WORKING PARENTS' CONVERSATIONAL RESPONSES TO THEIR TWO-YEAR-OLD SONS (LINGUISTIC INPUT, LANGUAGE ACQUISITION).

Demetras, Martha Jo-Ann

WORKING PARENTS' CONVERSATIONAL RESPONSES TO THEIR TWO-YEAR-OLD SONS

The University of Arizona PH.D. 1986

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WORKING PARENTS' CONVERSATIONAL RESPONSES TO THEIR TWO-YEAR-OLD SONS

by

Martha Jo-Ann Demetras

A Dissertation Submitted to the Faculty of the

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As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Martha Jo-Ann Demetras

entitled Working Parents' Conversational Responses to Their Two-Year-Old Boys' Utterances

and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

Daniel R. Boone, Ph.D.	11-19-86 Date
Noel D. Matkin, Ph.D.	11/19/86 Date
Glen Nicholson, Ph.D.	11/19/86 Date
Linda Swisher, Ph.D.	Nov. 19, 1986 Date
	Date

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copy of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Linda Swisher, Ph.D.
Dissertation Director — Nov. 21, 1986 Date

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DEDICATION

To John and Trevor

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ABSTRACT

Despite claims by some theorists to the contrary, investigators have shown that information about grammatical errors is available to young children learning language via the conversational responses of their parents. The present study described five categories of responses in the conversations of working mothers and fathers to their normally developing two-year-old sons, and investigated whether any of these responses were differentially related to well-formed vs. ill-formed child utterances.

Subjects were six middle-class, monolingual (English) parent-child dyads. Parents worked full-time jobs and the children were enrolled in full-time daycare. Within a two week period, four 20-minute conversational samples were audio and video recorded for each dyad in the subjects' homes during freeplay activities of the subjects' choice.

Results indicated that the pattern of responses for these six parents was very similar to that reported for other parent-child dyads. The most frequent type of response for all parents was one that continued the conversation without either repeating or clarifying the child's previous utterance. The least frequent type of response was one that explicitly corrected portions of the child's utterance.

Of all responses, repetitions--both clarifying and nonclarifying--appeared to be the type of response most differentially related to well-formed and ill-formed child utterances. Exact

repetitions were more likely to follow well-formed utterances, while the remaining repetitions were more likely to follow ill-formed utterances. This pattern of differential responses was similar for all six dyads. Very few differences regarding the style or pattern of interaction were noted for fathers and mothers.

Implications were drawn regarding the nature of linguistic input that is available to two-year-old children learning language.

INTRODUCTION

Considerable literature on linguistic input (the language spoken to young children by parents and others in frequent conversational contact with the child) has described a simplified manner of talking to young children that is characteristic of mothers (cf., Broen, 1972; Phillips, 1973; Sachs, Brown, & Salerno, 1976; Snow, 1972), as well as of fathers, older siblings, and peers (Berko-Gleason, 1977; Marinkovich, Newhoff, & MacKenzie, 1980; Newhoff, Silverman, & Millet, 1980; Sachs & Devin, 1976; Shatz & Gelman, 1973). What remains unclear is whether this special type of linguistic input is differentially produced to specific types of child utterances (e.g., grammatical vs. ungrammatical) or randomly distributed throughout the conversation.

In the process of acquiring adult-like language, young children must receive information about the acceptability of their utterances and communicative success. The availability of differential responses from their conversational partners may facilitate the ease with which they move toward adult use of the language they are learning. Ideally, children should be able to differentiate those responses by conversational partners that affirm the acceptability of their utterances (i.e., positive information) from responses that in some way indicate that their communicative attempts are unacceptable or are not fully understood (i.e., negative information).

Negative information may be in the form of a correction or a question that seeks to clarify the child's preceding message. Corrections may be either explicit responses (e.g., "no, you're wrong") or more subtle responses that (a) present a mismatch of information from what the child said (e.g., Child: baby sleeping; Mother: Baby is sleeping) or (b) indicate communicative failure on the part of the child (e.g., a wh- question). Positive information would indicate the message was acceptable and understood -- either explicitly (e.g., by saying "yes") or more subtly (e.g., by repeating exactly what the child said). The remainder of responses would be neutral, and at a minimum would maintain the flow of conversation. Few studies have investigated whether this type of differential feedback is available to young language learners. In fact, the issue of whether negative feedback to ungrammatical utterances plays any role in children's early language development was for many years presumed by some writers to be settled on the basis of one study--a study that focused only on the grammar of children's utterances as a source for parental correction (Brown & Hanlon, 1970).

Seeking to challenge learning theory explanations (e.g., Skinner, 1957) for the acquisition of grammar, Brown and Hanlon (1970) investigated whether explicit maternal approval and disapproval of children's utterances was contingent on the syntactic correctness of those utterances. If parents shape children's acquisition of grammar, as learning theory suggests, they would be expected to verbally reinforce children's grammatically well-formed utterances and verbally punish or ignore children's ill-formed utterances. The investigators

obtained language samples for three mother-child dyads at two different stages of the children's linguistic development: Brown's (1973) stage II and stage IV. Their results indicated that the mothers did not provide responses of explicit approval and disapproval differentially to well-formed and 'primitive' (ill-formed) child utterances, nor were they more likely to produce subtle responses indicating mis- or non-comprehension (nonsequiturs) after ill-formed utterances. The majority of explicit responses of approval and disapproval was directed towards the semantic content or phonological accuracy, rather than the syntactic correctness, of the child's utterances.

Based on Brown and Hanlon's (1970) study, learnability theorists (individuals who attempt to account for the fact of language acquisition by means of constructing formal mathematical models of grammar) have stated that "apparently, almost no negative information about syntax is presented to the child" (Wexler & Culicover, 1980, p. 78). Pinker (1984) has also concluded that "the assumption that negative evidence is not available to the child's learning mechanism is warranted," and that "it seems wisest to design acquisition mechanisms that do not depend on negative evidence" (p. 29).

The conclusion by these authors that mothers do not differentially reinforce grammatical vs. ungrammatical sentences by the child is premature--it is based only on one study (Brown & Hanlon, 1970) that reported data for only four types of parental responses as sources for information about the grammaticality of children's utterances. Furthermore, accounting for language acquisition solely through an investigation of grammar is simplistic. Should a child's speech be

judged correct or incorrect on the basis of semantic content or communicative function, as well as grammaticality, a different set of conclusions may be warranted. Recently, investigators have shifted the focus of analysis to more subtle types of parental responses (Demetras, Post, & Snow, 1986; Hirsh-Pasek, Treiman, & Schneiderman, 1984; Penner, 1985), and have provided information about the phonologic, semantic, and pragmatic errors in children's speech (Demetras et al., 1986).

In an attempt to replicate and expand Brown and Hanlon's (1970) analysis of differential responses, Hirsh-Pasek et al. (1984) collected a 30-minute language sample in a laboratory setting for 40 mother-child dyads. The children were two, three, four, and five years of age (10 children per age group). The children's utterances were judged to be grammatically well formed or ill formed based on a modified set of Brown and Hanlon's criteria. Unlike the Brown and Hanlon study, the data were averaged across the groups, rather than reported for individual mother-child interactions. They used a chi-square test to determine statistical significance for the group responses and reported no significant relationship ($p > .05$) between explicit maternal responses and child utterances being well formed or ill formed.

They also investigated whether a relationship existed between maternal repetitions and type of child utterance (well formed or ill formed). A statistically significant relationship ($p < .01$) was found for the two-year-old-group, but not for the older children. The mothers repeated grammatically ill-formed utterances more frequently than they repeated well-formed utterances. It is unclear from their analyses whether clarifying repetitions were separated from nonclarifying

repetitions. For example, a response such as "baby?" may function differently from "baby." In summary, they replicated Brown and Hanlon's results regarding explicit responses, but provided additional information regarding repetitions, a category of more subtle responses that may function as negative information to the child.

Demetras et al. (1986) extended the analysis of differential feedback to include 14 categories (2 explicit; 12 "implicit") of maternal responses. Four mother-child dyads were studied. The children were two years of age, and three of the four mothers stayed at home with their children. The purposes of the study were (a) to describe the availability of two types of maternal responses (explicit and implicit) to child utterances, and (b) to investigate whether the mothers differentially responded to their child's well-formed or ill-formed utterances with either type of feedback. Explicit responses included expressions of affirmation and correction; implicit responses included repetitions, requests for clarification, and responses that, at a minimum, continued the conversation of the child.

A coding system was developed to reduce the limitations of previous methods used to describe parental input to children developing language: (a) all child utterances and maternal responses were analyzed, (b) both explicit and implicit maternal responses were coded, (c) all language domains were included as criteria for determining whether a child's utterance was well formed or ill formed, and (d) clarifying responses were differentiated from non-clarifying responses. The proportion of maternal responses to the two types of child utterances were reported for each individual mother-child dyad.

The results for explicit responses replicated those of Brown and Hanlon (1970) and Hirsh-Pasek et al. (1984) Explicit responses were not differentially produced to well-formed or ill-formed utterances, were low in frequency of occurrence, and were directed towards the semantic content of the child's utterance. In contrast, implicit responses were differentially produced to well-formed and ill-formed utterance and were much higher in frequency than explicit responses. A more detailed analysis suggested that the type of repetition produced by the mothers varied depending on the type of child utterance that preceded it. The authors concluded that differential information is available to children by means of maternal responses to help the children generate linguistic rules or restrict the use of those rules that have been over generalized.

The most recent study (Penner, 1985) reported the distribution of 15 parental response types across grammatically correct and incorrect child utterances. Penner analyzed free-play interactions of two groups, each containing 10 parents and their language-learning children (Group 1 mean length of utterance [MLU] of 2.0 - 2.5; Group 2 MLU of 3.0 - 3.5). She compared the frequencies of 15 parental response types following grammatically correct and incorrect child utterances. Statistical analysis indicated differences in the distribution of several of the high-frequency parental response types, depending on the grammaticality of the preceding child utterances. These differences were larger for the lower MLU group. The largest distributional difference occurred for two parental response types: expansions and topic continuations. Parents expanded ungrammatical utterances more frequently than

grammatical utterances, and continued the topic more frequently following grammatical than ungrammatical utterances. She concluded that the differential distribution of these parental responses may provide the child with a selective pressure in favor of adult-like grammatical forms.

A conspicuous void in the above investigations is the lack of data on father-child communication interactions. Except for the two fathers included in Penner's (1985) study, no reports have described whether fathers provide differential information regarding grammaticality to their young children learning language. Information is available to suggest that fathers are similar to mothers in terms of the structural characteristics of their conversations with children. For example, fathers are similar to mothers with respect to mean length of utterance, mean length of conversational turns, and mean number of verbs per utterance (Golinkoff & Ames, 1979). They produce similar proportions of questions, declaratives, and imperatives (Kavanaugh & Jen, 1981; Kavanaugh & Jirkovsky, 1982). In contrast, a different pattern emerges for fathers than mothers when the pragmatic or communicative aspects of language are investigated. Fathers appear to have shorter dialogues (Killarney & McCluskey, 1981), fewer conversational turns (Golinkoff & Ames, 1979), more off-topic replies (Tomasello, Farrar, & Kaley, 1984), and initiate fewer conversations with their children than do mothers (Hiadek & Edwards, 1984). Although the data are inconclusive, and contradictions exist from study to study, the overall pattern suggests that mothers and fathers are similar in terms of the structural characteristics of their speech, yet different

in the pragmatic aspects of their communicative interactions with young children. These results suggest mothers and fathers will be similar in the types of conversational responses they produce to well-formed and ill-formed utterances, but may differ in the quantity of responses they produce in any given conversation.

In summary, only four studies have reported the availability of differential parental responses for grammatical and ungrammatical utterances to young children learning language. Type of subjects, method of data collection, and data analysis varied substantially. Subjects varied in age and sex (within and across studies); parents were mothers who typically stayed at home with their children. As is common in research on conversational interactions, only one set of data was reported for each parent-child dyad, resulting in little information as to the representativeness of the results. Data were collected in both laboratory and home settings and statistical procedures varied, with two studies reporting proportions (Brown & Hanlon, 1970; Demetras et al., 1986), one using a nonparametric chi-square test (Hirsh-Pasek et al., 1984), and one combining parametric and nonparametric techniques (Penner, 1985). Those that averaged results across groups of subjects (Hirsh-Pasek et al., 1984; Penner, 1985) obscured individual differences in parent-child communication patterns. Finally, the lack of differentiation between coding categories (e.g., clarifying and nonclarifying repetitions in the Hirsh-Pasek et al. [1984] study) and double coding of responses resulting in overlapping categories (Demetras et al., 1986; Penner, 1985) may have obscured the effect of the interactions being described.

The purposes of the present investigation were (a) to describe the availability of five types of parental responses in the conversation of middle-class, working mothers and fathers to their two-year-old sons, and (b) to investigate whether these parents differentially produced these responses to their child's utterances being well formed or ill formed.

