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Prosodic, paralinguistic, and interactional features in parent-child speech: English and Spanish*

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ABSTRACT

Parents employ a special register when speaking to young children, containing features that mark it as appropriate for children who are beginning to acquire their language. Parental speech in English to 5 children (ages 0;9–1;6) and in Spanish to 4 children (ages 0;8–1;1 and 1;6–1;10) was analysed for the presence and distribution of these features. Thirty-four paralinguistic, prosodic, and interactional features were identified, and rate measures and proportions indicated developmental patterns and differences across languages. Younger children received a higher rate of features that marked affect; older children were addressed with more features that marked semantically meaningful speech. English-speaking parents relied comparatively more on paralinguistic and affective features, whereas Spanish-speaking parents used comparatively more interactional features. Despite these differences, there was a high degree of similarity across parents and languages for the most frequently occurring features.

INTRODUCTION

When adults speak to young children, they use speech adapted for the children's restricted communicative skills. Several adaptations have been identified. Linguistic structure is simplified, sentences tend to be short, special lexical items are used, and intonation patterns are usually exaggerated (Ferguson 1964, 1975). Special interactional features such as attentionals, imitation and repetition are used (Blount 1972). Content of interaction is also tailored; parents give linguistic expression to content that children are capable of attending and understanding (Wells 1975).

Detailed, longitudinal studies of parent–child speech and interaction are,

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however, still rare. More documentation is needed of the organization, incidence and cultural bases of adult–child interaction. The special markers of parental speech reflect adaptation, and afford a convenient means of investigating the structuring of joint action by parent and child. A project on parental speech is under way along these lines; it is designed to investigate interpersonal communication between parents and children in English-speaking and in Spanish-speaking families in Austin, Texas.

The long-range goals of the project are the description of adult–child speech in English and in Spanish, a comparison of their differences, and an assessment of the roles of adult speech in fostering the acquisition of communicative skills by children. At present, the research focus has been on aspects of parental speech. Features of speech modification have been identified, and profiles of feature usage have been established for each of the families in the study. A description of the features and their rates of occurrence are given in this paper. Differences in feature usage by families are noted, and English and Spanish comparisons are made to establish cultural differences in feature selection and utilization. Lastly, changes in feature selection, longitudinally, are discussed in relation to language development.

METHOD

Data collection

Nine children are included in the study. All were in the one-word stage of development at the beginning of the project except for the two youngest children, who had vocabularies of only a few words and who were still at the babbling stage. The one-word stage was considered to be the most suitable developmental level for the study of input, since preliminary observations and research in another society (the Luo of Kenya) had shown that during this stage adult modification of speech was frequent and extensive during the late babbling and early one-word stages of development (Blount 1972). During the one-word stage, adult–child interaction is structured primarily by the adults, i.e. most interaction is initiated by adults and a large percentage of children's utterances are conversationally tied to the adult ones. The role of adult input in language acquisition is therefore potentially stronger than in earlier stages characterized by relatively infrequent and structurally simple interaction.

TABLE 1. *Ages and sex of children*

English		Spanish	
Miranda (F)	0;9–1;1	Valente (M)	0;8.7–0;10.28
Jeanne-Marie (F)	0;11.7–1;1.7	Analisa (F)	0;10.28–1;1.7
Joelle (F)	1;0–1;3.14	Christian (M)	1;6.7–1;8.7
Rebecca (F)	1;2–1;4.7	Luis (M)	1;8–1;10.7
Adam (M)	1;3–1;6.14		

The ages of the children during the collection of the speech samples ranged from 0;9 to 1;6.14 for the English-speaking children and 0;8.14 to 1;10.7 for the Spanish-speaking children. Individual age range, sex, and names of the children are given in Table 1.

All of the children were residents of Austin, Texas, and at least one parent in each case was a student at the University of Texas. Three of the Spanish-speaking families were from Latin America, residing temporarily in the United States. Valente's parents were from Mexico City; Christian's parents were from Chile; and Luis's father was from Peru and his mother from Argentina. None of the children had any siblings except Luis, who had a younger brother.

An initial session was held with each family to explain some of the aims of the research and the procedure to be followed. An immediate objective was to obtain samples of the children's speech in interaction with their parents. A tape recorder was left with the parents for a 24-hour period, ideally every week, and they were asked to record normal verbal interaction with the children, leaving the tape recorder operating nearby so as to record a portion of the regular daily routines. None of them reported any difficulty in making the recordings. The presence of the tape recorder did not appear to be a hindrance to the maintenance of natural interaction. Although the children frequently showed an interest in the tape recorder, it was largely an object of curiosity, as other new 'toys' or objects in the home, and did not appear to inhibit their behaviour. Judging from the abundance of baby-talk features in parental speech, the parents were not inhibited either.

The decision not to standardize context of recording was also made to promote naturalness of interaction. Preliminary interviews with parents indicated family differences in daily routines. Adam's parents, for example, had a favourite time for play with him, early in the morning before his father left for the day. Christian's parents had a similar play time, immediately after his father returned from school in the late afternoon. Parents were encouraged to follow regular daily patterns and make recordings during those times, since the objective was to obtain a segment of interaction as it normally occurred and to have for analysis typical samples of parental speech that children received in the socialization process. None of the parents felt that naturalness of setting and interaction was a problem, and no one felt that they had attempted to teach or instruct the children any more than they would have under other circumstances.

Some degree of standardization and data control was sacrificed by the procedures employed. An obvious weakness is the loss of contextual information, especially non-verbal communication. Preliminary experience, however, had shown clearly that the presence of an outsider – the researcher and/or assistants – strongly inhibited the children's interaction and verbal behaviour. Parental compensation for the children's shyness consisted frequently of efforts to encourage researcher–child interaction, which of course defeated the purpose of

the study. It was felt that data would best be obtained from interaction between parents and children without the presence of an observer.

Another disadvantage of the methodology was that the verbal performances of the children and thus of their parents were uneven in quantity and quality. Relatively large samples of speech were taped in some sessions; in others only limited and brief interaction was recorded. In some instances, the parents attributed the lack of participation to a general unhappy or fretful mood on the part of the child. In other instances – and for no apparent reasons – the children were not interested in conversing and could not be persuaded to talk at all (something viewed as normal by the parents). The minimal sample size for each recording was ideally 100 or more parental utterances. However, in 40 of the 106 (37·7 per cent of the total) sessions, the number was less than 100, and in 13 sessions, the number was less than 50 (12·3 per cent of the total). The number of sessions and the total number of parental utterances for each child is given below in Table 2.

