the sentence will affect the children's ability to imitate it because it is expected that some of the children will be Spanish dominant while others will be English dominant. If the length of exposure of the children to English is taken as a predictor of their language dominance, the younger children may turn out to be Spanish dominant while the older children may be English dominant. Thus, the Spanish dominant child will tend to imitate better the Spanish portion of the sentence, while the English dominant child will tend to favor the English portion.

2. Type of code-switch: The literature seems to be in agreement concerning the fact that code-switches which occur at major constituent boundaries within the sentence are more easily processed than those which break up major constituents within a sentence. (Thelander, 1976; Timm, 1975). It is expected, therefore, that in the present study the same trend will be observed; thus code-switches which encompass major constituents within a sentence, will be easier to imitate than those which only encompass lexical items.

3. Location of the code-switch in the sentence: It is expected that the Primacy Effect (Mordock, 1961) which holds that the early elements within a sequence will be remembered better than the late elements will also hold for code-switched

sentences, and that early code-switches will be more easily imitated by the children than late code-switches.

4. Direction of the code-switch: Another characteristic of code-switching which has not been explored by previous studies in a systematic way is that of directional preference; that is, the conditions that obtain when a bilingual chooses to switch from either of his languages into the other. Although it has been observed that bilinguals tend to switch into the language in which they are dominant (Lance, 1975), there are at present no studies to support this claim. By looking systematically at directional preference, this study hopes to show that such a preference does exist, and that it varies with the age of the bilingual.

CHAPTER III

DESCRIPTION OF THE EXPERIMENTAL SITUATION

3.1 IMITATION AS AN EXPERIMENTAL PARADIGM

The sociological constraints of code-switching are such that it is practically impossible to elicit code-switched speech at will. Children are particularly reticent in this aspect and in general do not enjoy displaying their bilingual abilities.

One of the ways of getting at the patterns and rules of code switching in children is the method used by Wentz and McLure (75). In their study, children were given a code-switched sentence and then were instructed to go into another room and repeat the sentence to the person waiting there. The experimenter's assumption was that the children would re-process the sentence according to their own rules in the time it took to go from one room to the other. Their results tend to confirm this theory.

The research on sentence imitation by children has shown a consistent trend in favor of the "filter theory," the belief that children's imitations are modified versions of model sentences which have been filtered through the child's own set of syntactic rules.

Menyuk (63) conducted a study in which 14 nursery school children (mean age 3.3) and 50 kindergarten children (mean age 5.6) were asked to imitate a series of sentences. Prior to testing, a sample of the language of each child was obtained in different situations and the rules used by the

child to generate his sentences was recorded.

Regression analysis showed that the syntactic structures used by both groups of children correlated significantly with the number of structures that they were able to repeat. Menyuk also pointed out that there was no significant correlation between sentence length and inability to repeat the sentences. However, the correlation was significant when the grammatical structure of the sentence was deviant in some way.

Menyuk stated that "When given the memory aid of immmediate recall a significant number of the children reproduced transformations which they [did] not use in their own sentences...," p. 437 but this was not the case when sentences were given in reverse order. It is interesting to note that many of the children tended to correct the deviant sentences in their imitations even when such deviant sentences were found in their original language sample. Such a tendency was most prevalent among the younger children.

Menyuk's hypothesis was that even as early as age 3, children "...have incorporated most of the basic generative rules of the grammar that we have thus far been able to describe and are using these rules to understand and produce sentences." (p. 437)

Menyuk's findings were supported by Ervin, who, in 1964 found that there was no difference between the grammar of the child's spontaneous utterances and that of his imitated

utterances. Specifically, she found that in imitated sentences children tended to leave out "...unstressed segments of sentences,...articles, prepositions, auxiliaries pronouns and suffixes." (p.169)

In 1970 McNeill wrote: "A child manipulates the grammatical system already at his disposal, often in fantastic ways, but he does not go beyond it." (p. 109) Subsequent studies, such as the one conducted by Smith (70) provided further evidence in support of the "filter theory". She presented 3 and 4 year olds with both grammatical and ungrammatical sentences for repetition. Her results showed not only that the children tended to introduce variations in their imitation of grammatical sentences, but also and maybe even more importantly, that they tended to "normalize" ungrammatical ones; that is, they transformed the ungrammatical sentence given to them into a grammatically correct one. Smith interpreted this as an indication that the child has to process the information given to him in the original sentence in order to understand it, and that this newly found structure is the reflected in the sentence he eventually produces.

Based on the premise that the repetition technique is a useful tool in the description and analysis of the syntactic competence of children, Menyuk and Looney (72) conducted a study involving normal and language deviant children. The latter group was made up of children who had been diagnosed

as language delayed.

They tested 13 normal and 13 language delayed children between the ages of 4.5 and 7.9. The sentence types used for imitation were: active declarative, imperative, negative, interrogative, truncated passive, and active declarative with a negative subject. This group of sentences was referred to as Set A. A second set of sentences (Set B) was also used in order to test the children's ability to imitate phonological sequences which make up words in sentences. Set B was also analyzed syntactically, however. The types of sentences making up this set were: active declarative, imperative, negative imperative, imperative with conjoined verbs, relative clause, negative subject, and active declarative with conjoined objects. All sentences (except one) were between 5 and 6 words long.

Whenever a child's repetition deviated from the model sentence, his version was recorded as an error and classified according to the following categories:

1. Modification
2. Substitution
3. Omission

In the normal group, sentence length did not correlate significantly with the number of errors. In general, the authors claim that syntactic structure seems to be a more significant variable than length in accuracy of repetition. Children seem to be able to store information about the

underlying structure of sentences and the difference lies in the nature of the information stored. In the normal group, for instance, the most common error was the addition of transformational operations, showing that these children are operating at a higher level of complexity than the language deviant group.

It appears then, that in his efforts to imitate a sentence the child relies on his stored information regarding that particular sentence type and tries to reproduce at least the elements necessary to convey the meaning. "...Therefore, these children come up with the simple forms of rules that are reflected in their repetitions. These rules are now part of the children's grammar and they use them to reproduce sentences." (pp. 277-278)

In their 1973 study, Slobin and Welsh do not even question the notion that children process sentences presented to them for imitation in such a way that their versions of the sentences do not necessarily conform to the grammatical arrangement of the model sentence but rather to the child's own internalized rules of grammar. They label the process "assimilation deformation" or "recoding in short term memory".

In their speculations as to the causes of this phenomenon they postulate the idea that in some cases"...the child (may have) filled up so much of short term memory with information about the syntactic structure of the model sentences that she has no more room for all the lexical items."

(p. 491) They also theorize that contextual support is one of the factors that aids children in the successful (or exact) imitation of a sentence. When a sentence is presented out of context, the child has to rely exclusively on the linguistic configuration of the sentence to attach meaning to it and to re-state this meaning in a form acceptable to his own rules of production. They concluded that a detailed analysis of chidren's imitations of adult sentences "...can reveal aspects of the child's theory of syntax, including transformational rules and the syntactic and semantic markers borne by lexical items." (p. 496)

In 1978 Bloom and Lahey reviewed some of the literature on imitation and concluded that "The underlying premise in elicited imitation tasks ... is that if a sentence is too long for children to hold in memory, they will process the meaning of the sentence, and their imitation of it, although shorter and inexact, will provide evidence of (1) the extent to which they understand it, and (2) what they know about speaking such sentences." (p. 250)

Given the evidence regarding the significance of imitation in child language research, the present study will use an imitation task in order to determine the rules of code-switching in normal bilingual children.

3.2 POPULATION

Certain criteria were established in order to narrow down the characteristics of the children who would take part in the study. These criteria were of six types: ethinicity, age, length of residence in the U.S., language background, educational background, and language performance.

1. Ethnicity

In terms of ethnicity the children had to be of Hispanic origin. The study was carried out in the Upper West Side of Manhattan; as a result most of the children who were eventually chosen to participate were either born in the Dominican Republic or their parents were recent immigrants from that Caribbean country. It was considered that these children are representative of most Hispanic groups which have settled in New York from the Caribbean since Dominicans constitute the second largest population of Hispanics in New York City.

2. Age

Because one of the purposes of this study was to demonstrate developmental trends in code-switching skills, it was necessary to choose children within a wide age range. The ages of the children in the study ranged from four to ten. Although the data was not to be analyzed according to sex, every effort was made to have as many girls as boys within each age group.

3. Length of residence in the United States

In order to participate in the study, a child had to

have been living in the Continental United States for a period of at least two years.

4. Language Background

To insure that the children's first language was Spanish it was necessary to determine through information provided by teachers and through direct questioning of the children that the primary language spoken in the home was Spanish, and that the child's parents were of Hispanic origin.

5. Educational Background

All the children in the study (with the exclusion of the 4 and 5 year olds), had to have attended an American school for at least two years. This criterion was established in order to make sure that they had been exposed to English for part of their lives.

6. Language Performance

A preliminary screening test was administered to every potential participant in the study in order to screen out those children who were not able to imitate sentences of the length and type used in the actual experiment. These sentences were presented in English and in Spanish. The screening process will be explained in more detail in section 3.

3.3 INITIAL INTERVIEW AND LANGUAGE SCREENING

A total of 95 children were interviewed in order to choose the participants in the study. Of these, 85 were attending a New York City Public School, while 10 were attending a Day Care Center. The initial interview was necessary in order to determine exactly the children's place and date of birth, number of years living in the Continental U.S., place of birth of the parents, language of the home, and language preferred by the child.

For the initial interview the examiner picked up each child in his or her classroom and led him/her to a room which the school (or Center) had assigned for this purpose. The examiner engaged the child in spontaneous conversation. Although initial greetings were in Spanish to put the child at ease, subsequent exchanges took place in Spanish and in English. That is, the examiner used code-switching consciously in order to draw out the two languages in the child.

Of the 95 children who went through the initial screening, 85 children were chosen to participate in the study on the bases of parental origin, language of the home, and length of residence in the U.S.

A "language performance" criterion was established to insure that the children chosen to participate in the study would be able to understand the task of imitation and to imitate sentences of the length and type used in the study:

children had to be able to imitate four all-English and four all-Spanish screening sentences of the length (eight words) and grammatical type used in the study.

The actual sentences used in the screening are listed in Table A-9 of Appendix A.

On the basis of the above criterion, 71 out of the original 85 children were chosen to take part in the study.

3.4 STIMULUS SENTENCES

The 24 sentences that were eventually chosen as "stimulus sentences" developed from a varied group of sentences which were administered to a group of bilingual children in the pilot study and by taking into account four factors which could have a possible effect on the sentences produced by the children. The four factors identified were (1) sentence length, (2) sentence type, (3) code-switch type, and (4) time elapsing between delivery of stimulus sentence and repetition by the child. Of the four factors mentioned, 1 and 4 held constant while 2 and 3 were varied.

1. Sentence length: Because the sentences had to be short enough for the younger children to be able to imitate, the length of the sentences was limited to eight (8) words. The pilot study had shown that the very young children (four and five year olds) had difficulty with sentences of more than ten words in length.

2. Sentence type: The original "pilot sentences" represented

many grammatical types, thus, it was determined that in order to reduce the number of variables in the study the number of sentence types to be used had to be reduced. Another condition that the stimulus sentences had to fulfill was to have the same surface structure in English and in Spanish. This was necessary because different portions of the sentences were to be presented in one language or the other and it was essential that the translation into either language would preserve the number of words; that is, if the portion of the sentence to be translated had four (4) words, its translation had to have four words as well so that there would be no variation in the total number of words present in the stimulus sentences. This last condition reduced considerably the types of sentences that could be used in the study.

Variations in sentence type were confined to sentenes with relative clauses and sentences with adverbial clauses. This factor of the study will be explained in more detail in the next section.

3. Code-switch type: Because intra-sentential code-switching (of the kind we are interested in for this study) can encompass lexical switches (in which one element of the sentence is presented in another language) or major constituent switches (in which major portions of the sentence are presented in another language), it was determined that both types of intra-sentential code-switching would be presented in the study. This factor will

also be explained later.

4. Time: Following Simpson and McDade's (1978) observation that a three-second delay allows the children to change the sentence presented to reflect their on rules, a three-second interval was allowed between presentation of the sentence and imitation by the child.

Factors 2 and 3 will henceforth be referred to as Sentence Type Factor and Code-Switch Type Factor.

Sentence Type Factor

As explained above, it was necessary to confine the study to two main types of sentences: sentences with relative clauses and sentences with adverbial clauses. Each one of these types allowed two variations, so that the study represented four basic sentence types:

Type I : Affirmative sentence with an embedded clause pertaining to the subject of the main clause. (Center-Embedded/CE) Example: The dog, which is black, chases the cat.

Type II: Affirmative sentence with a relative clause pertaining to the object of the main clause. Right-Branching/RB) Example: The boy pushes the girl, who is small.

Type III: Affirmative sentence with an adverbial clause that initiates the sentence. (Adverbial-Main/AM) Example: When the dogs bark, the girl always cries.

Type IV : Affirmative sentence with an adverbial clause that ends the sentence. (Main-Adverbial/MA)

Example: The boy always jumps when the planes fly.

Code-switch Type Factor

The code-switch factor is in turn represented by two types of code-switch: Constituent Switch and Lexical Switch. Constituent Switch: A Constituent Switch refers to a code-switch that encompasses major constituents within a sentence. A division of a sentence according to its constituents can occur at various levels. For the purposes of this study, the four sentence types (referred to in the previous section) are divided according to their Subject, Verb and Object constituents.

Sentence Types 1 and 2 have three (3) constituents:

Sentence Type 1:

S V O
The dog which is black / chases / the cat

Sentence Type 2:

S V O
The boy / pushes / the girl who is small

Sentence Types 3 and 4 have two main constituents:

Sentence Type 3:

(Part of V) S V
When the dogs bark / the girl / always cries

Sentence Type 4:

S V
The boy / always jumps when the planes fly.

When languages (Spanish or English) are assigned to each of the constituents within the sentences it becomes apparent that a sentence with three (3) constituents (such as sentence types 1 and 2) lends itself to eight different combinations of languages within it:

	1st Constituent	2nd Constituent	3rd Constituent	
1.	Spanish	English	English	(SEE)
2.	Spanish	English	Spanish	(SES)
3.	Spanish	Spanish	English	(SSE)
4.	English	Spanish	Spanish	(ESS)
5.	English	Spanish	English	(ESE)
6.	English	English	Spanish	(EES)
7.	Spanish	Spanish	Spanish	(SSS)
8.	English	English	English	(EEE)

Combinations number 7 and 8 (SSS) and (EEE) have been eliminated since they imply that there is no code-switch present in the sentence.

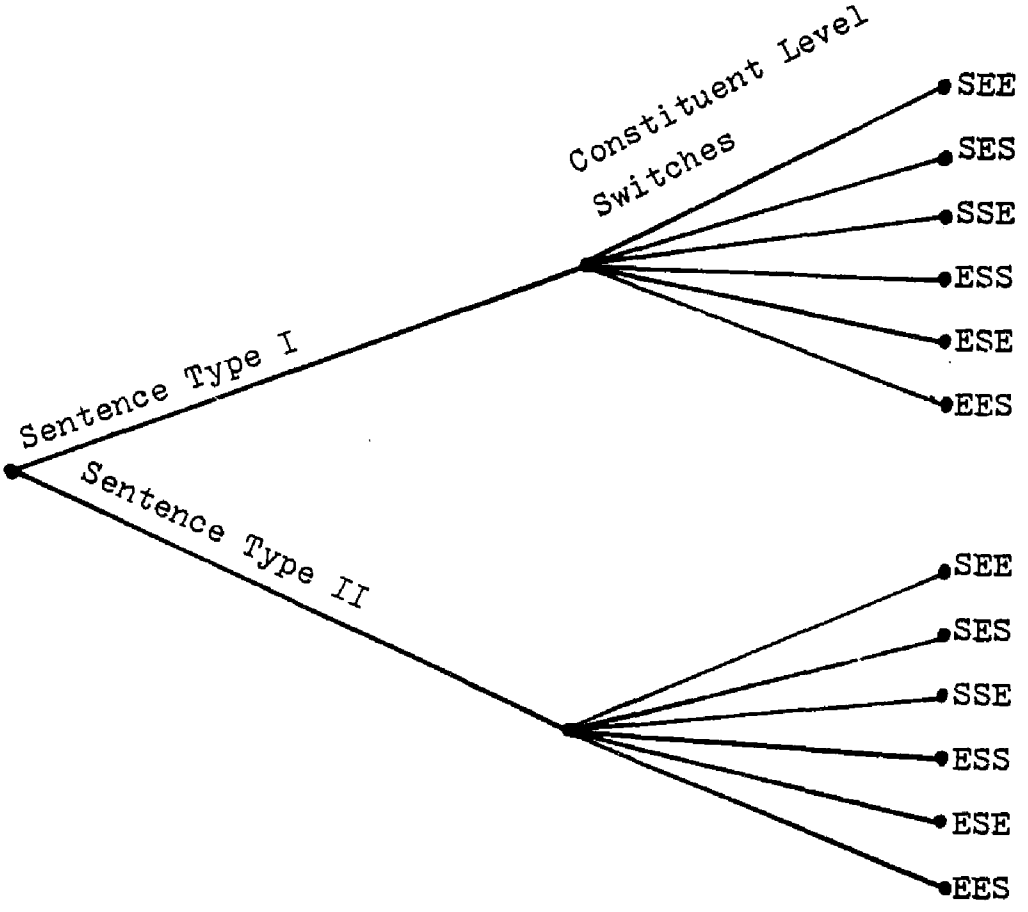
A sentence with two (2) constituents (such as sentence types 3 and 4) lends itself to four different combinations of languages within it:

	1st Constituent	2nd Constituent	
1.	English	Spanish	(ES)
2.	Spanish	English	(SE)

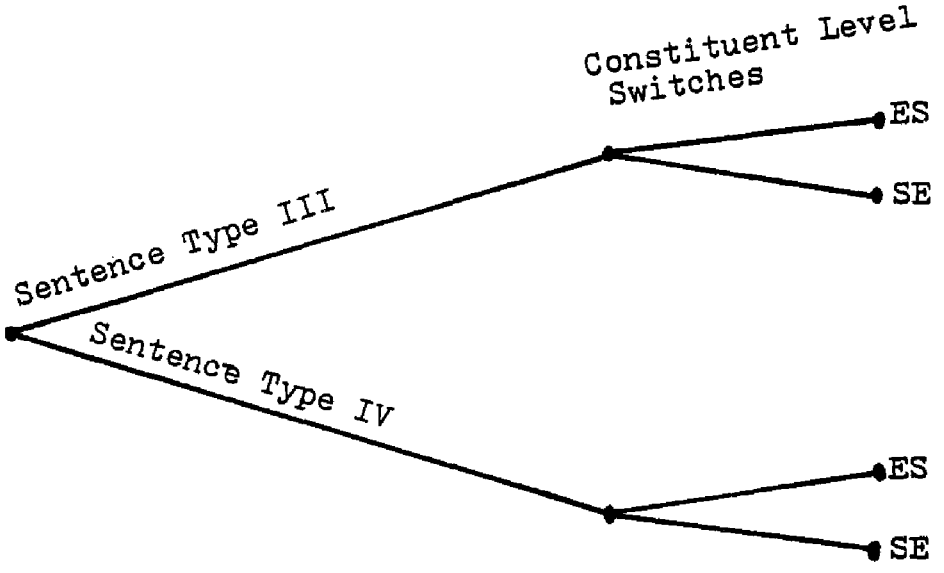
	1st Constituent	2nd Constituent	
3.	Spanish	Spanish	(SS)
4.	English	English	(EE)

Again, combinations number 3 and 4 have been eliminated because they imply that there is no code-switch present in the sentence.

When Sentence-Type Factor and Code-switch Type Factor are combined, the following possibilities obtain:



Combination of Sentence Types 1 and 2 with the possible Constituent switches, yields a total of 12 possible sentences.



Combination of Sentence Types 3 and 4 with the possible Constituent switches, yields a total of 4 possible sentences.

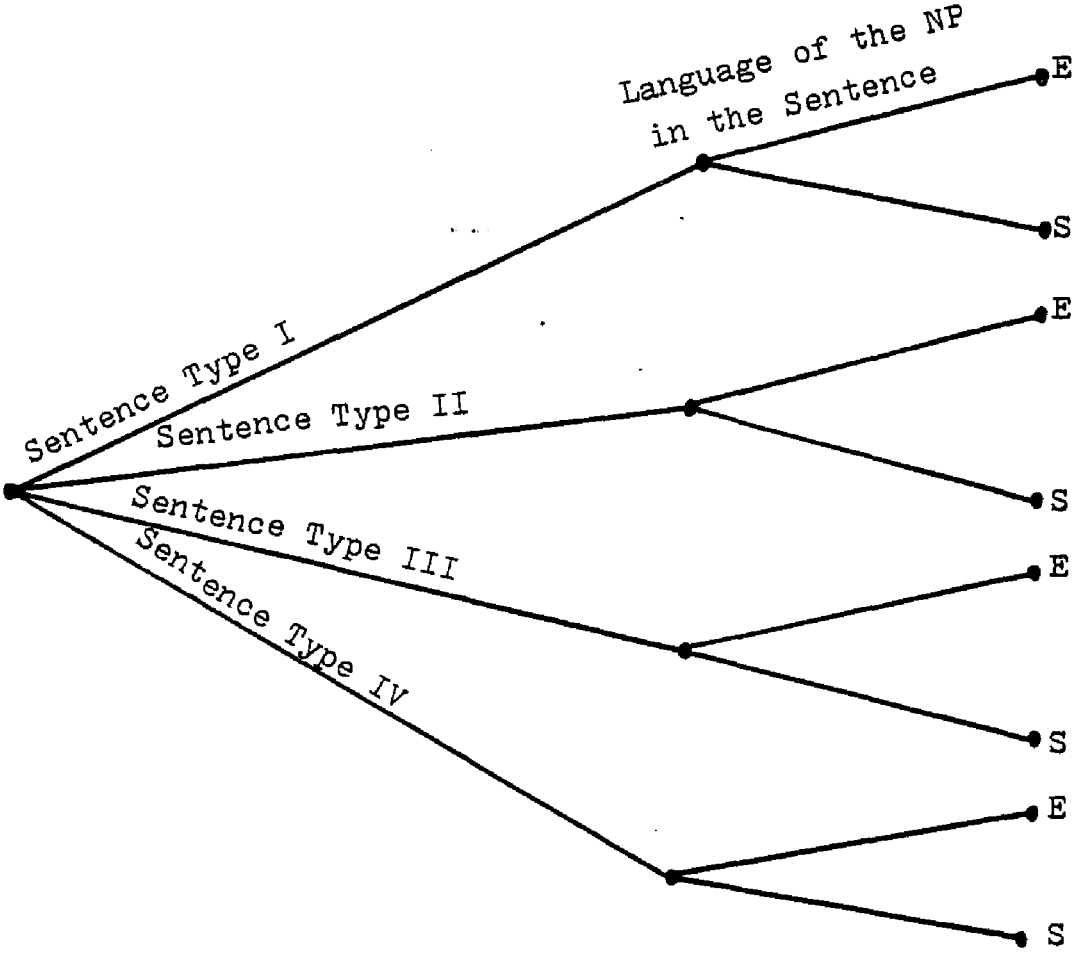
For the purporses of this study, a "Lexical Switch" will refer to a code-switch that encompasses a unit smaller than a major constituent. The present study will limit itself to the switching of Noun Phrases (Determiner + Noun) within the sentence.

Because of the structure of the sentences used in the study, there was one instance in which The Determiner + Noun combination corresponded to a major constituent within the sentence. For the sake of uniformity, this particular case was treated as a Lexical Switch in the analysis.

The Lexical Switch Factor had two possible levels:

1. All Noun Phrases (Determiner + Noun) in the sentence were presented in English while the rest of the sentence was presented in Spanish.
2. All Noun Phrases (Determiner + Noun) in the sentence were presented in Spanish while the rest of the sentence was presented in English.

When Sentence Type Factor and Lexical Switch Factor are combined, the following possibilities obtain:



Combination of Sentence Types 1. 2. 3 and 4 with the possible Lexical Switches, yields a total of 8 possible sentences.

For purposes of uniformity and to facilitate coding of stimulus sentences, the basic symmetric design of the study was divided into three groups of sentences:

GROUP I : Sentence Types 1 and 2 + Three-constituent combinations. (Total: 12 sentences)

GROUP II : Sentence Types 3 and 4 + Two-constituent combinations. (Total: 4 sentences)

GROUP III: Sentence Types 1, 2, 3, and 4 + Lexical Switch combinations. (total: 8 sentences)

The Basic Symmetric Design of the Study is presented in Table A-2 of Appendix A.

3.5 ADMINISTRATION OF STIMULUS SENTENCES

Once a child was found to qualify to participate in the study he was asked to imitate the 24 stimulus sentences.

Because the screening sentences had been administered prior to the actual test, it was not necessary to repeat the instructions to the children.

The sentences were presented to the children in such a way that counterpart sentences were separated by at least four other sentences. See Table A-3 in Appendix A. A three-second interval was allowed between the delivery of the stimulus sentence and the repetition by the child. The order of presentation of the stimulus sentences was the same for all the children. Sentences were repeated at the request of the child but the second attempt at imitation did not count as part of the final data.

When the test was over the child was asked whether he/she would like to listen to part of the recording. This was done to reassure the children. If the child asked the reason for the test, the purpose of the study was explained to him/her in simple language, otherwise no further explanations were offered.

Once the child had completed the task, he/she was escorted back to his/her classroom.

The children's responses were recorded using a Realistic CTR-39 battery operated tape recorder, and transcribed at a later date.

The stimulus sentences, in the order in which they were administered are listed in Tables A-3 in Appendix A.

After the data were collected, 11 children were eliminated from the study because of their inability to imitate most of the sentences presented. The 11 included all of the 4-year-olds, one 6-year-old male and one 8-year-old male.

Although 2 of the females in the 4-year-old were able to accomplish the task, all the 4-year-olds were eliminated from the study for the purposes of uniformity.

A total of sixty (60) children were included in the final data analysis. Each child was assigned a number from 1 to 60 going from the oldest to the youngest.

Tables A-4 through A-7 in Appendix A, illustrate the age breakdown of the sixty (60) children as well as the answers given by the children to the questions of place of birth, number of years in the Continental U.S., and language preference.

3.6 TRANSCRIPTION OF THE DATA

A data sheet was prepared for each one of the sentences. At the head of the page the stimulus sentence in question was copied. A column was formed for each one of the words in the sentence.

On the left hand margin the child's identifying number was placed. If the child repeated the sentence exactly, his line was left blank.

If a change was made by the child the change was recorded verbatim under the proper word column. Whenever a word was omitted, a dash (__) was used as an indicator. If a child was unable or unwilling to imitate the sentence, a line was drawn all the way across.

An unintelligible response was indicated by a wavy line (~~~~) .

Table A-8 in Appendix A is a photostatically reduced copy of the upper half of the actual data sheet for sentence 126.

3.7 EXPERIMENTAL DESIGN

For part of the analysis of the data the performance of the sixty (60) children whose responses served as data for the study were observed in reference to certain characteristics of the stimulus sentences. Other tests required that the sixty children be divided into two groups according to age. One of the groups comprised the children between five and seven years of age, the other group was made up of the children whose age ranged between eight and ten years of age. The former group was labeled YOUNG (N-35) the latter group was labeled OLD (N-25). These groupings made it possible to use some of the more powerful statistical tests which have minimum size requirements (such as the Chi-square test of contingency and some tests involving the normal curve).

Two types of observations were made of the responses of the children. The first type concentrated on the performance of either the whole group of sixty children or of the two sub-groups (young and old) in reference to the distribution of Spanish and English within the sentence. That is, given a specific base fraction of Spanish and English within a stimulus sentence, the fraction of the two languages in the children's renditions of the same sentence were measured and trends were observed. The second type of observation focused on more specific aspects of the code-switches contained in the stimulus sentences, and the children's renditions of these code-switches. In this case we compared the performance

of older and younger children with respect to imitation of the stimulus sentences, preservation of the structure of the sentences, preservation of the code-switching pattern of the sentences, and ability to reproduce specific code-switches within the sentences.

Statistical Analysis

Several types of statistical analysis were carried out to match the types of observations explained above:

The first type of analysis included a t-test compared the whole group of children with respect to a base fraction value, a paired variable test (a variation of a t-test) compared the whole group with respect to its rendition of two counterpart sentences and a t-test that compared the tendency of younger and older children to shift to Spanish.

For this purpose, the fraction of dominant language in each stimulus sentence was determined in the following way:

The number of words in each stimulus sentence was eight. In a sentence such as

115 : EL HOMBRE QUE ES MALO QUEMA THE PAPERS

six (6) of the words are in Spanish and two (2) in English. Thus, the sentence has a ratic of 6/8 (six words in Spanish over the total number of words in the sentence, namely eight). That is, the sentence is .75 Spanish.

Similarly, the fraction of English words in the sentence is .25 (two words in English over the total number of words

in the sentence : 2/8).

The DOMINANT language in sentence 115 is, therefore, Spanish.

The same procedure was followed with the counterpart of sentence 115, namely sentence 116 (THE MAN WHO IS BAD BURNS LOS PAPELES), where the fraction of dominant language (which in this case turns out to be English), is also .75, and with every other pair of sentences presented to the children for imitation.

Each one of the tests of this type will now be explained in detail.

1. Base Fraction Comparison Test

The purpose of this test was to determine whether the mean fraction of dominant languange "returned" by the children was the same as the base fraction of dominant language present in the stimulus sentence. In the case where the stimulus sentence was 50% Spanish and 50% English, we arbitrarily took the dominant language of the sentence to be Spanish.

The Null Hypothesis (H_o) was that the mean fraction of dominant language in the children's responses was equal to the fraction of dominant language present in the stimulus sentence.

$$H_o : \mu_{(\text{children's rendition})} = \text{Base Fraction}$$

The Alternate Hypothesis was that the Mean Fraction of dominant language in the children's response was different

from the base fraction of dominant language in the stimulus sentence.

$$H_1: \mathcal{M}_{(\text{children's rendition})} \neq \text{Base Fraction}$$

In this case each stimulus sentence was analyzed separately.