Three questions were addressed:

1. What is the availability of different types of responses in the conversations of middle-class working parents and their two-year-old children?
2. Are these responses differentially distributed to well-formed and ill-formed utterances?
3. Is the overall pattern of conversational responses different for individual dyads, or different for mothers vs. fathers?

METHOD

As advocated by Denenberg (1979) and many others, a single subject descriptive design was used to investigate the interactional phenomena of individual parent-child dyads.

> ... intensive study of single subjects or single units, which could be a mother-infant dyad, is one major kind of research design that we should be using and ... is the one that has the greatest likelihood of yielding fruitful results [for studying interactional phenomena] (Denenberg, 1979, p. 14).

Subjects

Subjects were three middle-class families, each consisting of two working parents and a two-year-old boy (resulting in six parent-child dyads). The children had normal speech-language skills, normal hearing and middle ear functioning, and were in full-time daycare. The parents had normal hearing and worked full-time jobs as described in Table 1. The subjects were recruited from past and ongoing research projects, and from birth announcements in the local paper. The first three families that met the inclusion criteria served as subjects.

Inclusion Criteria

To facilitate transcription of the conversation, the primary inclusion criteria for both members of each dyad were (a) that they produce a minimum of 20 conversational turns per 5 minutes of conversation in a free-play context, and (b) that at least 70% of the child's utterances be intelligible , and (c) that at least 95% of the

Table 1. Characteristics of parent-child dyads

CHILD	SEX	AGE	SESSION	MLU
OD	M	2;3	w/MOM	3.31
			w/DAD	3.51
DH	M	2;2	w/MOM	2.78
			w/DAD	2.74
EP	M	2;2	w/MOM	2.61
			w/DAD	2.66

PARENT	AGE	OCCUPATION	EDUCATION
O-Mom	35	Publishing/bookkeeping	M.A.
O-Dad	33	Management	B.S.
D-Mom	30s	Nursing	B.S.
D-Dad	30s	Purchasing	B.S.
E-Mom	37	Nursing	B.A.
E-Dad	43	TV/News editing	B.A.

adult's utterances be intelligible. The children met the following nine additional criteria.

1. Chronological age of 2;0 to 2;5;

2. a minimum mean length of utterance in morphemes (MLU) (adapted from Brown [1973] and Penner [1985]) of 2.50 for each child, and a maximum range of 1.0 MLU across children (e.g., 2.5 to 3.5 or 2.8 to 3.8);

3. male sex;

4. normal hearing as defined by passing a pure-tone screening of 15 dB HL (ANSI, 1973) at 500, 1000, 2000, and 4000 Hz with no one threshold greater than 20 dB HL in one ear;

5. normal middle-ear function as defined by having a Type A tympanogram for each ear with middle-ear pressure no greater than -150 mm water pressure;

6. parental report of no more than two episodes (unilateral or bilateral) of ear infections in the previous year, and no more than five episodes prior to two years of age;

7. independent report by both parents of motor, social, cognitive, and linguistic development within a normal range as indicated by a profile analysis of the Minnesota Child Development Inventory (MCDI, Ireton & Thwing, 1974);

8. confirmation of normal development by family physician or preschool teacher;

9. a history of having only standard English spoken by the parents and relatives in the home, and by the teacher in the day-care/preschool setting; and

10. parental report, and confirmation by investigator, that all members of the family were well at the time of recording sessions.

Each parent met the following three criteria:

1. Minimum education of two years of college, maximum of one graduate degree that did not include more than one course in child development or language development;

2. normal hearing as defined for the children; and

3. full-time employment (e.g., eight hours per day, five days per week).

Rationale for Criteria

Inclusion criteria were chosen to limit variables that might influence the manner in which parents speak to their children and provide sufficient detail so results could be generalized to other individuals with similar characteristics. Since the children were only two years of age, the developmental status was estimated by parent questionnaires (MDCI) and physician's or preschool teacher's reports, rather than by standardized tests.

Procedure

Parents that indicated an interest in the study were sent a questionnaire (see Appendix 1, p. 52). The information from this questionnaire was used to screen families as potential subjects. An appointment was then made to screen the potential subjects' hearing. On the day of the hearing screenings, authorization was obtained for their participation in the study and for release of medical information to the investigator. Also at this time, parents were given two copies

of the MCDI to complete independently and return before beginning the four language-sampling sessions. The MDCI served to confirm the physician's or preschool teacher's report of normal development.

When all three family members met the inclusion criteria, four evenings within a two-week period were immediately scheduled for recording parent-child conversations.

Hearing Screening

For each family, hearing screenings were conducted by a certified audiologist in a double-wall sound booth at the University of Arizona Hearing Clinic. Each person's hearing was screened with pure-tone audiometry. When all three family members passed the stated criteria for pure-tone screenings, the child was screened for normal middle ear functioning. One child failed the impedance screening and was rescreened within 10 days, at which time he passed.

Recording of Parent-Child Conversations

Each parent was audio and video recorded while talking to his or her child in a free-play context for four 20-minute sessions within a two-week period. The parents were instructed to play with their child in a natural manner with toys that belonged to and were familiar to the child. With the exception of puzzles or books, which tended to reduce the number of conversational turns between parents and children in pilot sessions, no restrictions were placed on the type of toys used. To increase the variety of topics and vocabulary, the parents were instructed to play with a different set of toys in each session. The counterbalancing of the parent-child sessions is shown in Table 2.

Table 2. Counterbalancing of parent-child conversation sessions.

	SESSION 1	SESSION 2	SESSION 3	SESSION 4
ORDER OF TAPING				
First:	Mother	Father	Father	Mother
	---------- 5-minute break ----------			
Second:	Father	Mother	Mother	Father

Both the child and parent wore lavaliere microphones, which permitted a stereo recording of the conversation. The room was structured so the camera was placed in a doorway, and the investigator observed from an adjacent room. The investigator entered the room only to reposition the camera, if needed during a session. The actual recording of each dyad began when the investigator judged that both members of the dyad have adjusted to wearing the microphones and were no longer attending to the recording equipment. Typically, this took approximately two to three minutes.

Apparatus

A B-200C Beltone audiometer and a Teledyne TA-4D impedance meter were used to screen for pure-tone hearing and middle ear function, respectively. The conversational samples were audio recorded with Sony hardwire lavaliere microphones (model ECM-16 T) in conjunction with an Hitachi D-E2 audio cassette recorder. A Magnavox Autofocus 8X color

video camera and Quasar (model) video recorder were used to document non-linguistic context. The samples were initially transcribed with a Sony BM-80 transcriber and stereo headphones, and the final editing was done with the Hitachi recorder.

Transcription of Language Samples

Unknown to the families, only five minutes (minutes 5 - 10, as indicated by the clock on the video recording) of each 20-minute parent-child conversation in Session 1 were transcribed. This session served two functions: (a) to provide a warm up session for the family, in case they were uncomfortable in front of a video camera, and (b) to provide information regarding the number of conversational turns, level of intelligibility for each speaker, and MLU for the child.

All conversations were transcribed according to a detailed set of rules. The transcription markers described by Bloom and Lahey (1978) served as the basis for the present rules (see Appendix 2, p. 56). An adapted version of Brown's (1973) and Penner's (1985) MLU rules was used to judge the number of morphemes in each child utterance (see Appendix 3, p. 60) A sample four-page transcript in Appendix 5 (p. 69) illustrates the transcription format. Calculation of MLU was done by computer (see "MLU DATA SUMMARY," Appendix 6, p. 74).

Coding of Child Utterances and Parental Responses

An extended version of the coding procedure described in Demetras et al. (1986) was used to analyze the parent-child interactions. Child utterances--both single and multiword--were categorized in terms of their well formedness. Parental responses were

judged to be one of five categories which included repetitions, requests for clarification, responses that continued the conversation, and explicit affirmation or correction. A summary of child and parent codes is presented in Table 3 for quick reference. The complete coding scheme, with examples, is presented in Appendix 4 (p. 62).

Child utterances. Child utterances were subdivided into three categories: well formed (WF), ill formed (IF), and other (CO). Utterances judged to be WF were those that were correct according to adult rules of syntax, semantics, pragmatics, and phonology. Utterances were coded as IF if they (a) included any morphological, syntactic, lexical, phonological, or pragmatic errors, or (b) consisted of meaningful words in combination with uninterpretable vocalizations. Utterances coded as CO included all laughs, vocalizations, singing, and completely unintelligible utterances.

Parental responses. Five main categories of responses were coded: repetitions (R), clarification questions (CQ), move-ons (MO), explicit affirmation (A), and explicit correction (C). Rs slow the flow of conversation and provide the child with a replication of his previous utterance. CQs stop the flow of conversation and request clarification from the child, whereas MOs maintain the flow of conversation without either questioning the information or repeating (parts of) the child's preceding utterance. MOs provide the least amount of information regarding the correctness of the child's preceding utterances. Rs, CQs, and MOs, referred to as "implicit" responses by Demetras et al. (1986), are more subtle in nature that their explicit counterparts, affirmation or correction.

Table 3. Summary of child and parent codes.

CHILD CODES

WF Well formed (coded CW for computer)

IF Ill formed

- CIP Ill formed only for phonology
- CI All other ill-formed utterances

CO Other

PARENT CODES

R Repetitions

- ER Exact lexical and phonological repetition
- ERP Exact lexical repetition with phonological correction
- CR Contracted repetition
- EXPR Expanded repetition
- EXTR Extended repetition

CQ Clarification questions

- Wh question
- OCC Occasional question
- YN Yes/no question

- ERQ Exact lexical and phonological repetition question
- ERPQ Exact lexical repetition question with phon. correction
- CRQ Contracted repetition question
- EXPRQ Expanded repetition question
- EXTRQ Extended repetition question

MO Move-ons

- ETC Exact topic continued
- RTC Related topic continued
- F Filler
- O Other
- AA Adult agenda

A Explicit Affirmation

C Explicit Correction

Repetitions typically either mimicked the child's intonation or had a more pronounced, falling intonation, indicating confirmation. A parental response with a rising intonation, typical of a yes-no question, was not coded as an repetitions, but as a clarification question, even if it contained some repetitions of the child's preceding utterance. Five types of repetitions were coded: exact lexical and phonological (ER), exact lexical with phonological correction (ERP), contracted (CR), expanded (EXPR), and extended (EXTR). CRs were shorter versions of what the child said, and EXPRs provided a syntactic or morphological correction. EXTRs were those that added new information to the child's utterance, which also may have included a syntactical or morphological correction. The alternation of deitic forms (e.g., substitution of you for me, come for go) did not disqualify an utterance as a repetition.

Clarification questions were responses that referred directly to the child's previous utterance, and were attempts to clarify the signal or some portion of it, or the child's intended meaning. There were eight types: Wh-, yes/no, occasional, and five repetition questions. Repetition questions were subcategorized in the same way as the repetitions, but differed from repetitions by including an upturn in intonation at the end of the response.

The move-on category described in Demetras et al. (1986) was subdivided to include five categories of responses. Two types of move-ons maintain the topic the child initiated--exact topic continuers (ETC) and related topic continuers (RTC); another type, filler (F), continues the flow of turn taking without adding new information. Laughs and

unintelligible responses were coded as "other" (O), and responses that appear to ignore the child's topic of interest were coded as "adult agendas" (AA).

Responses judged to be explicit affirmation or correction of the child's preceding utterance were coded as explicit feedback. Statements such as yes and that's right were counted as explicit affirmation (A); and statements such as no, that's not right, were counted as explicit correction (C). In addition, statements such as yeah, and uh huh, were coded as an A if they were not judged to be conversation fillers. Expressions of approval or correction of the child's nonverbal behavior were not coded as explicit feedback for his speech, but rather as move-ons--either ETCs or AA.

Interscorer Agreement

Transcription and MLU. For Sessions 2, 3, and 4, a second person independently transcribed and calculated an MLU for 4 minutes of each 20-minute sample (minutes 0 to 1, 5 to 6, 10 to 11, and 15 to 16, as indicated by a clock on the video recording). For each dyad, a point-by-point interscorer percent agreement (Kazdin, 1982) was calculated for utterance boundaries and word agreement (for both the child and the parent). A similar percent agreement was calculated for the judgment of morphemes per child utterance. Results are summarized in Table 4.