TABLE 2. *Summary of recording sessions*

Child	Number of sessions	Age span	Number of parental utterances
Miranda	13	4 mths.	1602
Jeanne-Marie	10	2 mths. 1 wk.	2149
Joelle	13	3 mths. 2 wks.	1414
Rebecca	11	2 mths. 1 wk.	697
Adam	13	3 mths. 2 wks.	3123
Valente	14	2 mths. 3 wks.	1061
Analisa	9	2 mths. 2 wks.	672
Christian	11	2 mths.	1015
Luis	12	2 mths. 1 wk.	933

Data processing

A working definition of what constitutes a parental utterance was established on interactional grounds. Interaction consists of jointly produced turns and rounds. In structural terms, a TURN is a slot for which one actor has conversational claim. Turns are dyadic: an initial turn by one actor defines the second actor's turn. Together these constitute a ROUND. In this study, a parental utterance was whatever a parent said in one of the dyadic turns. Parental utterances and turns are thus isomorphic, although we use the former to refer to content and the latter to dyadic structure. In analysis of adult conversations this procedure would not be practical, since the speech in one turn could be lengthy and complex. In this study, however, parental speech consists primarily of relatively brief expressions, rarely exceeding a few words.

Parental activity, moreover, was predicated on turn-taking. The majority of their utterances were efforts to elicit responses from the children, to engage the

children in an interactional round. If they were successful – if the child responded in his/her turn – the parents usually began another round by tying their utterance to the child's preceding turn. If they were unsuccessful (and this was much more frequent), they would enlist other strategies, such as repeating utterances, changing topic, altering speech prosodically or paralinguistically or, in some cases, taking the child's turn themselves and responding to their own turn. Co-ordination of utterances and turns was a major goal of their activities, and to this end parents used turns and rounds as structural devices.

Once the number of utterances had been established for the protocols for each parent, the utterances were examined for prosodic, paralinguistic and interactional features that could be designated as marking parental speech. To establish an inventory of features, native speakers of English and of Spanish listened to randomly selected portions of tapes and judged each utterance in terms of its appropriateness for use to children and inappropriateness for use to adults. If an utterance was judged as baby-talk, then it was examined for the features which marked that style.

Native speaker judgment may appear to be a loose standard for identification of baby-talk features, and indeed there were difficulties. Not every utterance could be scored definitively. Even features which would appear to be categorical, such as special lexical items, sometimes posed problems. A 'special' form, such as the diminutive marker *-ie*, does not necessarily mean that an item is baby-talk since the form may be used for words with more general usage, such as *sweetie*, *cutie*. However, special lexical items in the sample were usually more restricted in application and were more baby-talk-like as a result. Words such as *choo-choo* and *dollie* generally are not items in adult–adult interaction. The reverse problem also occurred in the assessments, namely that the use of words which are perfectly normal in form and regular in adult usage sometimes appear to be special in the speech to children. For example, the term *mother* in the expression *Mother will do that for you* is a special usage when the speaker is the mother of the addressee – a usage that would qualify as baby-talk.

Despite the difficulties with some utterances, the majority of cases were unambiguous, and native speaker judgments were easily made. Most of the utterances contained not one but several features, any one of which would serve to mark an utterance as speech addressed to and appropriate for very young children. Utterances such as *Look! Look! What's this? Say doggie* marked with falsetto, exaggerated intonation, vowel lengthening, and special lexical item could hardly be taken as adult–adult speech except in unusual or special instances (as, for example, when sarcasm might be intended, i.e. to call attention to an adult's childish behaviour or disposition).

Examination of the baby-talk utterances led to the identification of an inventory of 34 prosodic, paralinguistic and interactional features, grouped into nine categories. These categories, shown in Table 3, are no more than a convenient

means of assessing the data. No claim is made that they are immutable, well-defined dimensions, or that the classification necessarily has any salience for the speakers; they are discussed further below. Once this inventory was established, each utterance was examined for the presence of baby-talk features. Each feature was judged present or absent, and a feature was scored only once for each utterance, regardless of how many times the feature might have occurred. A multi-word utterance with all of the words in falsetto, for instance, would simply be scored as falsetto, as would a single-word utterance in falsetto. This procedure yields a RATE MEASURE for each feature. It should be noted that the measure does not give an absolute score of the total number of times any given feature was used: it gives a presence/absence rate.

TABLE 3. *Features and categories of parental speech*

I	Volume: air	VI	Tempo
	Breathiness		Slow tempo
	Breath held		Fast tempo
II	Volume: sound	VII	Lexicon/forms
	Whisper		Special lexical items
	Lowered volume		Nonsense forms
	Raised volume		Personal pronoun substitution
III	Pitch/intonation	VIII	Grammar
	Falsetto		Grammatical deviations
	High pitch		Tag questions
	Low pitch	IX	Interaction
	Exaggerated intonation		Instructional
	Singing		Hmm?
IV	Paralinguistic		Attentionals
	Alteration		Turn substitution
	Creaky voice		Repetition
	Tenseness		Imitation
	Nasality		Interpretation
	Rounding		
	Phonetic substitution		
V	Duration		
	Lengthened vowel		
	Lengthened consonant		
	Shortened vowel		
	Shortened consonant		

Five individuals were responsible for the coding of the features, three native speakers of English and two native speakers of Spanish, all graduate students of linguistic anthropology at the University of Texas. For English, coder reliability was relatively high throughout. Comparisons of selected samples during the coding procedures revealed no significant differences among the coders. The samples were small, however, and it is possible that larger samples might be skewed. To check this possibility, the records for Adam's tapes were examined,

since all of the English-speaking coders were involved in scoring his tapes. The total number of plus scores for each feature, as scored by each coder, was compared to the total number of utterances that each had coded. In only five of the features was there as much as 10 per cent variation in the feature rates. In four of these cases (Breathiness, Slow tempo, Repetition and Interpretation), the maximum variation among the three coders was less than 20 per cent, and in one case (Lowered volume), the range was 30 per cent. This latter case seems serious enough to distort the data, but it should be stressed that there are additional factors to consider. Feature rates for Lowered volume (and other features) were not always consistent for the children throughout the 3–4 months of the study, and the differences among coders might reflect these rate variations. Looking at larger samples, two of the coders showed almost no differences on Lowered volume. Overall, then, coders were consistent in their identification of features in the English parental utterances.