If the Mean Fraction returned by the children was larger than the base fraction in the stimulus sentence, that meant that the children showed an average tendency to shift to the dominant language of the sentence. If, on the other hand, the fraction dominant language returned by the children was smaller than the fraction in the stimulus sentence, this meant that the children tended to shift more to the non-dominant language of the sentence.

2. Paired Variable Test

A paired variable test was performed in order to determine whether in COUNTERPART SENTENCES there was the same tendency in the children to shift to the dominant language of the sentence.

The paired variable test (Levin and Rubin, 1980) and Kazmier (1978) was chosen because the two samples taken (from the two counterpart sentences) were not independent of each other, since each sample of responses was produced by the same set of children.

In order to carry out the test, each one of the sentences

produced by the children was expressed in terms of fractions according to the dominant language of the stimulus sentence. Example:

Sentence 115 (El hombre que es malo quema the papers), with a given fraction of .75 Spanish, is a Spanish dominant sentence. Sentence 116 (The man who is bad burns los papeles) its counterpart, is an English dominant sentence with a fraction of .75 English.

Child # 6 gave the following rendition of sentence 115:

El hombre que es malo quema los papers.

Following our rule for determining the dominant language in a sentence, it was found that child #6's rendition has a fraction 7/8 or .875 Spanish (as opposed to the .75 Spanish present in the stimulus sentence).

On the other hand, child #8 gave the following rendition of sentence #115:

El hombre que es malo burns the papers.

This sentence has a fraction of 5/8 or .625 Spanish.

Child #46 gave the following rendition of sentence 115:

El hombre quema los papeles.

In this sentence, the fraction in the dominant language (Spanish) is 5/5 or 1.0 Spanish.

Table 3.1 represents the way in which the data were organized for this test.

In Column 1 is indicated the child's number.

In Column 2, we list the fraction of the dominant language

present in the child's rendition of the stimulus sentence.

As explained above, if the stimulus sentence was Spanish dominant, the child's response fraction was computed as number of words in Spanish divided by the total number of words in the sentence. If, on the other hand, the stimulus sentence was English dominant, the child's fraction was computed as number of words in English over the total number of words in the sentence.

TABLE 3.1

PAIRED VARIABLE TEST: ORGANIZATION OF DATA

Child's number	Sentence 115 $\frac{\text{Span}}{\text{Total}}$ stim. = .75	Sentence 116 $\frac{\text{Eng}}{\text{Total}}$ stim. = .75	Difference between fractions in 115 & 116
	Variable : fs, 115	Variable: fs, 116	d=fs,115-fs,116
1	.75	———	~~———~~
2	.875	.75	.125
3	.625	.875	- .25
4	.75	.75	0
.	1	.25	.75
.	.	.	.
.	.	.	.
.	———	.75	~~———~~
60	.75	.625	.125

In Column 3, we listed the fraction of English in the child's response to the counterpart stimulus sentence.

If a child was unable to give a meaning preserving rendition of the stimulus sentence, his fraction was not

counted and was represented by  in the table. (e.g., see response of child number 1 in Table III.8).

What we were interested in considering for a hypothesis test here is the difference variable denoted by d. That is, the difference between the fraction given by the child for one response sentence and the fraction given for the counterpart stimulus sentence. In Table 3.1 the d values are listed in column 4.

If a child was unable to repeat either one or both of the sentences in a counterpart pair, then d (difference) for that child could not be computed.

In Table 3.1 therefore, the value in Column 3 were subtracted, respectively, from the values in Column 2 in order to obtain the values listed in Column 4.

If all the differences expressed in Column 4 had been equal to zero (0), that would have meant that all the children showed exactly the same tendency to go to the dominant language in both sentences. (This, of course, would constitute a highly unlikely occurrence).

The Null Hypothesis in this test (H_o) is that the children show the same tendency to go to the dominant language in both sentences of a counterpart pair:

$$H_o: \mathcal{M}_{(\text{one sentence})} = \mathcal{M}_{(\text{counterpart sentence})}$$

and

$$H_1: \mathcal{M}_{(\text{one sentence})} \neq \mathcal{M}_{(\text{counterpart sentence})}$$

One way of explaining the results of this study is to say that the closer $\bar{d}$ (Mean Difference) is to zero, the closer are the children's mean fractions dominant language in counterpart pairs.

A positive $\bar{d}$ ($\bar{d} > 0$) indicates that the Mean Fraction of the dominant language returned by the children was larger for the Spanish dominant sentence of the counterpart pair.

A negative $\bar{d}$ ($\bar{d} < 0$) indicates that the Mean Fraction of dominant language returned by the children was larger in the English dominant sentence of the counterpart pair.

3. Comparison of Young vs. Old

The purpose of this test was to determine whether there was a significant difference between the fraction of Spanish returned by the younger children and the fraction of the Spanish returned by the older children.

In symbols, $d = x_y - x_o$ where x_y and x_o are the fraction of Spanish for the Young and Old, respectively, and d is the symbol for the difference.

The Null Hypothesis (H_o) was that the Mean Fraction of Spanish returned by the younger children was the same as that returned by the older children.

$$H_o : \mu_y = \mu_o$$

and the Alternate Hypothesis (H_1) was that the Mean Fraction of Spanish returned by the younger children was larger than the Mean Fraction of Spanish returned by the older children.

$H_1: \mu_y > \mu_o$

In this test each stimulus sentence was analyzed separately. If the difference between the fractions was positive ($d > 0$), that meant that the younger children showed a stronger tendency to go to Spanish.

4. Chi-square Tests

The second type of analysis of the data was done by means of several Chi-square Tests of Independence. Contingency tables (see Table 3.2) were drawn up in order to determine whether quality of response (defined in several ways) was dependent on the age of the children tested.

Table 3.2

Sample Contingency Table

AGE	QUALITY OF RESPONSE	TOTAL
Old		
Young		
TOTAL		

The two values for age, YOUNG and OLD are indicated in the left most margin of Table 3.2 . The other variables (whose values are indicated in the top margin) pertain to quality of response. It can have values such as Exact Repetition/ No Repetition/ All Others. Another classification for quality of response could be Meaning Preserved/ Meaning

Not Preserved/ All Others.

Example: For sentence 121 we have the following Contingency Table:

AGE	Exact Repetition	No Repetition	All Others	TOTAL
Old	17	4	4	25
Young	9	14	12	35
TOTAL	26	18	16	60

Of the 25 children in the OLD category, 17 gave an Exact repetition of the stimulus sentence, 4 were not able to repeat it at all (No Repetition) and 4 gave an inexact repetition of the sentence (All Others).

Similarly, for the 35 YOUNG children, 9 repeated the stimulus sentence exactly, 14 were not able to repeat it at all, and 12 gave an inexact repetition of it.

The margin totals on the right indicate the sums for the OLD and YOUNG rows, and the bottom margin totals represent the sums of the frequencies in the various columns. The total frequency obtained by summing the row frequencies or the column frequencies (60) is given in the lower right hand corner of the table.

The Null Hypothesis (H_0) for the Chi-square (χ^2) Test of Independence is that the quality of response variable (top row) is independent of the age variable (left column). Thus

we write:

H_o: Quality of response is not dependent of age.

The Alternate Hypothesis (H_1) is:

H_1: Quality of response is dependent of age.

H_o being true is equivalent to a situation in which the quality of response pattern for the older children is the same as the quality of response pattern for the younger children.

A total of four Chi-square tests were performed on the data. The quality of response variables were:

1. Accuracy of Repetition of the Sentence
2. Structure Preservation
3. Code-switching Pattern Preservation
4. Accuracy of Reproduction of Specific Code-switching Junctures.
5. Direction of the Code-switch

A paired variable test was also performed in order to determine whether there was a significant difference in the children's ability to reproduce specific code-switches between counterpart pairs of stimulus sentences.

The Null Hypothesis (H_o) was that the ability of the children to reproduce a particular code-switch was the same in both members of a counterpart pair regardless of the direction of the switch. The Alternate Hypothesis (H_1) was that the ability of children to reproduce a particular code-switch was different for the two members of a counterpart

pair.

A positive $\bar{d}$ indicates that the children were better at reproducing a S$\longrightarrow$E switch, while a negative $\bar{d}$ indicates that they favored the E$\longrightarrow$S direction.

The closer $\bar{d}$ is to zero the less of a difference there was in the ability of the children to reproduce the code-switch in both directions.

For all the statistical tests performed in this study the Null Hypothesis was tested at the .05 significance level.

The analysis of the data was done with the aid of a TI 58/59 Programmable Calculator.

3.8 EXPERIMENTAL HYPOTHESES

The following hypotheses were tested:

1. The fraction of Spanish and English within the sentence will affect the children's ability to imitate it.
2. Younger children will be less proficient than older children at imitating code-switched sentences exactly.
3. Sentences type will affect the children's ability to imitate the stimulus sentence.
4. Constituent Switches will be more easily reproduced by the children than Lexical Switches.
5. Older children will be more proficient than younger children at reproducing Lexical Switches.
6. Early code-switches within a sentence will be more easily imitated by the children than late code-switches.
7. Code-switch junctures in the direction Spanish $\longrightarrow$ English will be more easily imitated by the children than code-switches in the opposite direction.

CHAPTER IV

RESULTS

4.1 EFFECTS OF LANGUAGE DISTRIBUTION WITHIN THE SENTENCE

A. BASE FRACTION COMPARISON TEST

In 16 out of the 24 sentences presented to the children the Null Hypotheis (H_o) was accepted, meaning that there was a tendency for the children to keep the same fraction of dominant language as that present in the stimulus sentence.

Table 4.1 summarizes the results of the test.

In all of the sentences in which the mean fraction of dominant language "returned" by the children was significantly different from the fraction of dominant language present in the stimulus sentence (with the exception of sentences 312 and 321) the children's fraction of dominant language showed a significant tendency to shift to Spanish.

B. SHIFT TO DOMINANT LANGUAGE IN COUNTERPART SENTENCES

Table 4.2 indicates that H_o was accepted in 9 out of the 12 counterpart pairs, showing that, in general the children had the same tendency to shift to the dominant language of the sentence in a counterpart pair.

In 3 out of the 12 counterpart pairs, H_o was rejected, indicating that the tendency of the children to shift to the dominant language of the stimulus sentence in a counterpart pair was not of the same magnitude in both sentences, and that this difference in magnitude was significant.

TABLE 4.1

BASE FRACTION COMPARISON TEST

	Type I Sentences Constituent Switch	Fraction of Dom. Lang. in Stim. Sentence	Fraction returned by Children	z	P(χ^2)
111	La niña que es gorda cuts the bread	F_e = .625	= .623	-.00026	.4998
112	The girl who is fat corta el pan	F_e = .625	= .638	.3922	.6525
113	El perro que es negro catches la bola	F_e = .875	= .876	.079	.5309
114	The dog which is black coge the ball	F_e = .875	= .772	-2.866	.0020 *
115	El hombre que es malo quema the papers	F_e = .75	= .787	1.94	.9740
116	The man who is bad burns los papeles	F_e = .75	= .722	-.839	.2007
	Type II Sentences: Constituent Switch				
121	El gato chases the mouse which is white	F_e= .75	= .767	.829	.7317
122	The cat persigue al ratón que es blanco	F_e = .75	= .773	.952	.8296
123	El niño cleans el cuarto que es grande	F_e = .875	= .856	-1.06	.1442
124	The boy limpia the room which is big	F_e = .875	= .755	-3.42	.0030 *
125	La señora carga the bag which is heavy	F_e = .625	= .545	-3.48	.0002 *
126	The lady carries la bolsa que es pesada	F_e = .625	= .608	-.493	.3107
	Type III Sentences: Constituent Switch				
231	When the planes fly el perro always jumps	F_e = .75	= .845	3.50	.9997 *
232	Cuando los aviones vuelan the dog siempre salta	F_e = .75	= .859	3.73	.9999 *
	Type IV Sentences: Constituent Switch				
241	The baby siempre llora cuando la mamá duerme	F_e = .75	=.75	-.0117	.4950
242	El bebé always cries when the mother sleeps	F_e = .75	=.743	-.188	.4254

TABLE 4.1 (CONTINUED)

	Type I Sentences: Lexical Switch	Fraction of Dom. Lang. in Stim. Sentence	Fraction returned by Children	Z	$P(\chi^2)$
311	El caballo which is small carries las frutas	$F_s = .5$	=.591	2.38	.9913 *
312	The horse que es pequeño carga the fruits	$F_s = .5$	=.381	-.404	.0002 *
	Type II Sentences: Lexical Switch				
321	La niña wears el sombrero which is old	$F_s = .5$	=.558	1.62	.9470
322	The girl lleva the hat que es viejo	$F_c = .5$	=.460	-.420	.3372
	Type III Sentences: Lexical Switch				
331	When los niños eat el papá always talks	$F_s = .5$	=.467	-.954	.9090
332	Cuando the children comen the father, siempre hable	$F_c = .5$	=.550	.909	.8183
	Type IV Sentences: Lexical Switch				
341	El niño always reads when la maestra talks	$F_s = .5$	=.545	1.52	.9359
342	The boy siempre lee cuando the teacher habla	$F_c = .5$	=.618	3.152	.9991 *

TABLE 4.2

SHIFT TO DOMINANT LANGUAGE IN COUNTERPART SENTENCES: Paired Variable Test

Sentence Type	Sentence Pair	$\bar{d}$	z	$P(\leq z)$
I (Constituent Switch)	111: La niña que es gorda cuts the bread 112: The girl who is fat corta el pan	-.0156	-.406	6176
	113: El perro que es negro catches la bola 114: The dog which is black coge the ball	.081	1.97	9760 *
	115: El hombre que es malo quema the papers 116: The man who is bad burns los papeles	.064	1.43	9245
II (Constituent Switch)	121: El gato chases the mouse which is white 122: The cat persigue al ratón que es blanco	.058	1.19	11622
	123: El niño cleans el cuarto que es grande 124 : The boy limpia the room which is big	.095	2.06	9805 *
	125: La señora carga the bag which is heavy 126: The lady carries la bolsa que es pesada	.046	.911	1809
III (Constituent Switch)	231: When the planes fly el perro always jumps 232: Cuando los aviones vuelan el perro siempre salta	.011	.226	5895
IV (Constituent Switch)	241:The baby siempre llora cuando la mamá duerme 242:El bebé always cries when the mother sleeps	.001	.028	5115

TABLE 4.2 (CONTINUED)

SHIFT TO DOMINANT LANGUAGE IN COUNTERPART SENTENCES: Paired Variable Test

Sentence Type	Sentence Pair	$\bar{d}$	z	$P(\chi^2)$
I (Lexical Switch)	311: El caballo which is small carries las frutas 312: The horse que es pequeño carga the fruits	.099	2.14	0600 *
II (Lexical Switch)	321: La niña wears el sombrero which is old 322: The girl lleva the hat que es viejo	.036	1.07	9470
III (Lexical Switch)	331: When los niños eat el papá always talks 332: Cuando the children comen the father siempre habla.	-.087	-.1.60	0545:
IV (Lexical Switch)	341: El niño always reads when la maestra talks 342: The boy siempre lee cuando the teacher habla	-.055	-1.23	1084

C. COMPARISON OF YOUNG VS. OLD

The difference between the fraction of Spanish returned by the young and the older children was significant in 11 out of the 24 sentences presented. In all of these cases (see Table 4.3) the fraction of Spanish returned by the younger children was significantly larger than that returned by the older children.

In 7 out of the remaining 13 sentences the same tendency was present although no significant.

TABLE 4.3

COMPARISON OF YOUNG VERSUS OLD

Sentence Type	Sentence	Fraction of Spanish in Stim. Sent.	Fraction of Spanish Returned by Children: Young	Old	T	H_o Accepted/ Rejected*
I Constituent Switch	111: La niña que es gorda cuts the bread	.625	.625	.619	.270	.6067
	112: The girl who is fat corta el pan	.375	.349	.375	-.377	.3528
	113: El perro que es negro catches la bola	.875	.926	.810	3.38	.9996 *
	114: The dog which is black coge the ball	.125	.296	.142	2.108	.9824 *
	115: El hombre que es malo quema the papers	.75	.799	.770	.724	.7655
	116: The man who is bad burns the papeles	.25	.34	.206	1.98	.977 *
II Constituent Switch	121: El gato chases the mouse which is white	.25	.253	.216	.652	.7429
	122: The cat persigue al raton que es blanco	.75	.747	.807	-1.20	.1147
	123: El niño cleans el cuarto que es grande	.875	.892	.810	2.27	.9884 *
	124: The boy limpia the room which is big	.125	.328	.145	2.72	.9968 *
	125: La señora carga the bag which is heavy	.375	.492	.408	1.85	.6833
	126: The lady carries la bólsa que es pesada	.625	.684	.553	1.95	.9749 *
III Constituent Switch	231: When the planes fly el perro always jumps	.25	.113	.196	.211	.4161
	232: Cuando los aviones vuelan the dog siempre salta	.75	.862	.855	.128	.5512
IV Constituent Switch	241: The baby siempre llora cuando la mamá duerme	.75	.724	.78	-.931	.1757
	242: El bebé always cries when the mother sleeps	.25	.266	.245	.28	.6099

TABLE 4.3 (CONTINUED)

COMPARISON OF YOUNG VERSUS OLD

Sentence Type	Sentence	Fraction of Spanish in Stim. Sent.	Fraction of Spanish Returned by Children: Young	Old	T	H_o Accepted/ Rejected*
I Lexical Switch	311: El caballo which is small carries las frutas	.5	.659	.503	2.06	.9805 *
	312: The horse que es pequeño carga the fruits	.5	.694	.520	3.24	.9994 *
II Lexical Switch	321: La niña wears el sombrero which is old	.5	.646	.454	2.77	.9972 *
	322: The girl lleva the hat que es viejo	.5	.443	.480	-.68	.2477
III Lexical Switch	331: When los niños eat el papá always talks	.5	.493	.441	.764	.7776
	332: Cuando the children comen the father siempre habla	.5	.798	.333	5.08	.9999 *
IV Lexical Switch	341: El niño always reads when la maestra talks	.5	.555	.534	.147	.5584
	342: The boy siempre lee cuando the teacher habla	.5	.684	.549	6.77	1. *

4.2 ACCURACY OF REPETITION

Table 4.4 summarizes the results obtained for this test. Type I Sentences: In 6 out of the 8 sentences of this type, we accepted the Null Hypothesis of Independence. That is, it was found that for these six sentences the ability of the children to repeat the sentence exactly was NOT dependent on age.

In the remaining two sentences of this type H_o was rejected and H_1 was accepted. That is, for these two sentences it was found that the ability of the children to imitate the sentences exactly WAS dependent on age. In both of these sentences the older group did better at imitating the sentence exactly than the younger group.

Type II Sentences: In general, it was found that Type II sentences were more difficult for the children to repeat exactly than Type I sentences. In fact, in 5 out of the 8 Type II sentences H_o was rejected, indicating that the ability of the children to imitate the sentence was dependent on the age of the child. As evidenced by the results in these 5 sentences, the older children were better at repeating the sentences exactly than the younger children.

Type III and Type IV Sentences: In 3 out of the 4 sentences comprising each of these sentnce types (III and IV) H_o was rejected, indicating that age was a significant factor in the children's ability to imitate the sentences. As in Type II sentences, the younger children had more difficulty that the older ones in repeating the sentences exactly.

TABLE 4.4

ACCURACY OF REPETITION

Sentence TYPE	SENTENCE	CHI-SQUARE	P (χ^2)
I	111 La niña que es gorda cuts the bread	2.61	7291
	112: The girl who is fat corta el pan	10.13	9937 *
	113: El perro que es negro catches la bola	6.27	9996 *
	114: The dog which is black coge the ball	5.4	9824
	115: El hombre que es malo quema the papers	2.6	7269
	116: The man who is bad burns los papeles	1.6	5647
	311: El caballo which is small carries las frutas	5.42	9334
	312: The horse que es pequeño carga the fruits	5.71	9423
II	121: El gato chases the mouse which is white	10.65	9951 *
	122: The cat persigue al ratón que es blanco	15.77	9544 *
	123: El niño cleans el cuarto que es grande	5.1	9215
	124: The boy limpia the room which is big	8.54	9860 *
	125: La señora carga the bag which is heavy	8.74	9873 *
	126: The lady carga la bolsa que es pesada	5.91	9480
	321: La niña wears el sombrero which is old	10.36	9943 *
	322: The girl lleva the hat que es viejo	2.09	6375
III	231: When the planes fly el perro always jumps	15.58	9995 *
	232: Cuando los aviones vuelan the dog siempre salta	5.7	9416
	331: When los niños eat el papá always talks	11.23	9963 *
	332: Cuando the children comen the father siempre habla	12.8	9983 *
IV	241: The baby siempre llora cuando la mamá duerme	6.01	9506 *
	242: El bebé always cries when the mother sleeps	16.6	9927 *
	341: El niño always reads when la maestra talks	5.7	9416
	342 The boy siempre lee cuando the teacher habla	7.94	9811 *

4.3 PRESERVATION OF SENTENCE STRUCTURE

A Chi-square test was performed in order to determine whether there was a relationship between the age of the children and their ability to preserve the grammatical structure of the stimulus sentences. See Table 4.5.

Type I Sentences:

In three out of the eight Type I sentences there was a significant relationship between the children's ability to preserve the structure of the sentences and the children's age.

Type II Sentences: In five out of the eight sentences of this type the children's ability to reproduce the structure of the sentence was significantly dependent on their age.

Type III Sentences: Type III sentences were analyzed under two conditions: under condition I, the omission of ALWAYS was accepted. When this was the case, the ability of the children to preserve the structure of the sentences was significantly dependent on age in three out of the four sentences of this type.

Under Condition II the omission of ALWAYS was NOT accepted. In this case, the ability of the children to preserve the structure of the sentenccs was dependent on age in four out of the four sentences presented.

Type IV Sentences: Type IV sentences were also analyzed under two conditions. Under Condition I the omission of WHEN was not accepted, while omission of ALWAYS was accepted. In this

case, the ability of the children to reproduce the structure of the sentences of this type was significantly dependent on age in every case.

Under Condition II, omission of WHEN and/or ALWAYS was NOT accepted. When this was the case, the ability of the children to reproduce the structure of the sentences was significantly dependent on age in every instance.

TABLE 4.5

PRESERVATION OF SENTENCE STRUCTURE

Sentence Type	Sentence #	P_o	P_y
I	111	.92	.74
	112	.96	.66 *
	113	1.	.91
	114	.96	.828
	115	.96	.91
	116	.92	.71 *
	311	.96	.77 *
	312	.72	.57
II	121	.84	.6 *
	122	.96	.88
	123	1.	.77 *
	124	.92	.8
	125	.92	.68 *
	126	1.	.83 *
	321	.88	.57 *
	322	.92	.8
III Condition 1.	231	.92	.6 *
	232	1.	.83
	331	.92	.66 *
	332	.96	.51 *
III Condition 2.	231	.72	.46 *
	232	.92	.4 *
	331	.84	.43 *
	332	.52	.2 *
IV Condition 1.	241	1.	.88 *
	242	1.	.77 *
	341	1.	.77 *
	342	1.	.8 *
IV Condition 2	241	1.	.77 *
	242	1.	.63 *
	341	.92	.77 *
	342	.92	.6 *

4.4 PRESERVATION OF CODE-SWITCHING PATTERN

This test was performed in order to determine whether the ability of the children to preserve the code-switching pattern presented in the stimulus sentence, was dependent on age.

The contingency table designed for this particular test had the following values pertaining to the quality of response variable: Pattern preserved / pattern not preserved. The following represents a sample contingency table for this test:

AGE	Pattern Preserved	Pattern not preserved	TOTAL
OLD			
YOUNG			

The two categories in the upper margin (Pattern preserved/ Pattern not preserved) were derived from the single category of children who gave structure preserving renditions of the stimulus sentences. This was, therefore, a conditional study in which not all the children were included.

Definition of Terms

The code-switching (c-s) pattern of the stimulus sentence was said to be preserved when the child did not deviate from the code-switches presented in the stimulus sentence. Whenever a child added, omitted or changed a particular code-switch, his rendition was judged as not having preserved the c-s

pattern presented.

The following are examples of renditions that did not preserve the c-s pattern of the stimulus sentence:

Sentence # 115: El hombre que es malo quema the papers.

Child # 16: El hombre que es malo quema los papers.

Child # 57: El hombre que es malo burns the papers.

Child # 42: El hombre que es malo quema los papeles.

The code-switching pattern of Sentence # 115 can be expressed in terms of the constituents involved (the sentence constituents used for the purposes of this study are defined and explained in Chapter III) : Spanish - Spanish - English (S-S-E), where the Noun Phrase constituent is in Spanish, the Verb Phrase constituent is in Spanish, and the Object constituent is in English.

Whenever a single constituent constains elements in the two languages it is defined as a MIXED (M) constituent. For example, child # 16's rendition of sentence 115 was: El hombre que es malo quema los papers. His code-switching pattern in this case was S-S-M, because the Direct Object constituent contains one element in Spanish and one in English.

The Null Hypothesis (H_o) was that the ability of the children to preserve the c-s pattern presented in the stimulus sentence was NOT dependent on the age of the children.

The Alternate Hypothesis (H_1) was that the ability of the children to preserve the c-s pattern presented in the stimulus sentence WAS dependent on age.

Type I Sentences: In 6 out of the 8 Type I sentences H_o was accepted, meaning that the ability of the children to preserve the C-S pattern presented was NOT dependent on age. The tendency (although not significant in the 6 cases mentioned) was for the older children to preserve the C-S pattern of the stimulus sentence more often than the younger children.

This tendency can be observed by looking at the proportions of older (P_o) and younger (P_y) children who reproduced the C-S pattern presented in the stimulus sentence. See Table 4.6

Type II Sentences: In 5 out of the 8 Type II sentences H_o was also accepted. The tendency to preserve the c-s pattern presented was not dependent on the age of the children.

The tendency for the older children to preserve the c-s pattern of the stimulus sentence more often than the younger children is shown by the proportions. See Table 4.6

Type III Sentences: H_o was accepted in all but one of Type III sentences. Once again, the tendency to preserve the code-switcing pattern was not significantly dependent on the age of the child. The tendency was, however, for the older children to preserve the code-swithing pattern more often than the younger children as shown by the proportions. See

Table 4.6

Type IV Sentences: In 3 out of the 4 Type IV sentences H_o was accepted. The proportions in Table 4.6 show the tendency of the older children to preserve the code-switching pattern of the stimulus sentence over the younger children.

TABLE 4.6

REPRODUCTION OF CODE-SWITCHING PATTERN

Sentence Type	Sentence #	C-S Pattern	$\hat{P}_o$	$\hat{P}_y$	(χ^2)	$P(\chi^2)$
I	111	SSE	1.	.896	.0816	.2249
	112	EES	.611	.625	2.524	.8879
	113	SES	.52	.187	7.385	.9934 *
	114	ESE	.541	.321	2.894	.9111
	115	SSE	.75	.562	2.498	.8860
	116	EES	.166	.285	.7431	.6113
	311	NP Span.	.208	0.	7.104	.9923 *
	312	NP Eng.	.444	.304	.3209	.4289
II	121	SEE	.809	.466	1.866	.8281 *
	122	ESS	.75	.677	.7010	.5975
	123	SES	.44	.555	.3208	.4289
	124	ESE	.782	.464	4.556	.9672 *
	125	SSE	.782	.625	1.859	.8272
	126	EES	.2	.071	2.043	.8471
	321	NP Span.	.409	.09	6.694	.9903 *
	322	NP Eng.	.521	.392	1.647	.8006
III	231	ES	.555	.13	3.725	.9463 *
	232	SE	.217	.21	.0039	.0500
	331	NP Span.	.272	.26	3.178	.9254
	332	NP Eng.	.076	0.	.8991	.6564
IV	241	ES	.56	.33	1.222	.7310
	242	SE	.72	.26	6.077	.9863 *
	341	NP Span.	.347	.22	1.963	.6252
	342	NP Eng.	.260	.07	1.459	.5178

4.5 REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

A Chi-square test was performed in order to determine whether the ability of the children to reproduce a specific code-switch was dependent on age.

For each specific code-switch a contingency table was drawn up. For example:

Sentence 111: La niña que es gorda cuts the bread.

This sentence had only one code-switch in it, namely the one occurring at the juncture of the adjective and the verb (where the adjective was in Spanish and the verb in English). For this sentence only one contingency table was necessary .

On the other hand, sentence 123: El niño cleans el cuarto que es grande, was considered to have two code-switches in it, one at the juncture of the noun and the verb (niño/cleans) and the other at he juncture of the verb and noun phrase (cleans/ el cuarto).

For this sentence it was necessary to draw up two contingency tables.

For this discussion the results have been grouped according to the elements present at the juncture of the switch in the stimulus sentence.

Six types of "juncture of switch" were identified:

1. Noun-Verb
2. Verb-Article (Noun Phrase)
3. Noun-Relative Pronoun
4. Adverb-Article (Noun Phrase)

5. Noun-Adverb

6. Adjective- Verb

Each type will be discussed individually.

1. NOUN-VERB JUNCTURE

Case 1: Noun in Spanish --- Verb in English

The sentences containing a code-switch at this juncture were:

121: El gato / chases the mouse which is white

321: La niña / wears el sombrero which is old

123: El niño / cleans el cuarto qua es grande

341: El niño always reads when la maestra / talks

331: When los niños / eat el papa always talks.

The results are summarized in Table 4.7

The N-V switch was significantly easier for the older children than for the younger children to reproduce in four out of the five cases presented.

NOUN - VERB JUNCTURE

Case 2: Noun in English --- Verb in Spanish.

The sentences containing a code-switch at this juncture were:

122: The cat / persigue al ratón que es blanco

124: The boy / limpia the room which is big

342: The boy siempre lee cuando the teacher / habla

332: Cuando the children / comen the father siempre habla

322: The girl / lleva the hat que es viejo

There was no significant difference in the ability of older and younger children to reproduce this particular code-switch (except for sentence 332). See Table 4.8

2. NOUN - ADVERE JUNCTURE

Case 1: Noun in Spanish --- Adverb in English

The sentences containing a code-switch at this juncture were:

231: When the planes fly el perro / always jumps

242: El bebé / always cries when the mother sleeps

341: El niño / always reads when la maestra talks

331: When los niños eat el papá / always talks.