Coding. Prior to collecting pilot data, two coders (the investigator and a research assistant) practiced using the coding system until a point-by-point interscorer agreement (Kazdin, 1982) of 90% was achieved for the various categories of child utterances and parental

Table 4. Point-by-point interscorer percent agreement for transcription and mean length of utterance

	CHILD		PARENT		MLU
	Word Agreement	Utterance Boundary	Word Agreement	Utterance Boundary	
O-MOM	84	92	99	95	89
O-DAD	87	90	99	99	84
D-MOM	87	98	99	96	97
D-DAD	87	91	98	97	94
E-MOM	93	98	98	99	100
E-DAD	95	97	99	100	95
Range:	84 - 95	90 - 98	98 - 99	95 - 100	84 - 100
Average:	88	94	99	98	93

Table 5. Point-by-point interscorer percent agreement for parent and child coding categories

		RANGE	AVERAGE
CHILD CATEGORIES		91 - 100	95
Well Formed	CW 99		
Ill Formed	CIP 91		
	CI 95		
Other	CO 90		
PARENT CATEGORIES		70 - 100	96
Repetitions		91 - 100	94
	ER 95		
	ERP 100		
	CR 91		
	EXPR 100		
	EXTR 100		
Clarification Questions		86 - 100	94
	WH 92		
	OCC 100		
	YN 96		
	ERQ 100		
	ERPQ 100		
	CRQ 94		
	EXPRQ 86		
	EXTRQ 91		
Move-ons		70 - 100	96
	ETC 96		
	RTC 84		
	O 100		
	F 70		
	AA 94		
Explicit Responses		-	100
	A 100		
	C 100		

responses. For the final data, one person coded the entire transcript; a second person coded four minutes (the same as transcription). Results are summarized in Table 5.

Data Analysis

Conversational analysis. Two sets of analyses were completed. One set described the proportion of child utterances and parental responses that fell into their various subcategories. This set provided information about the occurrence of each type of utterance or response (e.g., the percentage of child utterances that were coded WF; the percentage of parental responses that were coded CQ, or ERQ within CQs). The second set of analyses summarized the proportion of parental responses that followed a specific type of child utterance. This set of analyses attempted to describe whether differential feedback was available to the child.

The unit for analysis in the first set was the individual child utterance or parental response; the unit of analysis for the second set was one "turn" exchange for each partner in the conversation. A conversational turn was a consecutive sequence of child utterances and the following parental responses. The first parental response was defined as an "adjacent" response, and the rest as a "sequence" of responses. The following is an example of two conversational turns that included four child utterances and four parental responses.

CHILD:	MOTHER:
this is a big machine/	
	Oh, this I recognize. This is a tool bench.
hammer/ a tool bench/ tool bench/	
	Tool bench. Look. Here's the hammer that goes with it.

In the first set of analyses (all child utterances and parental responses), the frequencies and corresponding percentages of child utterances or parental responses in each category were tabulated by computer (see "DATA SUMMARY--ALL UTTERANCES, Appendix 6, p. 74) and reported as a percentage of the total corpus for each 20-minute session. In the second set of analyses ("turn analysis"), the pairings of child utterance(s) and adjacent parental response were tabulated by computer as a percentage of conversational turns (see "TURN CODES -- DATA REPORT, Appendix 6, p. 75) (e.g., a WF utterance followed by an ER). Rules for judging a sequence of child utterances are described in detail in Appendix 3 (p. 60); a brief description of these rules follows.

Each sequence of child utterances was judged to be either WF, IF, or CO. If there was more than one child utterance per turn and all utterances were coded the same (e.g., WF or IF), the turn was judged to be the same as each individual utterance. If the utterances within a turn were coded differently (i.e., one WF and another IF), the turn was usually judged to be IF. If the child's portion of the turn was judged to be a CO (e.g., laughs, vocalizations, singing, etc.), the child's utterance(s) and the corresponding sequence of parental responses were excluded from the analysis.

Presentation of data. The data are presented as proportions of categories of responses for each parent-child dyad. This method of presenting data in proportions of responses is similar to previous research on this topic (Brown & Hanlon, 1970; Demetras et al., 1986). Statistical analysis was not considered for the present study primarily because the focus was on individual dyad performance.

Despite the limitation that conclusions regarding statistical differences between responses to WF and IF utterances cannot be made, the reliability of responses can be evaluated by the replicability of one pattern occurring within one parent-child dyad across time, or across different parent-child dyads. For example, the pattern of more MOs following WF utterances and more CQs following IF utterances was found in all four of Demetras et al.'s (1986) study and in eight of nine pilot sessions. The consistency of this pattern within and across parent-child dyads from three different geographical areas (Boston, Seattle, Tucson) suggests a fairly stable pattern.

Collapsing of data. Because the frequency for some of the 18 categories of parental responses was less than 5 (per 20-minute sample), the data for Sessions 2, 3, and 4 were combined for the final analysis. An analysis of trends was completed to support combining of the data. A trend was defined as a consistent increase or decrease of these responses across the three sessions in at least three parental categories. (e.g., CQ responses of 5%, 25%, and 75% for sessions 2, 3, and 4, respectively). No trends were found in either the pilot or final data.

RESULTS

Results are presented separately for (a) availability of feedback, (b) differential responses, and (c) comparison of mothers and fathers. Results are presented separately for each dyad. The dyads are identified by the child's first initial and the name MOM or DAD (e.g., O-MOM represents the dialogue between OD and his mother).

The types of child utterances (i.e., well formed [WF], ill formed [IF], or other [CO]) to which the parents responded are described in Table 6.

Table 6. Percentage of child utterances by category

		CHILD UTTERANCES			
CHILD	(N)	WF	IF		CO
			CI	CIP	
O-MOM	(865)	28	42	23	7
O-DAD	(836)	24	35	28	13
D-MOM	(712)	37	35	20	8
D-DAD	(762)	31	39	20	10
E-MOM[1]	(462)	24	44	22	10
E-DAD	(615)	32	40	20	8

Note: CIP = ill-formed only for phonological errors; CI = all other ill-formed child utterances.

1. The analyses for E-MOM included only sessions 2 and 3. Session 4 was excluded from the analysis because the context differed from that prescribed in the procedure.

The relative proportions of WF, IF, and CO utterances are fairly similar for the children in all six dyads. The average proportion for each type of child utterance is 29% for WF, 62% for IF (40% for CI and 22% for CIP), and 9% for CO. Thus, the majority of child utterances that preceded parental responses were categorized as ill formed. Approximately one third were well formed, and a tenth of the utterances (COs) were excluded from the analysis.

Availability of Feedback

The percentage of parental responses for the main categories of repetition (R), clarification question (CQ), move-on (MO), affirmation (A), and correction (C) appears in Table 7. These data are summarized to describe the overall style of conversation for each parent, regardless of the type of child utterance. The term "style" is used to represent the relative proportion of each parent's responses that, for example, clarified rather than repeated, or affirmed rather than corrected, the child's communicative attempts.

Table 7. Percentage of parental responses by main categories

PARENT	(N)	R	CQ	MO	A	C
O-MOM	(1196)	9	14	69	7	1
O-DAD	(609)	3	24	71	1	1
D-MOM	(1041)	8	15	72	4	1
D-DAD	(575)	2	10	83	4	1
E-MOM	(722)	8	16	72	2	2
E-DAD	(964)	8	7	83	1	1

Parental responses for each main category are fairly similar for the six dyads. The average percentage of response for the six dyads was 6% for repetitions, 14% for clarification questions, 75% for move-ons, 3% for affirmations, and 1% for corrections. Move-ons were clearly the most frequent category of responses for all dyads; affirmations and corrections were the least frequent.

In regard to within response categories, several differences are noteworthy. For repetitions, two fathers (O-DAD and D-DAD) produced one half to one third the responses their wives did when conversing with their sons under similar conditions. For clarification questions, D-DAD and E-DAD produced approximately half the number of responses as did their wives. In contrast, the proportion of O-DAD's clarification questions exceeded those of his wife by a margin of almost two to one, and exceeded those of the other fathers by a margin of almost three to one. D-DAD and E-DAD produced proportionally more move-ons, and O-MOM tended to affirm more of her child's utterances than did any of the other parents.

Differential Responses

The differential distribution of parental responses to well-formed vs. ill-formed child utterances can be summarized two ways. First, given the classification of child utterance as either WF or IF, we can describe the predominant parental response that directly follows each type of utterance. Second, given the type of parental response, we can ascertain the type of child utterance that is most likely to precede it. Results for both analyses are displayed as histograms in Figures 1 through 4. Because the number of IF utterances consistently exceeded

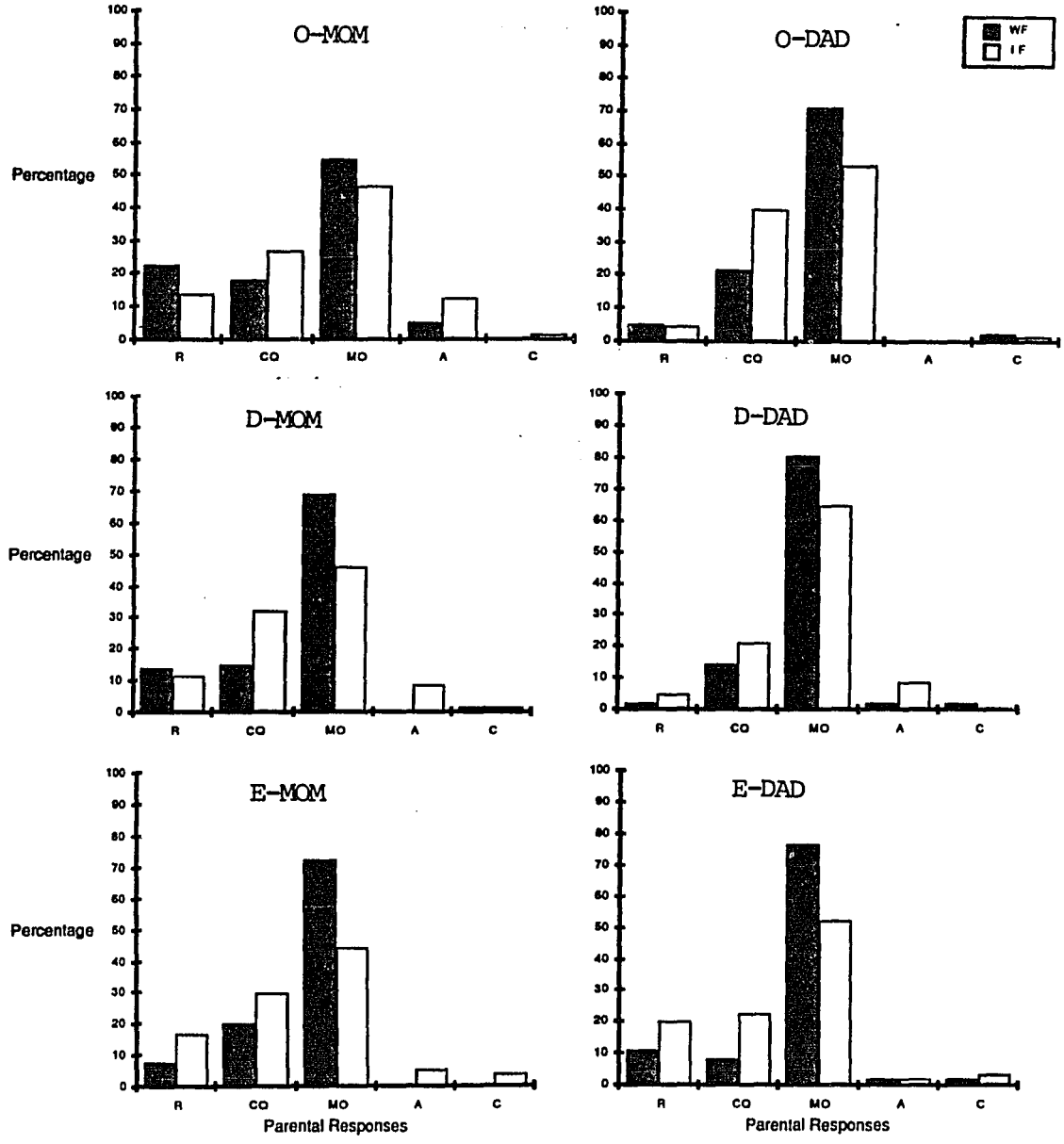

FIGURE 1. PERCENTAGE OF MAIN PARENTAL RESPONSES THAT FOLLOWED WELL-FORMED (WF) AND ILL-FORMED (IF) CHILD UTTERANCES

the number of WF utterances, the sum of the responses to each child category equals 100% to account for the unequal Ns.

Predominant Parental Response

Main categories. The main categories of responses to WF and IF utterances are shown for each dyad in Figure 1. For all dyads, if the child's utterance was ill formed, the most likely response was a move-on, second, a clarification question, and last, a repetition. In four dyads (O-DAD, D-MOM, D-DAD, and E-MOM), this same order of proportion of responses applied to WF utterances. For E-DAD and O-MOM, repetitions were more likely to occur after IF utterances than clarification questions.

The results for explicit affirmation and correction were more varied across the six dyads than for repetitions, clarification questions, and move-ons. For four dyads (O-MOM, D-MOM, E-MOM, and D-DAD), IF utterances were more likely to be followed by affirmations than corrections; for E-DAD the reverse was true by a small percentage. On the other hand, if the child's utterance was well formed, it was unlikely that either type of explicit feedback followed, as the percentages of affirmations and corrections were very small or nonexistent.