The two coders for the Spanish samples showed considerably more variation on some features than the three coders for English. The troublesome features were High pitch, Fast tempo, Slow tempo and Attentionals. Coder 1 had higher scores (at times as much as 40 per cent higher) for High pitch and Slow tempo, and she had lower scores for Fast tempo and Attentionals. Since the rates she coded were considerably higher or lower than what appeared in the samples for all of the children, English and Spanish, it was felt that her scoring on these features could not be used. Rate measures for these four features were calculated only on the utterances coded by coder 2. Since coder 1 completed only five of the sessions (of a total of 46), the loss of data was not serious, but the limitation on methodology must be noted. The rates for the four features could reflect idiosyncratic judgments. In general the Spanish results are more problematic than the English due to coder differences, fewer coders, and diverse backgrounds of the families. It should be noted, however, that the 40 per cent figure indicated above is the maximum variation between the two coders. In some sessions the figure was lower. For example during the first five sessions the rate measures for Attentionals used to Analisa were 11·2 (coder 1), and 44·0, 32·2, 13·8 and 48·2 (coder 2).

DESCRIPTION OF FEATURES

Many of the features identified as parental speech markers (Table 3) are common in sociolinguistic usage. Others require some description and discussion of pragmatic function. Category I (Volume: air) simply refers to the change in quantity of air expelled in articulation. Breathiness results from an increased volume, whereas Breath held refers to speech in which the air stream is diminished, almost unreleased, producing articulation with a tensed quality. Tension is in fact a major component, but what characterizes the feature is the

holding of breath. Tension is the dominant component in another feature, Tenseness (category IV), but without breath held. In category III (Pitch/intonation), Exaggerated intonation refers to contours of pitch movement that are unusual for adult–adult speech. There may be exaggerated step-up or step-down movements or abrupt rising and falling movements. Also, contours may be somewhat different than expected for certain syntactic patterns, e.g. word-final falling tone in questions. High and low pitch refer to speech marked with unusually high or low tone. This feature clearly overlaps with exaggerated intonation, but in some utterances of single syllables or words, the tone was normally contoured and yet still unusually high or low. Singing is self-explanatory, except that it includes what is commonly called singsong style, especially periodic rising–falling contours. In category IV (Paralinguistic), Alteration includes a variety of paralinguistic processes such as excessive ejection, sustained voicing and palatalization. Creaky voice refers to articulation with laryngealization, tenseness and low-amplitude pitch movement. Phonetic substitution involves the replacement of one phone by another, e.g. [w] for [r] in *right–wight* and *red–wed*. Lengthened and Shortened consonants (category V) refers to altered duration of nasals and continuants. Theoretically plosives could be included (i.e. with delayed release) but these were not observed.

In category VII (Lexicon/forms) Personal pronoun substitution includes those instances in which a parent uses a different personal pronoun than would usually occur in a two-person conversation. For instance, a child's mother would sometimes refer to herself as *she* and to the child as *I* or *me*. These substitutions were most likely to occur in the context of Turn substitution (category IX), in which the mother would assume the turn in a conversational round which structurally belonged to the child but which was usurped or forfeited. In effect, a mother would speak for her child and through the child's turn to herself, i.e. the child would be audience to a dialogue between his parent and his parent as proxy for himself.

Grammar (VIII) includes Grammatical deviations – utterances that would be ungrammatical in most instances for adult speakers. Examples are misplaced negatives *No see the book*, copula deletion *Baby sleepy!*, and tense/number marker deletion *Baby eat soup*. Deviations were very infrequent in the samples, contrary to stereotyped notions about parental speech. Tag questions were also used by the parents in ways different than one would expect in adult speech. The difference is not an all-or-nothing factor but is based on the singular functional use of tags in speech to children. Among adults, tags can serve numerous linguistic and sociolinguistic functions. The tag *It's cold, is it?* (*it* = a glass of milk) can be a request for confirmation, a request for information (truth content), or merely an interactional device. What is special about tags in parental speech is that they all serve to initiate and/or sustain interaction. The tag allows for terminal contour rise, a device that children are able to identify and respond to

at early ages, at least by 1 ; 6 (cf. Blount 1970, Weir 1966). The tag questions are devices that function to maximize the likelihood that a child will respond to the utterance. The example above, from one of the protocols, could serve only that function, since the child did not have the linguistic (nor cognitive) capacity to respond to the lexeme *cold*.

In one sense all of the 34 features are interactional. They are all indicators of a speech style that is considered appropriate for use with young children, and they all have a pragmatic function of fostering and promoting joint action of parent and child. Some of the features are defined specifically in interactional terms in contrast to others which have prosodic or paralinguistic bases. Category IX is composed of those features that are structural adaptations to adult–child interactional requirements. Instructional refers to a way of speaking that elucidates the pragmatic function of the utterance. The speaker intends that the utterance will explain, define, or call special attention to the referent. The utterance *That's a ball*, for example, said in response to a child's incorrect identification of a ball as, say, a car, would be Instructional. The utterance would also probably have prosodic or paralinguistic markers such as loudness, heavy stress, or lengthened vowel duration for the lexeme *ball*. The utterance *Look at this* with emphasis (stress, duration, etc.) on *this* would also be Instructional. The feature Instructional is difficult to define precisely (as are many features of speech styles), since it is a combination of several components representing different linguistic levels and functions. Demands, commands, stress, emphatics – in fact any device that underscores the pragmatic nature of an utterance – could serve to make the utterance Instructional.

A number of devices were used in particular to attract the children's attention so that interaction could proceed. The most commonly used items were the children's names and the interjections *Hey!* and *Look!* and their Spanish equivalents *Oye!* and *Mira!* Attentionals, like Instructionals, appear in adult–adult interaction, but the usage in adult–child speech is not identical. Attentionals were frequently used several times in succession, not only at the beginning of an episode of interaction but for successive rounds in the episode. They are also used in contexts that would be inappropriate or strange in adult usage, i.e. in enticing an individual to look at a picture in a book.