The results are summarized in Table 4.9

In sentences 231, 331 and 242 the Null Hypothesis was rejected, showing that the ability of the children to reproduce the code-switch in question was dependent on age. The older children did significantly better than the younger ones.

NOUN - ADVERB JUNCTURE

Case 2: Noun in english --- Adverb in Spanish

The sentences in this group were:

232: Cuando los aviones vuelan the dog / siempre salta

241: The baby / siempre llora cuando la mamá duerme

342: The boy / siempre lee cuando the teacher habla

332: Cuando the children comen the father siempre habla.

In this group the Null Hypothesis was accepted every time, meaning that the ability to reproduce this paticular code-switch was not dependent on age. (Results are summarized in Table 4.10)

3. NOUN - RELATIVE PRONOUN JUNCTURE

Case 1: Noun in Spanish --- Relative Pronoun in English

The sentences in this group were:

311: El caballo / which is small carries las frutas

321: La niña wears el sombrero / which is old

In this group the Null Hypothesis was rejected both times, meaning that the ability of the children to reproduce the code-switch in question was dependent on their age. The older children did significantly better than the younger ones. Results are summarized in Table 4.11

NOUN - RELATIVE PRONOUN JUNCTURE

Case 2: Noun in English --- Relative Pronoun in Spanish

The sentences in this group were:

322: The girl lleva the hat / que es viejo

312: The horse / que es pequeño carga the fruits

H_o was accepted in these two sentences meaning that the ability of the children to reproduce this particular type of code-switch was not dependent on age.

Results are summarized in Table 4.11

4. VERB - ARTICLE (Noun Phrase) JUNCTURE

Case 1: Verb in Spanish --- Article in English

The sentences in this group were:

124. The boy limpia / the room which is big

125: La señora carga / the bag which is heavy

232. Cuando los aviones vuelan / the dog siempre salta

115: El hombre que es malo quema / the papers

322: The girl lleva / the hat que es viejo

312: The horse que es pequeño carga / the fruits

322: Cuando the children comen / the father siempre habla

In the six out of the 7 sentences of this group the difference between the proportions was not significant. Results are summarized in Table 4.12

VERB - ARTICLE (Noun Phrase) JUNCTURE

Case 2: Verb in English --- Article in Spanish

The sentences in this group were:

116. The man who is bad burns / los papeles

126. The lady carries / la bolsa que es pesada

311. El caballo which is small carries / las frutas

321. La niña wears / el sombrero which is old

123. El niño cleans / el cuarto que es grande

331. When los niños eat / el papá always talks

231. When the planes fly / el perro always jumps

In sentences 311,331, 321 and 231 H_o was rejected, meaning that the ability of the children to reproduce those code-switches was dependent on age.

The trend was, as before, for the older children to do better than the younger ones. Results are summarized in Table 4.13

5. ADVERBS - ARTICLE (Noun Phrase) JUNCTURE

Case 1: Adverb in Spanish --- Article in English

The sentences in this group were:

342: The boy siempre lee cuando / the teacher habla

332: Cuando / the children comen the father siempre habla

The Null Hypothesis was rejected in both cases, showing that the ability of the children to reproduce this type of code-switch was dependent on age. Results are summarized in Table 4.14

ADVERB - ARTICLE (Noun Phrase) JUNCTURE

Case 2: Adverb in English --- Article in Spanish

The sentences in this group were:

331: When / los niños eat el papá always talks

341: El niño always reads when / la maestra talks

There was no significant difference in the ability of older and younger children to reproduce the code-switch in sentence in either of the two cases. Results are summarized in Table 4.14

6. ADJECTIVE - VERB JUNCTURE

Case 1: Adjective in Spanish --- Verb in English

The sentences in this group were:

113: El perro que es negro / catches la bola

111: The girl who is fat / corta el pan

In this case, the Null Hypothesis was rejected for sentence 113 showing that the ability to reproduce the code-switch (Adjective-Verb) was dependent on age.

In sentence 113 the younger children had significantly more difficulty than the older ones in reproducing the code-switch in question. Results are summarized in Table 4.15

ADJECTIVE - VERB JUNCTURE

Case 2: Adjective in English --- Verb in Spanish

The sentences in this group were:

112: The girl who is fat / corta el pan

114: The dog which is black / coge the ball

The proportions obtained for the two sentences were:

112: $\hat{P}_o = .611$ $\hat{P}_y = .458$

114: $\hat{P}_o = .625$ $\hat{P}_y = .586$

These results show that the abilities of older and younger children to imitate this code-switch was not dependent on age. Results are summarized in Table 4.15

TABLE 4.7

NOUN - VERB JUNCTURE

CASE 1 : Noun in Spanish - Verb in English Sentence	Proportion of Children preserving juncture	Chi^2	$P(X^2)$
121: El gato/chases the mouse which is white.	P_o: 1. P_y: .523	13.125	.9978 *
123: El niño/cleans el cuarto que es grande.	P_o: .8 P_y: .551	3.724	.95 *
321: La niña /wears el sombrero which is old.	P_o: .818 P_y: .041	25.22	.999 *
341: El niño always reads when la maestra/ talks.	P_o: .76 P_y: .482	4.342	.964 *
331: When los niños/eat el papá always talks	P_o: .5 P_y: .565	.2006	.3457

TABLE 4.8

NOUN - VERB JUNCTURE

CASE 2 : Noun in English - Verb in Spanish Sentence	Proportion of children preserving Juncture	Chi^2	$P(\chi^2)$	Hypothesis (H_o) Accepted/ Rejected
122: The cat persigue al ratón que es blanco	P_o: .79 P_y: .74	.185	.3331	Accepted
124: The boy limpia the room which is big.	P_o: .84 P_y: .76	.458	.5015	Accepted
342: The boy siempre lee cuando the teacher habla.	P_o: .52 P_y: .379	1.076	.7004	Accepted
332: Cuando the children comen the father siempre habla.	P_o: .16 P_y: .0	3.847	.950	Rejected
322: The girl lleva the hat que es viejo	P_o: .78 P_y: .64	1.187	.724	Accepted

TABLE 4.9

NOUN - ADVERB JUNCTURE

CASE 1: Noun in Spanish-Adverb in English. Sentence	Proportion of children preserving Juncture	Chi^2	$P(\chi^2)$
231: When the planes fly el perro always jumps.	P_o: .74 P_y: .14	15.741	.999 *
242: El bebé always cries when the mother sleeps.	P_o: .72 P_y: .33	8.506	.996 *
341: El nino always reads when la maestra talks.	P_o: .76 P_y: .83	.3800	.461
331: When los niños eat el papá always talks.	P_o: .541 P_y: .521	.0187	.108

TABLE 4.10

NOUN - ADVERB JUNCTURE

CASE 2: Noun in English-Adverb in Spanish. Sentence	Proportion of children preserving Juncture	Chi^2	$P(\chi^2)$
232: Cuando los aviones vuelan the dog siempre salta.	P_o: .36 P_y: .24	.729	.606
241: The baby siempre llora cuando la mamá duerme.	P_o: .86 P_y: .93	.975	.676
342: The boy siempre lee cuando the teacher habla.	P_o: .36 P_y: .38	1.076	.700
332: Cuando the children comen the father siempre habla	P_o: .04 P_y: .18	2.475	.884

TABLE 4.11

NOUN-RELATIVE PRONONUN JUNCTURE

Case 1: Noun in Spanish - Relative Pronoun in English. Sentence	Proportion of children preserving Juncture	Chi^2	$P(\chi^2)$
311: El caballo which is small carries las frutas.	P_o: .79 P_y: .41	7.706	.994 *
321: La niña wears el sombrero which is old.	P_o: .954 P_y: .333	19.011	.999 *
Case 2: Noun in English - Relative Pronoun in Spanish			
312: The horse que es pequeño carga the fruits.	P_o: .916 P_y: .774	2.006	.843
322: The girl lleva the hat que es viejo.	P_o: .652 P_y: .75	.582	.554

TABLE 4.12

VERB - ARTICLE (Noun Phrase) JUNCTURE

CASE 1: Verb in Spanish - Article in English. Sentence	Proportion of children preserving Juncture	Chi^2	$P(\chi^2)$
124: The boy limpia the room which is big.	P_o: .84 P_y: .5	6.97	.991 *
125: La señora carga the bag which is heavy	P_o: .8 P_y: .69	.812	.643
232: Cuando los aviones vuelan the dog siempre salta.	P_o: .78 P_y: .206	3.38	.934
115: El hombre que es malo quema the papers.	P_o: .75 P_y: .545	2.49	.886
322: The girl lleva the hat que es viejo.	P_o: .652 P_y: .464	1.80	.820,
312: The horse que es pequeño carga the fruits.	P_o: .625 P_y: .548	.326	.432
332: Cuando the children comen the father siempre habla.	P_o: .04 P_y: .0	.899	.656

TABLE 4.13

VERB-ARTICLE (Noun Phrase) JUNCTURE

Case 2: Verb in English- Article in Spanish Sentences	Proportion of children preserving Juncture	Chi^2	$P(\chi^2)$
116: The man who is bad burns los papeles.	P_o: .166 P_y: .285	.743	.611
126: The lady carries la bolsa que es pesada.	P_o: .24 P_y: .06	3.112	.922
311: El caballo which is small carries las frutas.	P_o: .25 P_y: .06	3.74	.95 *
321: La niña wears el sombrero which is old.	P_o: .409 P_y: .083	25.222	.999 *
123: El niño cleans el cuarto que es grande.	P_o: .44 P_y: .517	.320	.428
331: When los niños eat el papá always talks.	P_o: .583 P_y: .304	3.698	.95 *
231: When the planes fly el perro always jumps.	P_o: .652 P_y: .208	7.591	.994 *

TABLE 4.14

ADVERB - ARTICLE (Noun Phrase) JUNCTURE

Case 1: Adverb in Spanish - Article in English. Sentences	Proportion of children preserving Juncture	Chi^2	$P(\chi^2)$
342: The boy siempre lee cuando the teacher habla.	P_o: .36 P_y: .068	7.010	.991*
332: Cuando the children comen the father siempre habla.	P_o: .72 P_y: .0	24.364	.9999*
Case 2: Adverb in English - Article in Spanish			
341: El niño always reads when la maestra talks.	P_o: .48 P_y: .24	3.352	.932
331: When los niños eat el papá always talks	P_o: .458 P_y: .217	3.036	.918

TABLE 4.15

ADJECTIVE - VERB JUNCTURE

Case 1: Adjective in Spanish - Verb in English Sentences	Proportion of children preserving Juncture	Chi^2	$P(\chi^2)$
111: The girl who is fat corta el pan	P_o: 1. P_y: .931	1.64	.800
113: El perro que es negro catches la bola.	P_o: .88 P_y: .303	19.145	.999*

Case 2: Adjective in English - Verb in Spanish. Sentences			
112: The girl who is fat corta el pan.	P_o: .611 P_y: .458	.962	.673
114: The dog which is black coge the ball.	P_o: .625 P_y: .586	.082	.226

4.6 DIRECTION OF THE CODE - SWITCH

VERB-ARTICLE JUNCTURE

Within this category there was a clear tendency for both older and younger children to reproduce more accurately the code-switch when the direction was S⟶E. The tendency was significant in 5 out of the 8 sentence pairs containing this juncture (within the old group) and it was significant in 6 out of the eight sentence pairs containing this juncture (within the young group). The results are summarized in Table 4.16

NOUN-ADVERB JUNCTURE

Here the tendency was for the children in both groups to reproduce more accurately the code-switch juncture when the direction was E⟶S. This tendency was evident in 3 out of the 4 sentence pairs containing the Noun-Adverb juncture. There was only one sentence pair in this group in which the children favored the S⟶E direction. The tendency was also significant in this case. Results are summarized in Table 4.17

ADVERB-ARTICLE JUNCTURE

A difference was found between the performance of older and younger children in their ability to reproduce this code-switch juncture. The younger children showed a tendency (although not significant) to favor the E⟶S direction.

The older children showed a significant tendency to favor the S⟶E direction in one of the two sentence pairs containing this juncture. No preference was evidenced by the older children in their reproduction of the remaining sentence pair. Results are summarized in Table 4.18

NOUN-VERB JUNCTURE

The results in these 6 pairs of sentences were mixed. The older children showed a tendency to favor the S⟶ E direction in 3 out of the 5 sentence pairs. (The tendency was significant in these 3 cases). In 1 out of the 2 remaining sentence pairs the tendency of the older children was in favor of the E⟶S direction. The tendency was not significant in this case. There was no preference exhibited in the remaining sentence pair.

Among the younger children the E⟶S direction was preferred in 3 out of the 5 sentence pairs. This tendency was not significant, however, in any of the 3 sentence pairs in question. No preference was apparent in 1 of the 2 remaining sentence pairs. In the remaining sentence pair the tendency (although not significant) was in the S⟶E direction. Results are summarized in Table 4.19

ADJECTIVE - VERB JUNCTURE

The tendency within this group of sentences was for both groups of children to favor the S⟶E direction. The tendency was significant only in one of the two sentence pairs

containing the Adjective-Verb juncture. Results are summarized in Table 4.20

NOUN - RELATIVE PRONOUN

Within this code-switch juncture the results were mixed in that neither group of children showed a tendency to favor one direction over the other.

In the 311-312 sentence pair the younger children showed a preference for the E⟶S direction, while the older children exhibited no preference.

In the 321-322 sentence pair, the younger children evidenced a slight tendency in favor of the S⟶E direction and the older children showed a significant tendency in the same direction. Results are summarized in Table 4.21

TABLE 4.16

DIRECTION OF THE CODE-SWITCH
Verb-Article Juncture

Sentence Pair	Age Group	$\bar{d}$	t	P(t)
114:The dog which is black coge/the ball	Old	.083	.699	.754
113: El perro que es negro catches/la bola.	Young	.172	1.54	.932
115:El hombre que es malo quema/the papers	Old	.608	5.85	.999 *
116:The man who is bad burns/los papeles	Young	.25	2.26	.983 *
123:El niño cleans/el cuarto que es grande	Old	.28	2.06	.975 *
124:The boy limpia/the room which is big.	Young	-.12	-1.0	.163
125:La señora carga/the bag which is heavy	Old	.52	4.21	.999 *
126:The lady carries/la bolsa que es pesada	Young	.58	5.67	.999 *
232:Cuando los aviones vuelan/the dog siempre salta.	Old	.48	4.5	.999 *
231:When the planes fly/el perro always jumps	Young	.75	7.5	.999 *
312:The horse que es pequeño carga/the fruits	Old	.35	2.10	.975 *
311:El caballo which is small carries/las frutas	Young	.32	3.13	.997 *
322: The girl lleva/the hat que es viejo	Old	.26	1.58	.94
321: La niña wears/el sombrero which is old	Young	-.04	-.294	.385
332: Cuando the children comen/the father siempre habla.	Old	-.60	-5.84	.000 *
331: When los niños eat/el papá always talks.	Young	.72	6.64	.999 *

TABLE 4.17

DIRECTION OF THE CODE-SWITCH

Noun-Adverb Juncture

Sentence Pair	Age Group	$\bar{d}$	t	P(t)
231:When the planes fly el perro/always jumps.	Old	-.434	-4.11	.0002 *
232: Cuando los aviones vuelan the dog/siempre salta.	Young	-.75	-7.54	.0000 *
242: El bebé/always cries when the mother sleeps	Old	-.04	-.32	.373
441: The baby/siempre llora cuando la mamá duerme	Young	-.05	-.538	.297
331: When los niños eat el papá/always talks	Old	-.35	-3.41	.001 *
332: Cuando the children comen the father/siempre habla.	Young	-.388	-3.28	.0021 *
341:El niño/always reads when la maestra talks	Old	.4	3.46	.998 *
342:The boy/siempre lee cuando the teacher habla.	Young	.370	3.40	.998 *

TABLE 4.18

DIRECTION OF THE CODE-SWITCH
Adverb-Article Juncture

Sentence Pair	Age Group	$\bar{d}$	t	P(t)
332:Cuando/the children comen the father siempre habla.	old	.26	2.31	.984 *
331:When/los niños eat el papá always talks	Young	-.22	-2.2	.020 *
342:The boy siempre lee cuando/the teacher habla	Old	0	0	.5
341:El niño always reads when/la maestra talks	Young	-.111	-1.14	.132

TABLE 4.19

DIRECTION OF THE CODE-SWITCH

Noun-Verb Juncture

Sentence Pair	Age Group	$\bar{d}$	t	P(t)
121:El gato/chases the mouse which is white.	Old	.3	2.35	.985 *
122:The cat/persigue al ratón que es blanco.	Young	-.052	-.437	.333
123:El niño/cleans el cuarto que es grande	Old	.0	0	.5
124:The boy/limpia the room which is big.	Young	-.04	-.295	.385
321:La niña/wears el sombrero which is old	Old	-.11	-1.58	.064
322:The girl/lleva the hat que es viejo.	Young	-.24	-2.02	.028
331:When los niños/eat el papá always talks.	Old	.78	8.89	.999 *
332:Cuando the children/comen the father siempre habla.	Young	.61	5.16	.999 *
341:El niño always reads when la maestra/talks.	Old	.28	2.28	.984 *
342:The boy siempre lee cuando the teacher/habla.	Young	0	0	.5

TABLE 4.20

DIRECTION OF THE CODE-SWITCH

Adjective-Verb Juncture

Sentence Pairs	Age Group	$\bar{d}$	t	P(t)
111: La niña que es gorda/cuts the bread.	Old	.304	3.09	.997 *
112: The girl who is fat/corta el pan.	Young	.5	4.58	.999 *
114: The dog which is black/coge the ball	Old	.08	.069	.878
113: El perro que es negro/catches la bola.	Young	.174	1.53	.932

TABLE 4.21

DIRECTION OF THE CODE-SWITCH

Noun-Relative Pronoun Juncture

Sentence Pair	Age Group	$\bar{d}$	t	P(t)
311:El caballo/which is small carries las frutas.	Old	0	0	.5
312:The horse/que es pequeño carga the fruits	Young	-.409	-3.25	.0019 *
321:La niña wears el sombrero/which is old	Old	.24	1.74	.951 *
322:The girl lleva the hat/que es viejo	Young	.05	.294	.614

CHAPTER V

EXPLANATION OF RESULTS

5.1 EFFECTS OF LANGUAGE DISTRIBUTION WITHIN THE SENTENCE

In spite of the fact that there was usually no significant difference between the fraction of dominant language present in the stimulus sentence and the fraction returned by the children, there was a definite tendency for the children to increase the fraction of Spanish in the cases in which the dominant language was Spanish and to decrease the fraction of English when the dominant language of the stimulus sentence was English. Thus, in both cases there was a tendency to increase the fraction of Spanish.

The tendency was stronger whenever the fraction of dominant language was larger than .625. The explanation for this finding may lie in the concept of language set ("...inertia in switching from one language to the other..." Albert and Obler, 1978, p. 215). It may be that once a certain number of words are presented in one language, a language set is created that makes it difficult for the individual to switch at will.

Whenever the fraction of English and Spanish was .5 there was no predictability in the responses of the children. The fact that all the sentences in which the fraction of English and Spanish was .5 contained only Lexical Switches may have been a contributing factor in the unpredictability of the responses.

Figures 5.1 through 5.4 are graphic representations of the results obtained in this test.

In general, the younger children tended to shift to Spanish more often than the older children regardless of the dominant language of the stimulus sentence.

Given the language experience of the children involved in the study (the younger children had had less total contact time with English than the older ones) it is not surprising that the younger children would tend to shift to Spanish more than the older ones. It seems that as the children develop skills in the second language their dominance begins to shift. It is suggested here that at the time the study was carried out the younger children were still Spanish dominant while the older children were approaching balanced bilingualism or even English dominance.

Figures 5.5 through 5.8 are graphic representations of the results of this test.

Fig. 5 .1

Fraction of Dominant Language Returned by the Children

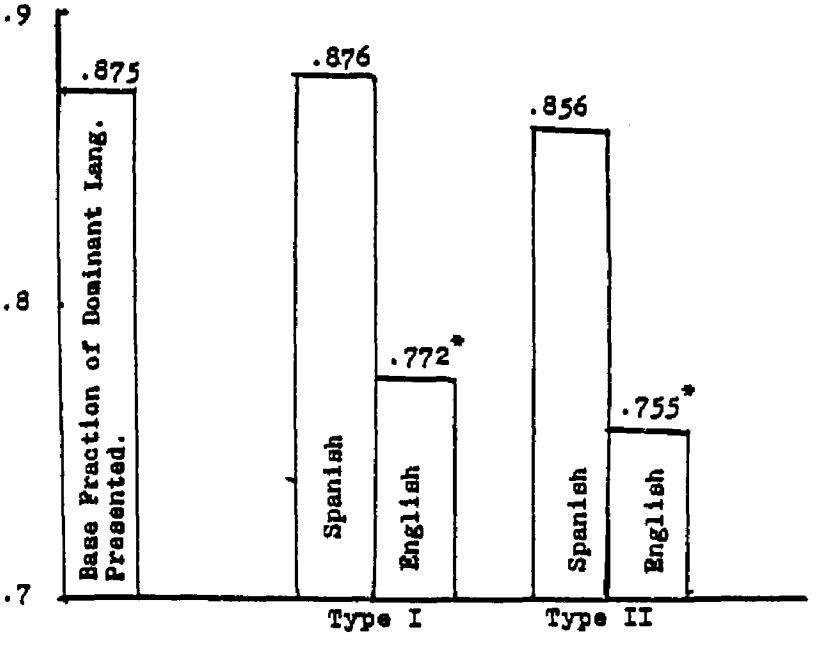
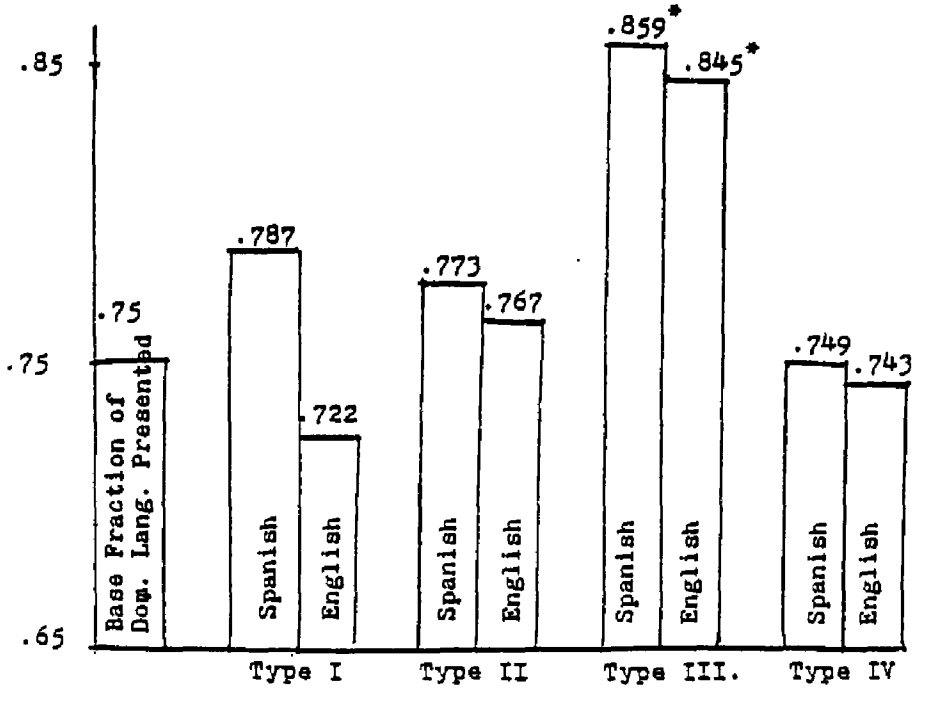


Fig. 5 .2



* Significant difference between base fraction of dominant language presented, and fraction returned by the children.

Fig. 5.3

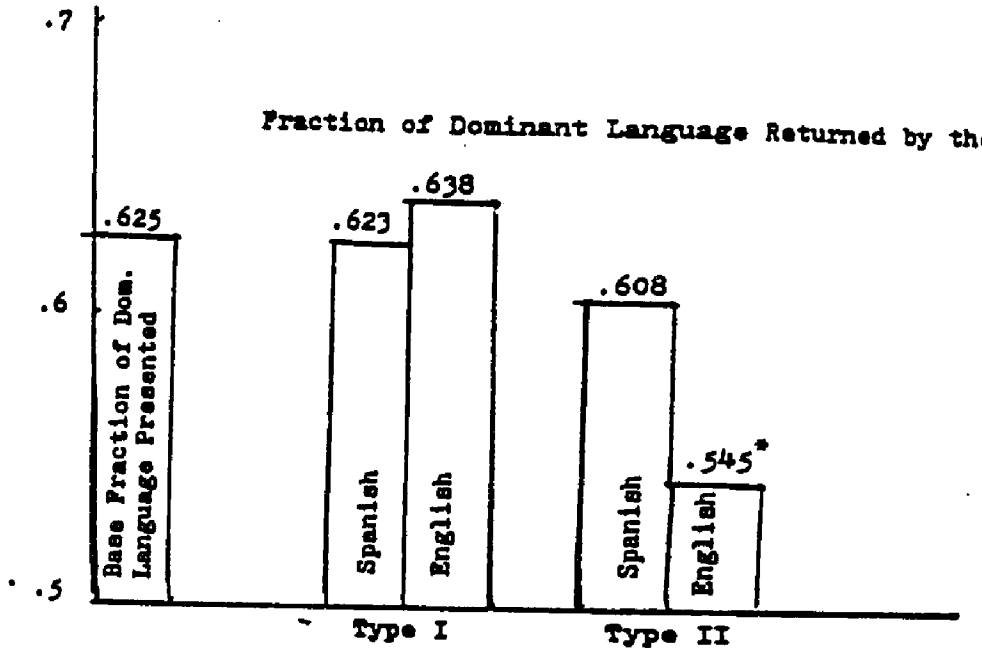
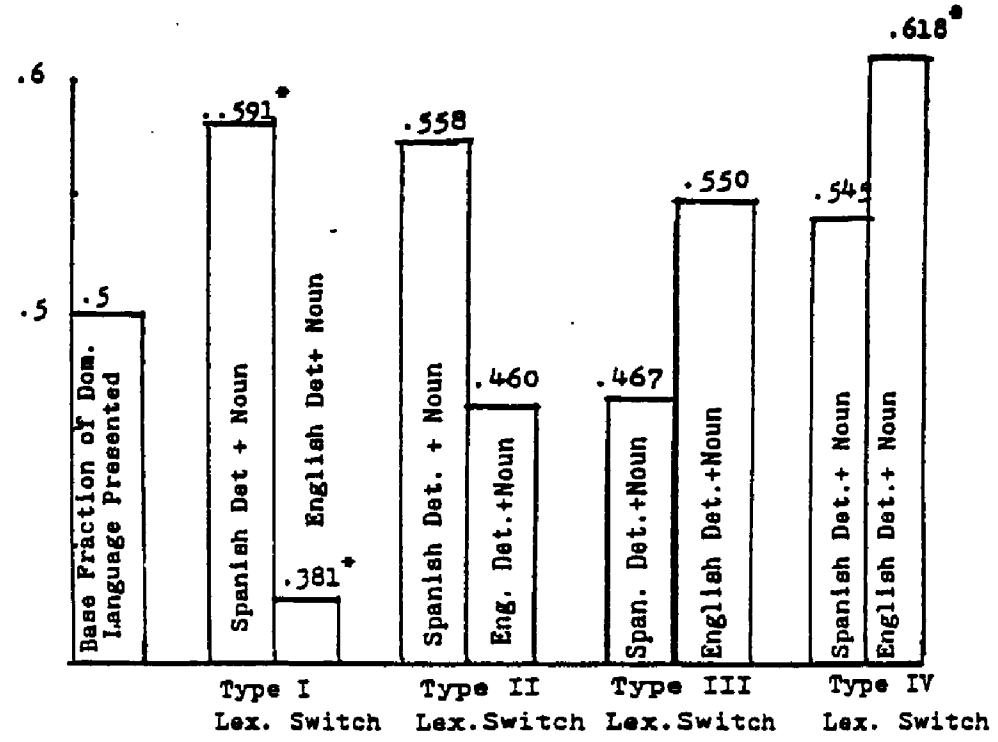
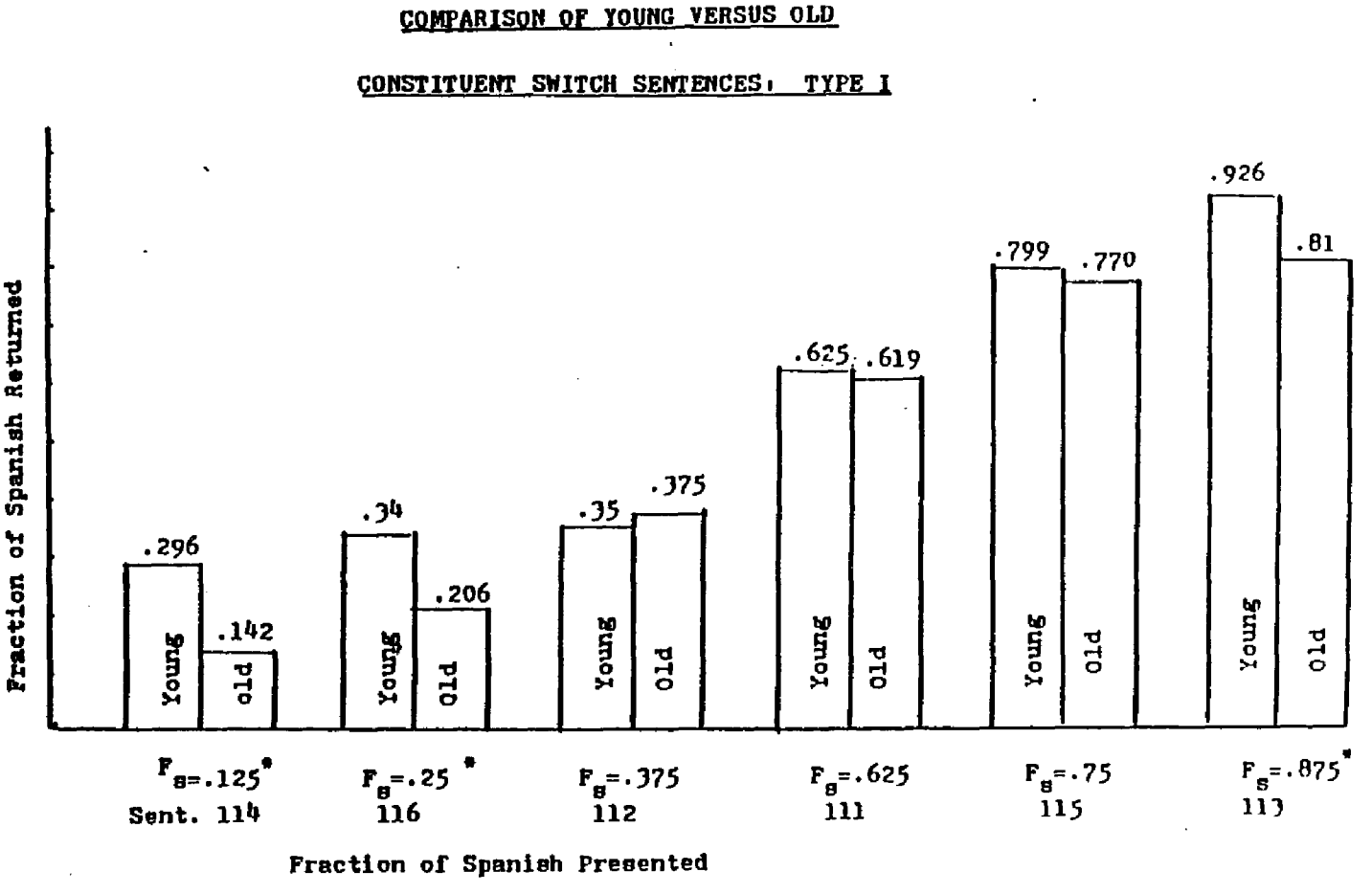


Fig. 5.4



*Significant difference between base fraction of dominant language presented, and fraction returned by the children.