Repetitions. Results for the subcategories of repetitions are displayed in Figure 2. The predominant response to WF utterances for all six dyads clearly is an ER. For D-DAD, this is the only response that follows WF utterances. EXTRs are the second most predominant response to WF utterances for O-DAD, D-MOM, E-MOM, and E-DAD. EXPRs and

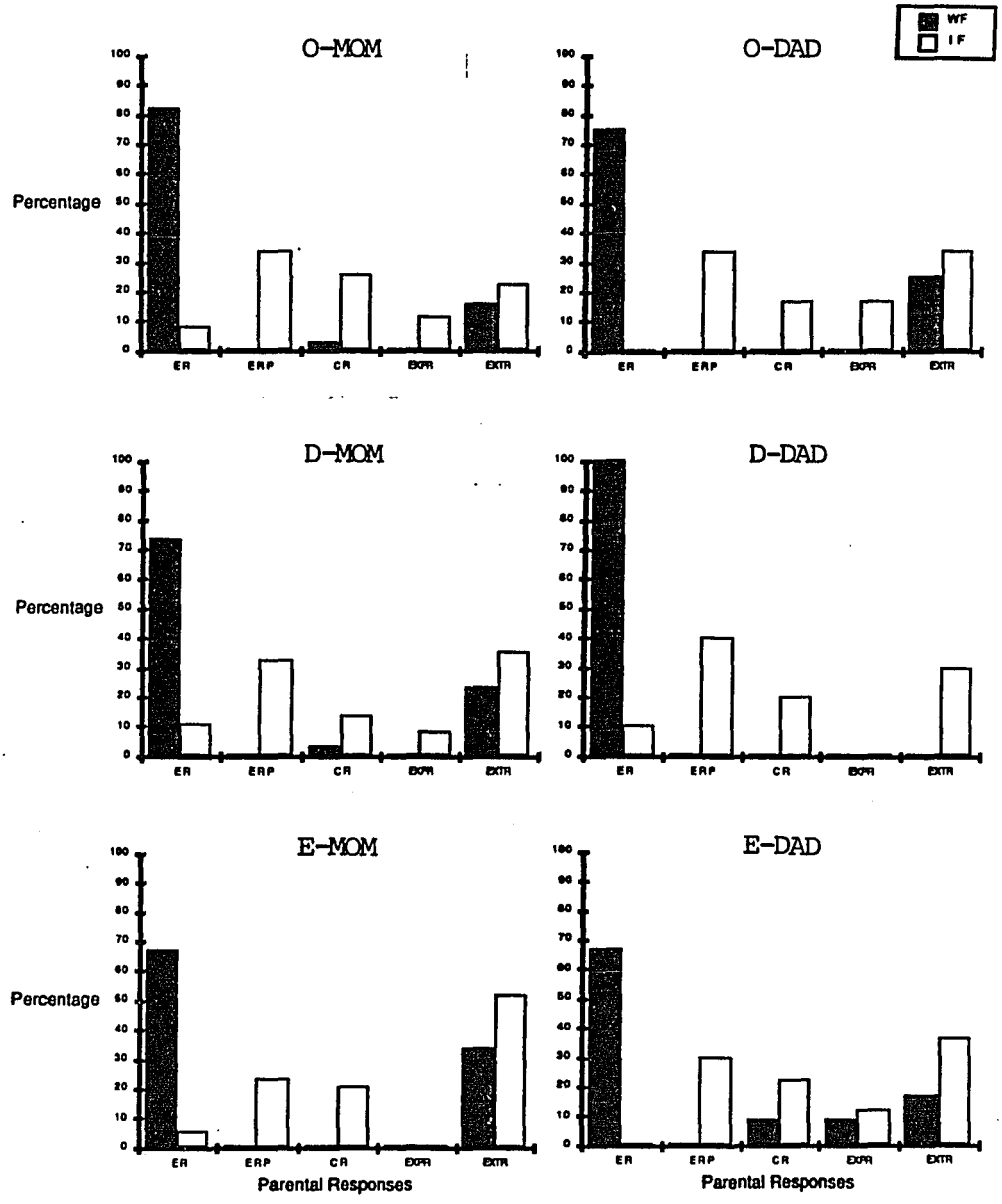

FIGURE 2. PERCENTAGE OF TYPES OF REPETITIONS THAT FOLLOWED WELL-FORMED (WF) AND ILL-FORMED (IF) CHILD UTTERANCES

CRs rarely if ever followed WF utterances; and, ERPs, by definition, did not occur after WF utterances.

The predominant repetition to IF utterances varied across the dyads. For four dyads (O-MOM, O-DAD, D-MOM, AND E-DAD), ERPs, CRs, EXPRs, and EXTRs were divided in different proportions to account for the responses following IF utterances. For D-DAD and E-MOM, EXPRs were barely represented as a response to IF utterances.

Clarification questions. The availability of clarification questions to WF and IF utterances is displayed in Figure 3. The predominant response to WF utterances varied across the dyads, with WHs, YNs, and ERQs being the most frequent across all dyads. When individual dyads were compared, minor differences were detectable. O-MOM's and O-DAD's clarification questions are the most evenly divided among the eight categories for any of the dyads, with ERQs and WHs being the most frequent responses. For D-MOM and D-DAD, only four types of clarification questions follow WF utterances: WH, OCC, YN, and ERQ. Similarly, for E-MOM and E-DAD, four types of clarification questions followed WF utterances, but they are not the same four categories as with D-MOM and D-DAD.

Similar to the responses to WF utterances, the predominant clarification question to IF utterances varied across the six dyads. In four dyads (O-MOM, D-MOM, E-MOM, and E-DAD), all eight categories of clarification questions were represented. O-DAD produced seven categories, and D-DAD produced six categories of clarification questions in response to IF utterances.

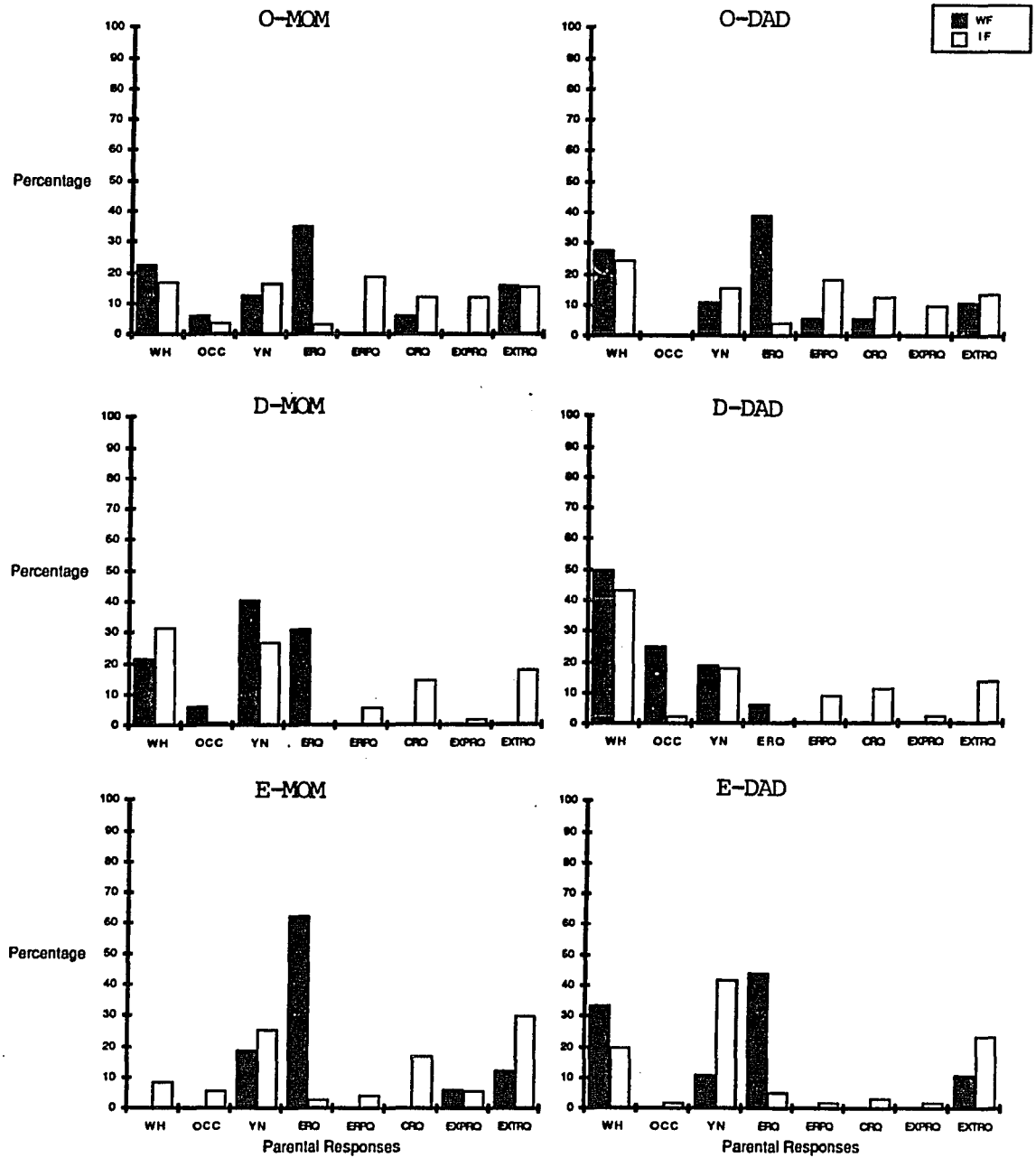

FIGURE 3. PERCENTAGE OF TYPES OF CLARIFICATION QUESTIONS THAT FOLLOWED WELL-FORMED (WF) AND ILL-FORMED (IF) CHILD UTTERANCES

Move-ons. Finally, as shown in Figure 4, the predominant move-on response to both WF and IF utterances clearly was an ETC. The frequency of the other move-on responses to both WF and IF utterances was very low, and even nonexistent in some cases.

Summary. Results for differential responses are summarized in Table 8. The predominant parental response to WF and IF utterances is shown for each parent-child dyad. Those responses that were similar for at least five of the dyads are noted with asterisks in the table.

Clearly, move-ons were the most frequently occurring, and thus the most available main category of response to both WF and IF utterances. Repetitions appeared to present a similar pattern of response for all six dyads with ERs following WF utterances, ERPs and

Table 8. Predominant parental response that followed well-formed (WF) and ill-formed (IF) child utterances

	Main Categories				Subcategories			
	Predominant Response		Predominant Repetition		Predominant Clar. Quest.		Predominant Move-on	
	to WF	to IF	to WF	to IF	to WF	to IF	to WF	to IF
O-MOM	MO**	MO**	ER**	ERP	ERQ	ERPQ	ETC**	ETC**
O-DAD	MO	MO	ER	ERP/EXTR	ERQ	WH	ETC	ETC
D-MOM	MO	MO	ER	EXTR	YN	WH	ETC	ETC
D-DAD	MO	MO	ER	ERP	WH	WH	ETC	ETC
E-MOM	MO	MO	ER	EXTR	ERQ	EXTRQ	ETC	ETC
E-DAD	MO	MO	ER	EXTR	ERQ	YN	ETC	ETC