Failure on the part of the children to respond to input prompted the use of interaction repair devices. One of these was Hmm? (category IX), phonetically [nm̀] or [hm̀], used by a parent in his/her turn in a round when a child had not responded to input in the previous round. Sometimes the parents would repeat the entire utterance of their previous turn; this would be scored as Repetition. The same utterances were occasionally repeated several rounds in succession. Two other interaction-sustaining devices were regularly used by the parents, particularly when a round was initiated by a child. Imitation, a parental mimicry of a child's preceding utterance, appears to function as confirmation that a round

was initiated (thereby calling for a response) and that the content of a child's utterance was read (e.g. Child: *That's a bear*. Parent: *That's a bear*). Interpretation, similar in function to Imitation, was the attribution of lexical meaning to a child's utterance, although it was not clear from the form of the utterance that a meaning was intended. For instance, a child might say [ta: ta:], and his mother would respond with *Yes, thank you*; or a child would say [ti:] and the interpretation would be *Cookie. Yes, that's a cookie.*

FEATURE PROFILES: INDIVIDUALS

In the first phase of the analysis of parental speech, profiles of the feature rates addressed to each child were compiled. An absolute rate score was computed for each recording session, and the speakers were identified as mother or father. Longitudinal records are thus available for each child, and the characteristics of parental input speech can be considered developmentally. At present, however, analyses have been limited to comparing average rate scores for each child, so as to provide a more general account of the characteristics of input speech across a longer age span. Table 4 shows the average rate scores for each child in the English sample, and Table 5 for the children in the Spanish sample. The figures in the rate columns represent the number of times each feature was present in every 100 utterances, and the percentage columns indicate the reliance on each feature in proportion to the total number of features per 100 utterances.

Inspection of Tables 4 and 5 shows a remarkable uniformity of rate measures across the children for each feature. Several features, for instance, have a very low rate of occurrence: Breath held, Whisper, and Alteration. Grammatical deviations and Tag questions have less than 2·5 per cent occurrence for all of the children; Singing and Turn substitutions have less than 1 per cent; Nasality does not appear in Spanish and is not statistically significant in English; Phonetic substitution rarely occurs in English and even less in Spanish; Rounding is less than 1 per cent of all children except Miranda and Jeanne-Marie; Lengthened consonant is almost never utilized except for Joelle and Rebecca; Shortened vowel and Shortened consonant have less than 1 per cent occurrence except for Rebecca; and Slow tempo is less than 3 per cent for all of the children.

Several points should be made about these low-frequency features. Low rates of occurrence were expected for some features, such as Breath held, Nasality and Shortened consonant, since they have limited utility facilitating interaction and the acquisition of linguistic and communicative skills. Low scores for other features were surprising. Rounding, Phonetic substitution, and especially Grammatical deviation are often stereotyped markers of baby-talk and of babyish speech, but they were clearly of minor importance in the present samples. None of the low-frequency features should, however, be dismissed outright as unimportant, for two reasons. They might be of more importance in

the baby-talk of other languages and are thus potentially useful as items for a cross-cultural checklist. A more important reason is the possibility that they are most often employed earlier or in later stages of children's development. As noted, this study covers essentially the one-word stage of development and it is

TABLE 4. *Average rate scores and percentages, English*[a]

Features	Miranda		Jeanne-Marie		Joelle		Rebecca		Adam	
	Rate	%	Rate	%	Rate	%	Rate	%	Rate	%
breathiness	23·3	7·5	34·4	9·6	17·5	6·1	20·8	6·4	35·5	11·2
breath held	0·1	0·0	6·7	1·9	2·1	0·7	3·0	0·9	1·4	0·4
Whisper	2·1	0·7	3·0	0·8	5·9	2·0	3·4	1·1	3·5	1·1
Lower volume	15·5	5·0	14·8	4·1	15·8	5·5	10·8	3·3	39·5	12·5
Raised volume	4·5	1·4	2·7	0·8	4·7	1·6	5·7	1·8	3·8	1·2
Falsetto	18·4	5·9	8·6	2·4	3·5	1·2	11·2	3·5	5·0	1·6
High pitch	26·0	8·3	27·7	7·8	20·8	7·2	23·1	7·1	26·7	8·4
Low pitch	6·8	2·2	13·5	3·8	5·9	2·0	5·0	1·5	3·5	1·1
Exaggerated intonation	67·2	21·5	73·5	20·6	61·2	21·2	77·5	24·0	64·7	20·4
singing	0·2	0·1	0·0	0·0	0·1	0·0	0·0	0·0	0·3	0·9
Alteration	2·7	0·9	8·4	2·4	0·1	0·0	0·4	0·1	1·3	0·4
Creaky voice	9·6	3·1	17·2	4·8	13·0	4·5	15·1	4·7	14·9	4·7
Tenseness	3·7	1·2	15·2	4·3	12·9	4·5	15·6	4·8	9·7	3·1
Nasality	0·1	0·0	0·3	0·1	2·9	1·0	4·2	1·3	0·2	0·1
Sounding	7·2	2·3	6·8	1·9	1·3	0·5	1·1	0·3	1·9	0·6
phonetic substitution	0·3	0·1	0·0	0·0	0·4	0·1	0·0	0·0	0·0	0·0
Lengthened vowel	26·4	8·5	18·4	5·1	25·2	8·7	20·9	6·5	23·3	7·4
Lengthened consonant	0·6	0·2	0·1	0·0	16·2	5·6	7·5	2·3	0·4	0·1
shortened vowel	0·9	0·3	1·7	0·5	2·2	0·8	1·7	0·5	1·4	0·4
shortened consonant	0·4	0·1	0·0	0·0	0·9	0·3	7·7	2·4	0·3	0·1
Slow tempo	5·0	1·6	3·1	0·9	2·7	0·9	7·2	2·2	4·6	1·5
Fast tempo	2·8	0·9	5·9	1·7	4·2	1·5	5·0	1·5	2·9	0·4
Special lexical items	15·5	5·0	7·8	2·2	7·6	2·6	1·9	0·6	8·7	2·7
Nonsense forms	11·4	3·7	6·3	1·8	9·5	3·3	2·3	0·7	3·2	1·0
Personal pronoun substitution	3·5	1·1	6·0	1·7	3·7	1·3	0·3	0·1	3·7	1·2
Grammatical deviations	0·8	0·3	2·0	0·6	0·4	0·1	0·1	0·0	1·3	0·4
Tag questions	1·6	0·5	1·2	0·3	2·8	1·0	2·6	0·8	2·3	0·7
Instructionals	16·6	5·3	13·3	3·7	3·2	1·1	25·5	7·9	7·6	2·4
Imm?	2·9	0·9	6·7	1·9	11·1	3·8	4·4	1·4	4·6	1·5
Attentionals	3·2	1·0	5·3	1·5	7·2	2·5	3·0	0·9	1·9	0·6
Turn substitution	0·2	0·1	1·6	0·4	0·4	0·1	0·4	0·1	1·3	0·4
Repetition	27·8	8·9	35·2	9·8	19·4	6·7	18·8	5·8	19·5	6·2
Imitation	4·1	1·3	6·6	1·8	2·8	1·0	6·2	1·9	9·1	2·9
Interpretation	0·8	0·3	3·4	1·0	0·8	0·3	10·8	3·8	8·8	2·8
Totals	312·2		357·4		288·4		323·2		316·8	