Fig. 5.5

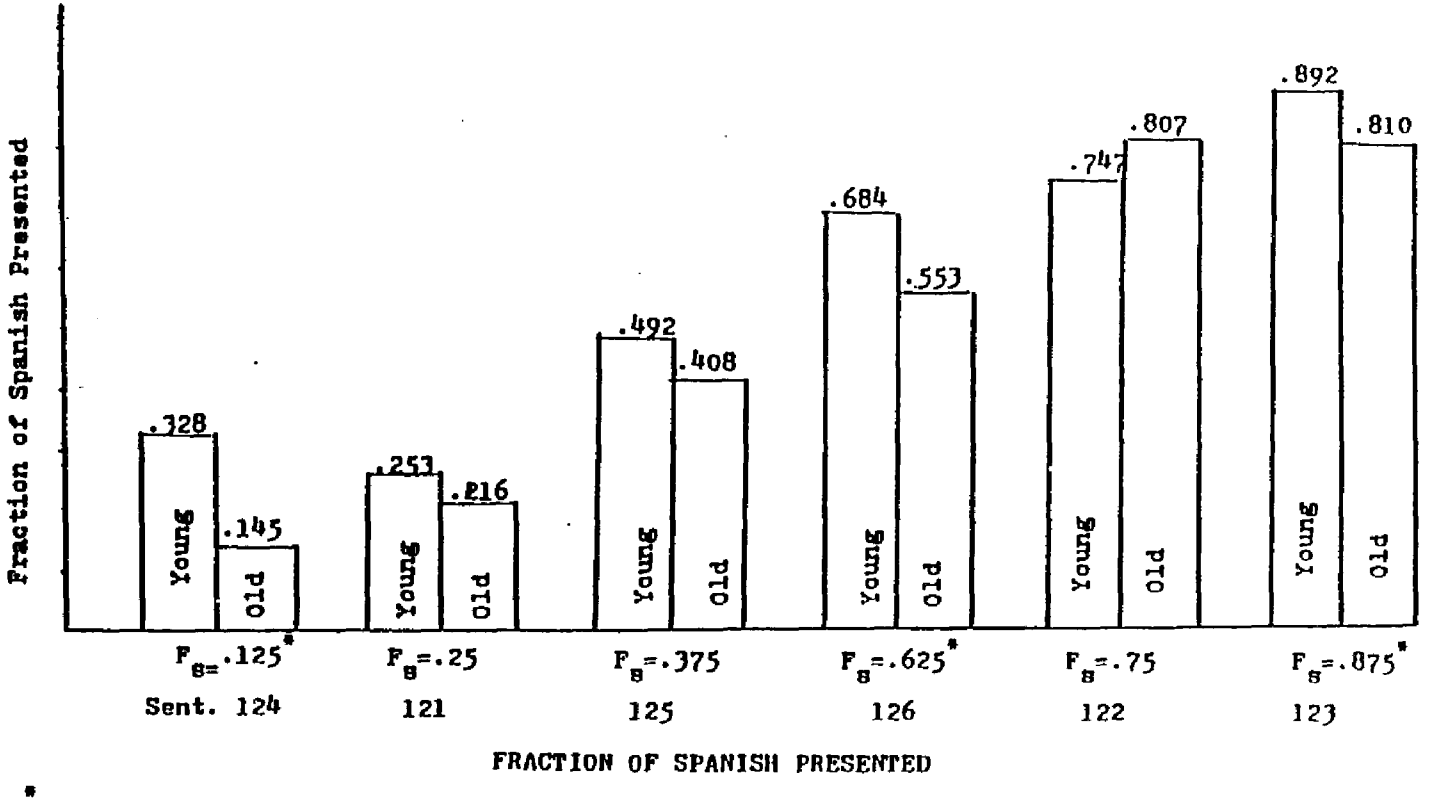


* Significant Difference Between Fractions.

Fig. 5.6

COMPARISON OF YOUNG VERSUS OLD

CONSTITUENT SWITCH SENTENCES: TYPE II



* Significant Difference Between Fractions

Fig. 5.7

COMPARISON OF YOUNG VERSUS OLD CONSTITUENT SWITCH SENTENCES

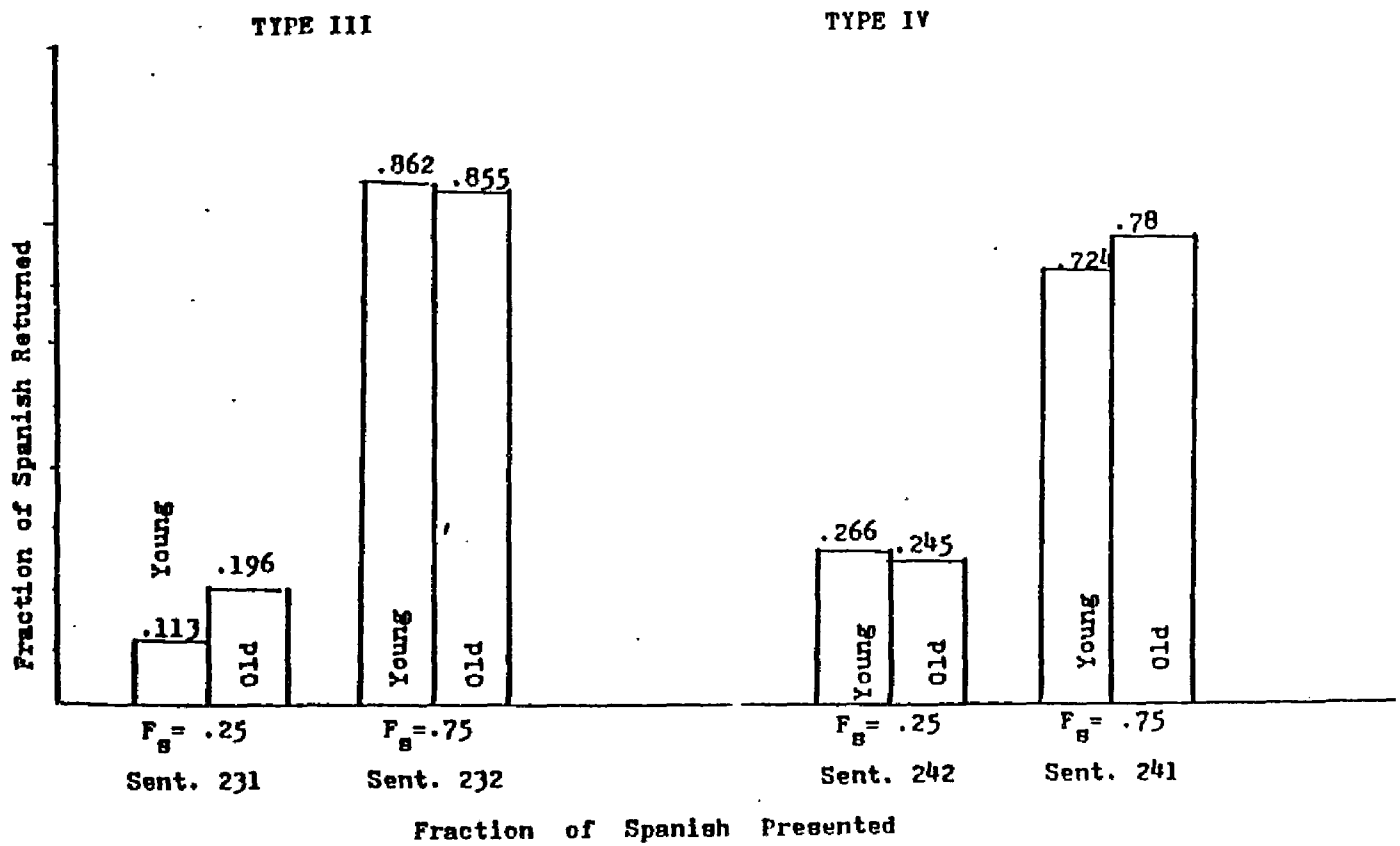
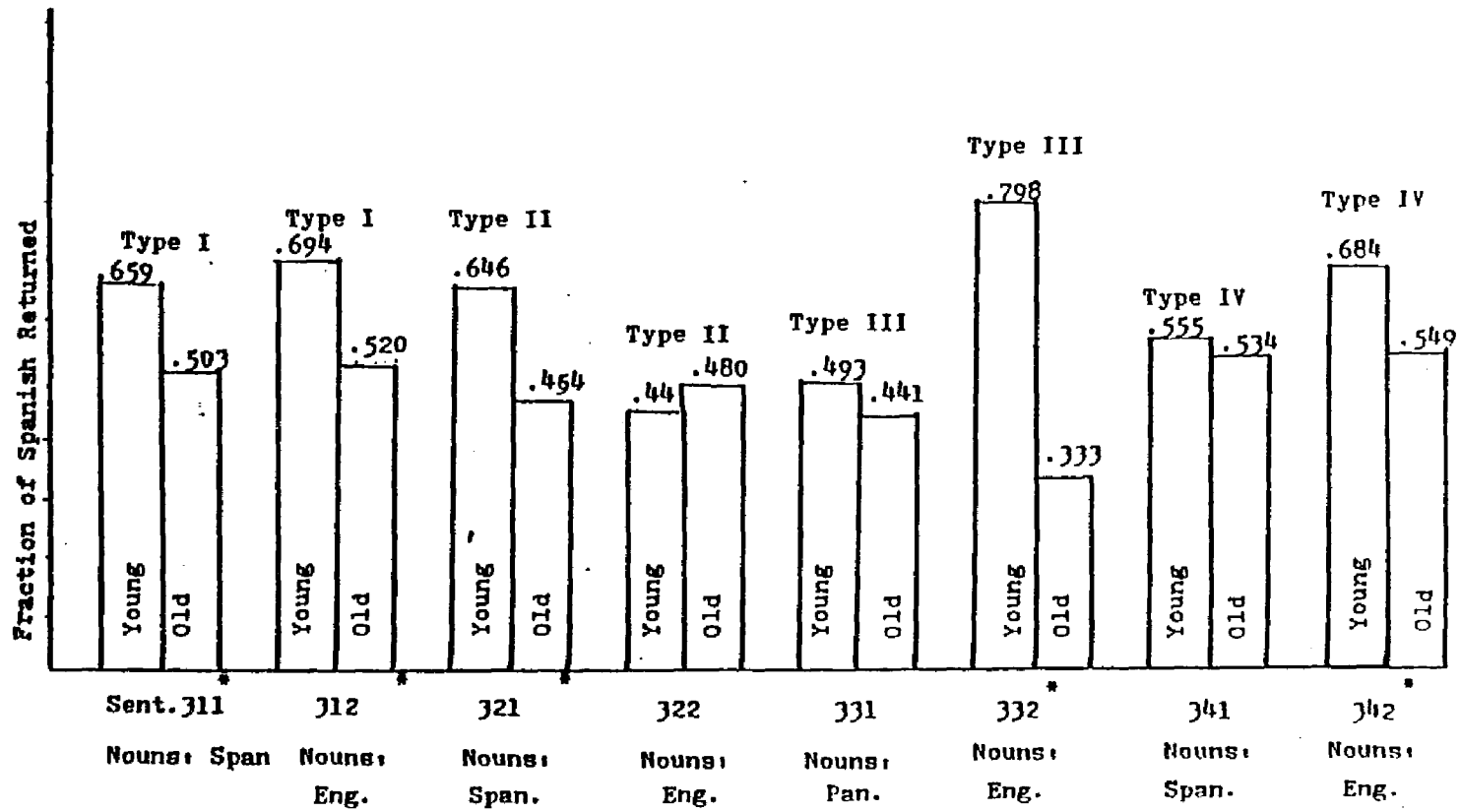


Fig. 5.8

COMPARISON OF YOUNG VERSUS OLD

LEXICAL SWITCH SENTENCES



*Significant difference between fractions

5.2 ACCURACY OF REPETITION

The results of this test show that in most cases the children's ability to imitate the sentences exactly WAS dependent on age. That is, the older children were significantly better than the younger ones at accomplishing this task in over 50% of the sentenc ; presented for imitation. In those cases in which the results were not significant, there was a definite trend in the same direction.

The ALL OTHERS group of sentences (previously defined as sentences in which the meaning was preserved but which were not word by word imitations of the stimulus sentences) are also interesting because there are certain patterns in the changes made by the children. That is, there are certain lexical items which were consistently changed by the children and these changes varied depending on the age of the children.

The most prevalent change made by the children was the substitution of the relative prononuns THAT, WHICH and QUE for the relative pronoun WHO. Among the older children the most common substitutions in order of preference were THAT, WHICH and QUE. Among the younger children, however, QUE was the most frequent substitution.

The relative pronoun WHICH was also replaced by other forms: the older children used WHO and THAT, while the younger group had a wider range of versions: QUE, WHEN, AND, CUANDO (when), THAT, and WHO.

It appears as if the English relative pronoun WHO is

easier for the children to imitate than WHICH, the implication being that the Spanish/English bilingual acquires the form WHO before WHICH. This finding is surprising given the fact that monolingual English speaking children acquire WHICH before WHO.

Neither group had difficulty in imitating the Spanish relative pronoun QUE (that, which, who).

Another important group of substitutions occurred around the language of the verb. It was very common for both younger and older children to change the language of the determiner to match that of the verb preceding it. For example, in a stimulus sentence in which the verb was in English and the object noun phrase was in Spanish as in

El niño cleans el cuarto que es grande

the tendency was for the children to change EL CUARTO to THE ROOM (or even THE CUARTO) in order to match the language of the verb. This tendency was quite pervasive throughout regardless of the language of the verb. The phenomenon was observed in 15 out of the 20 sentences in which there was a language switch between the verb and the determiner.

It appears as if the language of the verb is of paramount importance within the sentence as far as code-switching is concerned. In a broader sense, this observation lends additional support to the theories regarding the importance of the verb in the sentence and in language acquisition on general. (Chafe, 1971; Bloom, 1981)

An interesting observation arising from the same phenomenon concerns the changes made by the children within the Determiner + Noun unit.

It seems as if Spanish Determiner + English Noun combinations such as EL CAT, EL BAG, LA BAG, EL DOG, LOS PAPERS etc... are acceptable, while English Determiner + Spanish Noun combinations such as THE GATO, THE BOLSO, THE PERRO or THE NIÑO are not. The only cases in which a combination such as THE GATO was accepted was when the verb preceding the determiner was in English, so that the strength of the language of the verb took precedence over the English Determiner + Spanish Noun restriction.

A large number of the changes made by the children involved translations of nouns or verbs from English into Spanish or viceversa. Three of these cases deserve special mention:

1. In sentence 111 (la niña que es gorda cuts the bread) 9/25 of the older children and 7/35 of the younger children substituted CATCH for CUTS. This change was possibly due to the fact that the English portion of the sentence caught the children by surprise (this was the first sentence presented in which there was a code-switch) and they were not sure if the word they had heard was English or Spanish. It seems strange, however, that the change was more prevalent among the older children. One explanation is plausible: acoording to Goodman's (1967) theory of "psycholinguistic guessing", it

appears that as the child becomes more experienced in the use of language, he becomes more skillful at using context to anticipate certain lexical items. In this case, the older children, making use of their anticipatory strategies predicted that the verb following a string of words in Spanish would also be in Spanish.

2. In sentence 113 (El perro que es negro catches la bola) 4/25 of the older children and 19/35 of the younger children substituted CACHA for CATCH. It appears as if the word CACHA is more a part of the lexicon of the younger children than of the older ones.

The tendency of the children to translate the word CATCH into Spanglish (a combination of Spanish and English) made the word a poor lexical choice for this task. Because the word CACHA was pronounced by the children using the Spanish phonetic system, it was considered to be a Spanish word. If it had been classified as an English word we would have seen no difference in the ability of the two groups to repeat the sentence exactly. However, interpreting CACHA as a Spanish word is in agreement with our previous finding that the younger group tended to shift more towards Spanish, especially in sentences in which the dominant language of the sentence was Spanish.

3. In sentence 241 (The baby siempre llora cuando la mamá duerme) 11/25 of the older children and 17/35 of the younger children substituted EL BABY for THE BABY.

It is highly probable that the word BABY belongs to both the Spanish and English lexica of these children, so that they can use it without regard for the language of the determiner involved, as if the choice were 50/50.

The use of the word BABY was probably a poor choice for this task, because it made this sentence an all Spanish one for all practical purposes.

A detailed breakdown of the prevailing changes made by the children in each of the stimulus sentences is presented in Appendix B.

The results of this test are presented graphically in Figures 5.9 through 5.11.

Fig. 5.9

ACCURACY OF REPETITION

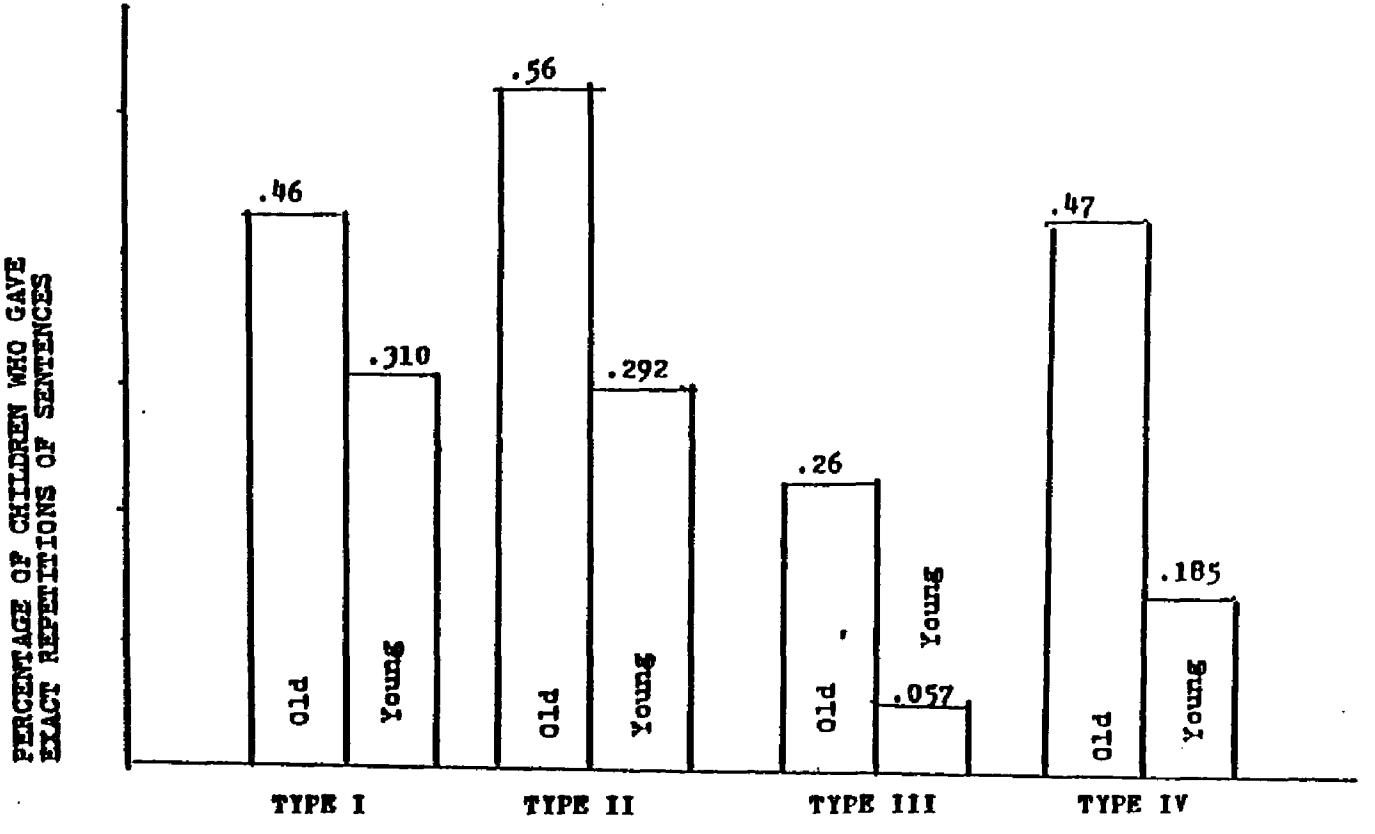


Fig. 5.10

ACCURACY OF REPETITION

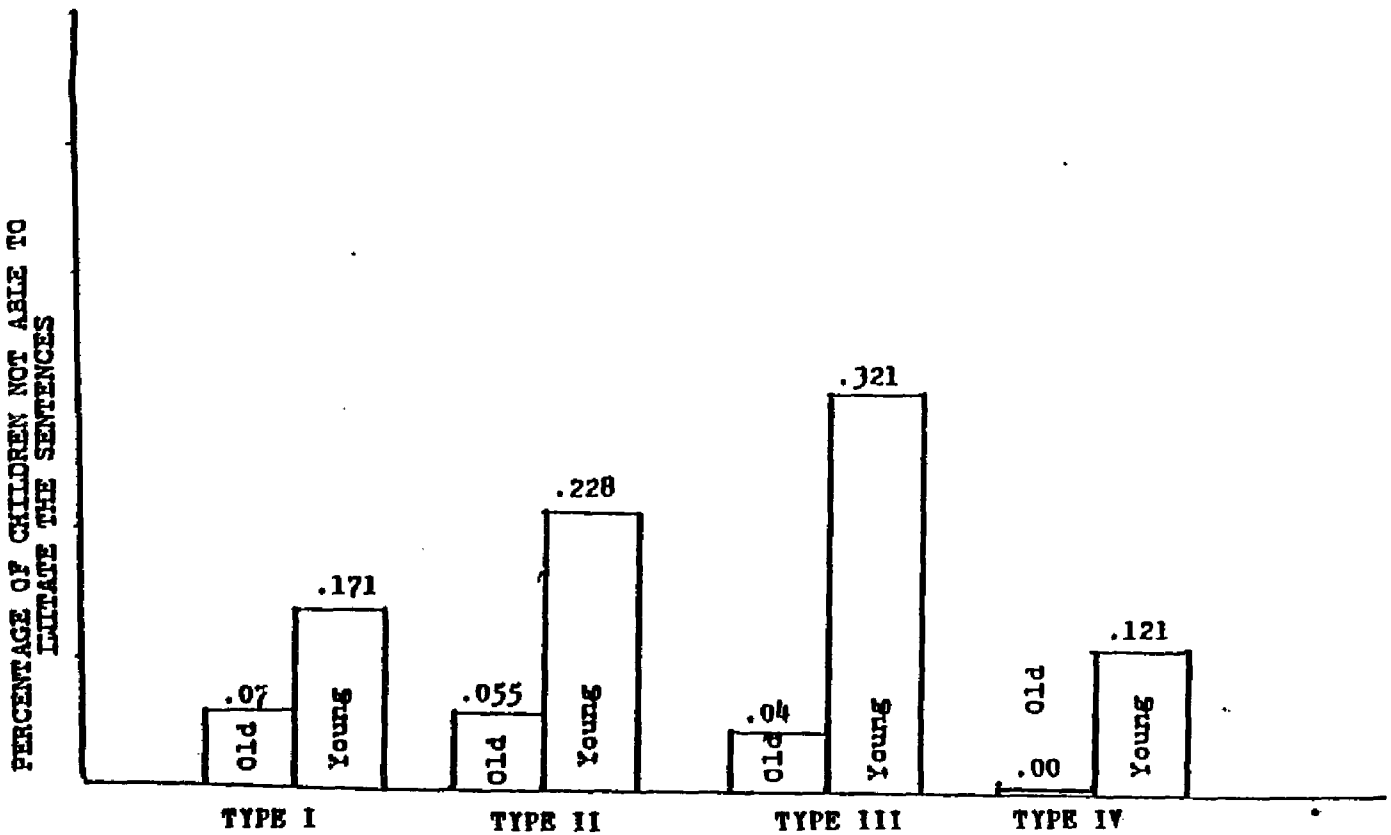
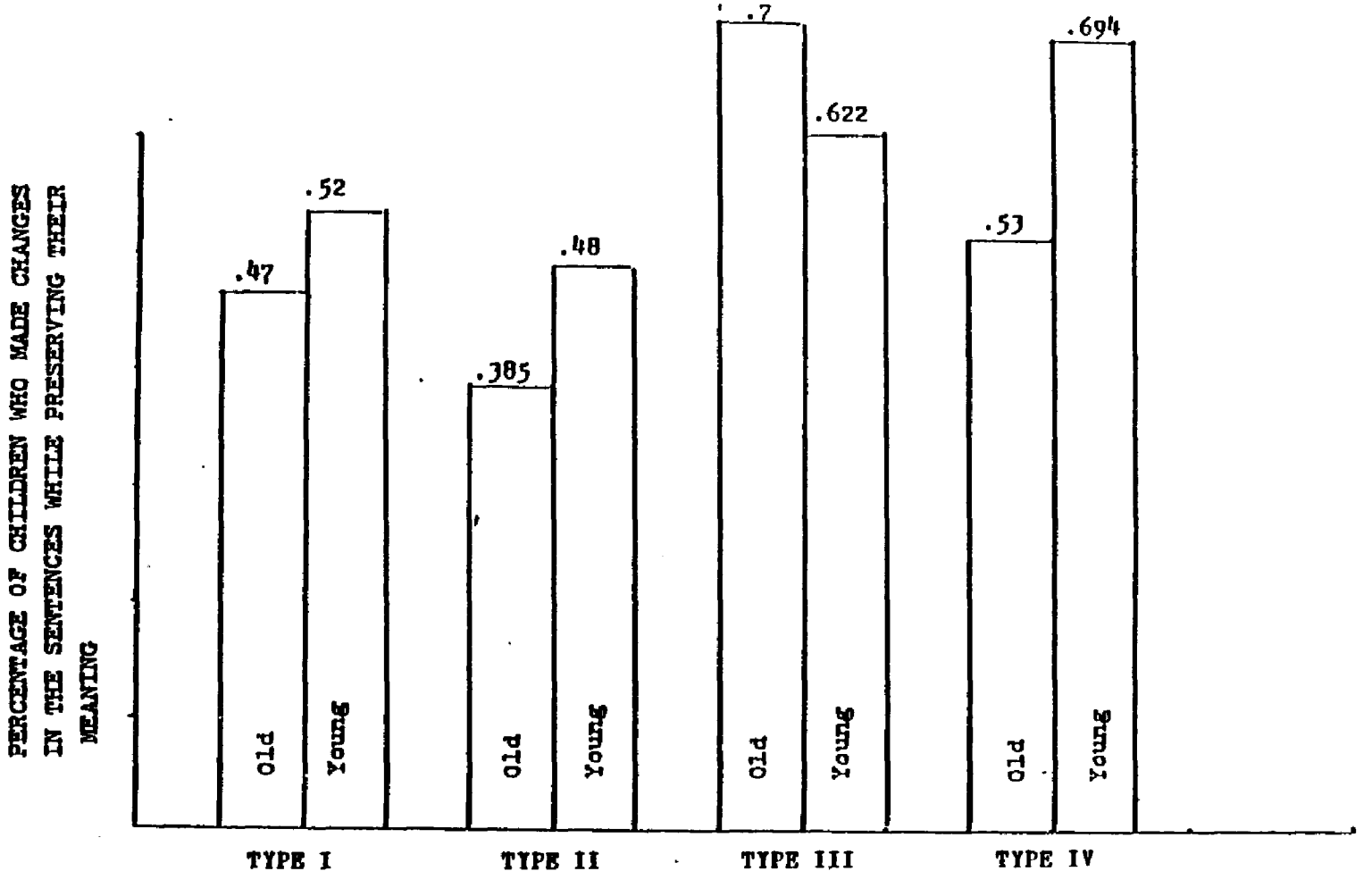


Fig. 5.11

ACCURACY OF REPETITION



5.3 PRESERVATION OF SENTENCE STRUCTURE

Both older and younger children showed a similar ability to imitate the Center Embedded Relative Clause sentences (Type I). On the other hand, the older children were significantly better than the younger ones at imitating the Right Branching Relative Clause sentences (Type II).

As explained in the previous chapter, the Adverb-Main sentences (Type III) in which the Adverbial Clause preceded the Main Clause, and Main-Adverb sentences (Type IV) in which the Main Clause preceded the Adverbial Clause, were analyzed under two conditions in order to observe the influence of the presence of the adverbs WHEN-CUANDO and ALWAYS-SIEMPRE in the stimulus sentences.

