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MARCON, REBECCA ANN

SECOND-LANGUAGE ACQUISITION AND THE DEVELOPMENT OF 
PRAGMATIC CODE SELECTION SKILLS

The Louisiana State University and Agricultural and Mechanical Col.  PH.D.  1981

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Second-Language Acquisition and the Development of
Pragmatic Code Selection Skills

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Psychology

by

Rebecca Ann Marcon
B.A., California State University, 1974
M.A., University of California, 1976
August, 1981
Dedicated to

Robert D. Abbott, PhD

who had confidence in me

long before I had it in myself
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Abstract

Language samples and nonverbal behavior of 50 children attending bilingual Kindergarten programs were recorded from children's conversations with a puppet on three separate occasions. In order to determine the influence of the listener's language on children's code selection, the puppet spoke a different language on each occasion. Of particular interest was the extent to which children would make pragmatic adjustments in their verbal and nonverbal language codes in response to different listener needs. Differences in code selection which could be attributed to variation in second language proficiency were explored by contrasting the behavior of children classified as monolingual, limited second language speakers, or bilingual. Distinctive behavioral variations in both verbal and nonverbal communication were found to be associated with the listener's language and the children's proficiency in a second language. The implications of this research for increasing children's pragmatic communicative effectiveness were discussed.
Second-Language Acquisition and the Development of
Pragmatic Code Selection Skills

As a nation of immigrants the United States has traditionally chosen monolingualism as a means of coping with the diversity of languages and cultures within its boundaries (Fishman, 1966). More recently, however, legislative trends (e.g. Title VII, 1967) and court rulings (e.g. Lau v. Nichols, 1976) which protect the educational rights of children from dual language environments have focused attention on the benefits of bilingualism for a pluralistic society.

Although over five million children in the United States are native speakers of languages other than English (Swanson, 1974), little empirical research has focused on this substantial population of children. McLaughlin (1977) reports that psychologists have not been actively involved in the study of second-language acquisition. Most of the existing data comes from inadequately controlled case studies of limited generalizability. The methodology of experimental psychology could be useful in isolating variables which are critical to the communicative process of children who function in dual language environments.

Full communicative competence involves more than knowledge of the formal aspects of language; it also involves ability for use (Hymes, 1972). An effective communicator has acquired the pragmatics of language which includes knowledge of rules for relating language to a context.

Communicative competence involves numerous linguistic, cognitive and cultural skills (Bates, 1976) which allow the individual to use language appropriately in a given context (McLaughlin, 1978). Linguistically, communicative competence includes the selection of syntactic
form and semantic content which suit the context and intended function of a message. Cognitively, communicative competence includes consideration of perspectives other than one's own when interacting with others. Culturally, communicative competence includes knowledge of how to use cultural subtleties in order to behave appropriately within the social framework of a particular culture. According to Bates (1976), it is through the pragmatic component of language that the integration of linguistic, cognitive and cultural skills may be explored.

The pragmatic component of language is not restricted to verbal performance alone. The individual must also learn to select and use the appropriate gesture for a particular context. Infants, for example, signal the acquisition of a conventional language system with the use of gestures which are consistent with those of the community (Bloom and Lahey, 1978). For the preverbal child this conventional gestural language is instrumental in satisfying physical needs and regulating the actions of other persons. Bates (1976) believes that the pragmatic component of language is first observable in the earliest communicative gestures of infants and follows a developmental sequence from showing to giving to pointing. Development of gestural language appears to parallel development in verbal language with increases in frequency and complexity of nonverbal communication observable as age increases (Jancovic, et al., 1975). Pragmatic adjustments in gestural language would be expected when communicating with persons who are not fluent in the conversational language (Wiener, et al., 1972) or when communicating with children who are in the early stages of language development (Gutmann and Turnure, 1979). In summary, full communicative competence requires effective use of both the verbal and the nonverbal communication systems.
In dual language environments pragmatics is especially critical for achieving full communicative competence. An investigation of how bilingual children develop skills for selecting appropriate styles of communication in different circumstances has applied implications. Since the point at which children acquire the ability to vary language systematically may not be uniform (Fraser, 1973), identification of patterns used by successful communicators could be of value for training ineffective communicators in the pragmatic skills needed to communicate within dual language environments. A developmental exploration of the pragmatic skills involved in becoming bilingual may serve to refine our understanding of the proficiencies needed for full communicative competence in a pluralistic society.

Because few controlled studies of the pragmatics of bilingualism have been conducted, the present research focused on a single but critical pragmatic skill, code selection. Code selection has been used to refer to either the choice of one language or linguistic code over another (interlanguage) or the selection of a particular style of speech within a single language (intralanguage). Factors which determine the appropriate code for specific situations have not been adequately investigated (McLaughlin, 1978). Therefore, the present research focused on the role of linguistic factors in code selection. Specifically, the effect of linguistic information on the appropriate selection of codes was experimentally studied by holding constant non-linguistic influences such as location, listener ethnicity, and other distinctive individual qualities of the listener. The basic question asked was whether or not preschool children speak in the language in which they are spoken to, thereby using the linguistic cues as the main determinant in appropriate
code selection. Additionally, an observational investigation of the influence of linguistic cues on the nonverbal behavior of children from dual language environments was conducted. Instances of inappropriate code selection were also examined in order to further identify the relationship between the development of pragmatic code selection rules and extent of second-language acquisition.

Code selection has been investigated by various disciplines. In the following section a review of studies relevant to the research question will be provided. In addition, special methodological concerns involved in the study of bilingualism will be discussed.

Review of the Literature

Code Selection: A Multidisciplinary Area of Study

On occasion scholars from the disciplines of anthropology, linguistics, psychology and sociology have come together in dialogue to share perspectives and research on bilingualism (e.g. Alatis, 1970; Kelly, 1969). However, a unified interdisciplinary research effort to study bilingualism has been slow to develop in spite of the complementary nature of questions asked by each discipline. While the area of sociolinguistics appears to offer the most integrative approach for the study of language diversity, researchers have generally been reluctant to integrate the data generated by three distinctive research focuses within sociolinguistics (Ornstein and Murphy, 1974). Shuy and Fasold (1971) identified these emphases as: a) identification of social and political factors involved in language use; b) the solution of theoretical linguistic problems through the establishment of an empirical base for the writing of grammars; and c) application of socio-linguistic findings to educational problems.
The phenomena of code selection and code switching have been examined from both a social and a linguistic perspective. Anthropological and psychological studies have been primarily concerned with the social implications of code switching while linguistically oriented studies have sought to quantify variations in code use as a means of discovering the underlying rules which govern language behavior. Educational implications of code switching have only recently begun to be explored (e.g. Beebe, 1977; Durojaiye, 1978) through examination of the different code switching strategies used by teachers and students in bilingual education programs.

**Anthropology.** Anthropologists characterize code switching as the degree to which an immigrant community has assimilated the host culture. The theoretical connection between code switching, bilingualism and de-ethnization of immigrant communities (e.g. Kuo, 1974; T'sou, 1975) has been empirically supported in a recent study by Valdés-Fallis (1978). Code switching behavior apparently reflects the degree and nature of an individual's bilingual development in that adults with the same type of bilingualism use very similar patterns of code switching. Consequently, a measure of the speed with which a community develops code switching and the distribution of community members who are able to use both codes could be used to monitor trends toward cultural assimilation ('monolinguialization') or trends toward accommodation (stable state of bilingualism). It is important for the interpretation of research results to consider anthropological factors which describe the community from which a research sample is drawn. Whether or not children speak in the language in which they are spoken to is most likely related to the degree to which their language community has experienced either cultural assimilation or accommodation.
Psychology. Psychological research on code selection and switching has been conducted primarily by social, cognitive and developmental psychologists. Although developmental research is most pertinent to the present study, the data collected by social and cognitive psychologists are intricately related to reasons why children may or may not choose to speak in the language in which they are spoken to.

Social psychology. Lambert and his colleagues at McGill University have investigated the relationship between language and the development of stereotypic attitudes within a pluralistic society. Through a series of controlled experiments which held the speaker constant but varied the code spoken, social psychologists demonstrated that adults do assign different stereotypic characteristics to unseen persons on the basis of verbal cues alone. Lambert (1967) concluded that success in learning and in using a new language code is, in large part, determined by the learner's attitude toward the other language group. Consequently, even if a child were linguistically competent in a particular language, the prevailing prejudices of a community towards users of that particular language code would be influential in the child's decision to converse with others in that code.

Cognitive psychology. Psychologists who have studied bilingualism as a cognitive process have been interested in code switching as an example of man's remarkable capacity to process information with little interference between the different language systems involved. A series of verbal learning experiments by MacNamara and his colleagues at McGill University has demonstrated that switching codes is not a random process. Rather, code selection appears to be a cognitive process which requires measurable effort to both interpret language
input (MacNamar and Kushnir, 1971) and select the language system to be used in language output (MacNamara, Krathammer and Bolgar, 1968). The output component of MacNamara's two switch model (1967) appears to be under voluntary control, while the selection of the language system to be used in interpretation of inputed information appears to be a function of the inputed language. According to this model, the language in which information is received determines the language in which we will initially try to understand that information. Therefore, as verified by MacNamara, et al. (1968), response uncertainty rather than stimulus uncertainty increases the processing time required to make a shift in codes.