[a] The percentages do not add to 100 due to rounding.

certainly conceivable that input is organized differently for infants who are in the pre-language stage or for those who are beginning to make rapid strides towards acquiring grammar.

Other features showed consistency across both the English and Spanish samples. High pitch, for instance, showed a frequency range of 3·5–10 per cent, and Low volume a range of 3·3–6·2 per cent for all children except Adam. Still other features were regular for English and for Spanish, although

the frequencies differed across languages. Breathiness showed a variation of only 6·5–11·2 per cent in English and 2·3–3·3 per cent in Spanish. Exaggerated intonation was scored as 20·6–24·0 per cent in English and 10·7–13·9 per cent in Spanish; Slow tempo was 0·9–2·2 per cent in English and 4·9–8·2 per cent in Spanish; and Attentionals were 0·9–2·5 per cent in English and 4·4–7·9 per cent in Spanish.

The uniformity of the parental speech is most striking when we consider the highest rate of scores for the features. In the English sample, Exaggerated into-

TABLE 5. *Average rate scores and percentages, Spanish*[a]

Features	Valente		Analisa		Christian		Luis	
	Rate	%	Rate	%	Rate	%	Rate	%
Breathiness	12·9	3·3	9·2	2·3	13·5	2·5	12·1	2·8
Breath held	0·0	0·0	0·0	0·0	0·3	0·1	0·2	0·0
Whisper	2·5	0·6	3·1	0·8	3·9	0·7	1·2	0·3
Lower volume	19·6	5·0	18·9	4·7	33·5	6·2	19·0	4·4
Raised volume	22·9	5·8	23·7	5·9	26·6	4·9	17·8	4·1
Falsetto	9·1	2·3	3·9	1·0	15·6	2·9	13·7	3·2
High pitch	19·3	4·9	18·3	4·5	57·5	10·7	15·4	3·6
Low pitch	5·2	1·3	4·2	1·0	8·0	1·5	2·6	0·6
Exaggerated intonation	42·0	10·7	52·2	12·9	59·7	11·1	60·0	13·9
Singing	2·4	0·6	0·7	0·2	2·3	0·4	0·9	0·2
Alteration	2·5	0·6	7·3	1·8	2·5	0·5	3·1	0·7
Creaky voice	8·4	2·1	2·5	0·6	6·4	1·2	14·9	3·4
Tenseness	2·5	0·6	0·6	0·1	3·2	0·6	2·4	0·6
Nasality	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0
Rounding	2·8	0·7	0·7	0·2	3·9	0·7	2·7	0·6
Phonetic substitution	0·0	0·0	0·3	0·1	0·1	0·0	0·0	0·0
Lengthened vowel	13·5	3·4	37·2	9·2	22·7	4·2	16·0	3·7
Lengthened consonant	0·7	0·2	2·7	0·7	4·2	0·8	0·3	0·1
Shortened vowel	0·9	0·2	1·2	0·3	3·8	0·7	1·4	0·3
Shortened consonant	0·2	0·1	1·2	0·3	1·4	0·3	0·5	0·1
Slow tempo	4·0	1·0	4·5	1·1	15·1	2·8	2·0	0·5
Fast tempo	19·2	4·9	18·5	4·6	44·2	8·2	30·5	7·0
Special lexical items	9·5	2·4	2·1	0·5	5·6	1·0	7·3	1·7
Nonsense forms	23·0	5·9	2·6	0·6	1·2	0·2	6·1	1·4
Personal pronoun substitution	26·0	6·6	24·6	6·1	4·5	0·8	28·8	6·7
Grammatical deviations	0·3	0·1	0·6	0·1	10·6	2·0	1·1	0·3
Tag questions	0·7	0·2	0·0	0·0	2·7	0·5	6·6	1·5
Instructionals	27·1	6·9	45·0	11·2	30·6	5·7	33·6	7·8
Hmm?	19·2	4·9	12·9	3·2	28·8	5·3	11·6	2·7
Attentionals	28·5	7·3	32·0	7·9	23·8	4·4	21·3	4·9
Turn substitution	4·0	1·0	2·2	0·5	1·9	0·4	2·4	0·6
Repetition	44·6	11·4	67·1	16·6	65·3	12·1	39·8	9·2
Imitation	12·3	3·1	1·5	0·4	10·2	1·9	15·4	3·6
Interpretation	7·0	1·8	1·8	0·4	26·2	4·9	42·1	9·7
Totals	392·8		403·3		539·8		432·8	

[a] The percentages do not add to 100 due to rounding.

nation received the highest rate for all of the children, and the maximum frequency variation was 3·4 per cent. High pitch received the second highest rank, and the frequency variation was an incredibly low 1·3 per cent. Low ranges of variation can also be seen for the third, fourth and fifth ranked features, Lengthened vowel, Repetition and Breathiness, respectively. Spanish shows a similarly high degree of uniformity. Repetition is first for all of the children except Luis, and the variation (including Luis) is 7·2 per cent. Number two in rank, Exaggerated intonation, has a range of only 3·2 per cent, and Instructionals, Attentionals and Fast tempo – three, four and five respectively – show low frequency variations.

Despite an age range of 0;9.14 for the English-speaking children and a range of 1;2.7 for the Spanish-speaking children, the speech of the parents was remarkably uniform across children and surprisingly similar across languages. We can begin to account for this uniformity in terms of parental speech as a reflection of similar developmental levels in their children's perceptual abilities. Children are responsive to pitch, tone, volume, and duration modulations long before they are able to process segmentals (Kaplan 1969, Lieberman 1967). We would expect that Exaggerated intonation pitch levels would be used frequently by parents, since they would have a higher probability in eliciting a response. Nasality and Breath held would be examples of features with low rates because they would have low perceptual salience and thus low success rates. Uniformity across parents in rate usage cannot, however, be accounted for solely on the basis of saliency and elicitation proficiency. Differences in cultural styles are also involved. We can see, for instance, that the rates of Exaggerated intonation are uniform for English and for Spanish but at considerably different levels.