Adverb-Main sentences were very difficult for both groups of children to imitate, while Main-Adverb sentences were easier for both groups. As a matter of fact, Main-Adverb sentences were the easiest for the older children to imitate.

The presence of the adverbs WHEN-CUANDO and ALWAYS-SIEMPRE made a difference in the children's ability to imitate the sentences. The younger children had more difficulty imitating adverbs when they were presented in English than when they were presented in Spanish, and both groups had more difficulty imitating the adverb ALWAYS than the adverb WHEN. The younger group also had difficulty imitating the adverb SIEMPRE (always).

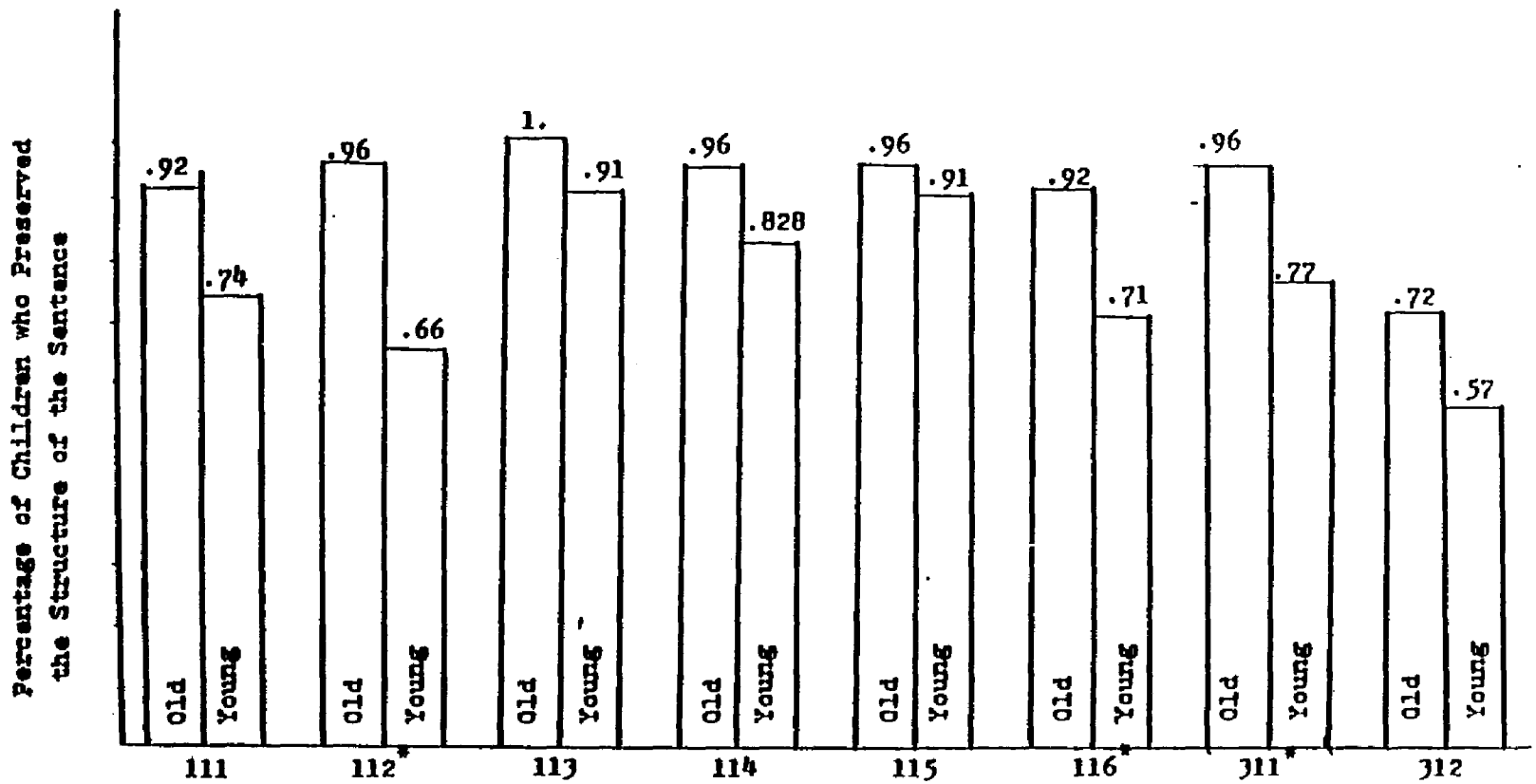
The order of difficulty of the four sentence types was different for the two groups of children. The easiest type

for the older children was Main-Adverb, followed by Right-Branching, Center Embedded, and finally Adverb-Main. For the younger children the Center Embedded clauses were the easiest to imitate, followed by the Right-Branching, Main-Adverb, and finally Adverb-Main.

The results of this test are graphically represented in Figures 5.12 through 5.15.

Fig. 5.12

PRESERVATION OF SENTENCE STRUCTURE

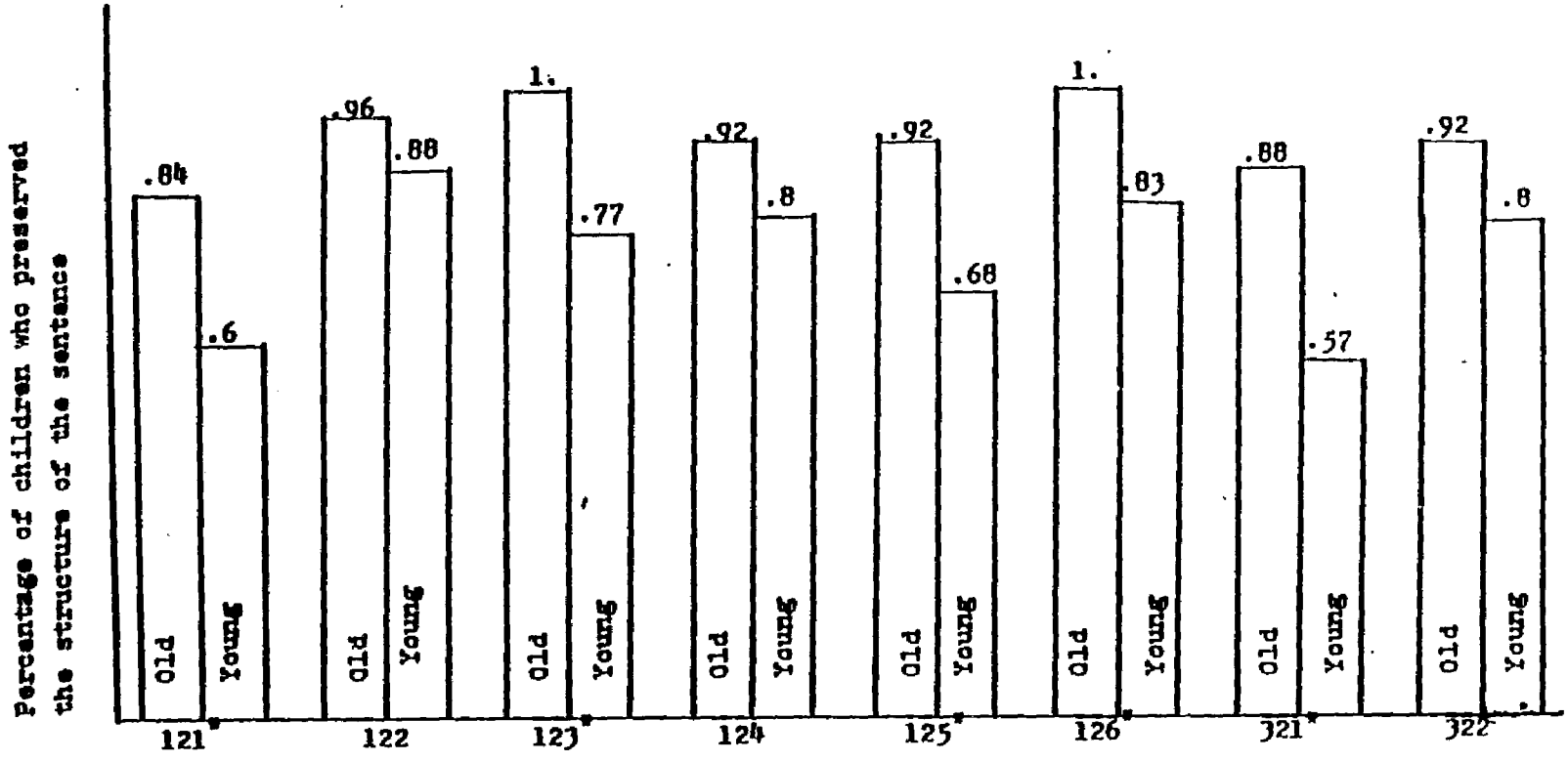


TYPE I Sentences

*Sentences in which there was a significant difference in the performance of younger and older children.

Fig. 5.13

PRESERVATION OF SENTENCE STRUCTURE



TYPE II SENTENCES

*Sentences in which there was a significant difference in the performance of younger and older children.

Fig. 5.14

PRESERVATION OF SENTENCE STRUCTURE

TYPE III SENTENCES Condition I : Omission of ALWAYS accepte
Omission of WHEN not accepted

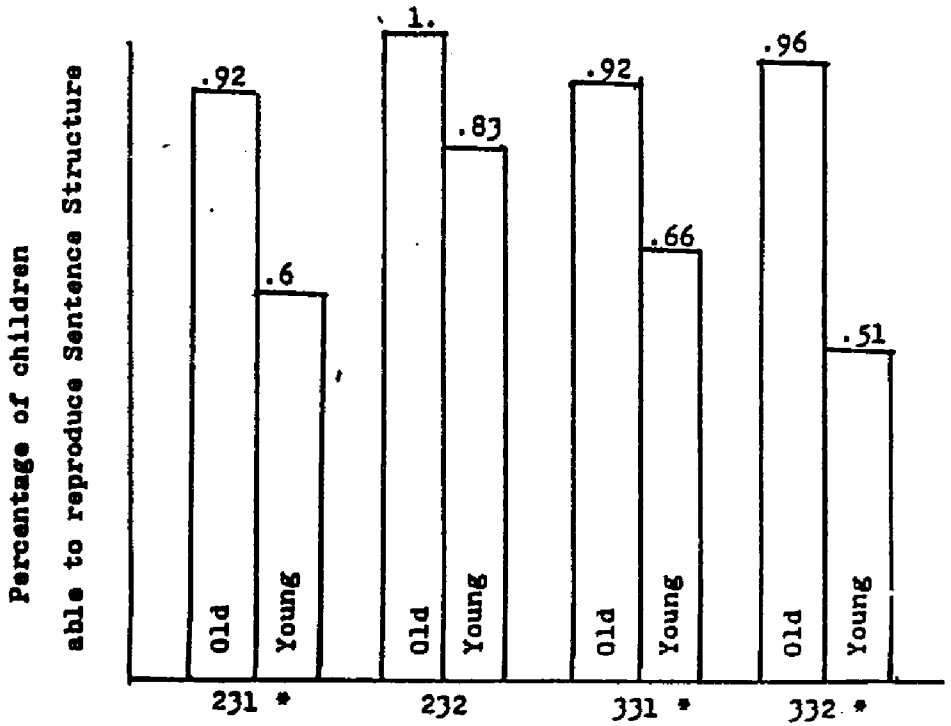
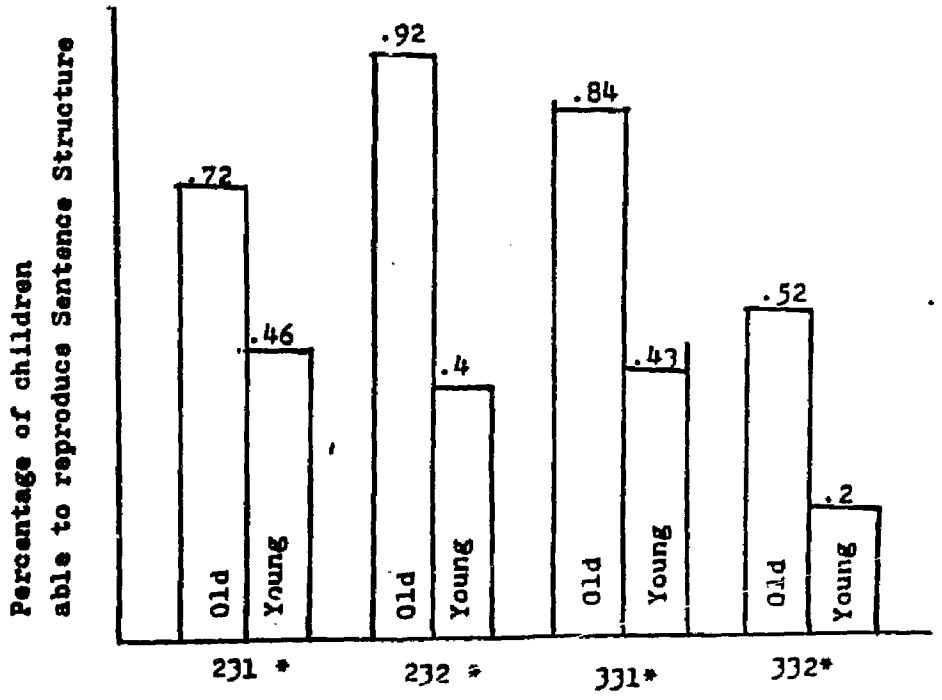


Fig. 5.14 (Continued)

PRESERVATION OF SENTENCE STRUCTURE

TYPE III SENTENCES Condition II: Omission of WHEN and/or ALWAYS, not accepted



*Significant difference between the performance of older and younger children

Fig. 5.15

PRESERVATION OF SENTENCE STRUCTURE

TYPE IV SENTENCES Condition I: Omission of ALWAYS accepted ed. Omission of WHEN not accepted

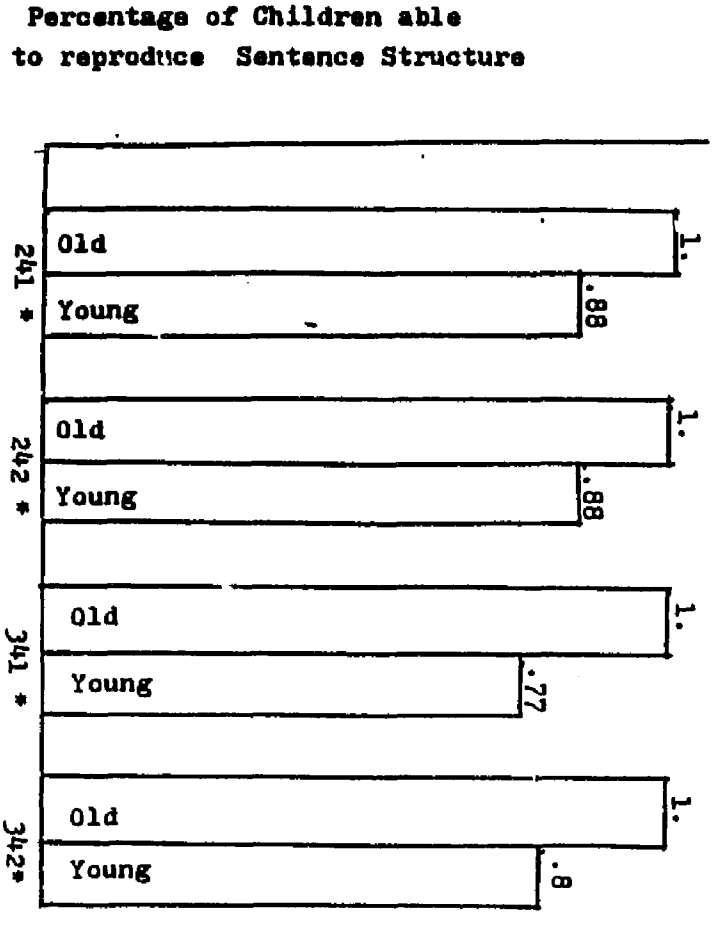
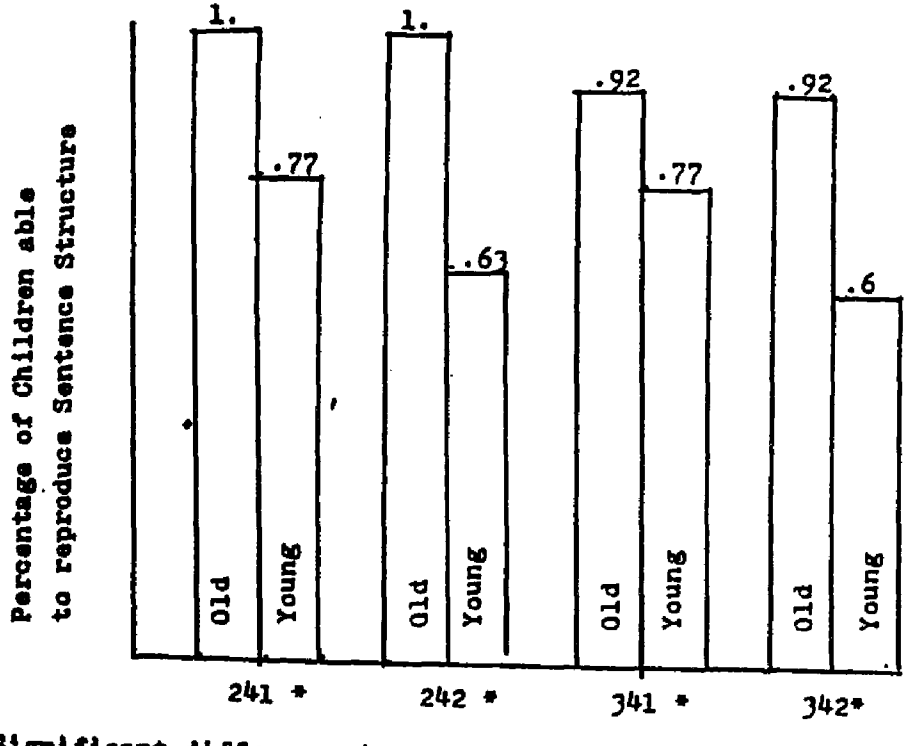


Fig. 5.15 (Continued)

PRESERVATION OF SENTENCE STRUCTURE

TYPE IV SENTENCES Condition II: Omission of ALWAYS and/or WHEN , not accepted



*Significant difference between the performance of older and younger children

5.4 PRESERVATION OF CODE-SWITCHING PATTERN

The results show that for the most part, the ability of the children to preserve the code-switching pattern of the stimulus sentence was not dependent on age.

There were, however, differences between the children's abilities to preserve Constituent Switch patterns and Lexical Switch patterns: Constituent Switch patterns were more easily reproduced by the children than Lexical Switch patterns.

A percentage criterion was established in order to determine whether a specific Constituent Switch or Lexical Switch pattern was acceptable to the children: if more than 50% of the children in a group were not able to reproduce a given code-switching pattern, such a pattern was judged to be unacceptable by the children.

Constituent Switch Patterns: Among the older children only three out of the sixteen Constituent Switch patterns presented were found to be unacceptable. The patterns were EES, SES (when only the verb of the sentence was in English) and SE. Among the younger children, on the other hand, ten out of the sixteen Constituent Switch patterns were found to be unacceptable.

Lexical Switch Patterns: Among the older children seven out of the eight Lexical Switch patterns were found unacceptable. Among the younger children all of the lexical Switch patterns presented were found to be unacceptable.

The general tendency, based on the percentage criterion

was for the older children to be better able to reproduce Constituent Switch patterns than the younger children. As far as the Lexical Switch patterns were concerned, it seems that Lexical Switch patterns of the type used in the study were very difficult for both groups of children to reproduce regardless of whether the Noun Phrases in the sentence were in English or in Spanish.

Table 5.1 summarizes the patterns which had the least degree of acceptability among the combined groups of children and the most prevalent patterns returned by the older and younger groups:

Table 5.1
ACCEPTABILITY OF C-S PATTERNS

PATTERNS PRESENTED (Judged Unacceptable)	MOST PREVALENT PATTERN RETURNED	
	OLD	YOUNG
SES	SEM, SEE	SSS
ESE	EEE	ESS
EES	EEM	EEE, SSS
SE	EE	EE
ES		SS

The patterns returned by the children are interesting in that they may reflect the language dominance of the two groups. Moreover, only the older children seemed to be confident enough in their code-switching skills to give MIXED

constituents.

A further observation is in order: it appears as if the position of the languages within the sentence is not as important as the language set that the dominant language creates in the child. (An inference is being made here regarding the language dominance of the children). Once the English dominant child encounters a constituent in English his tendency is to keep that language for the rest of the sentence. Similarly, when a Spanish dominant child encounters a major constituent in Spanish, his tendency is to continue the remainder of the sentence in Spanish.

The patterns SE and ES are somewhat misleading because they don't necessarily reflect the language composition of the sentence. For example, sentence 231 (pattern SE) started and ended in English, and sentence 232 (pattern ES) started and ended in Spanish. Thus, in sentences with two major constituents (patterns ES and SE) the children were still influenced by the language set phenomenon.

It is possible that in cases in which the portion of the sentence presented in one language is of a certain length, the length of the segment determines the language of the rest of the sentence. If this segment is long enough it may be able to override the language set of the speaker.

Another aspect of code-switch patterns which ought to be considered is the role played by the position and size of the code-switched segment within the sentence.

Both older and younger children had difficulty with switches which consisted of a one, two or three word phrase in the other language appearing in the middle of a sentence. Interestingly enough, the difficulty seemed to decrease when the segment was in Spanish.

Switches breaking up major sentence constituents were rejected both by younger and older children more cfter than those in which a whole major constituent was switched at a time but the tendency was stronger among the older children.

The Constituent Switch patterns which had the highest degree of acceptability among the children had certain characteristics in common:

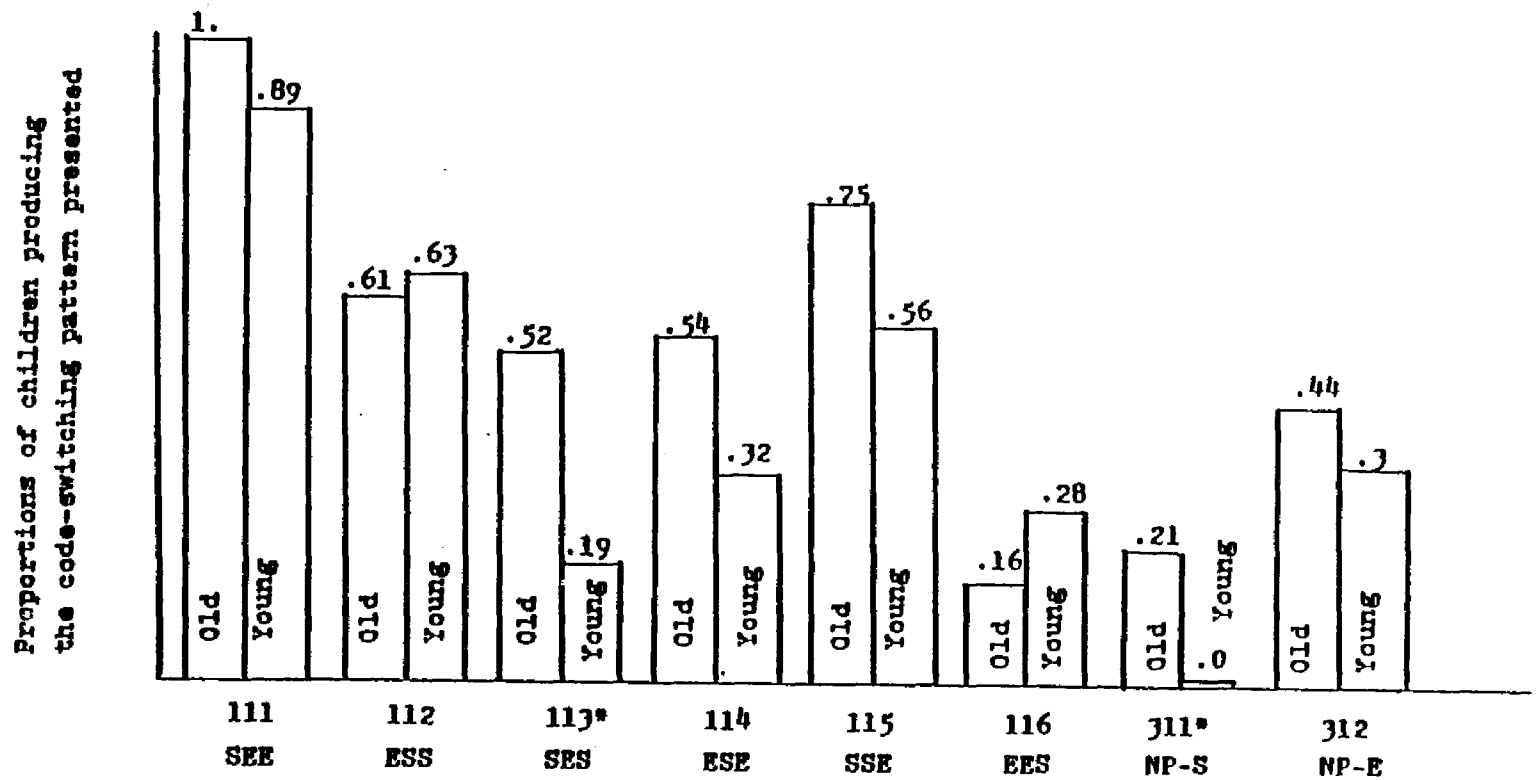
1. At least two adjacent major constituents were in the same language (such as SSE or SEE).
2. There was only one code-switch present in the sentence.

Figures 5.16 through 5.20 are graphic representations of the results of this test.