Increased processing time is viewed as evidence that code switching is meant to convey additional information to a listener which words alone do not express. Code switching, whether done intentionally or not, requires additional effort on the part of a speaker, effort which is apparently important in effective communication.

**Developmental psychology.** Observation of the intralanguage code switching behavior of preschool children has been undertaken by developmental psychologists interested in re-examining the traditional Piagetian views on preoperational egocentrism. Preoperational egocentrism commonly refers to children's failure to perceive an interaction in ways which differ from their own directly perceived point of view. As Gelman (1968) and Donaldson (1979) have pointed out, preschool children are more competent in their intent to communicate with others than indicated by their performance on formal tasks. When confronted with different listener needs in a realistic context, young children do adjust by selecting different styles of their language to meet situational
demands. Thus, Shatz and Gelman (1973) found that four year olds talked differently to two year olds than to adults, and the intended function of their messages was different for these two groups of listeners. Although Fraser (1973) correctly noted that the point at which children consistently and systematically vary language as a function of the social environment remains unknown, developmental data suggests that intralanguage code switching does begin early in life. Children as young as age two have been observed to adapt their communication to the demands of the listener and situation (Wellman and Lempers, 1977) and produce lexical, phonological and paralinguistic changes in code when speaking to infants (Ervin-Tripp, 1973). Developmental changes in the range of codes available for communication and ability to successfully use these codes were also reported by Gleason (1973), who studied children ranging in age from infancy to eight. She found that older children had better control of the basic features of a larger number of intralanguage codes than did younger children who were still completing their knowledge of 'regular' English syntax.

Padilla and Moll have each studied interlanguage code switching among bilingual Mexican American children. Padilla has focused on the preoperational pre-school age group while Moll has investigated children nearing the end of preoperational level thinking. By age three children are apparently able to distinguish between Spanish and English, apply different rules to each language, and create a new code by mixing the languages when appropriate (Padilla and Liebman, 1975). Lindholm and Padilla (1978) studied language samples of bilinguals for instances of interlanguage code switching within the same sentence (language mixing). Each child in their study interacted with a pair of female experimenters;
one experimenter speaking only English and the other, only Spanish. Language mixing was noted in only two percent of all child utterances. Insertion of a single noun from the 'incorrect' language was the most common type of mix. The researchers attributed the use of the mixed word to greater saliency or frequency of use in the child's environment, rather than confusion or interference between languages.

Moll (1978) asked each bilingual child to communicate information about a particular object to another person who could not see the object (referential communication). Characteristics of the listener with whom the child interacted were varied on three dimensions: a) Hispanic or Anglo, b) younger or older than the child, and c) monolingual or bilingual. Overall results indicated a high degree of success in communication in six of eight contexts. Communication difficulty with the younger Anglo monolingual listener was attributed to limited interaction with this kind of person outside of the experimental setting. The use of a speech style by the older Hispanic monolingual which was unfamiliar to the eight year old bilingual also created difficulties in referential communication. Moll's study represented a critical step toward controlled investigation of factors which influence code selection and subsequent success in communication with others.

The research on interlanguage code switching parallels studies of intralanguage code switching in suggesting that young children are able to consider the perspective of others when selecting a particular language code for communication. Interlanguage code switching by children in the preoperational age range is generally found in these studies. These results are dissonant with the Piagetian position that preoperational children cannot perform such shifts. However, Donaldson (1979)
has indicated that tasks which are relevant and realistic to the young child provide an optimal estimate of underlying competence in contrast to the formal tasks used in the construction of Piagetian theory. Consequently, for young children, evidence of basic cognitive competence in considering the perspectives of others would be most recognizable in samples of their conversations with others. Thus, preschoolers may be more competent communicators than previously suspected and further developmental studies of code selection among children from dual language environments could clarify the extent of competency.

**Related case studies.** McLaughlin (1978) reviewed developmental case studies completed by scholars from outside the discipline of psychology. These studies provide a descriptive account of bilingual individuals who have learned to associate different codes with different people and age groups. For example, Ruke-Dravina (in McLaughlin, 1978) observed children who spoke Latvian in their home and Swedish with their playmates. When these children were playing in their home they used Swedish. Meertens (in McLaughlin, 1978) reported on a small Dutch boy who spoke Fisian when walking with his parents but switched to Dutch when going to a store or going by his school and church. Ronjat (in McLaughlin, 1977) raised his son in an environment where his father consistently spoke to him in French and his mother spoke to him in German. This child learned to speak to his parents and other people in the language in which they spoke to him. Although the ability of bilingual children to switch codes rapidly has been well documented through case studies in many languages, little empirical data has been collected on what effect specific features of the linguistic environment have on appropriate code selection.
Thus, in the study of code selection psychology's most significant contribution is its experimental methodology. By systematically isolating influences on behavior it is possible to explain the impact which different factors might have on the selection of a particular language code for communication. In the present research two factors were examined. First, by systematically varying the language code used by a listener it was possible to empirically investigate whether or not children generally speak in the language code in which they are spoken to. Secondly, the variable of second-language proficiency was examined as a probable influence on speaker's response to the listener produced linguistic cues. Although conclusions reached by Moll (1978) and Padilla (1975) concerning interlanguage communication were based on sound methodological procedures, both researchers failed to address the impact which variability in second-language skills might have on the measured behaviors. In the present study it was suspected that a child's proficiency in a second language would be a significant moderator of code selection behavior because code selection in adults reflects type of bilingual development (Valdes-Fallis, 1978) and monolingual children in the later stages of language development use a wider range of intralanguage styles than do children in the earlier stages (Gleason, 1973). Although few experimental psychologists have been active in code selection research, their methodology provides a most useful approach for answering the global questions raised by other disciplines.

Linguistics. Linguists exploring the phenomenon of code switching have focused on the quantification of linguistic phenomena in order to fit the results into the framework of transformational grammar. Transformational grammar corresponds to the Chomskian model (see Greene,
of how an 'ideal' speaker-hearer functions. A theoretical distinction is made between competence or the basic capacities for language which all humans are believed to possess, and performance or the application of the rules of the language game. According to Chomsky, linguistic competence includes: a) semantics - the ability to discriminate, b) lexicon - the capacity for words and morphemes, and c) phrase structure grammar - universal abstract rules which structure all language. Hymes (1972) would add to this list a fourth component, the underlying abstract rules of language use. Performance refers to the linguistic sentence which is produced either phonologically, gesturally or graphically. Based upon samples of language performance, linguists have written grammars which they believe describe underlying competencies. The task of the linguist has been described by Labov (1973):

Our job as linguists is to reduce, eliminate or simplify that variation as far as we can by rule . . . . Our work is finished when we have written the most specific rule we can that constrains as tightly as possible the language of a given group . . . . They will apply to a group of speakers who use, interpret, and evaluate them in a relatively uniform way. (p. 176)

Contributions of Labov. Prior to the 1960s most transformational grammars written by linguists ignored the variability which was found in the speech patterns of a given community, dismissing such variation as random and non-important for identifying underlying competence. However, Labov (e.g. 1963, 1966) demonstrated that a large amount of language variation actually represented distinctive patterns of language usage which seemed to be determined by both the linguistic and the social environment of the speaker. Labov's work has had a
significant impact on linguistic theory and contemporary research in linguistic variation. Theoretically, linguists began to supplement their grammar writing with variable rules allowing them to theoretically specify the effects of the total environment on language production. Labov's interview method of measuring language in use in different contexts has served as a basic guide for the numerous sociolinguistic studies which followed (Ornstein and Murphy, 1973). Flaws in Labov's work have prompted challengers to explore the realm of social influences on language and thus, his views have generated an empirical base upon which linguistic theory can be written.

Methodological challenge. Labov has been criticized on methodological grounds for failing to adequately control factors which might influence language variation. For example, earlier sociolinguistic studies had confounded the variables of listener and situational context in such a way that the influence of each factor on linguistic variation could not be determined. Consequently, investigators such as Beebe (1977) have called for a finer differentiation of environmental factors and more careful planning of studies in order to avoid similar problems. Beebe (1977) used a repeated-measures design to study the influence of the listener on code switching behavior of bilingual Thais who were of Chinese ancestry. Each adult in her study was interviewed by two different Thai speaking listeners who were matched for age, sex, education, occupation, income, and SES group but differed on ethnic identity (one Thai, one Chinese). Results indicated that the native Thai variants of the phonological variables measured were consistently used more frequently with the ethnic Thai listener than with the ethnic Chinese listener. Beebe concluded that "the listener is a significant variable
independent of speech style since speech varies predictably when someone is speaking in the same room on the same day about the same topics in the same order using the same speech style, but with two different listeners on two occasions" (p. 338).