FEATURE COMPARISONS: SPANISH AND ENGLISH

The profiles for the nine children in Tables 4 and 5 show that rate differences exist for some features when English and Spanish are compared. Exaggerated intonation, for example, has rates exceeding 60 occurrences per 100 utterances in English, whereas in Spanish the rates range from 42 to 60 per 100 occurrences. When we consider the relative proportions of Exaggerated intonation, however, the differences are more striking. In English the value is approximately 20–25 per cent, and in Spanish it is approximately 10–14 per cent. Differences between Spanish and English can be readily seen by comparing rankings of the relative frequencies for the feature. First rankings were established for each child, then averages were taken of these values. The averages, in turn, were ranked on an absolute scale of 1–34, with increasing numerical value representing decreasing frequencies (and rates). The results are given in Table 6 below.

Inspection of Table 6 reveals differential ranking of several important features in English and Spanish. Considering the ten most frequent features in the two languages, it can be seen that six features – Exaggerated intonation, High pitch,

Lengthened vowel, Repetition, Lowered volume, and Instructionals – are common to both languages, but each language has four individual features: Breathiness, Creaky voice, Tenseness and Falsetto for English; Attentionals, Fast tempo, Raised volume and Personal pronoun substitution for Spanish. Among these, Tenseness shows the greatest difference: 8th in English and 26th in Spanish. Attentionals and Fast tempo also have considerable variation: 4th in Spanish, 20th in English, and 5th in Spanish, 21st in English, respectively. Other features showing divergent rankings are: Low pitch (12 – English, 19 – Spanish); Raised volume (16 – English, 7 – Spanish); Personal pronoun substitution (18 – English, 10 – Spanish); Interpretation (19 – English, 12 – Spanish); Breathiness (5 – English, 13 – Spanish); Creaky voice (7 – English, 16 – Spanish).

TABLE 6. *Average and absolute rank scores for each feature across children*

Rank	English	Average	Rank	Spanish	Average
1	Exaggerated intonation	1·0	1	Repetition	1·5
2	High pitch	3·6	2	Exaggerated intonation	1·8
3	Lengthened vowel	3·8	3	Instructionals	4·3
4	Repetition	4·0	4	Attentionals	6·3
5	Breathiness	4·2	5	Fast tempo	6·8
6	Lower volume	7·3	6	Lower volume	7·3
7	Creaky voice	8·1	7	Raised volume	7·9
8	Tenseness	9·3	8	High pitch	8·5
9	Instructionals	10·2	9	Lengthened vowel	9·3
10	Falsetto	11·9	10	Personal pronoun substitution	9·4
11	Special lexical items	14·1	11	Hmm?	10·8
12	Low pitch	14·5	12	Interpretation	13·0
13	Hmm?	15·4	13	Breathiness	13·5
14	Imitation	15·6	14	Falsetto	14·4
15	Nonsense forms	16·7	15	Imitation	16·3
16	Raised volume	17·4	16	Creaky voice	16·9
17	Slow tempo	17·7	17·5	Slow tempo	18·1
18	Personal pronoun substitution	18·7	17.5	Special lexical items	18·1
19	Interpretation	18·8	19	Low pitch	18·2
20	Attentionals	19·6	20	Nonsense forms	18·9
21	Fast tempo	19·7	21	Alteration	20·7
22	Whisper	20·1	22	Whisper	22·2
23	Rounding	21·0	23	Rounding	23·3
24	Lengthened consonant	21·8	24	Lengthened consonant	24·1
25	Alteration	23·8	25	Turn substitution	24·2
26	Tag questions	23·9	26	Tenseness	24·8
27	Breath held	24·1	27	Grammatical deviations	25·3
28	Shortened vowel	25·7	28	Shortened vowel	25·4
29	Shortened consonant	26·7	29	Tag questions	26·0
30	Nasality	27·3	30	Singing	27·1
31	Grammatical deviations	27·4	31	Shortened consonant	29·1
32	Turn substitution	28·3	32	Phonetic substitution	31·9
33	Singing	29·3	33	Breath held	32·3
34	Phonetic substitution	31·5	34	Nasality	32·5

Absolute rank scores can be computed also by totalling the number of occurrences for each feature in each language and dividing by the total number of utterances in each language. This procedure yields a slightly different measure for the rankings, since individual rank scores are not taken into account. The rate

TABLE 7. *Composite rate measures, relative frequencies, and ranking for each feature, English and Spanish*

	English				Spanish		
	Feature	Rate	%	Feature	Rate	%
1	Exaggerated intonation	67·2	21·1	1 Exaggerated intonation	52·4	12·0
2	Breathiness	29·1	9·1	2 Repetition	52·2	11·9
3	High pitch	25·4	8·0	3 High pitch	31·2	8·5
4	Repetition	24·4	7·7	4 Instructionals	29·1	6·7
5	Lower volume	22·9	7·2	5 Attentionals	25·8	5·9
6	Lengthened vowel	22·5	7·1	6 Lower volume	22·7	5·2
7	Creaky voice	14·4	4·5	7 Raised volume	22·6	5·2
8	Instructionals	11·2	3·5	8 Lengthened vowel	20·5	4·7
9	Tenseness	11·0	3·4	9 Fast tempo	19·6	4·5
10	Special lexical items	8·8	2·8	10 Personal pronoun substitution	18·4	4·2
11	Falsetto	8·5	2·5	11.5 Slow tempo	18·3	4·2
12	Low pitch	7·0	2·2	11.5 Hmm?	18·3	4·2
13	Imitation	6·4	2·0	13 Interpretation	16·5	3·8
14	Nonsense forms	6·2	1·9	14 Breathiness	12·2	2·8
15	Hmm?	5·6	1·8	15 Falsetto	11·0	2·5
16	Interpretation	5·0	1·6	16 Imitation	10·6	2·4
17	Slow tempo	4·3	1·3	17 Nonsense forms	8·7	2·0
18	Fast tempo	3·9	1·2	18 Creaky voice	8·3	1·9
19.5	Raised volume	3·8	1·2	19 Special lexical items	6·4	1·5
19.5	Rounding	3·8	1·2	20 Low pitch	6·0	1·4
21.5	Personal pronoun substitution	3·7	1·2	21 Phonetic substitution	3·5	0·8
21.5	Attentionals	3·7	1·2	22 Grammatical deviations	3·4	0·8
23	Whisper	3·3	1·0	23 Rounding	2·7	0·6
24	Lengthened consonant	3·2	1·0	24.3 Whisper	2·6	0·6
25	Phonetic substitution	3·0	1·0	24.3 Tag question	2·6	0·6
26	Breath held	2·7	0·9	24.3 Turn substitution	2·6	0·6
27	Tag question	2·0	0·6	27 Tenseness	2·3	0·5
28	Shortened vowel	1·5	0·5	28.5 Lengthened consonant	1·9	0·4
29	Grammatical deviations	1·2	0·4	28.5 Shortened vowel	1·9	0·4
30.5	Turn substitution	1·0	0·3	30 Singing	1·6	0·4
30.5	Shortened consonant	1·0	0·3	31 Shortened consonant	0·8	0·2
32	Nasality	0·9	0·3	32 Breath held	0·1	0·0
33	Singing	0·2	0·0	33 Nasality	0·0	0·0