Note: ** indicates the result is the same for all six dyads

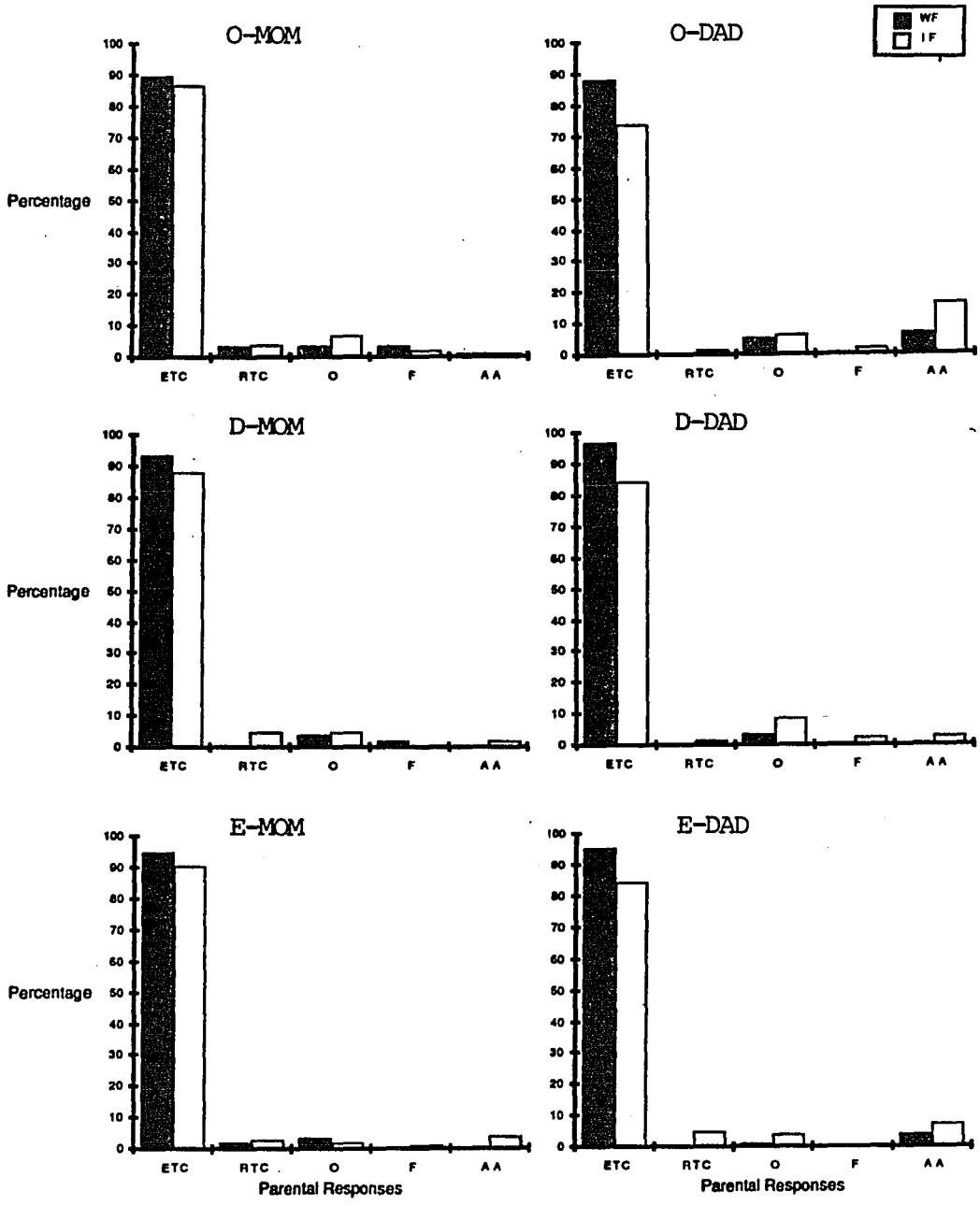

FIGURE 4. PERCENTAGE OF TYPES OF MOVE-ONS THAT FOLLOWED WELL-FORMED (WF) AND ILL-FORMED (IF) CHILD UTTERANCES

EXTRs following IF utterances. Within clarification questions, repetitions again were the most consistent responses to WF utterances, with ERQs being the preferred response to WF utterances in four of the six dyads. No clear pattern was seen for the responses to IF utterances. No patterns appeared to differentiate the manner in which fathers and mothers responded to their sons. DH's parents tended, as a family, to produce more WH questions than any other individual or pair of parents.

Type of Child Utterance

Main Categories. Results for the main categories of parental response are displayed in Figure 1. The results for move-ons and clarification questions are similar across all six dyads: WF utterances were more likely to precede move-ons, and IF utterances were more likely to precede clarification questions. The predominant child category that preceded repetitions tended to vary: WF for two dyads (O-MOM and D-MOM), IF for three dyads (D-DAD, E-MOM, and E-DAD), and no distinguishable difference for O-DAD.

Repetitions. The type of child utterance that most often preceded the five types of repetitions was similar for the six dyads (Figure 2). Clearly, WF utterances most often preceded ERs. Both WF and IF tended to precede EXTRs, with IF being the most frequent proportionally. Except for a few WF responses that preceded E-DAD's CRs and EXTRs, IF utterances clearly were the type of utterance that most often preceded CRs and EXPRs. By definition, IF utterances preceded ERPs.

Clarification questions. The results for clarification questions are illustrated in Figure 3. The type of child utterance that preceded ERQs, ERPQs, and CRQs was the same for all six dyads: WF utterances tended to precede ERQs; IF utterances preceded ERPQs (by definition) and CRQs. Except for E-MOM and O-MOM, IF utterances also tended to precede EXPRQs and EXTRQs. The type of utterance that preceded WH, OCC, and YN questions varied from dyad to dyad.

Move-ons. The results for ETCs and RTCs were the same for all six dyads (Figure 4): WF utterances most often preceded ETCs; IF utterances most often preceded RTCs. IF utterances were also most likely to precede Os and AAs in five out of the six dyads. Results for fillers (F) were mixed.

Summary. Results for the type of child that most often preceded parental responses are summarized in Table 9 for each parent-child dyad. Results that were similar for at least five or the dyads are noted with asterisks in the table.

For the main categories, a pattern of differential responses was found for clarification questions, move-ons, and affirmations, but not for repetitions or corrections: WF utterances were most likely to precede move-ons; IF utterances were most likely to precede clarification questions and affirmations. A pattern of differential responses was also found for repetitions. For all six dyads, WF utterances were most likely to precede ERs, and IF utterances preceded ERPs, CRs, and EXTRs. IF utterances also preceded EXPRs in four dyads; D-DAD and E-MOM did not produce this type of response.

Table 9. Type of child utterance that most often precedes each type of parental responses

	O-MOM	O-DAD	D-MOM	D-DAD	E-MOM	E-DAD
Major Categories						
R	WF	WF	WF	IF	IF	IF
CQ	IF	IF	IF	IF	IF	IF**
MO	WF	WF	WF	WF	WF	WF**
A	IF	IF	IF	WF	IF	IF*
C	IF	WF	WF	WF	IF	IF
Subcategories						
ER	WF	WF	WF	WF	WF	WF**
ERP	IF	IF	IF	IF	IF	IF**
CR	IF	IF	IF	IF	IF	IF**
EXPR	IF	IF	IF	ND	ND	IF
EXTR	IF	IF	IF	IF	IF	IF**
WH	WF	WF	IF	WF	IF	WF
OCC	WF	ND	WF	WF	IF	IF
YN	IF	IF	WF	WF	IF	IF
ERQ	WF	WF	WF	WF	WF	WF**
EPRQ	IF	IF	IF	IF	IF	IF**
CRQ	IF	IF	IF	IF	IF	IF**
EXPRQ	IF	IF	IF	IF	WF	IF*
EXTRQ	WF	IF	IF	IF	IF	IF*
ETC	WF	WF	WF	WF	WF	WF**
RTC	IF	IF	IF	IF	IF	IF**
O	IF	IF	IF	IF	WF	IF*
F	WF	IF	WF	IF	IF	ND
AA	WF	IF	IF	IF	IF	IF*

NOTE: * indicates the result is the same for five dyads;
** indicates the result is the same for six dyads.

For clarification questions, the repetition questions appeared to be differentially related to type of child utterance; WHs, OCCs, and YNs did not. Within the move-on category, WF utterances were most likely to precede ETCs; IF utterances were most likely to precede RTCs, Os, and AAs. Results for ETCs and RTCs were the same for all six dyads; results for Os and AAs were the same for five dyads.

Comparison of Mothers and Fathers

The data for availability of feedback and differential responses were analyzed from a perspective of comparing the style of interactions of fathers with that of the mothers. Clearly with only three subjects of each sex, very little, if anything, can be generalized to groups of fathers and mothers. However, results may suggest avenues for future investigations.

Availability of Feedback

Only when each main category of response (Table 7, p. 27) is viewed separately, can differences be detected between mothers and fathers. For repetitions, the data for the three mothers were virtually identical (range 1%). One father's responses were the same; the other two produced less repetitions than the mothers. For clarification questions, the data for the mothers were the same (range 2%). Two of the fathers produced less CQs than the mothers; one produced more. Again, for move-ons, the mothers were virtually identical (range 3%). Two of the fathers produced more MOs than the mothers; the third father was the same. No differences were detected for explicit affirmation or correction. These data suggest that the

more subtle types of responses may differentiate the manner in which fathers and mothers talk to their children, as opposed to explicit responses, which appeared fairly similar for both sexes.

Differential Responses

Regardless of the direction of the analysis--either looking at the predominant responses to well-formed or ill-formed utterances, or the type of child utterance that most likely preceded them--only one difference in the pattern of responses between mothers and fathers was noted. Fathers appeared to be questioning more WF utterances than did the mothers. As indicated in Table 9 (p. 38), the type of utterance most likely to precede WH questions was a WF one for all three fathers; only one mother produced similar results. For the rest of the analyses in both directions, either the mothers and fathers presented the same pattern of responses, or the pattern was mixed for both sexes.

DISCUSSION

The present study is one of only a few investigations of differential feedback in the conversational responses of parents to their young children learning language. It is the first attempt to thoroughly describe the types of responses that may be typical of working mothers and fathers. Findings are discussed with regard to the following topics: availability of feedback, differential responses, comparison of mothers and fathers, and the concept of negative evidence.

Availability of Feedback

The present finding that explicit responses to child utterances are infrequent in occurrence is consistent with previous reports (Brown & Hanlon, 1970; Demetras, et al., 1986; Hirsh-Pasek et al., 1984; Penner, 1985). Furthermore, explicit affirmation has been reported to be consistently more available than correction (Demetras et al., 1986) and more likely to follow IF utterances. Affirmation of the child's ungrammatical sentences supports previous findings that parents direct their explicit responses to the semantic content rather than syntactic accuracy of the child's communicative attempts (Brown & Hanlon, 1970; Demetras et al., 1986; Hirsh-Pasek et al., 1984). Correlational research may provide insight as to whether this phenomenon of affirming ungrammatical sentences is related to the linguistic level of the child. An affirmation of an utterance such as, "granny go bye

bye french fry hamburg" is seemingly more plausible for an 18-month-old child than for a three-year-old child.

The present results support previous findings that the most frequent responses in the conversations of parents to young children learning language are those that continue the conversation (Demetras et al., 1986; Penner, 1985). The relative proportion of topic continuers, however, has varied. Topic continuers accounted for approximately 70% of the data in the present study; 45% to 50% in Demetras et al., and only 30% in Penner's study. The double coding of responses in both Demetras et al. and Penner may account for some of the differences. Approximately 20% of the responses in the Demetras et al. study were coded as both (a) explicit feedback and (b) one of the three "implicit" categories (repetitions, clarification questions, and move-ons). In over 80% of the cases, explicit feedback was paired with topic continuers. When adjustment is made for the double coding, the results are very similar to the present study. In Penner's study, 8 out of 15 categories overlapped with at least 1 other category, and 4 responses overlapped with 3 to 5 categories. An accurate conversion of the data cannot be done as easily in this case. Clearly, minimizing or eliminating overlapping categories in this type of analysis will enable the results to be interpreted with greater accuracy.

A final note regarding topic continuers concerns the issue of heterogeneity. The move-on category in Demetras et al. (1986) was subdivided in the present study to account for different types of responses that, while appearing to continue the flow of conversation, may in actuality provide "negative" information to the child. Responses

of greatest concern were those that were considered to be off topic in some way, either because the parent switched the topic or maintained a topic that was not initiated by the child. As seen in Figure 4, all move-on categories occurred at relatively low percentages except for exact topic continuers. The present findings suggest that the original move-on category reported in Demetras et al. (1986) comprised a fairly homogeneous set of responses.

Differential Responses

Of all responses, repetitions--both clarifying and nonclarifying--appeared to be the type of response most differentially related to well-formed and ill-formed child utterances. Exact repetitions were more likely to follow WF utterances, while the remaining repetitions were more likely to follow IF utterances. These results in combination with previous findings for repetitions (Demetras et al., 1986; Hirsh-Pasek et al., 1984; Penner, 1985) support the notion that a mismatch of information between what the child says and what the parent responds may provide a powerful source of corrective feedback to the child (Nelson, 1977). Investigation of children's repairs (i.e., self-corrected repetitions of their own incorrect utterances) has provided evidence that children make use of this type of information, especially if the repair appears to be related to a structure that the child is currently mastering (Clark, 1982; Garcia & Jaeger, 1986).

Results also support previous findings that topic continuers (Demetras et al., 1986; Penner, 1985) are differentially distributed to well-formed and ill-formed child utterances. However, the bi-directional nature of the interaction for the main categories of move-

ons and clarification questions reported by Demetras et al. was not supported with the current findings. For three of the four mother-child dyads in the previous study the predominant response to WF utterances was an MO, and the predominant response to IF utterances was a CQ. In addition, the percentage of WF utterances that preceded MOs was greater than the percentage that preceded either Rs or CQs, and the percentage of IF utterances that preceded CQs was greater than the percentage that preceded MOs and Rs. Consequently, not only was a child more likely to receive a CQ to an IF than to a WF utterance, but receiving a CQ indicated a higher probability that the child made an IF utterance. Thus, an examination of conditional probabilities in both directions suggests that the strength of association between the child utterances and maternal responses was greater in Demetras et al. than in the present study.