Theoretical modifications. Recently, linguistically oriented sociolinguists have attempted to reconcile their goal of writing grammars to explain an 'idealized' competence with the convincing evidence that more variation exists within that competence than was ever before described by linguists. The theoretical approach taken by Fraser (1973) emphasized the optional nature of rules of grammar. The role which a rule plays in the language is critical in determining the degree of optionality with which that rule will be used. Thus, in Fraser's view, rules would be used with partial consideration of the speaker's characteristics and partial consideration of the style and context. For example, the optionality of rules to reduce redundancy (e.g. agent deletion) would increase as the style of speech became less formal but rules to adjust grammatical detail (e.g. number agreement) would become less optional in an unfamiliar context. A reanalysis of Moll's data on referential communication difficulties of bilingual children (1978) would be interesting from this perspective. Results would probably indicate greater optionality of rule use in those contexts where communication had been successful and lower optionality in contexts where unfamiliarity with particular listener characteristics made communication difficult.

Fraser is, in essence, seeking to identify underlying rules of pragmatics which integrate linguistic, cognitive and cultural competencies. He seeks to go beyond the descriptive nature of Labov's variable
rules by discovering how changes in a rule's optionality effects the communicative process. Why optional rules are used more often in one environment than in another has been suggested as a topic for investigation, but Fraser has offered no concrete guidelines for obtaining data on pragmatic competence.

Linguistic researchers have described characteristics of the speaker, listener and situation which influence code selection but have been unable to explain how variation in language occurs. Beebe's research appears to be a step in that direction. Having explained the impact of the listener's ethnic identity, she encouraged linguists to conduct further controlled experiments on other environmental factors which affect code selection. However, the size of the unit of behavior to be measured continues to present a problem for those researchers interested in the functional aspects of code selection. By focusing on small units (mostly phonological), the broader differentiations which people make in selecting a particular code may have been missed. The intent of the research question would then be important in selecting which unit of language behavior is to be measured.

Methodological Issues in Bilingual Research

A major hinderance to an interdisciplinary study of bilingualism has been the definition of bilingualism itself. Many researchers have classified as bilingual anyone with any degree of skill in another language. Recognizing that basic agreement across disciplines was essential before research in bilingualism could progress, an international seminar met in Canada in 1967, to discuss description and measurement of bilingualism (Kelly, 1969). To date general agreement has not been found for describing either language proficiency or measuring the
extent of bilingualism.

Degree of bilingualism. Efforts to base new research ideas upon findings of earlier studies have been hampered by the absence of information on the degree of participants' bilingualism. Of all the sources covered in this current literature review, only Valdés-Fallis (1978) defined and analyzed for differences in the extent of bilingualism. Other studies merely stated that participants were bilingual and a few indicated if the second language had been acquired simultaneously or sequentially with respect to the first language. No effort to differentiate between truly bilingual speakers and limited second language speakers were found in the research literature. Although differences in bilingual proficiency is a crucial variable, it has been inadequately controlled for in most of the existing research data (Johnson, 1969).

Preschool bilingualism. Defining bilingualism for a preschool population is another challenging task for researchers. MacNamara (1967; 1969—in Kelly, 1969) reminded his colleagues that only those skills and aspects of those skills with which the researcher is directly concerned and wishes to manipulate during the investigation need to be measured. Hence, in determining the extent of bilingual proficiency for preschoolers who cannot read or write, only the dimensions of speaking and listening need to be assessed, and then only the skill areas which are pertinent to the investigation (e.g. semantics, syntax, lexicon, phonemes).

Rivers (in Kelly, 1969) favored a developmental consideration of maturational factors that influence the control which a child has over performing the skills outlined by MacNamara. She considered a child to be bilingual "as soon as he is able to understand and make himself understood within his limited linguistic and social environment (that is,
as is consistent with his age and the situation in which he is expressing himself" (p. 35).

Finally, the federal government has become involved in defining extent of bilingualism in order to establish eligibility guidelines for Title VII (bilingual education) funds. Each school district is required to assess the degree of linguistic function or ability of its students and place them in one of five categories established by the Office for Civil Rights (OCR, 1975—see Appendix A). The five categories are: a) exclusive non-English speaker, b) predominantly non-English speaker, c) bilingual, d) predominantly English speaker, and e) exclusive English speaker. Final classification must be cross-validated in both the home and school social setting by persons who can speak and understand the necessary languages. Providing that assessment has been done accurately and reflects skill areas important to the research question, the OCR classifications could provide researchers with a standardized definition of bilingualism.

**Ethnicity.** The listener's ethnicity has been found to influence the language behavior of participants (Beebe, 1977). Likewise, the researcher's ethnicity created language difficulties for Japanese American women speaking English to a Japanese test administrator (Ervin-Tripp in Johnson, 1974). Labov (in Johnson, 1974) also found that the verbal behavior of Black children was extremely guarded when speaking to a white adult associated with the school. Consequently, unless ethnicity itself is the factor under investigation, the ethnic identity of researchers needs to be carefully controlled for in code selection studies.
Summary

Although code selection has been studied by different disciplines and specializations our understanding of the selection process and its significance in communicative interactions with others remains clouded. Missing from the current literature is any attempt to conceptually unify the findings of scholars across fields of study. Failure to consider the impact which degree of participants' bilingualism might have on the demonstrated variations in language use represents another inadequacy of existing data. Finally, because factors critical to the code selection process have generally not been adequately controlled, only a few studies have been able to explain the influence which specific variables (e.g. ethnicity in Beebe, 1977; age in Shatz and Gelman, 1973) have on language production.

Before isolating factors which might account for only a small part of variation in code it would seem reasonable to determine what amount of variation in code selection can be accounted for by the linguistic code of the listener. This type of question is particularly suited for research with young children in that a puppet can be used to keep the listener variable constant in all respects (e.g. age, location, ethnicity, sex, etc.) except for linguistic code used on different occasions. Thus, it would be possible to experimentally study the generalizability of Ronjat's findings that his son spoke in the language in which he was spoken to. Since McLaughlin (1978) reported that many widely held beliefs about bilingualism had not found support in empirical evidence, it would be farsighted to begin a long range investigation of the code selection process with empirical support for the very basic of questions.
Statement of Problem

General Questions

Do children speak in the language in which they are spoken to, thereby using the linguistic cues as the main determinant in appropriate code selection?

How do linguistic cues influence the nonverbal behavior of children from dual language environments?

To further explore the influences which a listener's linguistic code might have on the verbal and nonverbal codes which children use in communication, an experiment was designed which took into consideration its participants' degree of bilingualism. In this study the variables were:

Independent variable: language spoken by the same puppet on three separate occasions (repeated-measure). On one occasion the puppet's language was the same as the child's preferred language (P). On another occasion the puppet's language was the same as the child's nonpreferred language (NP). On the third occasion the puppet's language was a third language which was unknown to the child (3).

Moderator variable: degree of bilingualism (monolingual, limited second language speaker, bilingual).

Dependent variables: verbal and nonverbal behaviors of child in communicative situation with listener. Child verbal responses were recorded by a portable cassette recorder mounted inside the puppet theater. Five different codes which a child could use in communicating with the puppet served as verbal dependent variables. The codes included: a) silence, b) vocalization, c) nonpuppet language, d) mixed
response, and e) puppet language. In addition, 26 observational categories were used as nonverbal dependent variables because gesture is regarded as an important component of pragmatics. Two researchers trained in systematic observation were present in the experimental setting in order to transcribe the occurrence of nonverbal behaviors during the child-puppet conversations.

<table>
<thead>
<tr>
<th>M</th>
<th>Degree of Bilingualism:</th>
<th>Independent Variable: Puppet's Language</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Preferred (P)</td>
</tr>
<tr>
<td>Monolingual</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Limited</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Bilingual</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

Three experimental questions were addressed:

First, were the patterns of code selection used when the puppet's language was systematically varied similar for monolingual, limited second language speakers and bilingual children? \((1\text{v}4\text{v}7); (2\text{v}5\text{v}8); (3\text{v}6\text{v}9)\)

Second, were there differences in code selection which could be accounted for by the listener's language? \((1+4+7) \text{ v } (2+5+8) \text{ v } (3+6+9)\)

Third, were there differences in code selection which could be accounted for by degree of bilingualism? \((1+2+3) \text{ v } (4+5+6) \text{ v } (7+8+9)\) would answer this question. However, due to restrictions on orthogonality of contrasts, this question was approached indirectly through apriori tests of the first question.
Method

Participants

Fifty children (25 males, 25 females) ranging in age from 54 to 75 months (mean age = 67 months) who attended one of three schools in southeastern Louisiana, served as subjects. These children were enrolled in either one of two public Title VII Kindergarten classes (English-Hungarian in Livingston Parish; English-Vietnamese in Orleans Parish) or a private bilingual Kindergarten/pre-Kindergarten class (English-Spanish in the Diocese of New Orleans). The children were middle to lower middle SES. Ethnically, the sample included 8% Black, 22% Oriental, 34% Anglo, and 36% Hispanic, with approximately equal numbers of male and female children in each ethnic group. On the basis of expressive skills in a second-language children were identified as being monolingual (n=27), limited second language speakers (n=15), or bilingual (n=8). Children within each group (monolingual, limited, bilingual) were roughly matched for age and sex. Due to limitations in field research the bilingual group was composed primarily of Spanish speaking children while children from the Hungarian program were not represented in the limited or bilingual sample. (See Appendix B for sex and age distribution of each group x non-English language combination.)

Materials

Items used in this study included: a six foot high, three sided puppet theater; a portable cassette recorder built into the stage at the child's level but not visible to the child; a fuzzy orange arm puppet with eyes and movable mouth; a pre-recorded musical cassette; a timer; and a child's stool placed in front of the theater.