Fig. 5.16

PRESERVATION OF CODE-SWITCHING PATTERN

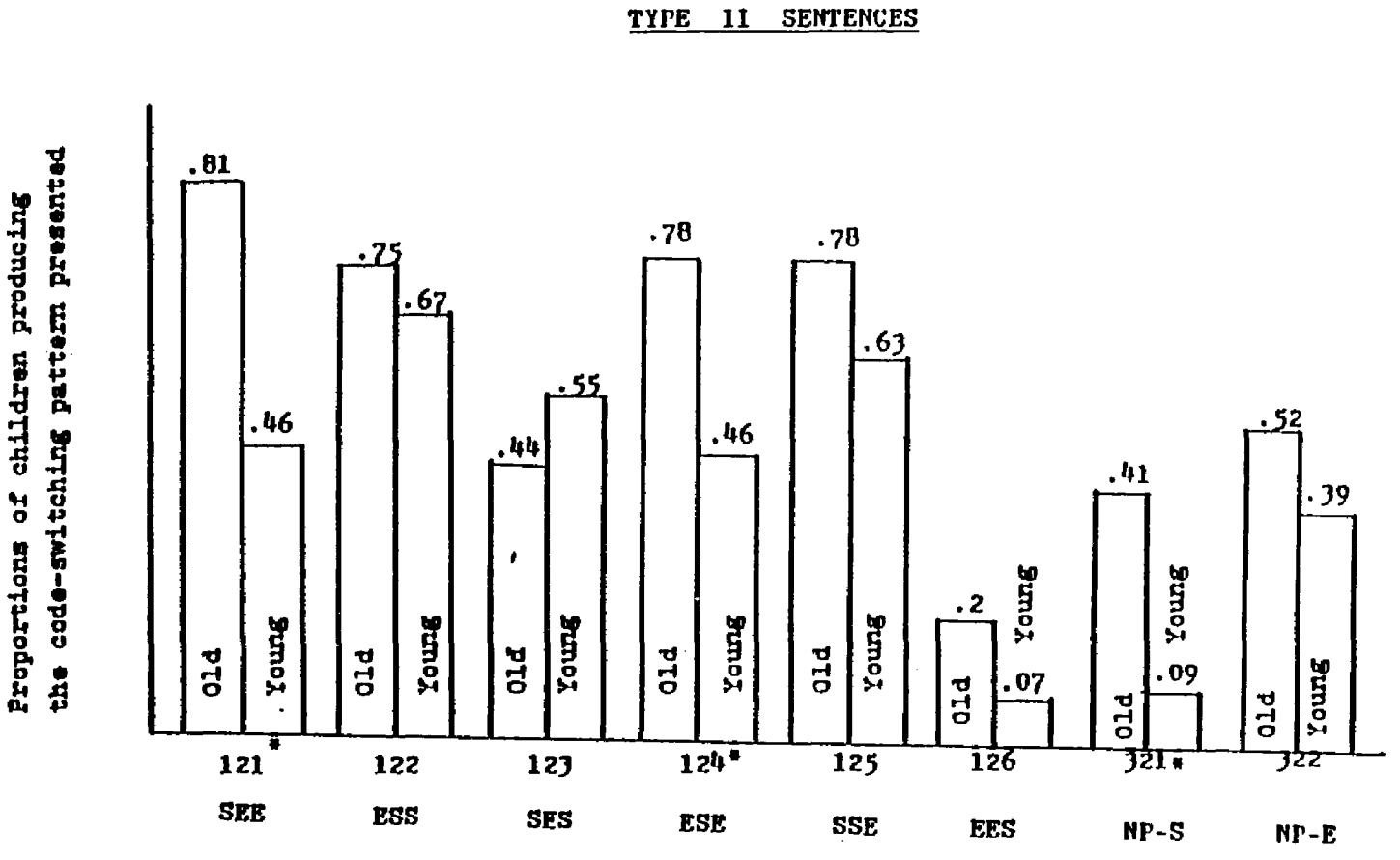
TYPE 1 SENTENCES



*Significant difference between the proportions

Fig. 5.17

PRESERVATION OF CODE-SWITCHING PATTERN

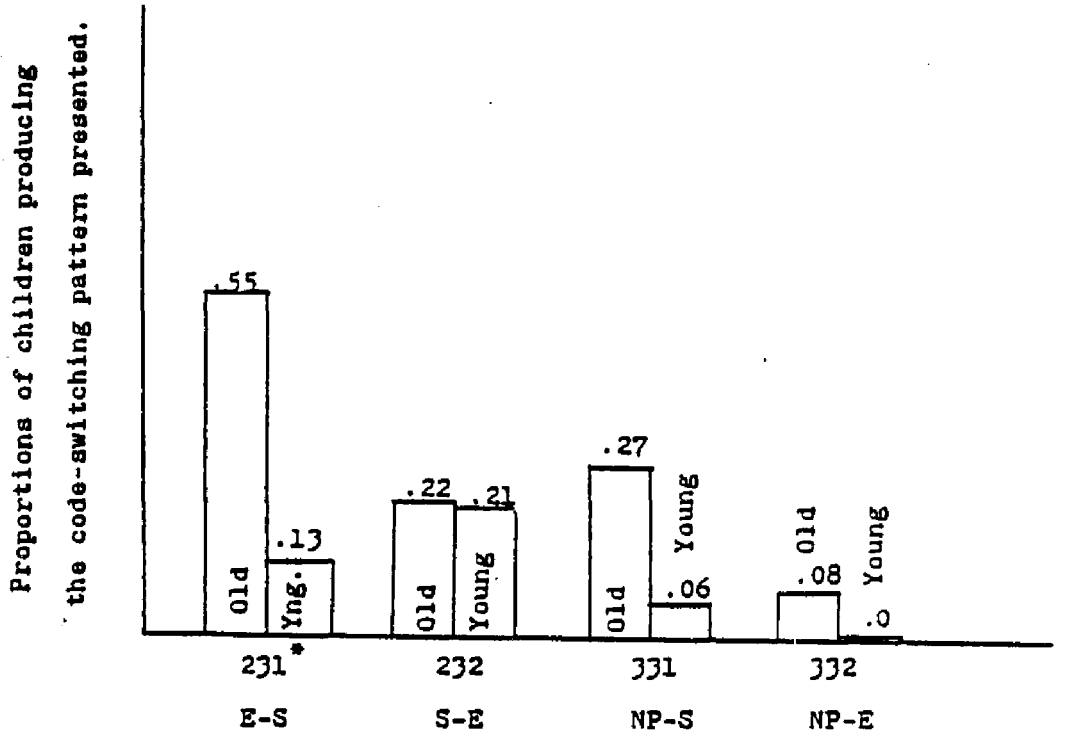


*Significant difference between the proportions

Fig. 5.18

PRESERVATION OF CODE-SWITCHING PATTERN

TYPE III SENTENCES

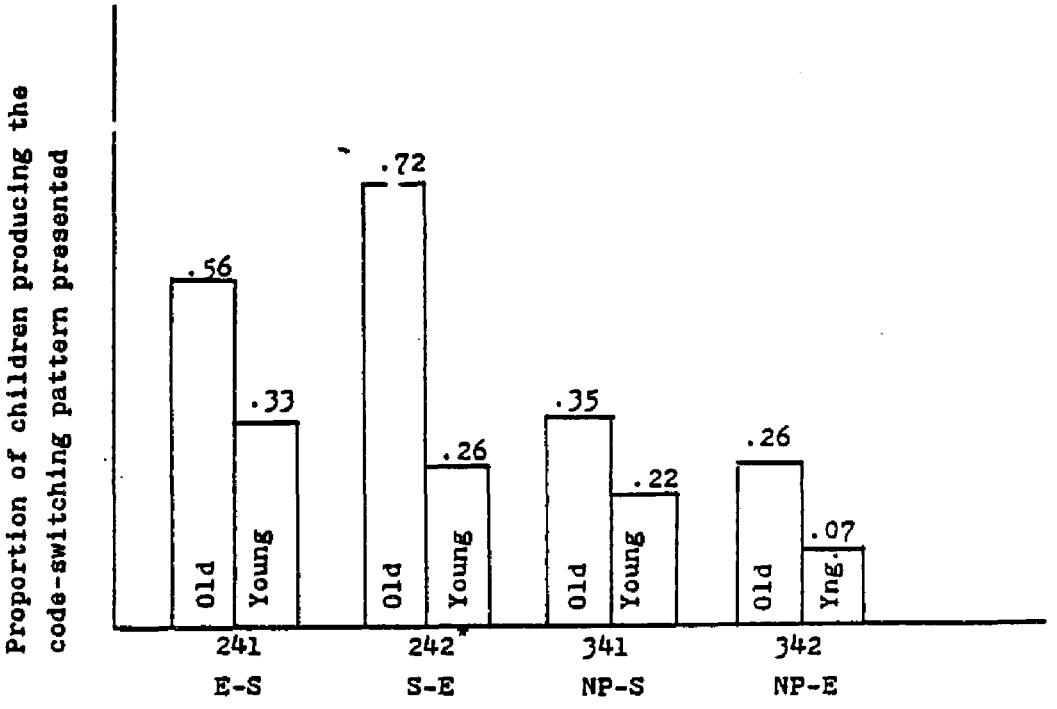


*Significant difference between the proportions

Fig. 5.19

PRESERVATION OF CODE-SWITCHING PATTERN

TYPE IV SENTENCES



* Significant difference between the proportions

5.5 REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

The anlysis of specific code-switch junctures proved very useful in determining the characteristics which make some code-switches easier to imitate than others.

Regardless of the elements present at the juncture two conditions appear to be necessary in order to classify a code-switch juncture as "easy" to imitate: code-switches

1. Code-switches which occurred at major constituent boundaries within the sentence were more easily reproduced by the children (especially the older group), than those which broke up major constituents.
2. Code-switch junctures occurring at the beginning of the sentence were more easily imitated than those which took place in the middle or the end of the sentence.

In order to determine whether a particular code-switch juncture was acceptable or not to the children the following criterion was established: whenever the average proportion ($\hat{P}$) of children able to imitate a particular juncture was below .5 ($P < .5$) the juncture in question was judged to be unacceptable. The following were judged to be unacceptable code-switch junctures:

Juncture of the Switch	Age Group	Direction of the Switch	$\hat{P}$
Verb-Article	Old	E ⟶ S	.396
Noun-Verb	Old	E ⟶ S	.374
Adverb-Article	Old	E ⟶ S	.409

Juncture of the Switch	Age Group	Direction of the Switch	$\hat{P}$
Verb-Article	Young	E ⟶ S	.224
Noun-Adverb	Young	E ⟶ S	.416
Adverb-Article	Young	E ⟶ S	.309
		S ⟶ E	.189
Noun-Relative Pronoun	Young	S ⟶ E	.376

To summarize, the code-switch junctures involving Verb-Article, Noun-Verb, and Adverb-Article appear to be unacceptable to both groups of children when the direction is E⟶S. In comparison, only the Adverb-Article and the Noun-Relative Pronoun junctures were unacceptable in the S ⟶ E direction and only within the younger group.

The results for each code-switch juncture are graphically represented in Figures 5.20 through 5.28.

Fig. 5.20

REPRODUCTION OF SPECIFIC CODE-SWITCHING JUNCTURES

Noun-Verb Juncture. Direction: S⟶E

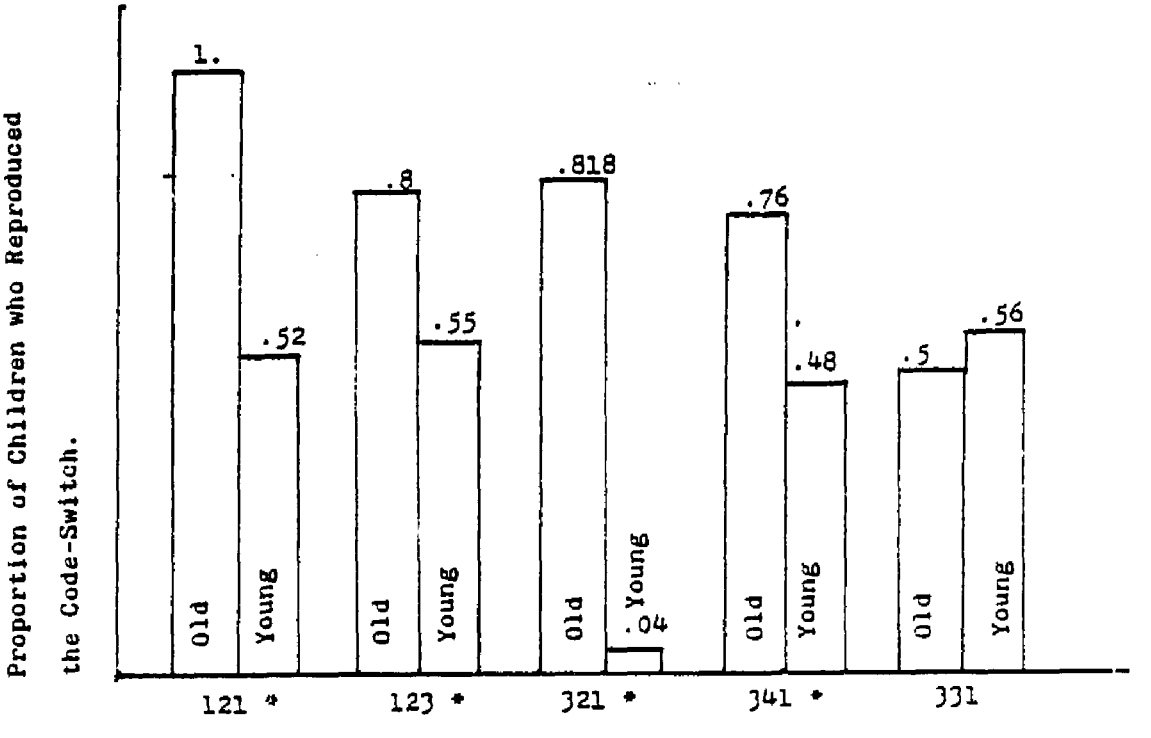
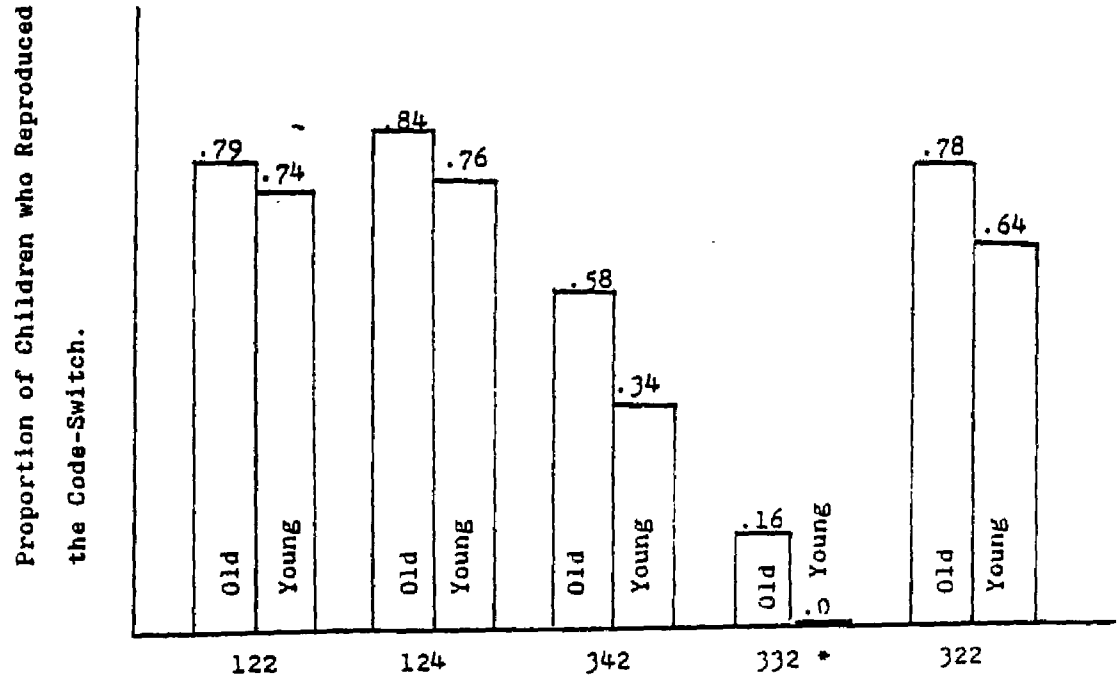


Fig. 5.21

REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

Noun-Verb Juncture. Direction: E⟶S

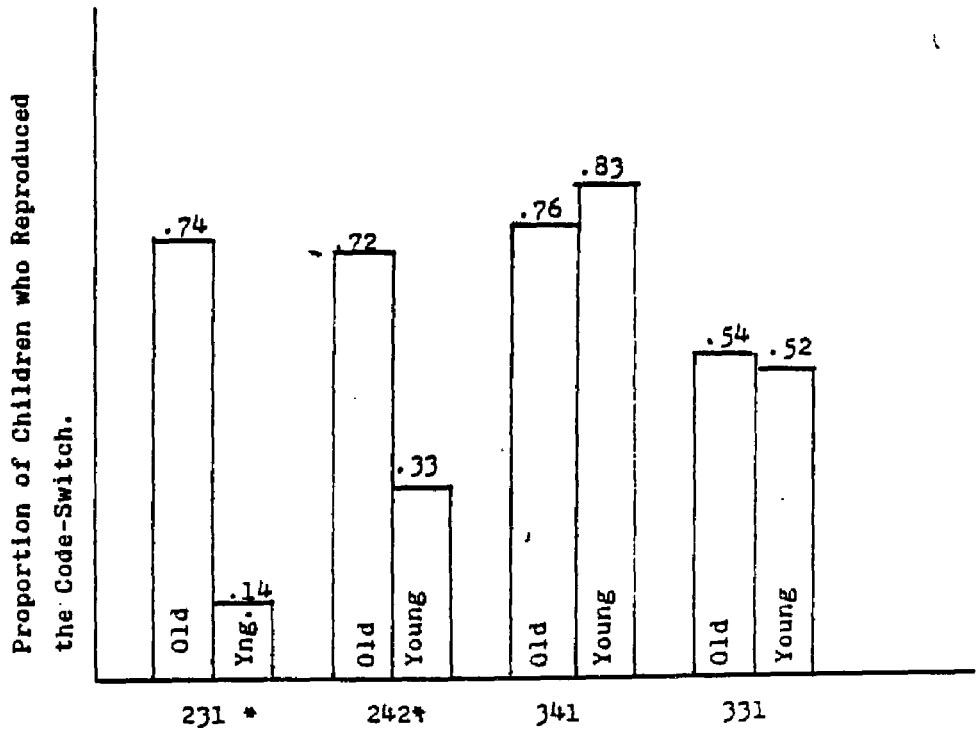


* Significant difference between the proportions.

Fig. 5.22

REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

Noun-Adverb Juncture. Direction: S⟶E



* Significant difference between the proportions.

Fig. 5.23

REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

Noun-Adverb Juncture. Direction: E——→S

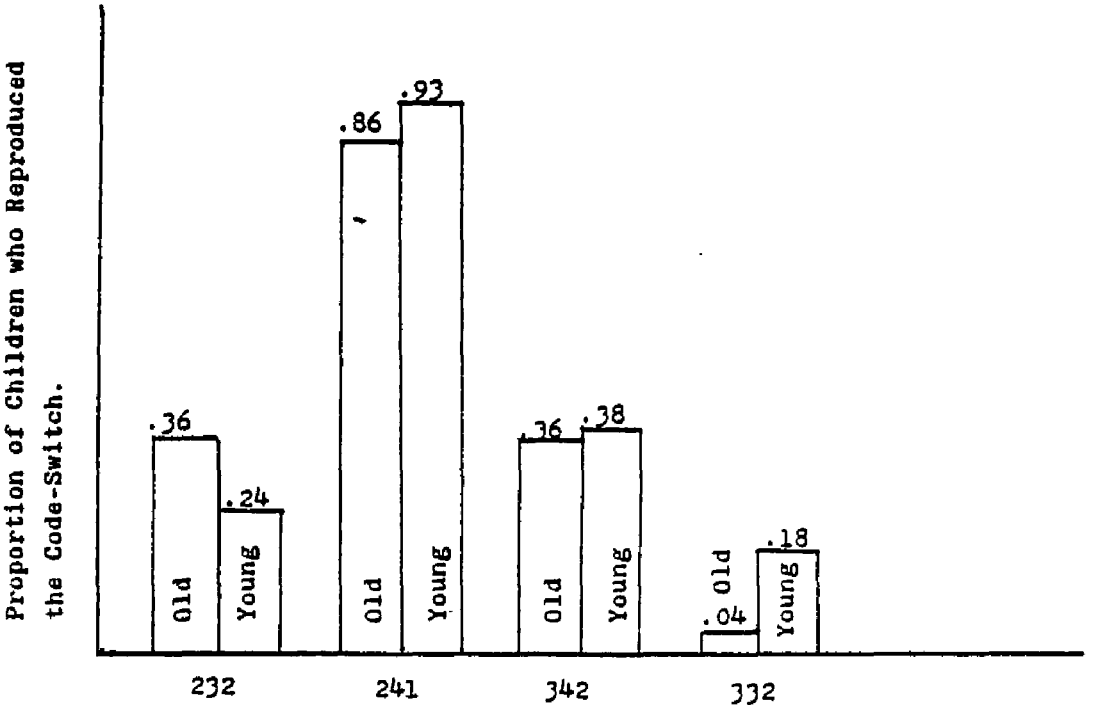
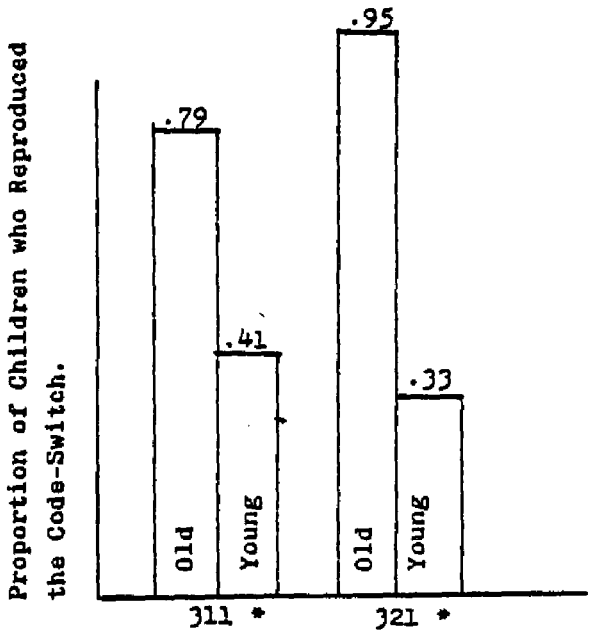


Fig. 5.24

REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

Noun-Relative Pronoun Juncture. Direction S⟶E



Noun-Relative Pronoun Juncture. Direction: E⟶S

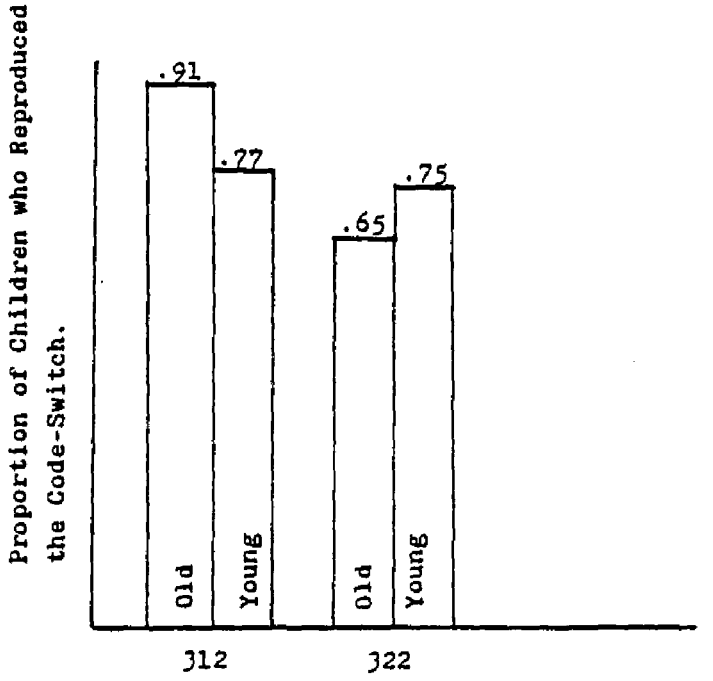


Fig. 5.25

REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

Verb-Article Juncture. Direction: S ——→ E

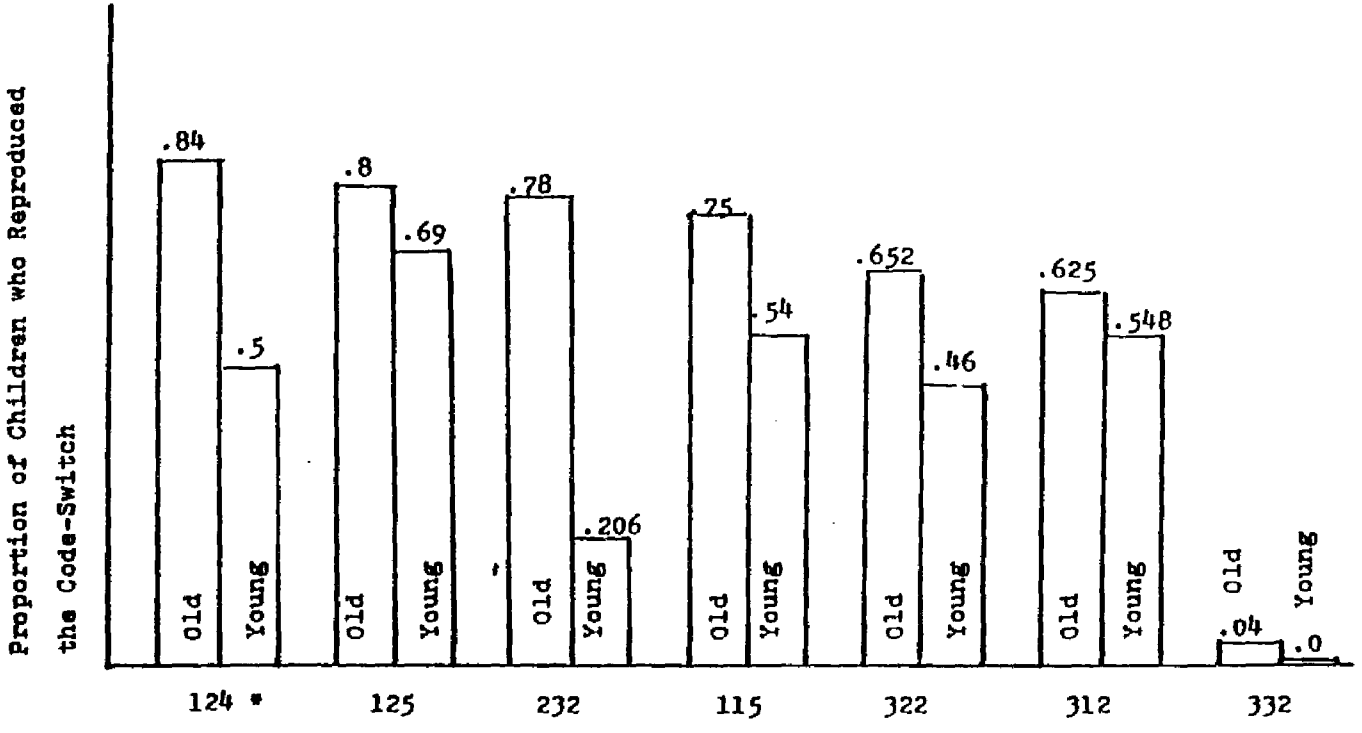
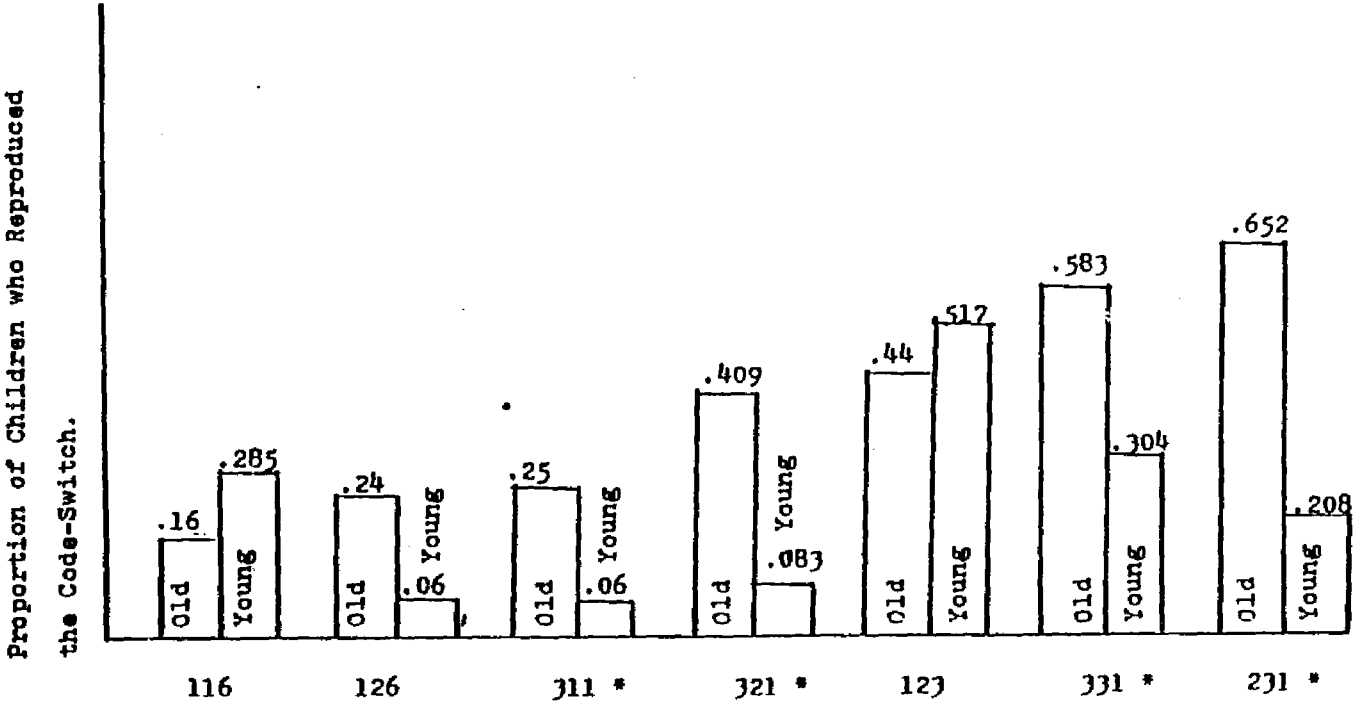


Fig. 5.26

REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

Verb-Article Juncture. Direction: E⟶S

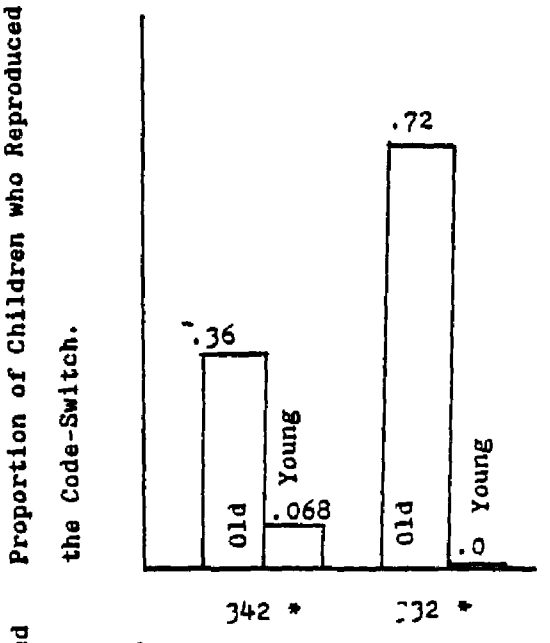


* Significant difference between the proportions.

Fig. 5.27

REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

Adverb-Article Juncture. Direction S⟶E



Adverb-Article Juncture. Direction E⟶S

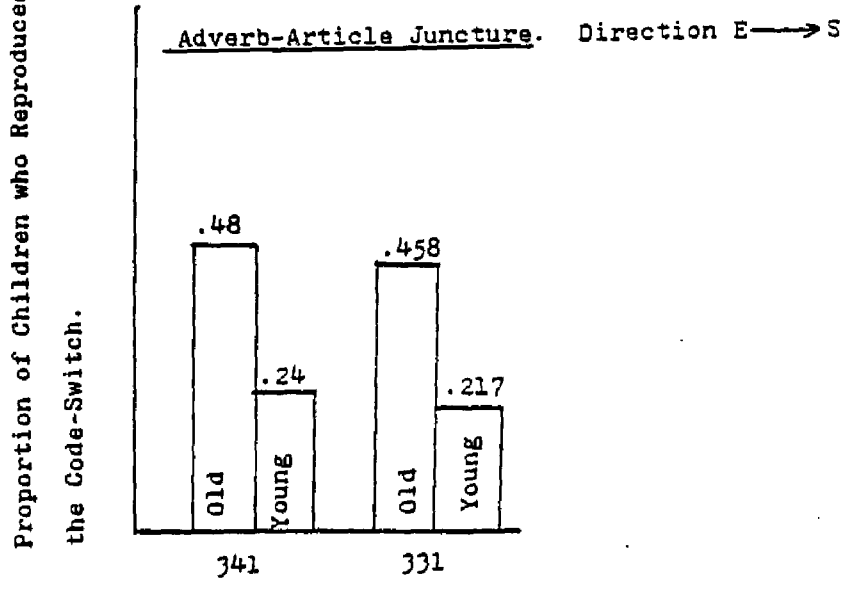
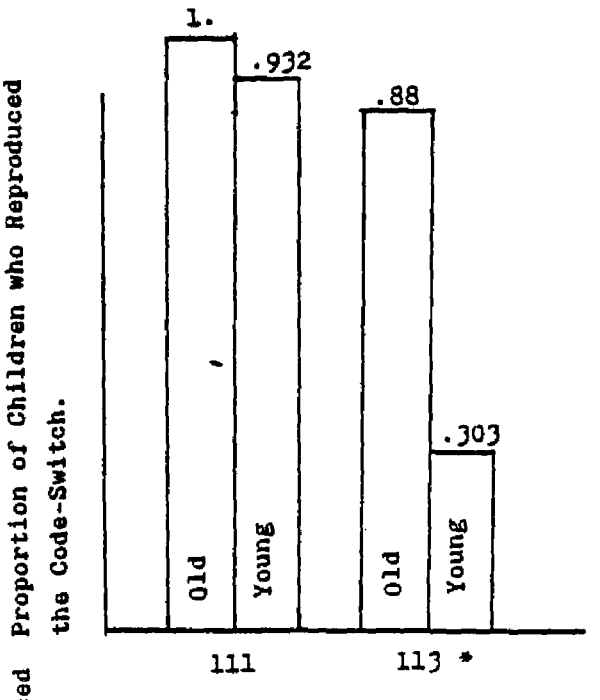


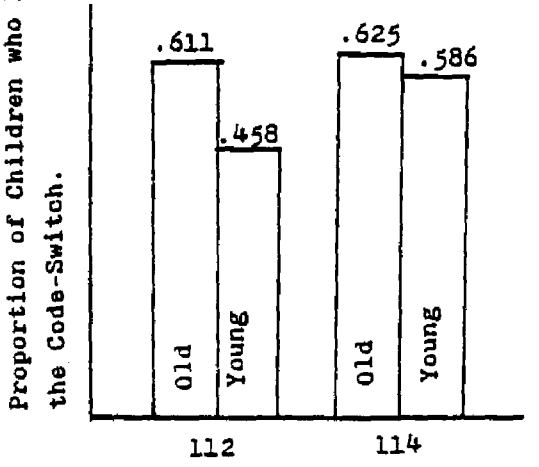
Fig. 5.28

REPRODUCTION OF SPECIFIC CODE-SWITCH JUNCTURES

Adjectve-Verb Juncture. Direction S⟶E



Adjective-Verb Jucture. Direction E⟶S



5.6 DIRECTION OF THE CODE-SWITCH

Given the tendency on the part of the older children to prefer the S ⟶ E direction it may be reasonable to theorize that the older children who participated in the study were on the way to establishing a preference in code-switching direction while the younger children had not began to demonstrate a preference in either direction. The assumption is that the older children are better at imitating the code-switch junctures in the S⟶E direction because this direction is more a part of their code-switching competence than the E⟶S direction. It is possible that S⟶E code-switching is more common among adult speakers whose first language is Spanish, but that this preference is acquired as the competence in the second language (English) increases.