Two hypotheses are offered to account for the high proportion of move-on responses to IF utterances in the present study. First, two different styles of responses may be typical of parents of young children: one that appears to predominantly continue the conversation, another that includes a higher proportion of clarification questions in response to IF utterances. Alternatively, the context in which the data were collected in the present study may have influenced the nature of the interaction. Considering that the data were collected during evening hours in between dinner, bath and bed--a difficult time at best for working parents with preschool children--it is not surprising a high proportion of move-ons responses to IF utterances were reported. Investigations of much larger samples of parent-child dyads, in

different contexts (other than free-play situations), during more leisure hours of the day are needed to confirm whether either hypothesis is correct.

Clarification questions, as a category, appeared to comprise two subgroups of responses: repetitions questions and the remaining responses. Repetition questions appeared to be differentially distributed to child utterances, while the other categories of WH, OCC, and YN questions did not. These data suggest that although particular responses may be conventionally defined to be questions (e.g., WH, YN, and OCC questions), they may actually function as conversational continuers, similar to move-ons. Another result noteworthy of comment is the high proportion of ERQs to WF utterances. All other repetition questions were more likely to follow IF utterances. This pattern replicates the results for nonclarifying repetitions. The consistent results for exact repetitions, whether clarifying or nonclarifying, suggests that this type of response may function similarly to affirmation, providing information to the child that his communicative attempts have been understood and accepted by the conversational partner. In any case, the present results and those of Demetras et al. (1986) suggest that the need to subdivide global categories of responses, such as repetitions, so that differential patterns of responses within categories will not be obscured as in previous research (Hirsh-Pasek et al., 1984).

Mothers and Fathers

The number of subjects studied to date regarding differential feedback is very small, especially compared with investigations that have described the simplified manner in which conversational partners talk to children. Only two fathers have been studied, and they were included as part of a group study (Penner, 1985). Working fathers and their female counterparts represent different populations of parents than mothers who, by staying home with their children, have the opportunity to interact with their children much more frequently than those parents who work outside of the home. No attempt is made to present these six parents as being representative of groups, but the data may suggest typical patterns of interaction that can be confirmed with larger groups. Furthermore, generalization of the results in the present study is limited by the homogeneous characteristics of the subjects (e.g., educational background and social economic status) and the limited context in which the data were collected (i.e., only free-play interactions). Because the number of subjects was small, a homogenous group was purposefully chosen, and a controlled context was imposed on the parent-child dyads to reduce the number of factors that may account for different patterns of responses.

The availability data indicated that for the more global analyses (e.g., comparison of the relative percentage of responses for each main category across dyads), the results were similar for all dyads. Thus, no differences were detected between mothers and fathers. These results could be interpreted as supporting findings that the structure of responses for mothers is similar to that of fathers (cf.

Lipscomb & Coon, 1981; Malone & Guy, 1982). However, a finer level of analysis (e.g., comparison of percentage of responses within a category) suggests that fathers and mothers may differ in the relative proportion of responses they produce. For example, two of the three fathers produced fewer responses than mothers in two categories (repetitions and clarification questions), and more responses than mothers in a third category (move-ons). In addition, two fathers talked less than the other mothers. It should be noted that the two fathers that differed from the mothers in each analysis were never the same two individuals. Because the results changed from one set of parents to another for the finer level of analyses, grouping of parent-child dyads may not be warranted for this type of analysis as it may obscure the individuality of the data. However, if global patterns of response are the focus investigation, these data support grouping of parents.

Except for WH questions, the differential response data indicated that the pattern of responses was similar for fathers and mothers for most analyses. The predominant response to well-formed and ill-formed utterances was similar across dyads, as was the type of child utterances most likely to precede these responses. These data suggest that children are equally likely to receive information about the accuracy or acceptability of their utterances from either parent.

The tendency for fathers to follow WF utterances with a WH question supports Rondal's (1980) findings that fathers request more clarification in the form of recasts (e.g., "What did you say?") from their children than do mothers. Similar results have been interpreted as suggesting fathers are less skilled than mothers at understanding

children's speech (Gleason, 1975; Weist & Stebbins, 1972; Weist & Kruppe, 1977), or that perhaps, they are more demanding than mothers as to the type or extent of verbal responses they are willing to accept from their children (Rondal, 1980). Another possibility is that fathers may use this type of response to stay on topic and continue the conversation. The findings in the present study that WH, YN, and OCC questions were not differentially distributed to child utterances supports this notion.

The Concept of Negative Evidence

Central to the issue of learnability is the characterization of the input available to children learning language. Gold (1967) posited that two types of information may facilitate acquisition of the grammar of a language: positive evidence--information about the types of utterances that occur in the language, and negative evidence--information about sentences that are not a part of the language (according to adult standards of usage). For negative evidence to exist, parents or other conversational partners must in some way correct the child, or provide information about the child's grammatical errors. Results from this study and others (Demetras, et al., 1986; Hirsh-Pasek et al., 1984; Penner, 1985) suggest that information about grammatical errors is available in the responses of adult conversational partners. Despite these findings. learnability theorists (cf. Pinker, 1986; Wexler, 1986) continue to conclude that negative evidence, as defined by Gold, is unavailable to young children learning language.

The terms positive and negative evidence may, in and of themselves, present the most cumbersome obstacle to resolving

differences in points of view. Results from this study and others suggest that the responses most likely to provide information about grammatical errors, thus negative evidence, are repetitions. However, repetitions are also models of the language, and by Gold's definition, positive evidence. Except for explicit corrections, all other responses that have been reported to be available as negative evidence, can be at the same time considered to be positive evidence. Further reliance on the use of these terms as a means of describing the type of parental responses that provide information about children's grammatical errors may only confuse, rather than clarify the issue regarding the nature of input.

Clearly, more defined criteria are needed for differentiating positive from negative evidence. Three criteria are offered: parental responses must (a) signal in some way that the previous utterance was ill-formed, (b) be differentially distributed to well-formed vs. ill-formed utterances, and (c) facilitate acquisition of adult-like sentences. Except for ERs and ERQs, all repetitions and explicit corrections in the present study meet the first two criteria. In contrast, positive evidence should signal in some way that the child's communicative attempt was satisfactory relative to adult standards. Exact repetitions and explicit affirmations appear to be suitable candidates for this type of feedback. Clearly, however, not all responses fall within these two categories. A third category may consist of more neutral responses that neither provide positive nor negative information to the child, but rather serve the function of continuing the conversation. Experimental manipulation of different

types of conversational responses is needed to confirm whether the responses described in the present study meet the third criterion. Previously reported results on the experimental manipulation of recasts suggest that repetitions are likely candidates for negative evidence (cf. Nelson, 1977; Schwartz, Chapman, Prelock, Terrell, & Rowan, 1985).

Conclusion

Despite the small number of investigations of differential feedback, the results have been overwhelmingly similar in supporting the notion that differential information is available to children learning language. Analyses of global patterns of responses have shown that different populations of parents--traditional mothers, career-oriented mothers, and working fathers--respond to children in such a way that children may expect to receive similar information from either parent. In terms of style, parents are most likely to stay on topic and offer little explicit information regarding the accuracy or acceptability of their children's communicative attempts.

Differential feedback, in of itself, is just one source of information in the conversational responses of parents. Children must be able to differentiate from among the proliferation of input those responses that are most likely to facilitate (re)formulation and (re)organization of grammatical rules from those responses that do not. Research findings suggest repetitions are the most fruitful category of responses for further investigation.

The conceptualization of negative and positive evidence as presented by Gold (1967) has served a purpose in providing a framework for learnability theorists to hypothesize about the nature of input

available to the child. Existing data would suggest that this conceptual framework is somewhat limited in differentiating responses that may provide information to the child regarding grammatical rules from those that do not. In essence, a number of responses can be categorized as both positive and negative evidence. A shift in criteria for what qualifies as negative vs. positive information may prove to be more fruitful in differentiating not only positive from negative sources of information, but also positive and negative sources from those that appear to be neutral.

APPENDIX 1

PARENT QUESTIONNAIRE

DATE:_____

FATHER'S NAME:_____ ADDRESS:_____
First Last Street

MOTHER'S NAME:_____ _____
First Last City State Zip

CHILD'S NAME:_____ HOME PHONE: (___) _____
First Last

CHILD'S Sex:___ Age:___ Birthdate:_____ # Siblings:___ Birth Order___

List Siblings:

Name	Birthdate	Age	Sex
_____	_____	_____	___
_____	_____	_____	___

DEMOGRAPHIC:

MOTHER:

AGE:_____ OCCUPATION:_____ EMPLOYER:_____
WORK PHONE:_____

EDUCATION: High school degree? Y___ N___ Other:_____
_____ (degree) _____(major)
_____ (degree) _____

FATHER

AGE:_____ OCCUPATION:_____ EMPLOYER:_____
WORK PHONE:_____

EDUCATION: High school degree? Y___ N___ Other:_____
_____ (degree) _____(major)
_____ (degree) _____

FAMILY

Income (optional): $0 - 10,000 ___ $10,000 - 20,000 ___
$20,000 - 30,000 ___ $30,000 - 40,000 ___ over $40,000 ___

Ethnic Background: American Indian Tribe:_____
Black
Caucasian
Mexican American
Oriental
Other

If ethnic background is not the same for all family members, please describe _____

Is any language other than English spoken in your child's presence on a regular basis? Y___ N___. If yes, what language(s)?_____ by whom?_____, how much?_____

MEDICAL HISTORY

FATHER:

Did the father have recurring ear infections as a child? Y___ N___
If yes, how many? 0-6___, 7-12___, 13___, 19 or more___

Did the father have a diagnosed hearing loss as a child? Y___ N___

Did the father ever have tubes inserted in his ears? Y___ N___
If yes, how many times?_____, for how long?_____

Did the father ever receive speech or language services as a child? Y___ N___
If yes, at what age?_____, reason for and duration of service_____
_____

MOTHER:

Did the mother have recurring ear infections as a child? Y___ N___
If yes, how many? 0-6___, 7-12___, 13___, 19 or more___

Did the mother have a diagnosed hearing loss as a child? Y___ N___

Did the mother ever have tubes inserted in her ears? Y___ N___
If yes, how many times?_____, for how long?_____

Did the mother ever receive speech or language services as a child? Y___ N___
If yes, at what age?_____, reason for and duration of service_____
_____

CHILD:

Any serious childhood illness or hospitalization? Y___ N___ If Yes, describe type of illness, duration, and age of child when illness occurred:_____
_____

Has your child had any of the following childhood illnesses? (please circle)

allergies	meningitis
anoxia	mumps
convulsions	respiratory ailments
earaches	rubella
encephalitis	viral infections

other (please describe)_____

Has your child had any serious accidents? Y___ N___. If yes, please explain _____

Has your child ever undergone surgery? Y___ N___. If yes, please explain _____

On the average, how many times does the child see a doctor per year?
0-5_____, 6-10_____, 11-15_____, 16-20_____, 21-25_____, more than 26_____

When was the child last seen by the doctor?_____

Has your child had medically diagnosed ear infections? Y___ N___
If yes, how many prior to age one?_____.
How many between one and two years of age?_____. How many after two years of age? _____.

Has your child ever had a hearing test? Y___ N___
If yes, when?_____ where?_____
results_____ By whom was the test done?_____

Has your child ever had tubes put in his/her ears? Y___ N___.
If yes when?_____ duration_____

After tubes were inserted, did you notice an effect on his/her speech?
Y___ N___. If yes, describe_____

After tubes were inserted, did you notice an effect on his/her hearing?
Y___ N___. If yes, describe_____

After tubes were inserted, did you notice a change in your child's behavior?
Y___ N___. If yes, describe_____

DEVELOPMENTAL INFORMATION:

General

At what age did your child first sit up? _____ (Yrs., Mos.)

At what age did your child first walk unaided? _____(Yrs., Mos.)

Speech/Language

At what age did your child speak his/her first word?_____(Yrs., Mos.)

Please write down five sentences or phrases that your child said yesterday.

_____
_____
_____

Do you think that your child speaks as clearly as other children his age?
Y___ N___
If no, explain: _____
_____

Is your child's speech easily understood by (a) neighbors? _____
(b) preschool teacher? _____ (c) relatives? _____ (d) strangers? _____

Do you feel that your child listens as well as other children his/her age?
Y___ N___
If no, explain_____

Do you think that your child has a problem with speech or language? Y___ N___
If yes, describe_____

Has your child in the past, or is your child now receiving speech-language-hearing services ? Y___ N___
If yes, please complete the following:

Therapy period(s)_____
(month/day/year) to (month/day/year)
_____

Location of services (e.g. clinic name)_____

Type of problem (circle): articulation, dysfluency (stuttering), voice (hoarseness, etc.), language, other_____

If you have other children, have any of them received treatment for speech or language problems? Y____ N____. If yes, which one(s)_____
_____ and for how long? _____

PRESCHOOL/DAYCARE:

With whom does the child spend most of his/her day? (circle one).
Mother Father neighbor daycare babysitter other_____

Are there other adults living at home? Y___ N___
If yes, please list _____

If child is in daycare, please fill in the following:
Place: _____ Address:_____
Type (private home, center): _____
Number of days/week: _____ Number of hours/day: _____
How long has child been in present daycare setting: _____
Approximate number of children in daycare setting: _____
Number of teachers: _____ Number of aides: _____

Do you wish to be considered for future research? Y___ N___

Thank you for taking the time to answer these questions. You will be called shortly after the questionnaire is returned. If you have any specific questions, please call me at 623-2150.