In order to control for any researcher induced cues relating to
appropriate code selection, all research personnel within the children's view wore brightly colored costumes to disguise their ethnicity.

Personnel for this study included: a) costumed volunteer escorts who transported the children to and from the research setting; b) three volunteer bilingual females (one at each language research site) and an additional German speaking female served as the puppeteers and were trained in nondirective, open-ended conversation techniques by the researcher; and c) the costumed researcher and co-observer who were present in the research setting in order to record behavioral observations, co-ordinate, and time each session. For two months prior to data collection, the primary researcher trained two undergraduate females in the Behavior Category Observation System (Gottfried and Seay, 1973), modified to the needs of the present study. Inter-observer agreement in the training setting was sufficiently high to warrant use of observers in actual data collection. Throughout the study all research personnel within the children's view were silent and only occasionally communicated by nonverbal means.

Procedure

Preliminary tasks. Language preference and proficiency in a second language were determined for each child through an interview with staff members conducted by the researcher using a standard set of questions (see Appendix C). These questions assessed language preference, receptive understanding of the two spoken languages, and length of spoken sentences produced by the children in both languages. Each interviewee was then presented with a written description of monolingual, limited, and bilingual categories (see Appendix C). Interviewees were asked to match each child with the appropriate description
while taking into consideration their earlier answers. Where available, OCR language classifications of each child were consulted in order to confirm the appropriateness of the classifications made by staff members.

Rapport was established prior to actual data collection. Children were introduced first in English and then in the other language by their teachers to the "friendly persons" (costumed researchers) and were encouraged to play and talk with the visitors. It was explained that the visitors could understand both English and the non-English language but could not talk. Children were told that the visitor would return the following week and those children who returned the experimenter-provided parental permission slips (see Appendix D) would be able to talk with the "friendly persons".

Data collection—verbal behavior. Each child participated in three, five minute conversations with a puppet who spoke only in the child's preferred language on one occasion and only in the child's nonpreferred language on another occasion. On the third occasion, the puppet spoke a language which was unknown to the child. German was used as the third linguistic code of the puppet in each of the three schools. The order of preferred and nonpreferred language was counter-balanced within monolingual, limited and bilingual groups, while the third language was last due to personnel restrictions. It was the puppet, Fuzzy, which remained constant in all three situations and in all 150 child-puppet conversations.

As the child entered the research setting a musical tape signaled the puppet to dance while the puppeteer received a card from the costumed escort with the child's name and designated language for the
session. The puppeteer did not know whether the designated language was the child's preferred or nonpreferred language. When the child was comfortable the escort left, the music stopped, and the cassette recorder and five minute timer were started. The puppet began the conversation with a standard introduction in the language of the session. The English version was as follows:

Hello (child's name). This is my house. I live with the friendly person. My name is Fuzzy. I want to talk with you. Tell me about yourself. I like you. I want to be your friend. What do you do at school?

Following the introduction, content of puppet and child conversations varied with the interests of each child. Although the puppeteer understood both languages of the children, the puppet interacted as a monolingual speaker and did not respond to the content of verbalizations that differed from the language of the introductory statement. In effect, the puppet was an egocentric communicator because of the puppeteer's instructions to use a preselected code without adaptation to the listener's code.

At the end of each five minute session the escort entered the research setting to return the child to class. The remaining two sessions were conducted on different days with all three sessions separated in time.

Data collection-nonverbal behavior. Because informal observations of differences in nonverbal behavior had been noted in a pilot study of bilingual preschoolers, and gestural pragmatics have been identified as a critical component of effective communication, systematic collection of observational data was included in the present study. With modifica-
tion, the Behavior Category Observation system (Gottfried and Seay, 1973) was used because it samples a wide range of both social and non-social behavior, and has proven to be a useful tool for gathering data in both laboratory and naturalistic settings (e.g. Gottfried and Seay, 1974; Gottfried, et al., 1981; Langolis, et al., 1978).

A total of 26 symbols (see Appendix E) corresponding to specific behavioral categories were used in graphically recording nonverbal behavior of children conversing with a puppet on three different occasions (see procedure for verbal data collection). These symbols represented a subset of behaviors from the Behavior Category Observation system selected to reflect the probable range of activity possible within the research setting. The research setting was defined as a 5x5 foot space within a larger room outside of the child's classroom. From the child's perspective, the angled puppet theater defined the forward boundary while the knees of the two costumed observers, seated to the child's right, provided a side boundary. By placing a child's stool in the middle of the remaining space, the child was able to define the remaining boundaries. The research setting was free of other furniture and objects. The costumed escort waited outside the research setting and only re-entered when the timer indicated that five minutes had passed.

Since access to objects other than self, chair, or puppet theater was limited, 17 of the 26 categories described social behavior directed toward the puppet. The majority of observational categories focused on facial, hand, and shoulder motor patterns of the seated children. Three of the 26 categories (affirmative nod, negative nod, facial gesture other than smile or frown) were new additions to the observational
system and provided further differentiation of gestural communication.

A potentially serious problem in the collection of observational data is the reliability of that data (Sackett, 1978). By having two observers simultaneously record behavior, Hansen (1966) was able to estimate inter-observer reliability and assess the objectivity of judgments made in classifying behavior as social. In the present study, procedures used in data collection and analysis were based upon procedures developed by Hansen (1966) and adapted for study of human social interaction by Gottfried and Seay (1973).

Each five minute session was divided into twenty 15-second intervals during each of which two observers simultaneously recorded child behavior categories exhibited. Observers were alerted to the beginning of a new time interval via earplugs connected to a tape recorder which began simultaneously with audio recordings of verbal data (see procedure for verbal data collection). A behavior was recorded only once during each 15-second interval, regardless of its frequency or duration. For each five minute session a child could obtain a score ranging from zero to 20 for each category. A total of 150 sessions were observed (three, five minute conversations per child).

**Data scoring-verbal behavior.** For verbal data the unit of analysis was a conversational turn. A turn was defined as an interval during which the puppet paused and waited for a response from the child. Each turn was preceded and followed by a puppet statement. The number of turns and duration of each turn varied from child to child and session to session. The average number of turns in a five minute session was 58 ($SD = 11$).

Categories were developed to describe the type of code used by
children in response to the puppet's previous statement. Each turn in the conversation was scored by the researcher for only one of the following categories:

1. Silence -- no verbal response
2. Vocalization -- a nonword response only (e.g. ooo, umhum)
3. Nonpuppet language -- all words in response were in a language other than the puppet language
4. Mixed response -- both puppet and nonpuppet language were used in the same response
5. Puppet language -- all words and/or imitative responses were in the puppet language

For purposes of this study, each of the five categories operationally defined a variation in child language code; silence and vocalization being examples of intralanguage codes while the other three categories reflected interlanguage codes. Only the last category (puppet language) was defined as completely intelligible to the puppet while other responses were labeled as less adequate selection of codes for the situation.

To check reliability of scoring verbal data, a sample of 34 audio recordings on 34 different children were independently scored by an English speaking listener using a stereo system for amplification. This sample included the first recorded conversation on each side of each audio cassette used in the study. If the first conversation included a child who had already been included in the reliability sample, the scorer advanced the tape to the next conversation with an unscored child. Of the 34 conversations, 14 were in the preferred language, 12 in the nonpreferred and eight in the third language. Inter-rater agreements were calculated for each response code (silence, vocalization,
nonpuppet language, mixed, puppet language) using product-moment correlations.

Scores used in the analysis of group differences were based upon the response categorizations made by the listener who scored all 150 conversations.

Data scoring-nonverbal behavior. For each child-puppet conversation a score representing the number of intervals in which a particular child behavior occurred was tabulated. Scores for a five minute conversation could range from zero to 20 for each of the 26 behavior categories in the observational system. The average session score for each category was calculated by dividing the total number of intervals in which a behavior had actually been recorded by the total number of sessions observed. Only those behavior categories with an average session score of .5 or more were subjected to further analysis.

Inter-observer reliabilities were calculated separately for each category of behavior using Fisher $z$ transformations to estimate product-moment correlations (see Gottfried and Seay, 1973 or Gottfried, et al., 1981). In each session either co-observer A or co-observer B was paired with the primary researcher who scored all 150 sessions. Co-observer A scored 93 sessions and co-observer B scored 57 sessions. Using the session scores, the correlation between co-observer A and the primary researcher was averaged with the correlation between co-observer B and the primary researcher to yield an estimate of observer reliability.

For each category of behavior, the child's score used in the analysis of group differences was the average of the scores obtained by the two observers who recorded data for that child.
Results

Verbal Behavior

Inter-rater reliabilities for each category of verbal behavior were as follows: silence .92, vocalization .92, nonpuppet language .92, mixed .74 (low frequency), puppet language .98.

Data for the three puppet language conditions (preferred, nonpreferred, third language) were analyzed separately. In this study five verbal codes served as inter-correlated dependent variables, four of which represented errors in code selection. Errors in verbal code selection (silence, vocalization, nonpuppet, mixed) were plotted using the means of monolingual, limited, and bilingual groups (see Figures 1, 2, and 3). The mean number of responses made in the puppet language is shown in Figure 4 for monolinguals, limited speakers and bilinguals under each puppet language condition.