measures and the relative frequencies for each feature are given in Table 7 below. Comparison of Tables 6 and 7 indicates only slight variation in absolute rankings of the features, showing that the rankings of the features for each parent are reasonably consistent with the scores for the composite rankings, again an indication of the overall similarity of the speech addressed to the children.

Rankings of some features, however, did change in Table 7, but a consideration of these shows that the reordering occurred among those features that have only minor variations in rates and frequencies. In English, for instance, High pitch, Lengthened vowel, Repetition and Breathiness (2, 3, 4 and 5 in Table 6) are reordered in the composite record to 3, 6, 4 and 2. Furthermore, exactly the same features are contained in the top 10 slots in each ranking, and no feature except Slow tempo shows a marked change (17·5 in Table 6 and 11·5 in Table 7). The change in Slow tempo reflects the higher rate of feature occurrence in the speech of Christian's parents, who were the most prolific in the use of the features altogether.

Since Tables 6 and 7 show only minor differential rankings, the contrasts between English and Spanish are not changed in any significant way. The same features are involved, but the comparative ranks are more divergent in some cases. Raised volume is 7 for Spanish, 19·5 for English in Table 7 (7 and 16 in Table 6); Creaky voice is 7 for English, 18 for Spanish (7 and 16 in Table 6); Personal pronoun substitution is 10 for Spanish, 21·5 for English (10 and 18 in Table 6); Breathiness is 2 for English, 14 for Spanish (5 and 13 in Table 6); Low pitch is 12 for English, 20 for Spanish (12 and 19 in Table 6); and Tenseness continues to show the greatest divergence, 9 for English and 27 for Spanish. Differences decreased for Fast tempo and Interpretation. Fast tempo shows 9 for Spanish and 17 for English (5 and 21 in Table 6), and Interpretation is 13 for Spanish and 16 for English (12 and 19 in Table 6). Although it is not entirely clear why these changes occurred, Table 4 provides some information that is suggestive. Fast tempo in English is lowered in the individual/average rankings by the low rank for Adam, 25·2. The composite rankings elevated the rank to a more accurate overall position. In Spanish, the drop from 5 to 9 may be more apparent than real since the differences between features 6 through 9 are small. Another factor was the relatively lower scores and the dampening effect of the records of Valente, Analisa, and Luis in relation to Christian. The rise in rank of Interpretation from 19 to 16 is due to the higher rates for Christian and Luis on that feature and in the rates overall. In English, the drop from 12 to 13 is due to the developmental factors, i.e. low ranks for the three youngest children and considerably higher ranks for the two eldest, Rebecca and Adam.

To summarize, the profiles for the English-speaking and Spanish-speaking parents reveal that among the top-ranked 10 features, 6 features are common to each language: Exaggerated intonation, Repetition, High pitch, Instructionals, Lower volume and Lengthened vowel. These constitute 54·6 per cent of feature usage in English and 49·0 per cent in Spanish. Among those features, Exaggerated intonation shows the greatest differential usage, 21·1 per cent in English and 12·0 per cent in Spanish. English-speaking parents also rely frequently on Breathiness, Creaky voice, Tenseness and Special lexical items. These features (2, 7, 9 and 10 in Table 7) constitute a usage frequency of 19·8 per cent, giving a

frequency of 74·4 per cent for the top ten features in English. Spanish-speaking parents utilize Attentionals, Raised volume, Fast tempo and Personal pronoun substitution among the top ten. These features (5, 7, 9 and 10 in Table 7), constitute a usage frequency also of 19·8 per cent, giving an overall frequency for the top ten features of 68·8 per cent.

Both languages are similar in a high utilization of pitch/intonation, vowel duration and lower volume on the one hand, and the use of repetition and instruction on the other. English also has a tendency to use paralinguistic components, i.e. Tenseness and Creaky voice, whereas Spanish relies more on interactional components – Attentionals and Personal pronoun substitution. Even Raised volume and Fast tempo may act as interactional devices in the speech of the Spanish adults. They serve to attract and maintain attention in the ongoing activity of interaction. Failure of a child to respond to an Attentional, or the lapse of his attention during interaction, would sometimes elicit louder and faster speech by his/her caretaker to convey the message 'Pay attention'.

The different emphases on interactional and prosodic features can be seen by examining the composite rates and frequencies for the categories of features. The features in Table 7 have been collapsed into the original nine categories and are presented in Table 8 below.