MAIL TO: M. J. Demetras, M.S.
Child Language Laboratory
Department of Speech and Hearing Sciences
The University of Arizona
Tucson, AZ 85721

APPENDIX 2

TRANSCRIPTION RULES

Format

1. Type the header as follows:

    Child's first name/Parent Type of session Session # Session Date
    CA= MLU= Date Typed Page #

    Trevor/Dad Freeplay Session 4 7/8/85 CA=2:1;5 MLU= 3.76
    Typed 12/2/85 Page 1

2. Type one utterance to a line. Both child and adult utterances start at the far left-hand margin. (Long utterances may run on to two or more lines.)

3. Child utterances always end with a slash (/). (Punctuation marks may precede the slash)

4. Adult utterances end with a period (except incomplete utterances - see section below).

5. Insert context lines on the line above the utterance they precede or with which they are simultaneous. Use present tense -s, -es verb endings when the action occurs before the utterance.

    Use -ing verb form for events occurring as the utterance is spoken. Enclose situation lines in parentheses. Always specify who is talking or performing an action. Initials are sufficient.

    [Child = Trevor, Adult = Dad]

    (T sits in D's lap)
    (D handing library card to T)
    CHI: are we done?/
    DAD: This is to check out books.

    Transcribe as context laughter, animal, machine or other sounds made by either child or adult.

6. Transcribe non-verbal communication (usually head nods or shakes) to which the adult responds as follows:

```
%sit:  (T nods head)
*TRE:  [non-verbal `yes']
%cod:  MLU=n    @co   $co

*DAD:  Yeah?
%cod:  MLUP=    @erq  $erq
```

Punctuation

1. ' - normal usage - contractions, possessives.

2. , - as per adult grammatical usage - before and after names, etc.

   Child: here it is, Baby/

3. : - indicates an elongated vowel (syllable, word).

   Child: mi:ne/ (miiiiine) baby:/ (babeeeeee)

4. ! - normal usage - exclamatory statements, (e.g. There it is!), interjections (e.g. oh!/)

5. . - normal usage - only in adult utterances.

6. ? - normal usage (see substitution below).

Intonation Markers

1. ^ = rising intonation - use in place of a question mark when rising intonation contour would not be clear.

   Child: what?/ (straight or falling intonation)
   what^/ (rising intonation)

2. --^ = rising intonation - use in counting sequences or serial identification

   Child: one --^/ two --^/ free --^/
   dis a doggy --^/ an a kitty --^/ an a horsey --^/

Time Markers

1. .. = pause within an utterance.

   Child: I go home .. um den to bed/

2. double spacing = pause between utterances or responses.

   Child: dere it is/

Child: oh I see it now/

3. . . . = break between utterances or responses with the same topic.

sit: (child playing with toys on floor)
Child: dis de airpwane/

. . .

Child: it gonna fwy up in de air/

4. .
. = break between utterances or responses with a new topic.
.

Child: dis de airpwane/
Child: it gonna fwy up in de air/

.
.
.

Dad: What're we gonna do today?

Other Transcription Symbols

1. ---/ = unintelligible utterance (3 dashes = each unintelliglible word if boundaries can be determined)

2. _ = emphasis marker (underlines vowel).

Dad: That's hi chair.
Child: no, mine/

3. - = repetition marker.

Child: d-d-d-d-dis my b-b-boat/ see-see-see it here?/

4. s/c = self-correction of an utterance.

Dad: Let's go s/c here it is.

5. ____ = incomplete or interrupted utterance. (Child's utterance ends with a slash; adult's with no period.)

Child: Mommy over dere in ____/

6. _____ underscoring - to denote simultaneous child and adult utterances.

Child: here my airpane/ Dad: Let's try this one.

7. [ ] = letters enclosed within represent the correct omitted phonology.

Child: airp[l]ane/ [y]eah/

Substitutions are transcribed corresponding as closely as possible to [American] English orthography. The entire correct version of the word(s) is bracketed and included in the transcription for clarity.

Child: gween [green] one/
on de tsair [the chair]/
hewe my baww [here my ball]/

8. Indicate omissions common in adult speech, with an apostrophe:

`kay (okay), goin' (going), `em (them)

Capitalization

Adult utterances begin with capital letters; child utterances do not. Proper nouns and the pronoun "I" are capitalized in both adult and child utterances.

Child: I go see Mommy at Tucson Mall/

Transcribing Contractions with Phonological Substitutions and Omissions

Transcribe orthographically (including substitutions), omitting apostrophes (to prevent confusion with plural or possessive forms), then bracket correct version.

das = [that's] de'r or dey're = [they're]
der's or dere's = [there's or their's] iss = [it's]
we'r = [we're] wer's = [where's] wes, des, or les = [let's]

APPENDIX 3

MEAN LENGTH OF UTTERANCE RULES

Rules for computing mean length of utterance are based on a composite of the rules outlined by Brown (1973), and modified by Chapman (1981), and Penner (1985) and this investigator. These rules specify a system for computing the average number of morphemes per child utterance. The intent of the rules is to provide a general measure of the morphemes used by the child.

Count as one morpheme:

1. Each unintelligible word (if word boundaries are clear) in utterances of questionable intelligibility, or containing unintelligible portions.

2. Non-standard, but commonly used words for agreement and disagreement (transcribed with an othographic approximation):
"Uh huh" "Uh uh."

3. Compound words (two or more free morphemes), proper names, and ritualized reduplications: "airplane" "Joanne" "night-night."

4. Irregular verb forms: "dug" "went" "saw."

5. Negative contractions (unless the child also uses the uncontracted negative or other negative contractions within the transcript).

6. Catenatives: "gonna" "hafta" "wanna."

7. Auxiliaries: "is" "have" "will" "can."

8. Inflections: "-s" "-es" "-ed" "-ing."

9. Common expressions in the form of one word: "lookit."

10. Words ending in a diminutive morpheme: "doggie" "horsie."

11. Non-standard words for objects or actions used consistently by the child and accepted and used by the parent: "owie" [a sore].

12. A string of words introduced by the adult and used by the child in an rote way: "He's naked semi-nude!"

Count as two morphemes:

1. Irregular verb forms with (over-generalized) addition of past tense endings. The child demonstrates [incomplete/incorrect] knowledge of past tense formation.

dig - "digged" go - "goed" see - "seed"

Count:

1. Each occurrence of a repeated word or phrase when the repetition indicates emphasis are included in the count.

"He's very, very, very, big."

Do NOT count:

1. Incomplete or interrupted child utterances.

2. Words representing vehicle. animals, or machine noises. (These should be recorded in context lines.)

3. Fillers or interjections. "oh" "um" "mmm" "hey!"

4. Initial repetitions of a word or phrase in attempt to formulate an utterance.

"where - where - where's my truck?/"
[do not count the first two "where" 's]

5. Beyond the third consecutive repetition of a completely formulated utterance.

e.g. if the child says "mine" five times in a row, do not count the fourth and fifth occurrences.

6. More than one "and" in lists of more than three named objects or people.

"I have my cup and your cup and Minnie and Mickey and the airport truck/"

7. Number strings (serial counting).

8. Memorized songs, prayers, rhymes, etc.

9. Non-verbal child responses (usually head shakes or nods) to which the adult responds.

APPENDIX 4

CODING RULES

CHILD UTTERANCES

Child utterances may be well-formed (WF), ill-formed (IF), or other (CO). The specific guidelines for coding an utterance as one of the above are as follows:

Child Well-Formed (WF) [computer code: CW]

1. Must be semantically, syntactically, and phonologically appropriate for the context in which it is spoken.

   a. Diminutive endings are allowed: doggie/ horsey/

   b. Directives are allowed: put it in/ push it/

   c. Single words that call attention to an object, person, or location are allowed: ball/ mommy/ here/

   d. Variants of yes and no (yeah, yup, yap, nope, naw, etc.) and non-standard forms (uh hu, huh uh, etc.) are allowed.

   e. Catenatives (gonna, inna, wanna, hafta, etc.) are allowed.

   f. Colloquialisms are allowed (gross, yuck, etc.)

2. Prosodic variables (e.g., stress) are not analyzed.

3. Interjections and normal disfluencies (e.g., repetitions of initial words and slight prolongations of vowels) are ignored.

Child Ill-Formed (IF)

1. Phonological errors: [computer code: CIP]

   a. Omissions: ight for light

   b. Reductions: seep for sleep

c. Substitutions: wight for right, wike for like
d. Reversals: evelator for elevator.
e. Distortions are ignored.

Note: If a child utterance contains only phonological error(s), it is coded CIP (child ill-formed because of phonology) rather than CI.

2. Morphological errors: [computer code: CI]

a. Lack of an obligatory grammatical marker:

he not walking/

b. Lack of an article in response to a question:

DAD: What's that? CHI: doggie/

c. Inaccurate or incomplete verb forms:

I throwed it/ he no like it/

3. Syntactical errors: [computer code: CI]

a. Incorrect order of morphemes or words: what he's doing?/

b. Lack of a subject: forgot your cup/

4. Lexical errors: [computer code: CI]

a. Creation of a "word" that has no known referent to the listener: fadder.

If the conversational partner uses the non-standard word, and appears to understand it's meaning, then the word is coded CW.

b. Combination of vocalizations and meaningful words in a single utterance if vocalizations do not have a known referent to the listener: ba ba boo down/

c. Combination of unintelligible speech and ill formed speech: where my (U)?/

d. Violation of semantic selection restrictions: big money/ I don't have some [any] bacon/

5. Pragmatic errors: [computer code: CI]

a. Utterances expressing incomplete thoughts: that is ____/

b. Portions of utterances which are self-corrected are ignored
I have s/c we have some/ les go over s/c in dere/

c. Complete utterances or portions occurring simultaneously with responses of the conversational partner are not analyzed if they cannot be clearly linked to the previous or following adult response.

CHI: wed twuck/
DAD: What's in here?
CHI: oh here my shoe
DAD: Oh yeah, that's your red truck.

Child Other (CO)

1. Vocalizations with no meaningful words, e.g. grunts, "babbling", etc.

2. Head nodding or shaking to indicate "yes" or "no" in response to an adult question. NOTE: LS is to make decision on this

3. Unintelligible or partially unintelligible utterances--either from the adult conversational partner's perspective or the transcribers' (in some cases, the audio recordings are difficult to understand):
I want ---/ --- bubbles/ where's --- doggie?/

If an utterance contains a word or a sequence of words that are clearly ill-formed, then the utterance is coded as IF and not CO.

4. All singing and routine counting was coded as a CO.

ADULT RESPONSES

Five categories of responses are coded: repetitions (R), clarification questions (CQ), move-ons (MO), explicit affirmation (A), and explicit correction (C).

Repetitions (R)

Five types of repetitions are coded: Exact (ER), exact with phonological correction (ERP), contracted (CR), expanded (EXPR), and extended (EXTR). The use of deitic forms (e.g., substitution of you for me, come for go) are accepted as repetitions.

Exact: Exact repetition of what the child said.

CHI: bang/ DAD: Bang.

Exact, with phonological correction:

CHI: wike dat/ DAD: Like that.

Contracted: Shortening of the child's utterance in any way.

CHI: that is a monster/ DAD: That's a monster.

Expanded: Correction of the child's utterance with appropriate syntax or morphology.

CHI: daddy house/ DAD: Daddy's house.

CHI: baby sleeping/ DAD: Baby is sleeping.

Extended: Repetition of the child's utterance with new information added.

CHI: firetruck/ DAD: That's your new firetruck.

Clarification Questions (CQ)

These responses refer directly to the child's preceding utterance. Questions that start a new topic are not included. Also, any questions requesting knowledge from the child are not included. The different types of questions are as follows:

Wh-(WH): Must start with a wh- word and clarify, otherwise scored as a MO.

Occasional(OCC): Questions that have a wh- word embedded in them:

You went where?

Yes/No (YN): Scored only if no other choice (usually a repetition question can be scored as both a repetition and Y/N. In these cases, the response is scored as a repetition.)

CHI: doggie go/
DAD: Did you take the doggie with you?

Repetition Questions (ERQ, ERPQ, CRQ, EXPRQ, EXTRQ): These are repetitions (as described above) that have a rising intonation contour at the end of the sentence.

CHI: ball/ DAD: Ball?

CHI: this my house/ DAD: This is your house?

If the child's utterance is a question, and the response is a repetition of that question, the response is scored as a repetition, and not a repetition question.