Insert Figures 1, 2, 3, and 4 about here

In the present study differences in patterns of code selection which could be attributed to the interaction of puppet linguistic code and child's classification as monolingual, limited speaker or bilingual were of particular interest. Consequently, profile analysis (see Timm, 1975) was selected as the appropriate statistical procedure for testing the null hypotheses of equal response effects in code selection errors.
Figure 1

Mean Number of Responses in Error Codes – Preferred

RESPONSE CATEGORIES
Preferred Session
Figure 2

Mean Number of Responses in Error Codes - Nonpreferred

RESPONSE CATEGORIES
Nonpreferred Language
Figure 3
Mean Number of Responses in Error Codes - Third Language

RESPONSE CATEGORIES
3rd Language Session
Figure 4

Mean Number of Responses in Puppet Language

- Monolingual
- Limited
- Bilingual
Patterns of error code selection (silence, vocalization, nonpuppet language, mixed) were analyzed separately from nonerror code selection (puppet language). The rationale for separate analysis was based upon the expectation that a predictably higher use of puppet language would mask possible differences in error patterns. Therefore, in order to simplify interpretation of experimental findings, profile analysis was performed on the four error codes only.

As reported in Table 1, the null hypotheses of profile analysis were tested using a Wilks' Lambda Criterion \[ \Lambda(p, q, n) \] to identify significant differences between multiple dependent variables. The Wilks' criterion was selected because it enabled computation of exact probabilities while other statistical tests of the null hypotheses would have provided approximations. The Wilks' critical value was based upon \( p \), \( q \), and \( n \) degrees of freedom where \( p \) reflected the number of dependent variables being compared, \( q \) was based on the number of groups being examined, and \( n \) represented an error term based on sample size. The null hypothesis was rejected when the obtained Wilks' value was less than the critical Wilks' value.

Insert Table 1 about here

Group differences in use of puppet language code were analyzed for each puppet language condition using a one way analysis of variance. Results of the analysis of variance on the fifth dependent variable, puppet language code, indicated significant group differences in the preferred language condition \( (df=2.47; F=4.59, p < .01) \) and in the
Table 1

Results of Wilks’ Lambda Tests of Null Hypotheses

<table>
<thead>
<tr>
<th>Test of null hypothesis that:</th>
<th>Preferred</th>
<th>Nonpreferred</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profiles are parallel across monolingual, limited, bilingual groups (interaction)</td>
<td>$U = .4973^a$</td>
<td>$U = .6675^a$</td>
<td>$U = .7418^a$</td>
</tr>
<tr>
<td>df = 3,2,47</td>
<td>$P &lt; .01$</td>
<td>$P &lt; .05$</td>
<td>$P &lt; .10$</td>
</tr>
<tr>
<td>There are no differences among the codes selected</td>
<td>$U = .1355$</td>
<td>$U = .1570$</td>
<td>$U = .0866$</td>
</tr>
<tr>
<td>df = 3,3,47</td>
<td>$P &lt; .01$</td>
<td>$P &lt; .01$</td>
<td>$P &lt; .01$</td>
</tr>
<tr>
<td>There are no differences between monolingual, limited, bilingual groups</td>
<td>$U = .3579$</td>
<td>$U = .6380$</td>
<td>$U = .7196$</td>
</tr>
<tr>
<td>df = 4,2,47</td>
<td>$P &lt; .01$</td>
<td>$P &lt; .01$</td>
<td>$P &lt; .06$</td>
</tr>
</tbody>
</table>

*a Rejection of null hypothesis indicates ANOVA would be an inappropriate test of the data.*
nonpreferred language condition ($df=2.47; F=6.43, p < .01$). Groups did not differ significantly on the use of puppet language code in the third language condition ($df=2.47; F=1.99, p=.15$).

Apriori orthogonal contrasts were used to further explore differences between monolinguals, limited speakers and bilinguals. These contrasts were made separately for the preferred, nonpreferred, and third language conditions. Duncan's multiple range tests were used to explore differences between monolinguals, limited speakers, and bilinguals in the selection of puppet language code.

In the preferred language condition, monolinguals and bilinguals made similar code selections but the pattern of codes selected by limited speakers differed from the other children. While puppet language was the predominant code selected by children, a Duncan's test ($df=47, p < .05$) indicated that limited speakers made significantly fewer responses in the puppet language (see Figure 4). Monolinguals and bilinguals did not differ from each other in the use of puppet language code. When codes other than puppet language were used, limited speakers differed significantly from monolinguals and bilinguals in the pattern of error codes selected ($U(4,1,47)=.4764, p < .01$; see Figure 1). It appeared that monolingual and bilingual children were more likely to acknowledge their listener through vocalization while limited speakers were more likely to remain silent. Although use of nonpuppet language was low in the preferred language condition, children who erroneously responded with their nonpreferred language were typically limited speakers.

In the nonpreferred language condition, a Duncan's test ($df=47, p < .05$) indicated that bilinguals responded more often in the puppet language.
language than did the other children (see Figure 4). While limited
speakers used the puppet language more frequently than did monolin-
guals, no significant differences between these two groups were found.
When codes other than puppet language were used, monolinguals differ-
ed significantly from limited speakers and bilinguals in the pattern of
error codes selected \( U (4,1,47)=.6897, p < .01 \); see Figure 2).
Monolinguals were more likely to use the nonpuppet language code than
were other children. No overall differences between limited speakers
and bilinguals were found in code selection errors because both groups
were similar in their use of vocalization, nonpuppet language, and
mixed responses. However, as shown in Figure 2, limited speakers
were more likely to remain silent \( X=20.67 \) than were bilinguals
\( X=4.38 \) when conversing in the nonpreferred language condition.

In the third language condition, puppet language responses were
low for monolinguals, limited speakers and bilinguals (see Figure 4),
and the children's spoken 'German' reflected an attempt to repeat the
previous puppet statement. Apriori contrasts between groups in the
third language were nonsignificant although group differences were
indicated in the original profile analysis \( U (4,2,47)=.7196, p < .06 \);
see Figure 3). Had within group variance been smaller, the differences
between bilinguals and nonbilinguals in Figure 3 may have been statis-
tically significant. Unlike monolingual and limited speakers who remain-
ed predominantly silent in response to the German puppet, bilinguals
attempted to communicate by using the nonpuppet code. Observational
data indicated that when bilinguals were confronted with an unknown
language, both the preferred and nonpreferred languages were tried
before bilinguals settled on the nonpuppet code of English.
Figure 5 compares the pattern of monolingual code selection in the nonpreferred language condition with the third language profiles of each group. Although no formal statistical contrast was performed, the third language profile of monolinguals and limited speakers appeared to be similar to the monolingual nonpreferred profile, while bilinguals differed.

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Insert Figure 5 about here

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Differences in code selection which resulted from changes in the puppet's linguistic code are shown in Figure 6.

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Insert Figure 6 about here

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Profile analysis was used to test for differences between preferred, nonpreferred and third language conditions. Results indicated that children did adjust their language in response to changes in their listener's language ($U(4,2,101) = 4.418, p < .01$; see Figure 6). Children were most likely to vary their use of silence and nonpuppet language codes. Silence was used least often in the preferred language, but equally in the nonpreferred and the third language conditions. Nonpuppet language was used differently in all three conditions. Very few nonpuppet responses were made in the preferred condition, with increases noted as the puppet language became less familiar to the children.

For monolinguals, limited speakers, and bilinguals, Figure 7 contrasts code selection under each puppet language condition.

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Insert Figure 7 about here

---
Figure 5
Mean Number of Responses in Error Codes -
Monolingual Nonpreferred and
Monolingual, Limited, Bilingual Third Language

RESPONSE CATEGORIES

MEAN NUMBER OF RESPONSES

Silence Vocalization Nonpuppet Mixed

Monolingual Nonpreferred
Monolingual 3rd
Limited 3rd
Bilingual 3rd
Figure 6
Mean Number of Responses in Error Codes - Across Groups

RESPONSE CATEGORIES

Silence Vocalization Nonpuppet Language Mixed

Preferred Nonpreferred Third Language
Figure 7
Mean Number of Responses in Error Codes - Within Groups

RESPONSE CATEGORIES USED BY MONOLINGUALS

RESPONSE CATEGORIES USED BY LIMITED SECOND-LANGUAGE SPEAKERS

RESPONSE CATEGORIES USED BY BILINGUALS
Monolinguals appeared to use a similar pattern of response in the nonpreferred and third language condition which differed from their response to the preferred language condition. Limited speakers displayed similar patterns of code selection in the preferred and nonpreferred language conditions but changed their verbal behavior in response to the third language condition. Bilinguals used nearly identical patterns of response in the preferred and nonpreferred conditions but made noticeable changes in response style when confronted with the unknown puppet language.