The results of this test are graphically displayed in Figures 5.29 through 5.33.

Fig. 5.29

DIRECTION OF THE CODE-SWITCH

NOUN - VERB JUNCTURE

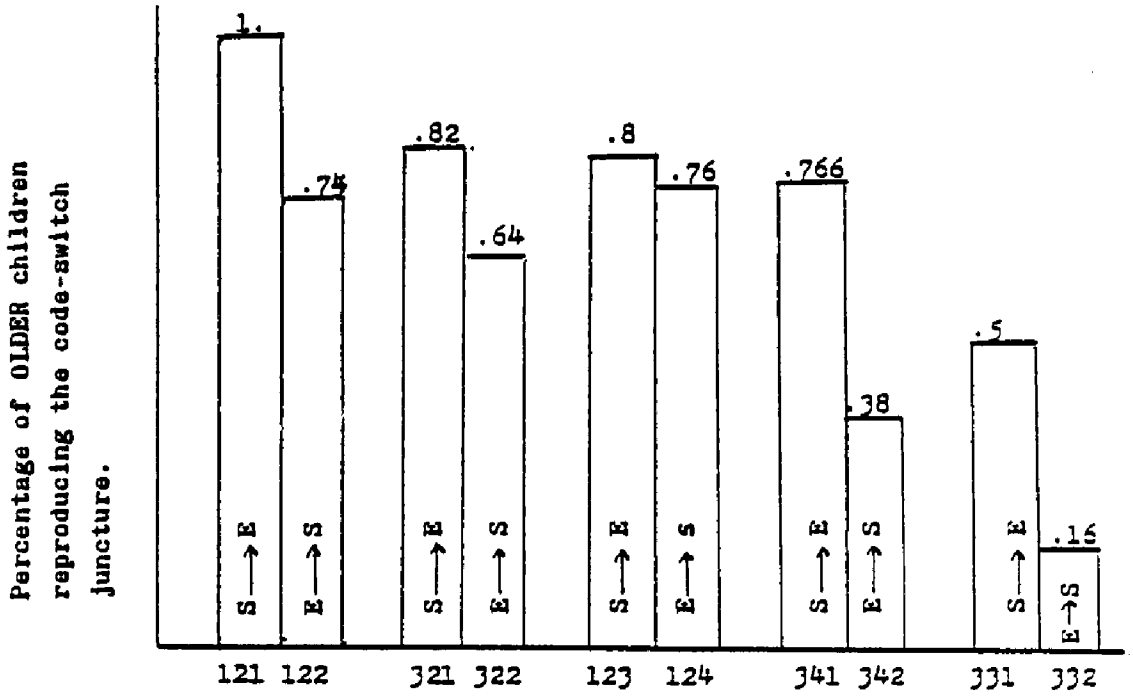


Fig. 5.29 (Continued)

DIRECTION OF THE CODE-SWITCH

NOUN - VERB JUNCTURE

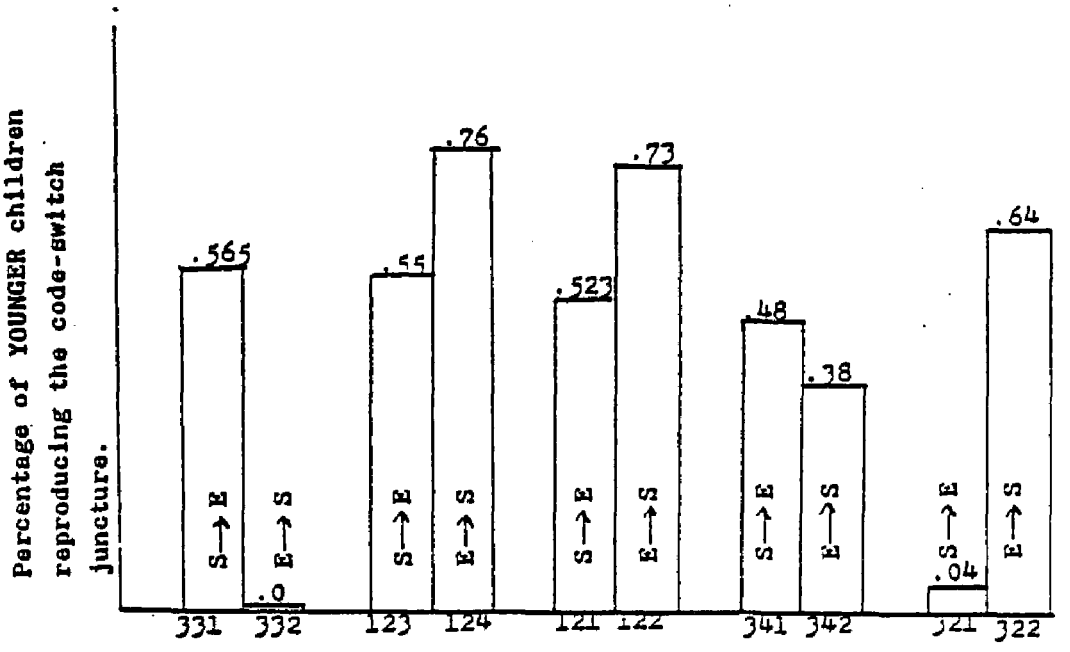


Fig. 5.30

DIRECTION OF THE CODE-SWITCH

VERB - ARTICLE JUNCTURE

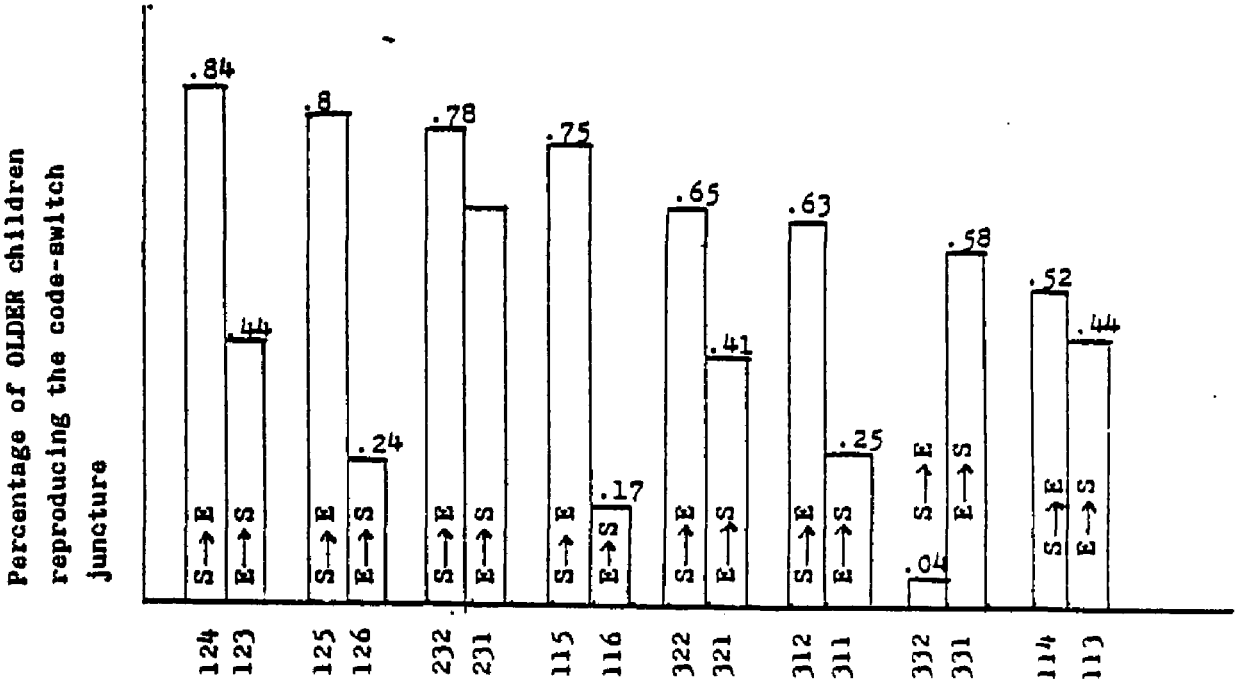


Fig. 5.30 (Continued)

DIRECTION OF THE CODE-SWITCH

Verb - Article Juncture

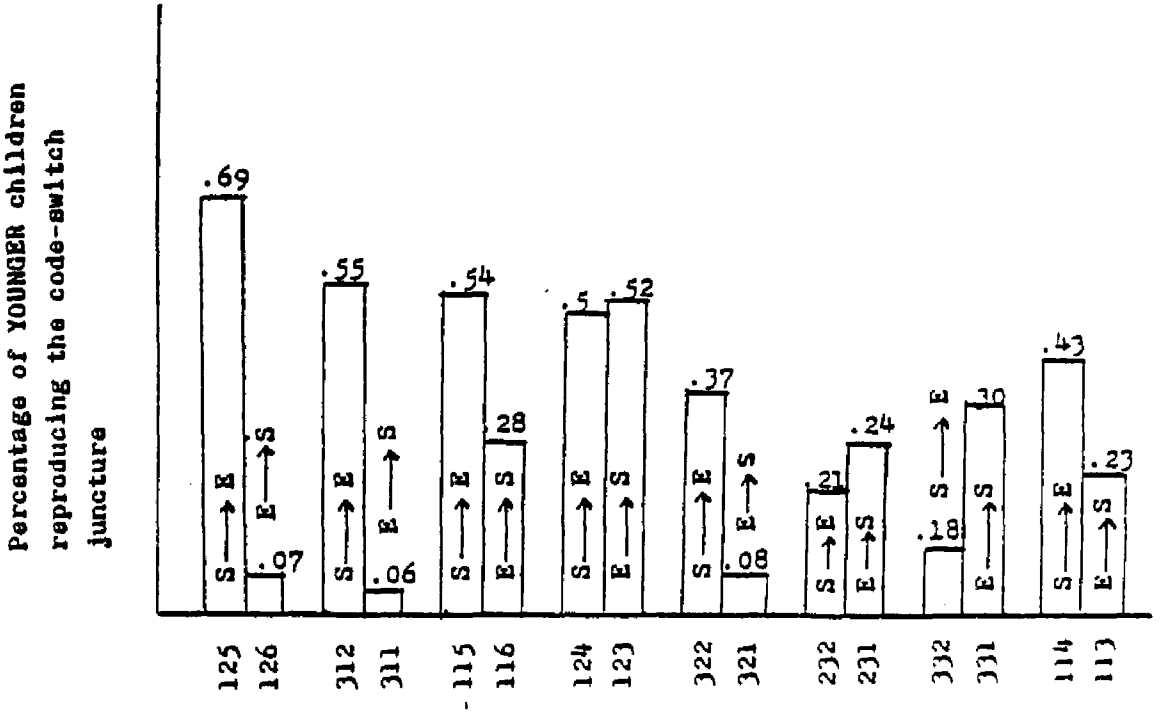


Fig. 5.31

DIRECTION OF THE CODE-SWITCH

NOUN - RELATIVE PRONOUN JUNCTURE

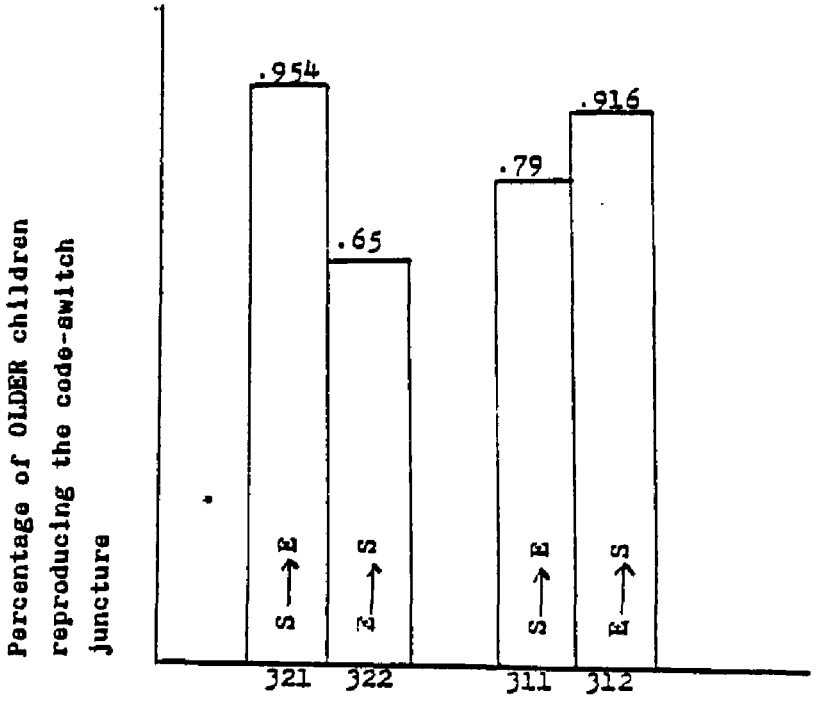


Fig. 5.31 (Continued)

DIRECTION OF THE CODE-SWITCH

Noun - Relative Pronoun Juncture

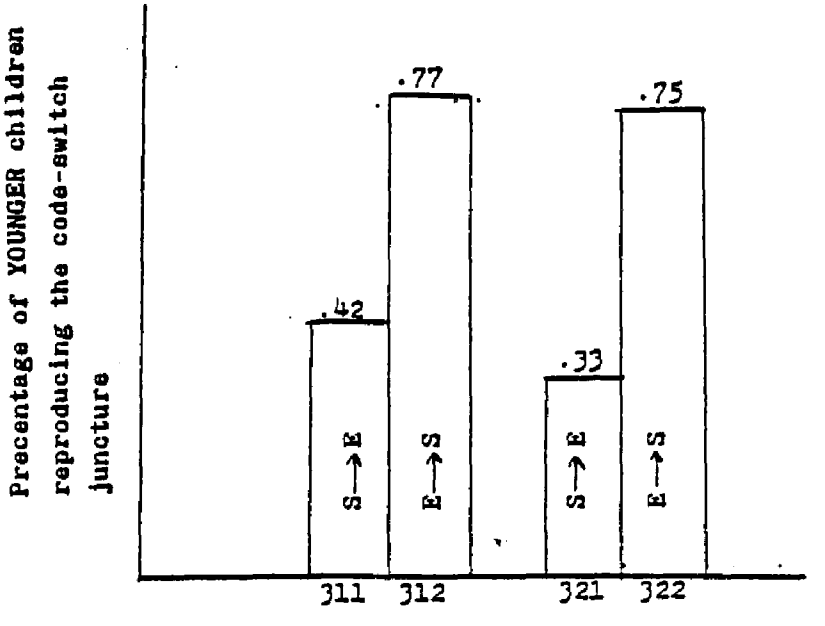


Fig. 5.32

DIRECTION OF THE CODE-SWITCH

ADVERB - ARTICLE JUNCTURE

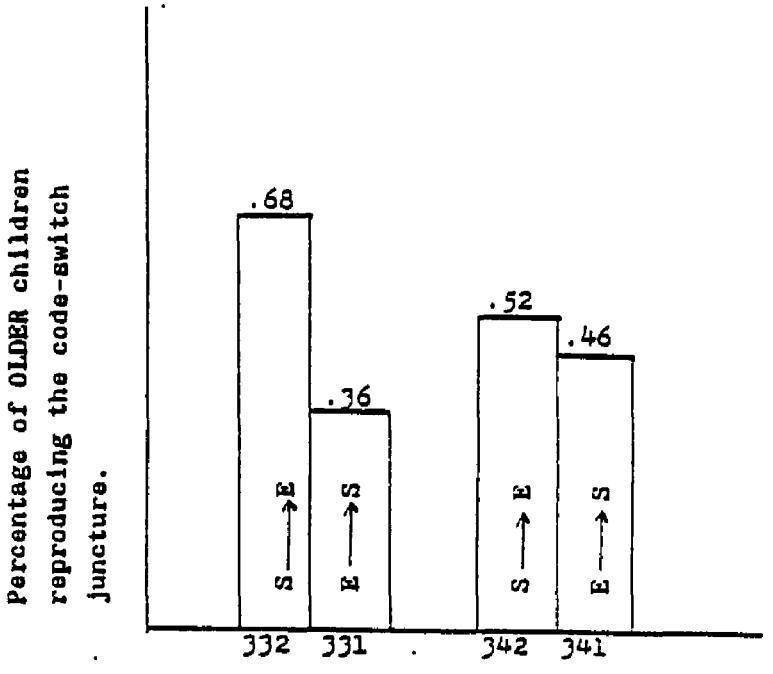


Fig. 5.32 (Continued)

DIRECTION OF THE CODE-SWITCH

Adverb - Article Juncture

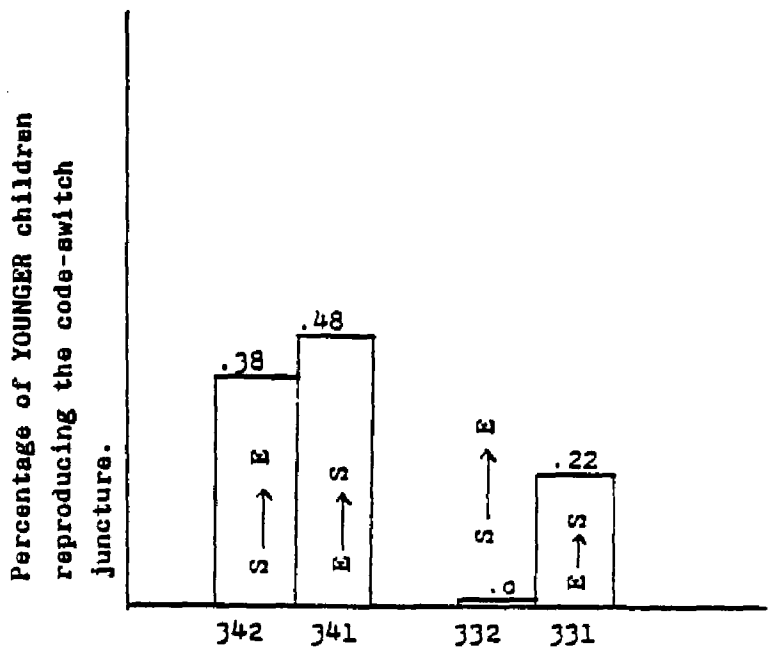


Fig. 5.33

DIRECTION OF THE CODE-SWITCH

NOUN - ADVERB JUNCTURE

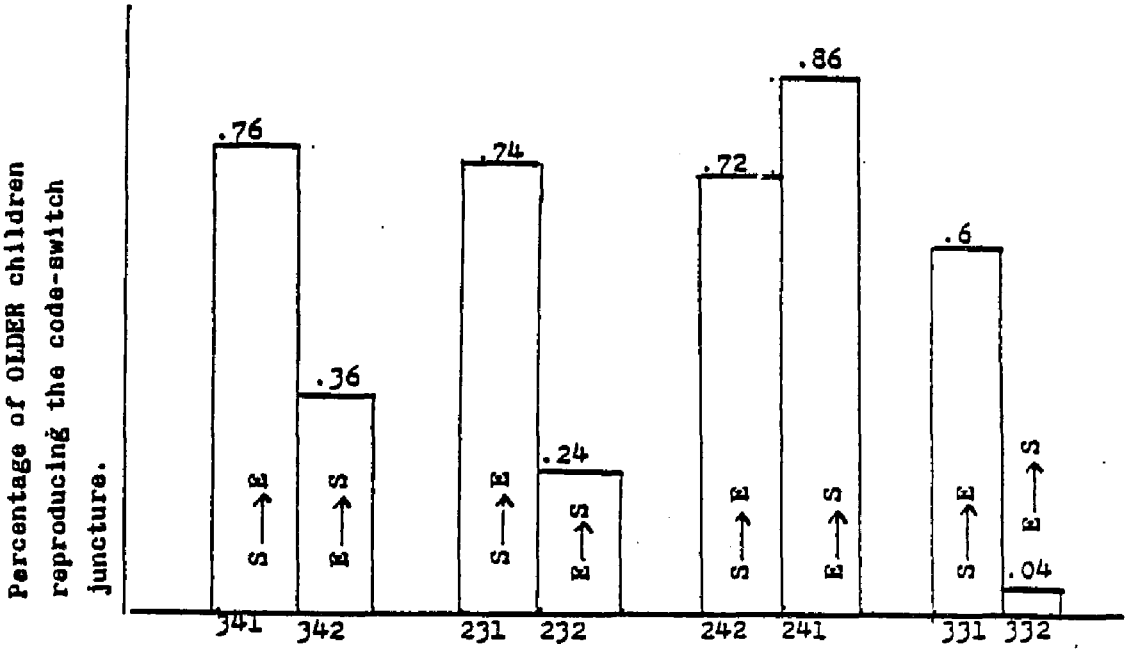
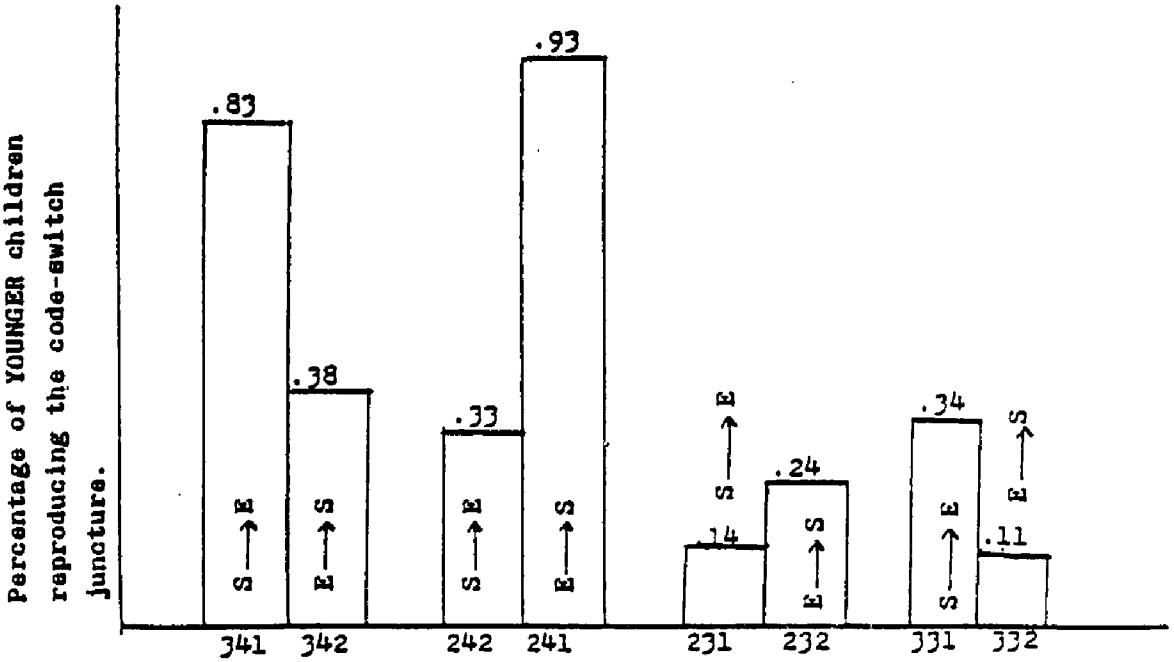


Fig. 5.33 (Continued)

DIRECTION OF THE CODE-SWITCH

Noun - Adverb Juncture



CHAPTER VI

CONCLUSIONS

6.1 VERIFICATION OF THE HYPOTHESIS

1. The fraction of Spanish and English within the sentence will affect the children's ability to imitate it.

In their renditions of the stimulus sentences, the children as a whole showed a tendency to shift to the dominant language of the stimulus sentences. If, for instance a stimulus sentence had five words in English and three in Spanish (English dominant sentence), the children, in their renditions tended to give back at least five words in English, and often more. This was true regardless of whether the dominant language of the stimulus sentence was English or Spanish, although the tendency was more marked when the dominant language of the stimulus sentence was Spanish.

In sentences in which 50% of the words were in English and 50% in Spanish, the tendencies were divided according to the language of the verb in the stimulus sentence. In sentences in which the verb was in Spanish the tendency was for the children to shift to Spanish, and if the verb was in English the children tended to shift to English.

Thus, when asked to imitate a sentence in which two languages are unequally distributed, bilingual children tend to shift to the dominant language of the stimulus sentence, and the shift is stronger when the dominant language of the stimulus sentence is Spanish.

There was a marked tendency (significant in 45% of the sentences presented for imitation) for the younger children

to shift to Spanish more often than the older children.

The tendency to shift to Spanish or to English, meaning that words that are originally presented in one language are translated into the other language by the children, indicates that, although the concept is processed and stored in memory, the specific language in which the concepts are heard is secondary to sentence structure. Whenever the sentence has to be retrieved from memory the child tends to recall concepts and structure first, then to "plug in" the languages that he/she has at his disposal. The language that the child chooses to "plug in" may be an indication of his language dominance. The implication in this case would be that the younger children, who chose to use more Spanish than English may have been Spanish dominant, while the older group may have been English dominant or at least more advanced in the continuum towards English dominance.

Remembering the specific language in which a lexical item was originally heard seems to place an extra load on memory, so that "language" accuracy is readily sacrificed for the sake of conceptual accuracy. It may very well be that when confronted with a task in which a concept has to be expressed in a specific language children resort to the following simplifying strategy: When in doubt, present lexical items in the dominant language.

It can be concluded, therefore, that the hypothesis was confirmed by the results.

2. Younger children will be less proficient than older children at imitating code-switched sentences exactly.

In this case the hypothesis was confirmed: the older children were better at imitating the sentences exactly than the younger children. The real significance of these results, however, lies in the fact that BOTH groups of children were able to imitate the same types of senteneces when they were presented either ALL in English or ALL in Spanish, and that BOTH groups of children made errors in imitating the code-switched sentences presented to them.

These results confirm Kolers' (1966) findings regarding bilingual's performance when reading a code-mixed passage. In his experiment, Kolers asked a group of French-English bilinguals to read (silently) several stories which had been prepared in several linguistic forms:

1. Unilingual form (English or French)
2. Alternating form (One sentence in French, one in English, etc...)
3. Linguistically mixed form (French and English within the same sentence).

Half of the stories were followed by questions in English, and the other half by questions in French.

Kolers found that the amount of time required by the subjects to read the passages varied according to the type of linguistic form presented in the passage. Linguistically mixed passages took the longest time to read, while unilingual pas-

sages took significantly less time. In contrast, answers to the questions (both in English and French) revealed that the bilinguals had understood the meaning of the passages regardless of their linguistic form.

Kolers concluded that code-switching imposes an extra linguistic load for the speaker, which impairs his performance as far as production is concerned. On the other hand, code switching seems to be irrelevant to comprehension.

The performance of the children in the present study shows clearly that the children understood the semantic content of the sentence, otherwise accurate translations such as the ones they made would have been impossible. It was the mixing of the languages that presented a problem for retrieval.

In 1971, Macnamara and Kushnir conducted a study in which subjects were presented (visually) with unilingual and linguistically mixed sentences. The subjects were asked to respond TRUE or FALSE to the different sentences. Their findings revealed that the subjects responded fastest to unilingual sentences presented in their strong language, and that they were slowest at responding to linguistically mixed sentences. One of Macnamara and Kushnir's main conclusions was that switching languages interferes with the bilingual's ability to process sentences. In fact, they stated that "...switching languages in input takes an observable amount of time..." (p.480) More specifically, they found that when sentences containing two or three switches were presented, the time it took for the

subjects to respond, was longer than when no switch or only one switch was present in the sentence.

Regarding the present study, however, the results go beyond Kolers' and Macnamara and Kushnir's claims because most of the sentences (irrespective of type) were imitated more accurately by the older children. In other words, code-switching itself may prove to be a burden on the performance of the bilingual speaker, but the age of the speaker is also a factor (the subjects in the two studies mentioned were all adults), that is, the burden may be heavier on the less skilled bilingual.

3. Sentence Type will affect the children's ability to imitate the stimulus sentences.

This part of the analysis included those renditions by the children which, although not exact replicas of the stimulus sentence, preserved its grammatical structure. This meant that the analysis included the translations made by the children.

The results showed some important differences in the children's ability to preserve the structure of the sentences presented for imitation.

For purposes of clarity, the four sentence types will be described.

Type I : In which the relative clause is attached to the subject of the main clause. Example: La niña, que es gorda, cuts the bread. (Center Embedded)

Type II: In which the relative clause is attached to the object of the main clause. Example: El niño cleans el cuarto que es grande. (Right Branching).