TABLE 8. *Composite rates and frequencies according to category*

Category	English Rate	English %	Spanish Rate	Spanish %	Ratio
I Volume: air	31·8	9·9	12·3	2·8	2·58 English
II Volume: sound	30·0	9·4	47·9	11·0	1·60 Spanish
III Pitch/intonation	108·3	34·0	102·2	23·4	1·06 English
IV Paralinguistics	33·1	10·3	16·8	3·8	1·97 English
V Duration	28·2	8·9	25·1	5·7	1·12 English
VI Tempo	8·2	2·6	37·9	8·7	4·62 Spanish
VII Lexicon/forms	18·7	5·9	33·5	7·7	1·79 Spanish
VIII Grammar	3·2	1·0	6·0	1·4	1·88 Spanish
IX Interaction	57·3	18·0	155·1	35·5	2·71 Spanish
Totals	318·8	100·0	436·8	100·0	

It can be seen from Table 8 that the English-speaking parents, in contrast to their Spanish counterparts, relied more heavily on control of air volume, paralinguistic components, and to a lesser degree on duration and pitch/intonation. Spanish-speaking parents, on the other hand, showed far greater utilization of tempo and interactional components and a comparatively stronger reliance on grammar, lexical items and forms, and loudness/softness of volume. Parents in the Spanish sample also used a higher rate of features than those in the English sample (436·8 per 100 utterances, compared with 318·8, i.e. 37 per cent more).

What accounts for these differences between English and Spanish? At one

level, cultural styles seem to be responsible for the different patterns. The rate of features, for instance, was higher for all of the Spanish families than for the English. From Table 5 it can be seen that the lowest rate was 392·8 features per 100 utterances, considerably higher than any of the rates for the English-speaking families (Table 4), where the lowest rate was 288·4 (34 per cent less than the Spanish average) and the highest was 357·4 (18·2 per cent less). The higher rate of the baby-talk features cannot be completely attributable to the greater average age of the Spanish children, since the rate was also high for the youngest child, Valente (although it does seem that the rate increases for the older children). Within the age-range covered in this project, Spanish-speaking caretakers uniformly use a higher rate of baby-talk features than do English-speaking caretakers, and this must be a cultural phenomenon.

Cultural preference is also responsible for the differential use of features. The tendency to use paralinguistic features, particularly Tenseness and Creaky voice, control of air volume and a high frequency of Exaggerated intonation in English are not related in any simple, direct way to adult uses of English. The same can be said of the high-rate Spanish categories, Tempo, Interaction and Volume. Although rules deriving baby-talk from adult speech can be written, these do not account for the distribution of preferred features.

The differential Spanish–English use of some features represents a cultural dimension, style of interaction. In English, the style is heavily affective since there is greater reliance on affectively marked features such as intonation, breathiness and tenseness. Spanish is more directly interactional-oriented, relying on structural devices such as the attention-getting devices, repetition, instruction, and special pronoun usage. We should keep in mind, however, that in all of the families the initiation and maintenance of interaction with the children was the focus of the caretaker–child activity. English speakers' greater reliance on prosodic and paralinguistic devices and Spanish speakers' greater reliance on interactional ones represent different cultural styles to achieve the same end – promoting interaction.

CHILDREN'S AGES AND FEATURE RATES

It was expected that feature selection by the parents would change as the children advanced in age and that the changes would be significant over the entire age range. For the most part, this expectation was not met, at least in terms of the composite records for the children. As noted above, the most striking aspect of the parental speech was its uniformity across children. A few features, however, appear to be used differentially according to the children's age.

Inspection of Table 4 reveals that Miranda, the youngest child, was exposed to Falsetto and Special lexical items at twice the rate of the other children. Her rate for Nonsense forms was also twice that of everyone except Joelle. The higher

rates for Miranda may merely reflect preferences by her parents for these features since the rates for the other children are essentially the same. Although this possibility cannot be completely rejected, there is additional evidence which suggests the higher rates are related to development of the children's communicative skills. The parental speech in the Spanish-speaking families (Table 5) shows similar patterns for these two features. Valente, the youngest child, received approximately twice the rate for Special lexical items and four times the rate for Nonsense forms. The use of these forms appears to be more appropriate for younger children, who are less capable of attending to the meanings of the parental utterances.

Two additional features in Table 4 reflect developmental patterns. Repetition is higher in terms of rate for the two youngest children, Miranda and Jeanne-Marie. Interpretation shows the opposite pattern; it is 3–10 times higher for the two oldest children, Rebecca and Adam. These patterns are related to interactional considerations. Children whose interactional skills are limited (as shown by their tendency to repeat short, simple utterances again and again) are frequently addressed by their parents with those same utterances. Older children receive input that is less repetitive; and, as the records indicate, they are increasingly spoken to with meaningful interpretations of their utterances.

Data from the Spanish sample corroborate these findings on interactional patterns. Table 5 shows that Interpretation is used more often for the two oldest children, Christian and Luis. The pattern for Repetition is not as clear, although Luis does receive that feature less often than do the other children. The Spanish data also reveal that Slow tempo is considerably higher in the speech to Christian and Luis. Although it is not clear why this should be the case, the slower rate of speaking is probably due to increased concern by the parents that their utterances are understood by the children.

The composite scores for the children represent gross measures for detecting longitudinal patterns. Analyses of the records need to be made on the basis of individuals' weekly sessions, and the overlapping ages of the children need to be taken into account. One interesting pattern is revealed, though, by the composite scores. The youngest children are addressed with relatively more features that are markers of affect-laden speech – Falsetto, Special lexical items, and Nonsense forms. These features function to promote meaningful interaction, in the sense that joint activity between parent and child is valued and is rewarding affectively, but they do not introduce semantic content (i.e. lexical, referential information) into the interaction. They assist in initiating joint action; meaningful content comes later. By increasing use of Interpretation, parents begin to introduce more and more semantic content into the joint activities. Thus, two parental strategies may underlie feature usage developmentally – affective-interactional and semantic-interactional. The latter would emerge as children begin to acquire some proficiency in responding to the lexical content of parental speech.

REFERENCES

Blount, B. G. (1970). The pre-linguistic system of Luo children. *AnthLing* **12**. 326–42.
—— (1972). Aspects of socialization among the Luo of Kenya. *LangSoc* **1**. 235–48.
Ferguson, C. A. (1964). Baby talk in six languages. *AmAnth* **66**. 103–14.
—— (1975). Baby talk as a simplified register. *PRCLD* **9**. 1–27.
Kaplan, E. L. (1969). The role of intonation in the acquisition of language. Unpublished doctoral dissertation, Cornell University.
Lieberman, P. (1967). *Intonation, perception, and language*. Cambridge, Mass.: M.I.T.
Weir, R. (1966). Questions on the learning of phonology. In F. Smith & G. A. Miller (eds), *The genesis of language*, Cambridge, Mass.: M.I.T.
Wells, G. (1975). Interpersonal communication and the development of language. Paper presented at the Third International Child Language Symposium, London.