Unequal cell size made it inappropriate to analyze for differences between the non-English language environments within groups of monolingual, limited, and bilingual children. Where appropriate, percentage of responses made in each category were calculated (see Appendix F). In general, patterns of code selection used by Hungarian, Vietnamese, and Spanish speakers resembled the overall pattern of code selection found for their appropriate group. Two possible exceptions were found. In the third language condition, Vietnamese limited speakers were noticeably more silent than were Spanish limited second language speakers. Among monolinguals, children from the Hungarian program were more likely to produce puppet language responses (imitative) in the nonpreferred and third language condition than were other monolinguals.
Nonverbal behavior

Estimates of inter-observer reliability presented in Table 2 were calculated for each category of nonverbal behavior which received an average session score of .5 or more. Sixteen of the original 26 behavior categories had average session scores of at least .5. The reliabilities for social behavior categories ranged from .46 to .98. Inter-observer reliabilities for nonsocial categories ranged from .59 to .85.

To test for differences in nonverbal code selection, a 3 (puppet language condition: preferred, nonpreferred, third language) x 3 (group: monolingual, limited, bilingual) analysis of variance with puppet language as a repeated-measure was performed on each of the 16 behavior categories listed in Table 2. Significant differences between group means (monolingual, limited, bilingual) were found in five of the 16 behavior categories, with weak differences found in four additional categories. As shown in Table 3 the categories included: SMILE, FACIAL GESTURE, LAUGH, VERBALIZATION, VOCALIZATION, PROXIMITY, VISUAL ORIENTATION, GENERALIZED BODY MOVEMENT, and MANIPULATE SELF.

While no differences between monolingual and limited groups were found in four categories, bilinguals were observed to smile, verbalize, and shift about in their chair more often than nonbilinguals. Bilinguals were also less likely to 'fidget' with their clothing, hands or other body parts. Monolinguals differed from limited speakers in their greater use
Table 2

Inter-observer Reliabilities for Behavior Categories

<table>
<thead>
<tr>
<th>Description</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social categories</strong></td>
<td></td>
</tr>
<tr>
<td>Gesture</td>
<td>.68</td>
</tr>
<tr>
<td>Affirmative nod</td>
<td>.88</td>
</tr>
<tr>
<td>Negative nod</td>
<td>.82</td>
</tr>
<tr>
<td>Smile</td>
<td>.79</td>
</tr>
<tr>
<td>Facial gesture</td>
<td>.46</td>
</tr>
<tr>
<td>Laugh</td>
<td>.88</td>
</tr>
<tr>
<td>Verbalization</td>
<td>.86</td>
</tr>
<tr>
<td>Vocalization</td>
<td>.51</td>
</tr>
<tr>
<td>Proximity to Fuzzy</td>
<td>.98</td>
</tr>
<tr>
<td>Visual orientation toward Fuzzy</td>
<td>.64</td>
</tr>
<tr>
<td>Nonspecific body contact with Fuzzy</td>
<td>.93</td>
</tr>
<tr>
<td><strong>Nonsocial categories</strong></td>
<td></td>
</tr>
<tr>
<td>Generalized body movement</td>
<td>.70</td>
</tr>
<tr>
<td>Manipulate self</td>
<td>.78</td>
</tr>
<tr>
<td>Manipulate object</td>
<td>.83</td>
</tr>
<tr>
<td>Oral contact with self</td>
<td>.85</td>
</tr>
<tr>
<td>Sit</td>
<td>.59</td>
</tr>
</tbody>
</table>
Table 3

Behavior Categories in which Significant Group Effects were Found

M = monolinguals, L = limited speakers, B = bilinguals

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Least Squares Mean</th>
<th>F(2,40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>SMILE</td>
<td>6.49</td>
<td>6.20</td>
</tr>
<tr>
<td>FACIAL GESTURE</td>
<td>1.14</td>
<td>.42</td>
</tr>
<tr>
<td>LAUGH</td>
<td>.59</td>
<td>.06</td>
</tr>
<tr>
<td>VERBALIZATION</td>
<td>11.59</td>
<td>11.07</td>
</tr>
<tr>
<td>VOCALIZATION</td>
<td>4.22</td>
<td>2.62</td>
</tr>
<tr>
<td>PROXIMITY</td>
<td>17.80</td>
<td>19.79</td>
</tr>
<tr>
<td>VISUAL ORIENTATION</td>
<td>17.54</td>
<td>18.81</td>
</tr>
<tr>
<td>GENERALIZED BODY MOVEMENT</td>
<td>9.15</td>
<td>8.36</td>
</tr>
<tr>
<td>MANIPULATE SELF</td>
<td>10.27</td>
<td>9.86</td>
</tr>
</tbody>
</table>

Note. Maximum score = 20.

* = p < .10
* = p < .05
** = p < .01
of vocalization. In two categories where bilingual and limited speakers behaved similarly, monolinguals were less likely to be found in proximity to their listener and were more likely to use facial gestures (other than a smile or frown) than were second-language speakers. Monolinguals were less likely to visually focus on their listener than were bilinguals. Limited speakers rarely laughed when conversing with the puppet although monolingual and bilingual children did so in all three puppet language conditions.

Significant differences between means for each puppet language condition (preferred, nonpreferred, third language) were found in three categories, with a weak difference between means noted in one additional category. As shown in Table 4 the categories included: FACIAL GESTURE, VERBALIZATION, VOCALIZATION, and VISUAL ORIENTATION.

Inspection of Table 4 shows the use of vocalization in the preferred and nonpreferred language conditions to be similar and different from vocalization in the third language condition. Differences between verbalization in the preferred and third language conditions were also observed. Children decreased verbalization and increased vocalization in the third language condition. In contrast with their preferred language behavior, children increased visual attention toward their listener in the third language condition. Children were also more likely to make facial gestures in the third language condition which they had not used when conversing in their preferred language.
Table 4
Behavior Categories in which Significant Differences Between Puppet Language Conditions were Found
P = preferred, NP = nonpreferred, 3 = third language

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Least Squares Means for Puppet Language Condition</th>
<th>$F$ (2,101)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P</td>
<td>NP</td>
</tr>
<tr>
<td>FACIAL GESTURE</td>
<td>.32</td>
<td>.66</td>
</tr>
<tr>
<td>VERBALIZATION</td>
<td>16.49</td>
<td>13.30</td>
</tr>
<tr>
<td>VOCALIZATION</td>
<td>2.87</td>
<td>2.69</td>
</tr>
<tr>
<td>VISUAL ORIENTATION</td>
<td>17.9b</td>
<td>18.39</td>
</tr>
</tbody>
</table>

Note: Maximum Score = 20.

* $p < .10$
* $p < .05$
** $p < .01$
Table 5

Behavior Categories in which Significant Group x Condition Interaction Effects were Found

F = preferred,  NP = nonpreferred,  3 = third language

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>GROUP</th>
<th>Puppet</th>
<th>Language</th>
<th>Condition</th>
<th>F (df=4,101)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERALIZED</td>
<td>Mono</td>
<td>7.44</td>
<td>9.28</td>
<td>10.74</td>
<td>3.18**</td>
</tr>
<tr>
<td>BODY</td>
<td>Limited</td>
<td>10.27</td>
<td>8.10</td>
<td>6.70</td>
<td>3.18**</td>
</tr>
<tr>
<td>MOVEMENT</td>
<td>Bi</td>
<td>14.19</td>
<td>14.44</td>
<td>15.25</td>
<td></td>
</tr>
<tr>
<td>GESTURE</td>
<td>Mono</td>
<td>2.94</td>
<td>2.20</td>
<td>1.24</td>
<td>3.83**</td>
</tr>
<tr>
<td></td>
<td>Limited</td>
<td>1.40</td>
<td>1.00</td>
<td>1.73</td>
<td>3.83**</td>
</tr>
<tr>
<td></td>
<td>Bi</td>
<td>2.00</td>
<td>1.63</td>
<td>4.31</td>
<td></td>
</tr>
<tr>
<td>VISUAL</td>
<td>Mono</td>
<td>15.30</td>
<td>18.07</td>
<td>19.24</td>
<td>3.61**</td>
</tr>
<tr>
<td>ORIENTATION</td>
<td>Limited</td>
<td>19.33</td>
<td>17.53</td>
<td>19.57</td>
<td>3.61**</td>
</tr>
<tr>
<td></td>
<td>Bi</td>
<td>19.25</td>
<td>19.56</td>
<td>19.88</td>
<td></td>
</tr>
<tr>
<td>VERBALIZATION</td>
<td>Mono</td>
<td>17.19</td>
<td>9.54</td>
<td>8.05</td>
<td>3.64**</td>
</tr>
<tr>
<td></td>
<td>Limited</td>
<td>15.23</td>
<td>11.50</td>
<td>6.50</td>
<td>3.64**</td>
</tr>
<tr>
<td></td>
<td>Bi</td>
<td>17.06</td>
<td>18.87</td>
<td>14.94</td>
<td></td>
</tr>
</tbody>
</table>

Note. Maximum Score = 20

+ F < .10
* F < .05
** F < .01
As indicated in Table 5, significant interaction effects were found in four categories of behavior: GESTURE, VERBALIZATION, VISUAL ORIENTATION, and GENERALIZED BODY MOVEMENT.