Type III: In which the adverbial clause precedes the main clause and modifies the main verb. Example: When the planes fly el perro always jumps. (Adv.- Main).

Type IV: In which the adverbial clause follows the main clause and modifies the main verb. Example: The baby siempre llora cuando la mamá duerme. (Main - Adv.)

The literature concerning acquisition and comprehension of relative clauses in children and adults has been somewhat

conflicting.

Yngve's (1960) and Miller's (1962) prediction that center embedded relative clauses (sentences in which the main clause is interrupted by the relative clause) would be more difficult to process than right branching relative clauses (in which the main clause is not interrupted), was confirmed by Slobin (1971) who used an elicited imitation task, and by Brown (1971) who used a picture-cued comprehension task, but was contradicted by Gaer (1969) who used a delayed imitation task. More recent research conducted by Sheldon (1974) and Lahey (1974) has shown that right branching relative clauses are more difficult to process than center embedded relative clauses. These and other studies have successfully refuted one of the Operating Principles regarding universal constraints in production and comprehension proposed by Slobin (1973): "Avoid interruption or re-arrangement of linguistic structures." (p.352)

The present study showed that for the older children center embedded relative clauses were about as easy to imitate as right branching relative clauses (with a slight advantage for the right branching relative clauses). For the younger children, on the other hand, the center embedded relative clauses were less difficult to imitate than the right branching relative clauses. It is important to mention, however, that the difference was more marked whenever the relative clause was in English than when it was in Spanish. In other words, the language of the relative clause seems to be an extra burden

with which these children had to contend.

Regarding adverbial clauses, Clark and Clark (1977) quote Bever, who in 1970 proposed a number of strategies that speakers may use to understand sentences. One of Bever's strategies states that the speaker should assume that the first clause in a sentence is the main clause "...unless it is marked at or prior to the main verb as something other than the main clause." (p.68) Clark and Clark interpret this strategy as predicting that adverbial clauses that follow the main clause ought to be acquired before those that precede the main clause. Applying this principle to sentence imitation, the structure of Type IV sentences (in which the adverbial clause follows the main clause) should be easier to preserve than the structure of Type III sentences in which the adverbial clause precedes the main clause). Looking at the results this was indeed the case; both groups of children had considerably more difficulty preserving the structure of Type III than of Type IV sentences.

The following table presents the four types of sentence structure arranged in ascending order of difficulty for each age group:

	Older Group	Younger Group
Easiest	IV	I
	II I	II
		IV
Hardest	III	III

In Type III sentences both groups (but more markedly the younger children) tended to omit the adverb ALWAYS. Given the fact that this word carries no significant content in the sentence, it is understandable that the children would leave it out in order to keep more relevant items in memory.

The younger children had little difficulty imitating the adverb CUANDO (when), it was more difficult for them to imitate the adverb WHEN.

As with the relative clauses, the early adverbial clauses were more difficult for the younger children to imitate (and to some degree for the older children too) whenever the lead adverbial conjunction, in this case WHEN or CUANDO; was in English than when it appeared in Spanish, so that, again the language of the adverbial clauses plays an important role in the children's ability to imitate them.

As shown by the results, in this case the hypothesis was confirmed: Sentence type did affect the children's ability to imitate the stimulus sentences.

4. Constituent Switches will be more easily reproduced by the children than Lexical Switches.

Studies aimed at determining the psychological reality of the constituent structure of the sentence are for the most part in agreement with Fodor and Bever, who, in 1965 stated that "The unit of speech perception corresponds to the constituent." (p. 415) In their experiments, adult subjects were presented with sentences, each containing a click at one of eight different positions. After they had heard the sentence, the subjects were asked to write it down and to indicate the point in the sentence at which the click had been heard. Fodor and Bever found that the subjects tended to move the clicks to correspond with major constituent boundaries within the sentence.

Although several other explanations of the clicks' displacement have been offered (Ladefoged, 1967 and Reber and Anderson, 1970), other studies have tended to support the theory regarding the psychological reality of major constituents within sentences. In their treatment of this topic Clark and Clark (1977) concluded that "Listeners try to isolate and identify constituents in working memory, for they are useful in building propositions." (p.55)

Further support for this idea within the context of bilingualism was offered by Wakefield et al (1975), who presented a group of sentences to adult Spanish-English and Korean-English bilinguals. Their task was to respond TRUE or

FALSE after having heard or read the sentence. Each sentence contained elements in English and Spanish or Korean and English. Some of the language switches within the sentences disrupted a major constituent, while others occurred at a major constituent boundary. Their results on the visual aspect of the study confimed their hypothesis that "... sentences in which the language of presentation and the constituent structure are in phase will be perceived more readily than sentences in which languages and constituents are not in phase." (p.15).- The results of the auditory part of the experiment were not significant but the trends were in the expected direction.

In 1976 Thelander reiterated Wakefield et al's idea by stating that "...in most cases a code-switch takes place from one clause to another." (p.111)

The hypothesis that the code-switching patterns involving major sentence constituents would be more easily reproduced than code-switches involving individual lexical items was borne out by the results of the present study.

Several developmental aspects of code-switching are also suggested by the results: (1) the fact that the older children were better able to reproduce constituent switch patterns than the younger children indicates that there is an age factor involved. That is, the older children seem to have already acquired the ability to perceive the constituent structure of sentences, while the younger children are still

less able to do so. (2) the patterns returned by the children may have been indicative of their language dominance. For instance, when presented with an E-S-E (English-Spanish-English) or and S-E-S pattern, the older children tended to return an E-E-E or an S-E-E pattern respectively, while the younger children returned E-S-S or S-S-S patterns.

It is possible that both the "language set phenomenon" ("The inertia in switching from one language to another..." (p. 214), Albert and Obler, 1978) and language dominance are having an influence on the patterns returned by the children. That is, the child is most influenced by the language set phenomenon whenever he/she encounters a sentence constituent in his/her dominant language. This idea would explain most of the patterns returned by the children.

In this case the hypothesis was confirmed by the results.

A corollary of this finding could be stated as follows: A code-switch that occurs at a major constituent boundary within a sentence will be more easily imitated than a code-switch that breaks up a major constituent.

5. Older children will be more proficient than younger children at reproducing Lexical Switches.

Some of the research on code-switching suggests that lexical switching is very prevalent among bilingual speakers. According to Lindholm and Padilla (1977) "It is evident that mixing occurs predominantly at the lexical level. The insertion of English nouns into Spanish utterances accounts for the majority of language mixes." (p.327)

The results of the present study do not confirm Lindholm and Padilla's assertion. Although older children were slightly better at reproducing Lexical Switches than the younger children, the difference was negligible. As a matter of fact, both groups evidenced a great deal of difficulty in imitating Lexical Switches of the type used in this study.

Two explanations for the discrepancy are possible: (1) it may be that the unit Determiner + Noun (defined as a lexical switch in this study) is not as easily switched as the noun alone, as seems to be the case in the type of examples cited by Lindholm and Padilla; (2) it may be that the position of the lexical switches in the sentences used in this study were not particularly conducive to switching. The results, however, agree with Wentz' (1977) findings regarding Lexical Switches.

This hypothesis was NOT confirmed by the results.

6. Early code-switches within a sentence will be more easily reproduced by the children than late code-switches.

This hypothesis was confirmed by the results. Code-junctures involving Noun-Verb, Noun-Adverb, Verb-Article and Adverb-Article were imitated more easily by both groups of children when they occurred early in the sentence than when they occurred late in the sentence. These findings are in agreement with the Primacy Effect principle, first mentioned by Murdock in 1961, which states that the end points of an ordered sequence are more distinct than the center portion of the sequence; more specifically, he claimed that subjects appear to start learning an ordered sequence from the beginning, next learn the end, and then work towards the center. In 1962 Jensen showed the same serial position effect in subjects learning a ten digit list.

8. Code-Switch junctures in the direction Spanish--->English will be more easily reproduced by the children than code-switches in the opposite direction.

All of the code-switch junctures were more easily reproduced by the older children than by the young ones. The ability of the children to reproduce specific code-switch junctures was significantly dependent on age only in certain cases:

Noun-Verb Juncture (when the direction of the switch was S⟶E).

Noun-Adverb Juncture (when the direction of the switch was S⟶E)

Noun-Relative Pronoun Juncture (when the direction of the switch was S⟶E)

Verb-Article Juncture (when the direction of the switch was E⟶S)

Adverb-Article Juncture (when the direction of the switch was S⟶E).

The results show that there was a definite preference among the older children in favor of the S⟶E direction of switches (except in the case of the Verb-Article Juncture). The Adverb-Article switch was the most difficult for all the children to imitate, which makes it possibly the least acceptable.

The developmental trend in this part of the study is clear: older children show a definite preference for the

Spanish→English direction in code-switching, while the young children's mixed responses show that their preference is not yet established. The directional preference of the older children is probably a reflection of their language dominance, while the lack of preference in the younger children suggests a dominance that is in transition. It is possible that a more detailed breakdown of the ages of the children would have revealed better defined stages in the transitional dominance of the younger group.

This Hypothesis was only partially confirmed. The Spanish→English direction was favored mostly by the older group. The younger children showed mixed preference in this regard.

In summary, the developmental trends observed by the study were:

1. Given a sentence containing elements in English and in Spanish for imitation, younger bilingual children (age five to seven) will tend to increase the number of Spanish elements in their rendition of the sentence, while older bilingual children will tend to increase the number of English elements.
2. When given sentences containing either major constituent switches or lexical switches for imitation, older bilingual children will tend to do better at reproducing major constituent switches than younger bilingual children. Both younger and older children will tend to reject lexical switches.
3. When given sentences containing code-switches in the direction Spanish⟶English and/or in the direction English⟶Spanish, older bilingual children will show a significant preference for the Spanish⟶English direction, while the younger children will exhibit no clear preference in either direction.

Four factors that appear to affect the acceptance or rejection by the children of a specific code-switch were isolated:

1. Place of the code-switch in the sentence
2. Direction of the code-switch
3. Type of code-switch.

4. Size of the code-switched portion of the sentence.

Place of the code-switch in the sentence: Early code-switches have a higher likelihood of being imitated than those which occur late in the sentence.

Direction of the code-switch: Switches in the direction Spanish English are reproduced more easily by older bilingual children (ages 8-10).

Type of code-switch: Code switches occurring at major constituent boundaries within the sentence are reproduced more easily than those which break up a major sentence constituent.

Size of the code-switched portion of the sentence: The larger the code-switched portion of the sentence, the easier it will be for children to imitate it (taking into account short term memory constraints).

6.2 IMPLICATIONS OF THE STUDY

1. Translation Skills: A fascinating aspect of this study was the ease with which the children (young and old) were able to translate sentences or parts of sentences from one language to the other. Very little is known about the translation skills of young children mostly due to the fact that children who naturally translate in their everyday lives, have a tendency to freeze when asked to translate on command. A delayed imitation task of the type used in this study may be an indirect way of getting at the translation skills of young children.

2. Comprehension skills: A corollary of the translation skills of these children is the issue of comprehension of code-switched sentences. Even though the study was not looking at the comprehension abilities of the children per se, the fact that by translating the sentences the children showed that they understood them, cannot be ignored. The children were not simply imitating the sentences, they were "processing" them. The "filter theory" of imitation tested and supported by the studies of Menyuk (1963), Smith (1970), Menyuk and Looney (1972) and Slobin and Welsh (1973), is also supported by the present study.

On the other hand, Koler's assertion that code-switching does not impair comprehension, is also corroborated by this study.

3. The Strong Verb Hypothesis: A very important observation arising from the results of this study is the role played by the language of the verb on the language of the rest of the sentence. The results indicate that once the verb is stated (in either language) the elements following it (or at least the element immediately to the right of it) will be stated in the language of the verb.

The influence of the language of the verb lends additional support to the idea suggested by Chafe in 1971, that the verb may be central to the structure of sentences, and emphasized by Timm (1975), who stated that "...verbs and their pronominal and auxiliary satellites remain in unilingual format." (p.480) More recently, Bloom (1981) reiterated this notion by explaining that the first words used by children ("...uhoh, there, up, gone, more, etc.") (p.163) express relations between objects or transformation of objects, and that they only begin to use verbs when multi-word utterances have become part of their repertoire. From this sequence of events she concludes that in order for the child to acquire grammar, he/she must know something about the nature of verbs: "...the syntactic and semantic functions of verbs [are] major factors that contribute to the cognitive requirements for learning a language." (p. 169)

In the present study almost every verb was followed by a Det. + Noun combination. Even though occasionally the whole Det. + Noun unit was changed to the language of the

verb, often only the Determiner was changed, breaking up the Determiner + Noun unit and challenging Fodor and Garrett (1967), Kimball (1973), and Watt (1970 b) in their assertion that speakers of the language, in order to segment sentences into major constituents make use of elements within the sentences as clues to predict subsequent elements. For instance, they argue, once the listener hears the Determiner he expects a Noun to follow, so that the Determiner + Noun is interpreted as a unit. The results of the present study show that the children did NOT interpret the Determiner + Noun combination as a unit or they would have kept it in one language.

4. The Neutral Determiner Rule: The lexical switches used in the study (defined as Determiner + Noun) provided an interesting piece of information regarding the acceptability of certain code-switches within the Determiner + Noun combination.

Although the children used the following combinations:

Spanish Determiner + Spanish Noun

English Determiner + English Noun

Spanish Determiner + English Noun

they did not use

English Determiner + Spanish Noun

unless the English Determiner was immediately preceded by an English Verb, in which case the Strong Verb Hypothesis prevailed.

It appears as if the combination

English Determiner + Spanish Noun

as in THE GATO (the cat) or THE NIÑA (the girl), is not an acceptable code-switch among these children. The explanation may lie in the rule of Gender Agreement (acquired quite early by Spanish speaking children) whereby the gender of the determiner must match the gender of the noun following it. Since the English determiner THE has no gender, it is probably perceived by the children as a NEUTRAL determiner, and their internal rules of gender agreement will not allow them to use it in conjunction with nouns which have masculine or feminine markers.

5. Language Proficiency: Some of the changes made by the children in their renditions of the stimulus sentences are indicative of their proficiency in their two languages. For example, the English relative pronouns WHO and WHICH were accurately imitated in the all-English sentences, but not when they appeared in the code-switched sentences, while the Spanish relative pronoun QUE was imitated accurately in both contexts.

It seems as if, when the children have the support of an all-English context, they are able to imitate more advanced forms of the relative pronoun. On the other hand, when the extra load of switching is added on, they revert back to a more primitive form (such as THAT). In other words, the extra load imposed by language mixing within the sentence seems to force the child to rely on old forms. A similar principle had

already been proposed by Slobin (1973): "New functions are first expressed by old forms." (p. 185)

In many instances the relative pronoun WHICH was changed to THAT, and less often to QUE, WHEN, and CUANDO. The pronoun WHO (which is acquired later than WHICH by monolingual English speaking children) was changed also to THAT, and less often to WHICH and QUE. The fact that the children (especially the younger ones) gave a greater variety of renditions of the relative pronoun WHICH, may suggest that WHICH is acquired later than WHO by children whose first language is Spanish, thus reversing the order of acquisition present in monolingual English children.

It is also suggested here that the children (especially the younger ones) have only begun to master the complex Relative Pronoun System in English, while the simpler Spanish system has already been acquired.

The same was true of the English adverbs ALWAYS and WHEN, and their Spanish counterparts SIEMPRE and CUANDO.

6. Assessment: The direction preference of the code-switch, one of the clearest results of this study, could be used as the basis for future tests of language dominance. Being able to imitate code-switches in the direction of Spanish English better than in the opposite direction would indicate that the child is English dominant, while a preference for the English Spanish direction would indicate Spanish dominance. More

interesting perhaps, would be the cases showing mixed preference, because they would indicate that the child's dominance is in transition, a condition which has been ignored by the literature.

6.3 LIMITATIONS OF THE STUDY

Although every effort was made in the present study to account for as many variables as possible, certain limitations, inherent to the nature of research in general and to research in bilingualism in particular, became apparent as the study progressed. The limitations concerned (1) the population of the study, (2) time and (3) the nature of the task.

1. Population: The children who took part in the study represent the second largest Hispanic group within the City of New York and other major Northeastern cities. They do not represent, however, other Hispanic groups in the United States. It is hoped, however, that the findings of this study will hold for other Hispanic groups as well.

A second limitation within this category has to do with restrictions imposed by the public school system concerning the numbers of children who are allowed to participate and the amount of time which they are allowed to spend outside of the classroom for research purposes.

2. Time: Because the children were only allowed to be out of their classrooms for a specified amount of time, it was impossible to administer any tests prior to the actual

experiment. The ideal situation would have been to have determined each child's language dominance and proficiency in advance of the presentation of the sentences. In this way a correlation could have been established between language dominance and performance in the imitation of code-switched sentences.

3. The nature of the task precluded the use of more sentence types. Since each combination of constituents had to be accounted for, the use of more sentence types would have rendered an unmanageable number of stimulus sentences.

6.4 SUGGESTIONS FOR FUTURE RESEARCH

The results of the study as well as its limitations provide ample basis for future studies concerning code-switching:

1. Replications: The study could possibly be replicated with other Hispanic groups such as Puerto Rican or Mexican American. The tendencies of different groups could then be compared.

2. A similar study (using more complex sentences) could be done using adult subjects instead of children. The results could then be compared to see if the code-switching patterns of older children resemble more closely those of the adults than do the patterns of younger children.

3. The same sentences could be used with a group of language delayed children to see if their patterns resemble those of

the younger normal children. Similarly, a group of language impared children could be used in order to compare their code-switching patterns with those of normal children.

APPENDIX A

TABLE A-1

STIMULUS SENTENCES

SENTENCE #	
111	La niña que es gorda, cuts the bread.
112	The girl who is fat, corta el pan.
113	El perro que es negro catches la bola.
114	The dog which is black, coge the ball.
115	El hombre que es malo, quema the papers.
116	The man who is bad, burns los papeles.
121	El gato chases the mouse which is white.
122	The cat persigue al ratón que es blanco.
123	El niño cleans el cuarto que es grande.
124	The boy limpia the room which is big.
125	La señora carga the bag which is heavy.
126	The lady carries la bolsa que es pesada.
231	When the planes fly, el perro always jumps
232	Cuando los aviones vuelan, the dog siempre salta.
241	The baby siempre llora cuando la mamá duerme.
242	El bebé always cries when the mother sleeps.
311	El caballo, which is small, carries las frutas.
312	The horse que es pequeño, carga the fruits.
321	La niña wears el sombrero , which is old.
322	The girl lleva the hat, que es viejo.
331	When los niños eat, el papa always talks.
332	Cuando the children comen, the father siempre habla.
341	El niño always reads when la maestra talks.
342	The boy siempre lee cuando the teacher habla.

TABLE A-2

BASIC SYMMETRIC DESIGN

GROUP #	SENTENCE TYPE	CODE-SWITCH TYPE	SENTENCE #	LANGUAGE COMBINATION
I	1	1	111	SES
I	2	1	121	SES
I	1	2	112	EES
I	2	2	122	ESS
I	1	3	113	SES
I	2	3	123	SES
I	1	4	114	ESE
I	2	4	124	ESE
I	1	5	115	SSE
I	2	5	125	SSE
I	1	6	116	EES
I	2	6	126	EES
II	3	1	231	ES
II	3	2	232	SE
II	4	1	241	ES
II	4	2	242	SE
III	1	1	311	NP Span.
III	1	2	312	NP Eng.
III	2	1	321	NP Span.
III	2	2	322	NP Eng.
III	3	1	331	NP Span.
III	3	2	332	NP Eng.
III	4	1	341	NP Span.
III	4	2	342	NP Eng.

Total number of sentences in the study: 24

TABLE A-3

ORDER OF PRESENTATION OF STIMULUS SENTENCES	
1.	Sentence 111
2.	" 332
3.	" 121
4.	" 231
5.	" 311
6.	" 112
7.	" 122
8.	" 232
9.	" 312
10.	" 321
11.	" 341
12.	" 123
13.	" 241
14.	" 321
15.	" 114
16.	" 124
17.	" 242
18.	" 331
19.	" 115
20.	" 125
21.	" 322
22.	" 116
23.	" 342
24.	" 126

TABLE A-4

FINAL AGE AND SEX BREAKDOWN OF THE CHILDREN

AGE	MALES	FEMALES	TOTAL
5	0	7	7
6	11	4	15
7	5	8	13
8	4	4	8
9	3	5	8
10	4	5	9
TOTAL	27	33	60

TABLE A-5

COUNTRY OF ORIGIN OF THE CHILDREN

Age	Place of Birth	
	U.S.	Dominican Republic
5	4	3
6	8	8
7	8	4
8	6	2
9	3	5
10	7	2

TABLE A-6

AVERAGE LENGTH OF TIME IN THE U.S.

Age	Average Number of years in the Continental U.S. (For those children born in the Dominican Republic)
5	4
6	4
7	5
8	5 1/2
9	6
10	5 1/2

TABLE A-7

LANGUAGE PREFERRED BY THE CHILDREN

Age	Spanish	English	No preference	Total #
5	4	2	1	7
6	6	5	4	15
7	4	8	1	13
8	3	4	1	8
9	2	5	1	8
10	3	5	1	9
				60

TABLE A-8

SAMPLE DATA SHEET

Child's #	Sentence # 126 THE	LADY	CARRIES	LA	BOLSA	QUE	ES	PESADA
1			CARGA					
2				the		which	is	
3			carga	la		which	is	heavy
4						which	is	heavy
5			carga	la		which	is	
6								
7				the		that	is	
8			carga					
9								
10				the		which	is	
11						which	is	
12								
13	La					that	is	
14		c	carga					
15			carga					
16				the				
17				the				
18			carga	the				
19				the	bag	which	is	
20			[illegible]			—	is	
21			carga	una				
22			carga					
23			carga					
24				[illegible]		—	[illegible]	
25	la	mamá	carga					
26			carga					
27			carga					
28				the	bag	which	is	heavy
29				the		[illegible]		
30				the		which	is	
31	la	señora	[illegible]	una	bolsa	—	—	muy heavy

TABLE A-9

SCREENING SENTENCES

1. La niña que es alta lee el libro
2. The boy who is strong carries the box
3. El hombre carga la leche que es fresca
4. The man pushes the car which is heavy
5. El niño siempre grita cuando la mamá cocina
6. The woman always laughs when the boy runs
7. Cuando la luna sale el perro siempre ladra
8. When the music plays the lady always sings

APPENDIX B

PREVAILING CHANGES MADE BY THE CHILDREN IN THEIR IMITATIONS

TYPE I SENTENCES:

Sentence 111: La niña que es gorda cuts the bread.

Older Group: 9/25 (.36) substituted CATCH for CUTS

Younger Group: 7/35 (.2) substituted CATCH for CUTS

Sentence 112: The girl who is fat corta el pan.

Older Group: 8/25 (.32) substituted THAT / WHICH / QUE } for WHO

5/25 (.2) translated the Verb Phrase (CORTA EL PAN) into English.

Younger Group: 6/35 (.16) substituted THAT / WHICH / QUE } for WHO

7/35 (.2) substituted CUTS for CORTA

Sentence 113: El perro que es negro catches la bola.

Older Group: 4/25 (.16) substituted CACHA for CATCHES

5/25 (.2) substituted THE BALL for LA BOLA

Younger Group: 19/35 (.54) substituted CACHA for CATCHES

5/35 (.14) substituted THE for LA in LA BOLA.

Sentence 115: El hombre que es malo quema the papers.

Older Group: 4/25 (.16) substituted EL for THE in THE PAPERS.

Younger group: 7/35 (2) substituted LOS PAPELES or

LOS DIARIOS for THE PAPERS.

5/35 (.14) substituted LOS PAPERS for THE PAPERS.

Sentence 116: The man who is bad burns los papeles.

Older Group: 6/25 (.24) substituted WHICH or THAT for WHO

6/25 (.24) substituted QUEMA for BURNS

14/25 (.56) substituted THE for LOS in LOS PAPELES.

Younger Group: 5/35 (.14) substituted THAT or WHICH for WHO

7/35 (.2) substituted EL for THE in THE MAN

5/35 (.14) substituted QUEMA for BURNS

9/35 (.26) substituted THE PAPELES for LOS PAPELES

TYPE II SENTENCES:

Sentence 121: El gato chases the mouse which is white.

Older Group: 8/25 (.32) substituted WHO or THAT for WHICH

Younger Group: 10/35 (.28) substituted THE CAT for EL GATO

4/35 (.11) substituted CATCH for CHASES

12/35 (.34) substituted { WHEN, AND, CUANDO, THAT, WHO } for WHICH

Sentence 122: The cat persigue al ratón que es blanco.

Older Group: 7/25 (.28) substituted EL CAT for EL GATO

4/25 (16) substituted EL GATO for THE CAT

Younger Group: 5/35 (.14) substituted EL CAT for THE CAT

5/35 (.14) substituted EL GATO for THE CAT

8/35 (.23) substituted SIGUE for PERSIGUE

Sentence 123: El niño cleans el cuarto que es grande.

Older Group: 7/25 (.28) substituted THE CUARTO for EL CUARTO

3/25 (.12) substituted THE ROOM for El CUARTO

Younger Group: 6/35 (.17) substituted LIMPIA for CLEANS

Sentence 124: The boy limpia the room which is big.

Older Group: 3/25 (.12) substituted CLEANS for LIMPIA

2/25 (.08) substituted EL CUARTO for THE ROOM

2/25 (.08) substituted EL ROOM for THE ROOM

4/25 (.16) substituted THAT for WHICH

Younger Group: 8/35 (.22) substituted CLEANS for LIMPIA

4/35 (.11) substituted EL NIÑO or EL NENE for THE BOY

8/35 (.22) substituted WHEN or WHO for WHICH

6/35 (.17) substituted CUANDO for WHICH

Sentence 125: La señora carga the bag which is heavy.

Older Group: 3/25 (.12) substituted CARRIES for CARGA

3/25 (.12) substituted THAT for WHICH

Younger Group: 6/35 (.17) substituted LA BAG for THE BAG

7/35 (.2) substituted EL BAG for THE BAG

4/35 (.11) substituted THAT or WHEN for WHICH

6/35 (.16) substituted QUE or PERO for WHICH

Sentence 126: The lady carries la bolsa que es pesada.

Older Group: 10/25 (.4) substituted CARGA for CARRIES

5/25 (.2) substituted CARRIES THE BOLSA for CARRIES LA BOLSA

Younger Group: 18/35 (.51) substituted CARGA for CARRIES

5/35 (.20) substituted CARRIES THE BOLSA for CARRIES LA BOLSA

5/35 (.14) substituted WHEN IS or THAT IS for WHICH IS

8/35 (.23) substituted LA LADY for THE LADY

6/35 (.17) substituted SEÑORA for LADY

6/35 (.17) substituted THE HAT for EL SOMBRERO

Sentence 321: La niña wears el sombrero which is old.

Older Group: 10/25 (.4) substituted THE for EL in EL SOMBRERO

6/25 (.24) substituted THAT or WHO for WHICH

Younger Group: 10/35 (.28) substituted COGE, LLEVA or USA for WEARS

11/35 (.31) substituted CUANDO ES, PERO ES or QUE ES for WHICH IS

Sentence 322: The girl lleva the hat que es viejo.

Older Group: 5/25 (.2) substituted EL (Spanish masculine detrminer) for THE in THE HAT

4/25 (.16) substituted WHICH IS for QUE ES

Younger Group: The younger group had too many individual variations in their responses to allow for any

patterns to be observed.

TYPE III SENTENCES:

Sentence 231: When the planes fly el perro always jumps.

Older Group: 7/25 (.28) substituted THE DOG for EL PERRO

3/25 (.12) substituted THE PERRO for EL PERRO

Younger Group: 14/35 (.4) substituted THE DOG for EL PERRRO

Sentence 232: Cuando los aviones vuelan the dog siempre salta.

Older Group: 11/25 (.44) substituted EL PERRO for THE DOG

Younger Group: 17/35 (.49) substituted EL PERRO for THE DOG

6/35 (.17) substituted EL DOG for THE DOG

Sentence 331: When los niños eat el papá always talks

Older Group: 8/25 (.32) substituted THE NIÑOS for LOS NIÑOS

5/25 (.2) omitted ALWAYS altogether

4/25 (.16) substituted THE FATHER for EL PAPA

Younger Children: 12/35 (.34) substituted CUANDO for WHEN

8/35 (.23) substituted THE for LOS in LOS NINOS

7/35 (.2) substituted THE PAPA for EL PAPA

5/35 (.14) substituted THE FATHER for EL PAPA

5/35 (.14) substituted HABLA for TALKS

6/35 (.17) omitted ALWAYS altogether

Sentence 332: Cuando the children comen the father siempre habla

Older Group: 9/25 (.36) substituted LOS NIÑOS for THE CHILDREN

13/25 (.52) substituted EAT for COMEN

7/25 (.28) substituted EL PAPA for THE FATHER

Younger Group: 21/35 (.6) substituted LOS NIÑOS for THE CHILDREN

11/35 (.31) substituted EAT for COMEN

8/35 (.228) substituted EL PAPA for THE FATHER

TYPE IV SENTENCES:

Sentence 241: The baby siempre llora cuando la mamá duerme.

Older Children: 11/25 (.44) substituted EL BABY for THE BABY

Younger Children: 17/35 (.48) substituted EL BABY for THE BABY

Sentence 242: El bebé always cries when the mother sleeps.

Older Group: 5/25 (.2) substituted THE BABY for EL BEBE

Younger Group: 13/35 (.37) substituted THE BABY for EL BEBE

6/35 (.17) substituted LLORA for CRIES

5/35 (.14) substituted DUERME for SLEEPS

Sentence 341: El niño always reads when la maestra talks.

Older Children: 13/25 (.52) substituted CUANDO for WHEN

Younger Group: 7/35 (.2) substituted THE NINO for EL NINO

14/35 (.4) substituted CUANDO for WHEN

Sentence 342: The boy siempre lee cuando the teacher habla.

Older Group: 9/25 (.36) substituted LA MAESTRA FOR THE TEACHER

11/25 (.44) substituted ALWAYS for SIEMPRE

Younger Group: 13/35 (.37) substituted LA MAESTRA for THE TEACHER

9/35 (.26) substituted EL NIÑO for THE BOY

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