Monolingual and bilingual children increased generalized body movement in the third language condition, but limited speakers greatly reduced such movement and sharply increased self manipulation. Differences in gestural communication were also most apparent in the unknown, third language condition. While limited speakers used gestures similarly in all three language conditions, bilinguals doubled the number of gestures produced in the third language conversation compared with the preferred language. In contrast, monolinguals reduced gestures in the third language by 50% compared with the preferred language. An increase in smiling and laughter by bilinguals in the third language was also observed. Bilinguals consistently focused their visual attention on the listener. By comparison, monolinguals were least attentive in the preferred language condition and limited speakers decreased their visual contact in the nonpreferred language. All groups reduced verbalization in the third language but bilinguals were more likely to converse in the unknown language condition than were limited or monolingual children.

Discussion

A major goal of the present study was to determine whether or not children speak in the language in which they are spoken to and whether or not children vary nonverbal behavior in response to different listeners. Results of this study indicate that there are distinctive behavioral
variations in both verbal and nonverbal communication which can be associated with the listener's language code. Additionally, children's proficiency in a second language does effect the selection of both verbal and nonverbal codes used for communication.

This study confirms the importance of the listener in the communicative process. As a result of changes in listener language alone children do make pragmatic adjustments in both their verbal and nonverbal code selection. As the listener's language becomes less familiar, observable changes in behavior include: an increase in visual contact with the listener, more frequent facial gesturing, greater use of non-puppet language, and an increase in silence which coincides with an overall decrease in verbalization.

Experimental findings also indicate that differences in second language proficiency do effect the types of pragmatic adjustments which children make for each listener. Although adult and child patterns of code selection are not identical, the relationship between type of bilingual development and code selection behavior which Valdés-Fallis (1978) found in adults holds for children as well. Bilingual children verbalize more than do other children even when confronted with a puppet language which they do not speak. Bilinguals also smile more often and exhibit less self directed fidgeting although they do shift about in their chairs more than other children might. Surprisingly, limited speakers do not verbalize more than monolinguals although limited speakers are able to communicate in more languages than can monolinguals. Apparently limited speakers are more likely than other children to remain silent, making fewer vocalizations and rarely laughing in response to their listener. Interestingly, children who speak a second language maintain
closer physical and visual contact with their listener than do children who speak only one language. Such noticeable differences in behavior demonstrate that variation in participants' second language proficiency is an important factor which needs to be controlled for in future research on bilingualism.

Differences in behavior which result from an interaction between the listener's language and the children's language proficiency are particularly noticeable when children are spoken to in a language which they do not speak. Apparently the ability to communicate effectively in more than one language effects children's communication with a listener who speaks an unfamiliar language. Bilinguals become more animated in response to an unintelligible listener, increasing their use of gesture and movement. Bilingual children maintain verbal communication at higher levels than do other children by initiating conversation with their unintelligible listener even though neither speaker nor listener understand each other. In contrast, limited speakers reduce verbal and nonverbal activity in the presence of an unintelligible listener, and make virtually no adjustments in gesture which might clarify or supplement communication in an unfamiliar language. Other than looking at their unintelligible listener more often and moving about more, monolingual children do not clarify their communication to the same extent which bilinguals do in an unfamiliar situation. In contrast with bilinguals, monolinguals actually reduce gestural communication when confronted with an unfamiliar language. These observations suggest that bilinguals make more pragmatic adjustments in their code selection than do other children when placed in an unfamiliar language environment.
The current study adds to our understanding of young children's communication in two important ways. First, the data indicate that children do adjust their nonverbal behavior in response to their listener. While earlier studies have shown adjustments in children's verbal communication, the present study is unique in demonstrating that preschoolers do alter both verbal and nonverbal behavior when confronted with different listener needs. Second, a relationship between inter and intralanguage codes can be seen in the pattern of code selection which children use. The type of intralanguage adjustments (e.g. silence, vocalization, gestural) which children make for their listener is effected by their ability to communicate in more than one interlanguage code. Interestingly, by age five interference between interlanguage codes is apparently not a problem in children's communication. The current data are consistent with earlier findings that interlanguage mixing is unusual for bilingual children.

An important aspect of this current research is the differentiation between limited second language speakers and actual bilingual children. Limited speakers are unexpectedly more silent than are bilinguals. Bilinguals are surprisingly verbal with a listener who speaks an unfamiliar language. Such a striking contrast between children's communication styles needs to be explored further.

It is possible that bilingual children are more confident in their communicative skills and are more willing to risk being wrong in their choice of codes than are limited speakers. Consequently, if bilingual children are less fearful of making errors they would be more likely to verbalize in any situation than would children who are less confident. In addition to expressing possible confusion about the situational
expectations, the silence of limited speakers could reflect a more cautious communicative style. For limited speakers it may be preferrable to say nothing rather than to risk making a 'wrong' response. The communicative style of limited speakers may actually inhibit further second language development. Children who remain silent would not be learning from corrections of their errors in the second language. In contrast, the communicative style of bilinguals may facilitate further bilingual development as a larger sample of language skills is subjected to evaluation by a listener.

It is also possible that bilingual children make an egocentric assumption about their listener's ability to understand which other children do not make. Bilinguals may assume that the user of an unfamiliar language is able to understand languages other than the one spoken. Consequently, bilinguals could continue to produce a large number of verbalizations which are not understood by their listener without realizing that the listener's needs are not being met. Other children might remain silent because they understand that the listener's needs will not be met by speaking in the interlanguage codes which the children are able to use.

However, data collected in the preferred and nonpreferred language conditions indicate that bilinguals generally do meet their listener's communicative needs by speaking predominantly in their listener's code. Because of the repeated-measures design of this study, bilinguals may be using prior knowledge of their listener's language skills in an effort to maintain communication in an unfamiliar language. It is difficult to determine whether these bilingual children know that their listener no longer understands the interlanguage codes which children
used in earlier communications with the listener. While all children 
might have prior experience with the listener's varied language skills, 
bilinguals apparently use such information differently in adjusting to an 
unfamiliar language situation.

From an applied perspective the differentiation between bilingual 
and limited speakers has implications for increasing children's communi­
cative effectiveness. Limited speakers could be taught to make specific 
pragmatic adjustments in their communication style which bilingual 
children apparently develop on their own. For example, less effective 
limited speakers could be encouraged to acknowledge their listener more 
regularly in a conversation or to supplement their verbal message in an 
unfamiliar situation with gestural communication. If a relationship 
between risk taking, confidence, and bilingual development were empiri­
cally demonstrated, efforts to reduce possible anxieties of limited 
speakers might also increase their communicative effectiveness.

In summary, children do not always speak in the language in 
which they are spoken to. However, much of the variation which is 
observed in children's conversational language (both verbal and non­ 
verbal) can be attributed to variation in the language of the listener 
and the extent of children's second language proficiency.
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Appendix A

Office for Civil Rights Classification of Primary Language

A. Monolingual speaker of the language other than English (speaks the language other than English exclusively).

B. Predominately speaks the language other than English (speaks mostly the language other than English, but speaks some English).

C. Bilingual (speaks both the language other than English and English with equal ease).

D. Predominantly speaks English (speaks mostly English, but some of the language other than English).

E. Monolingual speaker of English (speaks English exclusively).
# APPENDIX B

## Sex and Age Distribution of Children

<table>
<thead>
<tr>
<th>Non-English Language</th>
<th>Sex</th>
<th>Monolingual</th>
<th></th>
<th>Limited</th>
<th></th>
<th>Bilingual</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>age range (months)</td>
<td>n</td>
<td>age range (months)</td>
<td>n</td>
<td>age range (months)</td>
</tr>
<tr>
<td>HUNGARIAN</td>
<td>Male</td>
<td>6</td>
<td>70</td>
<td>64-74</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>8</td>
<td>69</td>
<td>63-74</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>VIETNAMESE</td>
<td>Male</td>
<td>3</td>
<td>67</td>
<td>65-71</td>
<td>4</td>
<td>65</td>
<td>65-72</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>4</td>
<td>70</td>
<td>69-74</td>
<td>5</td>
<td>70</td>
<td>65-74</td>
</tr>
<tr>
<td>SPANISH</td>
<td>Male</td>
<td>4</td>
<td>65</td>
<td>56-69</td>
<td>3</td>
<td>65</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2</td>
<td>67</td>
<td>60-74</td>
<td>3</td>
<td>69</td>
<td>65-73</td>
</tr>
<tr>
<td>TOTAL</td>
<td>Male</td>
<td>13</td>
<td>67</td>
<td>56-74</td>
<td>8</td>
<td>67</td>
<td>55-75</td>
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<tr>
<td></td>
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<td>14</td>
<td>69</td>
<td>60-74</td>
<td>7</td>
<td>70</td>
<td>65-74</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>27</td>
<td>66</td>
<td>56-74</td>
<td>15</td>
<td>68</td>
<td>55-75</td>
</tr>
</tbody>
</table>

**Note** Total n = 50.
Appendix C

Interview Questions and Description of Bilingual Categories

1. language used most often and easily
2. language used in home environment
3. language used most often with classmates/peers
4. language first acquired
5. understands spoken English (+,−, )
6. understands spoken non-English language (+,−, )
7. can differentiate English from other non-English language
8. follows oral instructions in English
9. follows oral instructions in non-English other language
10. good expressive vocabulary in English
11. good expressive vocabulary in non-English other language
12. child's spoken English can be understood by peers
13. child's spoken non-English other language can be understood by peers
14. uses 1-2 word sentences in English
15. uses 1-2 word sentences in non-English other language
16. uses 3-5 word sentences in English
17. uses 3-5 word sentences in non-English other language
18. uses 7+ word sentences in English
19. uses 7+ word sentences in non-English other language
20. expressive language category:

Monolingual uses only one language in oral communication 85-100% of the time he/she talks (to self or others).

Limited second language speaker can use two languages functionally in oral communication but, is significantly more fluent in his first language; understands language and responds significantly better in his first language; and would be generally classified as limited in second language expression even though he/she may be able to communicate in two languages.

Bilingual can use two languages in oral communication with no major differences in fluency, understanding and responding in both languages. This child may prefer either his/her first or one language over another but is not severely limited in either. He/she is able to use either his first or second language when the situation calls for one language or the other.
Appendix D

Parental Permission Slips

Your child's class at (name of school) has been selected for a special study on childhood bilingualism in Louisiana. As the parent/guardian of (child's name) your permission is requested for your child's participation in this study. Each child will talk with a puppet who speaks three different languages. These conversations will be tape recorded in order to see how children change their language to match the puppet. These recordings will be used for research purposes only and your child's anonymity will be maintained. Your child's teacher can answer any further questions which you might have or you may call me in the evenings at home (phone number) in Baton Rouge.

Please mark yes or no, sign this form and return to (teacher).

Rebecca A. Marcon
Instructor/PhD Candidate
Department of Psychology
Louisiana State University

☐ YES, my child has my permission to participate in the bilingual study being conducted by R. Marcon

☐ NO, my child may not participate in the bilingual study being conducted by R. Marcon

Date

Signature of Parent/Guardian

Rebecca A. Marcon
Instructor/PhD Candidate
Department of Psychology
Louisiana State University
La clase de su niño ha sido seleccionada para participar en un estudio que investiga el bilingüismo en Louisiana. Siendo Ud. el padre o la madre de (nombre de niño) se le require su permiso para poder utilizar a su niño en este estudio. Cada niño conversará con un muñeco que habla tres idiomas diferentes. Cada conversación será grabada en cinta magnetofónica (tape) para ver cómo los niños cambian su idioma para ajustarse al idioma del muñeco. Estas grabaciones serán utilizadas únicamente para propósitos investigativos y la anonimidad de su hijo será protegida. Sister R.A., principal, o la maestra de su niño puede contestar cualquier pregunta que Ud. tenga o me puede llamar directamente a mi casa (numero de teléfono) en Baton Rouge.

Haga el favor de marcar sí o no, firme esta forma y devuélvala a la maestra. Gracias.

☐ Sí, mi hijo tiene mi permiso para participar en el proyecto investigativo de R. Marcon

☐ NO, mi hijo no tiene mi permiso para participar en el proyecto de R. Marcon

Firma de padre (o madre)
Appendix E

Behavior Categories and Symbols Used to Record Nonverbal Behavior

<table>
<thead>
<tr>
<th>Category</th>
<th>Symbol</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gesture</td>
<td>![Symbol]</td>
<td>Child makes hand, arm, or shoulder movements directed at Fuzzy as a means of communication (e.g. points, waves, shoulder shrug)</td>
</tr>
<tr>
<td>Affirmative nod</td>
<td>$N^+$</td>
<td>Child nods head up and down to indicate agreement</td>
</tr>
<tr>
<td>Negative nod</td>
<td>$N^-$</td>
<td>Child nods head from side to side to indicate disagreement</td>
</tr>
<tr>
<td>Smile</td>
<td>![Symbol]</td>
<td>The corners of the child's mouth are turned upward</td>
</tr>
<tr>
<td>Frown</td>
<td>![Symbol]</td>
<td>The corners of the child's mouth are turned downward</td>
</tr>
<tr>
<td>Facial gesture</td>
<td>![Symbol]</td>
<td>Child makes facial movements (other than a smile or frown) directed at Fuzzy as a means of communication (e.g. extends tongue, rolls eyes, winces)</td>
</tr>
<tr>
<td>Laugh</td>
<td>![Symbol]</td>
<td>Child vocalizes sound of joy or amusement</td>
</tr>
<tr>
<td>Verbalization</td>
<td>![Symbol]</td>
<td>Child speaks a word or word approximation</td>
</tr>
<tr>
<td>Vocalization</td>
<td>![Symbol]</td>
<td>Child makes a nonword sound (e.g. grunt, noise, humming)</td>
</tr>
<tr>
<td>Approach</td>
<td>![Symbol]</td>
<td>Child moves from beyond to within one foot of Fuzzy</td>
</tr>
<tr>
<td>Withdraw</td>
<td>![Symbol]</td>
<td>Child moves from within to beyond one foot of Fuzzy.</td>
</tr>
<tr>
<td>Proximity</td>
<td>![Symbol]</td>
<td>Any part of child's body is within one foot of Fuzzy.</td>
</tr>
<tr>
<td>Category</td>
<td>Symbol</td>
<td>Definition</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Visual orientation</td>
<td></td>
<td>Child's head is clearly directed toward Fuzzy's head or face</td>
</tr>
<tr>
<td>Non-specific contact</td>
<td>![symbol]</td>
<td>Any part of child's body comes in contact (nonforceable) with Fuzzy</td>
</tr>
<tr>
<td>Manipulate person</td>
<td>![symbol]</td>
<td>Child manipulates Fuzzy's body (e.g. moves Fuzzy, plays with Fuzzy's mouth, pats Fuzzy's head)</td>
</tr>
<tr>
<td>Oral contact with person</td>
<td>![symbol]</td>
<td>Child kisses Fuzzy</td>
</tr>
<tr>
<td>Positive contact</td>
<td>![symbol]</td>
<td>Child hugs, embraces, holds, affectionately touches Fuzzy</td>
</tr>
<tr>
<td>Negative Contact</td>
<td>![symbol]</td>
<td>Child forcefully strikes, pushes, bites, pulls hair or scratches Fuzzy</td>
</tr>
<tr>
<td>Grooming</td>
<td>![symbol]</td>
<td>Child uses one or more fingers to adjust or fix Fuzzy's hair, eyes, mouth, etc.</td>
</tr>
</tbody>
</table>

**Note.** Fuzzy is the puppet towards whom social behavior was directed.

---

**Nonsocial Categories**

<table>
<thead>
<tr>
<th>Category</th>
<th>Symbol</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized body movement</td>
<td>![symbol]</td>
<td>Child makes a nonspecific movement of limbs (e.g. swings legs, shifts in chair)</td>
</tr>
<tr>
<td>Manipulate self</td>
<td>![symbol]</td>
<td>Child manipulates own body or clothing with hands (e.g. adjust clothes, neck eyes or face, groom self, fidget with hands)</td>
</tr>
<tr>
<td>Manipulate object</td>
<td>![symbol]</td>
<td>Child handles object (e.g. chair, puppet theater) in any manner</td>
</tr>
<tr>
<td>Oral contact with self</td>
<td>![symbol]</td>
<td>Child places part of body in contact with mouth (e.g. sucks finger or thumb)</td>
</tr>
<tr>
<td>Oral contact with object</td>
<td>![symbol]</td>
<td>Child places object in contact with mouth</td>
</tr>
<tr>
<td>Sit</td>
<td>1</td>
<td>Child rests with buttocks on floor or seat</td>
</tr>
<tr>
<td>------------</td>
<td>---</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Stand</td>
<td>$</td>
<td>Child stands</td>
</tr>
</tbody>
</table>

**Note.** Observers were considered to be objects.
APPENDIX F

Percentage of Responses Made in each Code
for each Non-English Language
Within Monolingual, Limited and Bilingual Groups
P = preferred,  NP = nonpreferred,  3 = third language

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Non-English Language</th>
<th>Monolingual</th>
<th>Limited</th>
<th>Bilingual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>P</td>
<td>NP</td>
<td>3</td>
</tr>
<tr>
<td>SILENCE</td>
<td>Hungarian     0</td>
<td>9</td>
<td>55</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Vietnamese    0</td>
<td>5</td>
<td>54</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Spanish       1</td>
<td>0</td>
<td>95</td>
<td>5</td>
</tr>
<tr>
<td>VOCALIZATION</td>
<td>Hungarian       0</td>
<td>0</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Vietnamese    0</td>
<td>1</td>
<td>34</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Spanish       1</td>
<td>0</td>
<td>95</td>
<td>5</td>
</tr>
<tr>
<td>NONPUPPET LANGUAGE</td>
<td>Hungarian       0</td>
<td>0</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td>Vietnamese    0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Spanish       1</td>
<td>0</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td>MIXED</td>
<td>Hungarian     0</td>
<td>0</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td>Vietnamese    0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Spanish       1</td>
<td>0</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td>PUPPET   LANGUAGE</td>
<td>Hungarian       0</td>
<td>0</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td>Vietnamese    0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Spanish       1</td>
<td>0</td>
<td>1</td>
<td>.5</td>
</tr>
</tbody>
</table>

a No children in limited or bilingual group
b Small bilingual sample (n=2) made calculation of percentages inappropriate
VITA

REBECCA ANN MARCON

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Title of Thesis: Second-Language Acquisition and the Development of Pragmatic Code Selection Skills

Approved:

[Signatures]

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Robert C. Mathewes

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Date of Examination: 7/15/81