CHI: what's that?/ DAD: What's that?

Move-ons (MO)

Move-ons are the least syntactically and semantically contingent responses. They may continue or shift the focus of topic, but provide minimal information to the child about the well-formedness of his utterances. The move-on category includes: exact topic continuers (ETC), related topic continuers (RTC), fillers (F), other (O) responses, and adult agenda (AA).

Exact Topic Continuers: As their name implies, continue the same topic of conversation.

CHI: firetruck/ DAD: There it goes.

CHI: put that there/ DAD: Okay.

Related Topic Continuers: Signify a shift of attention, but refer to topics just discussed.

CHI: here my truck/ DAD: Let's put it away.

Fillers: Add no information; simply keep the conversation going: um, mmm, oh, etc.

Other: Includes incomplete responses (self-explanatory), and exclamations.

(Laughter, machine noises, animal noises, etc. are transcribed as context lines.)

Move-on Exclamations are usually one or two words (may include the child's name) versus an entire sentence: oh!, hi!, Billy!

Adult Agenda: The adult ignores the child's topic by introducing his/her own.

Explicit Affirmation (A)

1. All responses (including those containing the word no) signifying affirmation are scored as a A if the phrase that's right, can be inserted afterward.

CHI: this is real fragile/ DAD: Yes [that's right].

CHI: don't hit Momma/ DAD: No [that's right], don't hit Momma.

2. Words such as yeah, that are judged to be conversational fillers are not scored as explicit affirmations, but as implicit move-ons.

3. A response of yes or no to a child's question is not scored as explicit feedback, but as implicit (move-ons)

CHI: climb up?/ DAD: Yes, you can climb up.

NOTE: The context is used to judge whether the response is explicit A/C or an implicit MO.

4. Adult repetition of yes, or yeah, is not scored as an affirmation, but as a repetition (R).

Explicit Correction (C)

1. Utterances scored as corrections (C), explicitly contain words such as no, not, that's not right. (Contradictory statements must contain explicit negatives to be scored as C's.)

CHI: that right there/ DAD: No, that's the ducky.

CHI: orange juice/ DAD: That one's not orange.

2. An adult response that contradicts a child's negative statement is scored as a C.

CHI: don't have bananas/ DAD: Yes we do.

3. An adult statement that provides contradictory information is scored as a C.

CHI: it's a banana/ DAD: It's an orange.

4. A/C scorings refer only to the child's verbal communication, not to behavior.

CHI: I can't do it/ DAD: Oh yes you can.,

CHI: I wanna hold 'em/ DAD: No, let's put them in.

NOTE: Verbs, especially can and may often signal reference to behaviors:

4. Social approval/disapproval in response to verbal behavior (versus communication) is not scored as an A or C. Again, the reference is to the behavior.

CHI: no thank you/ DAD: Real nice way to say it.

CHI: don't take Momma's glass away/
DAD: That's what you'd have to say all right.

CHI: no!/ DAD: Don't talk to Momma that way.

NOTE: If there is no (immediately) preceding child utterance, then the parental approval/disapproval most likely refers to behavior rather than communication.

CODING CONVERSATIONAL TURNS:

1. One utterance per turn - turn code = individual utterance code

2. More than one utterance per turn:

a. turn code = individual codes if all judged the same
b. turn code = least "correct" code (CI, CIP, CW descending order of choice) if individual codes are mixed EXCEPT:

(1) turn code = individual code of utterance repeated (any type) by adult

(2) turn code = code of majority of utterances in turns of more than five utterances where all but one have the same code

*CHI:	dat's mine/	CIP
*CHI:	an dis is one/	CIP
*CHI:	an das for you/	CIP
*CHI:	mine is nice/	CW
*CHI:	an dis is yours/	CIP
*CHI:	he[r]e's one/	CIP

turn = CIP

3. If turn = CO - turn thrown out (both child utterances and adult responses)

4. With simultaneous utterances adult response goes to utterance preceding the interrupted one (child utterance said at same time - thrown out)

APPENDIX 5

EXAMPLE OF CODED TRANSCRIPT

```
type t-dad5.asc
This is Session Five, with Trevor and Dad; the date is December 7th, a day that will live
infamy, 1985.  This is Session Number Five; we're in Tucson, Arizona.  The setting is the
livingroom; the time of day is late afternoon.  At this point, Trevor is two years, six
months, and four days old.  And Dad is thirty three years and two days old.


*TRE:  Mama  wants the bear: cups/
%cod:  $MLU=7     @cw
*TRE:  my mommy wants a bear cups/
%cod:  $MLU=8     @ci    $ci

*DAD:  She wants the bear cups?
%cod:  $MLUP=     @crq   $crq

%sit:  (T makes running water sound) (D sits down)
*DAD:  What're you making for Mommy?
%cod:  $MLUP=     @etc   $etc

*TRE:  umm uh .. I'm..um, I'm I'm..I'm..um/
%cod:  $MLU=n     @ci
*TRE:  I'm puttin' dis..dis one..right/
%cod:  $MLU=7     @ci
*TRE:  dis right/
%cod:  $MLU=2     @ci
*TRE:  an dis one..right..here/
%cod:  $MLU=4     @ci    $ci

*DAD:  Uh huh.
%cod:  $MLUP=     @a     $a

*TRE:  right dere^/
%cod:  $MLU=2     @cw    $cw

*DAD:  Umm hmm
%cod:  $MLUP=     @a     $a

*TRE:  and um .. ha-have to get dis all d-de way^/
%cod:  $MLU=8     @ci    $ci

*DAD:  Okay
%cod:  $MLUP=     @etc   $etc
```

```
*TRE:  and dis iss gonna be^/I minute
%cod:  $MLU=5     @ci
%sit:  (T makes motor noise)
*TRE:  oh, I'm take my gwoves off/
%cod:  $MLU=7     @ci    $ci

*DAD:  Okay.
%cod:  $MLUP=     @etc   $etc
*TRE:  pus[h] em/
%cod:  $MLU=2     @ci
       .
       .
       .

*TRE:  I'm gonna put my g[l]oves on/
%cod:  $MLU=8     @cip
*TRE:  pus[h] em/
%cod:  $MLU=2     @cip
*TRE:  pus[h] em and go/
%cod:  $MLU=4     @cip   $cip
%sit:  (T grunts)

*DAD:  Want some help?
%cod:  $MLUP=     @etc   $etc

*TRE:  I got it/
%cod:  $MLU=3     @cw    $cw

*DAD:  Okay.
%cod:  $MLUP=     @etc   $etc
*TRE:  'kay/
%cod:  $MLU=1     @cw    $cw

*DAD:  You want me to hold 'em?
%cod:  $MLUP=     @etc   $etc

*TRE:  what^/
%cod:  $MLU=1     @cw    $cw

*DAD:  Should I hold 'em?
%cod:  $MLUP=     @etc   $etc

*TRE:  yea:h/
%cod:  $MLU=1     @cw    $cw

%sit:  (makes an airplane sort of noise)

*DAD:  Were your hands cold?
%cod:  $MLUP=     @etc   $etc
```

*TRE: what^/
%cod: $MLU=1 @cw $cw

*DAD: Were your hands cold?
%cod: $MLUP= @etc $etc

*TRE: yeah/
%cod: $MLU=1 @cw

. . .

%sit: (T makes the airplane noise three times again)
*TRE: no/
%cod: $MLU=1 @cw
*TRE: no/
%cod: $MLU=1 @cw
*TRE: can't/
%cod: $MLU=2 @ci
*TRE: we have-have to get dis out of de way/
%cod: $MLU=9 @cip $ci
%sit: (T makes the noise three times)

*DAD: Tell me about where he's going.
%cod: $MLUP= @etc $etc

*TRE: um, he's going to town
%cod: $MLU=6 @cw
%sit: (T makes more airplane noises)
*TRE: Dad-um-Daddy we have to eat/
%cod: $MLU=5 @cw
*TRE: 'kay/
%cod: $MLU=1 @cw
%sit: (T moves to D's lap)
*TRE: di-di-dis is mom, um di-di-dis is M-ommy's, okay^/
%cod: $MLU=5 @cip $cip

*DAD: Okay, where do we put it?
%cod: $MLUP= @etc $etc

*TRE: umm, o[v]er here/
%cod: $MLU=2 @cip
*TRE: for her/
%cod: $MLU=2 @cw
*TRE: Mommy's on[1]y's ____/
%cod: $MLU=n @ci
*TRE: Mommy's on[1]y gonna sit right there/
%cod: $MLU=7 @cw $ci

*DAD: Okay
%cod: $MLUP= @etc $etc

*TRE: and .. and we're gonna sit right here/
%cod: $MLU=7 @cw $cw

*DAD: Okay
%cod: $MLUP= @etc $etc

*TRE: here's de microphones/
%cod: $MLU=5 @cip $cip

*DAD: Are we gonna look at Mommy?
%cod: $MLUP= @rtc $rtc

*TRE: what^/
%cod: $MLU=1 @cw $cw

*DAD: Are we gonna look at Mommy?
%cod: $MLUP= @etc $etc

*TRE: yeah/
%cod: $MLU=1 @cw
. . .

*TRE: he[r]e's ____/
%cod: $MLU=2 @ci $ci

*DAD: Are we all gonna eat the same thing?
%cod: $MLUP= @etc $etc

*TRE: yep/
%cod: $MLU=n @cw
*TRE: we're all g[onn]a eat the same sing [thing]/
%cod: $MLU=8 @cip
*TRE: okay^/
%cod: $MLU=1 @cw $cip

*DAD: Okay.
%cod: $MLUP= @er $er
*DAD: Tell me what we're gonna have.
%cod: $MLUP= @etc

*TRE: w-we're gonna have grill cheese sawich/
%cod: $MLU=7 @ci
*TRE: a:nd .. salad bar/
%cod: $MLU=3 @ci $ci

*DAD: Salad bar?
%cod: $MLUP= @crq $crq

APPENDIX 6

EXAMPLE OF COMPUTER PRINTOUT

```
TURN SEQUENCE ERROR - INVALID CODE SEQUENCE
     *DAD:  Do you want chocolate milk instead of coffee?
     %cod:  $MLUP=     @etc   $etc
-------- RAW UTTERANCE DATA ---------


MLU INFORMATION

MLU= 1 USED  21 TIMES
MLU= 2 USED  25 TIMES
MLU= 3 USED  28 TIMES
MLU= 4 USED  40 TIMES
MLU= 5 USED  38 TIMES
MLU= 6 USED  29 TIMES
MLU= 7 USED  22 TIMES
MLU= 8 USED   7 TIMES
MLU= 9 USED   6 TIMES
MLU=10 USED   0 TIMES
MLU=11 USED   1 TIMES


@ CODE INFORMATION

@ CODE cm      USED 157 TIMES
@ CODE ci      USED  60 TIMES
@ CODE crq     USED   5 TIMES
@ CODE etc     USED 190 TIMES
@ CODE a       USED  19 TIMES
@ CODE cip     USED  80 TIMES
@ CODE rtc     USED   7 TIMES
@ CODE er      USED   2 TIMES
@ CODE o       USED   6 TIMES
@ CODE c       USED   5 TIMES
@ CODE aa      USED   2 TIMES
@ CODE wh      USED   5 TIMES
@ CODE yn      USED   4 TIMES
@ CODE extr    USED   2 TIMES
@ CODE f       USED  10 TIMES
@ CODE co      USED   6 TIMES
@ CODE extrq   USED   6 TIMES
@ CODE erq     USED   1 TIMES
@ CODE cr      USED   1 TIMES
```

```
$ CODE INFORMATION

$ CODE ci      USED  45 TIMES
$ CODE crq     USED   5 TIMES
$ CODE etc     USED 110 TIMES
$ CODE a       USED  20 TIMES
$ CODE cw      USED  69 TIMES
$ CODE cip     USED  56 TIMES
$ CODE rtc     USED   5 TIMES
$ CODE er      USED   3 TIMES
$ CODE o       USED   3 TIMES
$ CODE wh      USED   6 TIMES
$ CODE c       USED   4 TIMES
$ CODE aa      USED   2 TIMES
$ CODE yn      USED   3 TIMES
$ CODE extr    USED   2 TIMES
$ CODE oa      USED   1 TIMES
$ CODE f       USED   9 TIMES
$ CODE extrq   USED   6 TIMES
$ CODE co      USED   4 TIMES
$ CODE erq     USED   1 TIMES
$ CODE cr      USED   1 TIMES
---------- DATA SUMMARY - ALL UTTERANCES ----------

SPEAKER INFORMATION - # OF UTTERANCES

TRE SPOKE 316 TIMES
DAD SPOKE 252 TIMES


MLU DATA SUMMARY

MLU MINIMUM =   1
MLU MAXIMUM =  11
MLU AVERAGE =   4.40


PARENT CODE - DETAIL

CODE er     USED    2 TIMES  =    0.75% OF PARENT RESPONSES
CODE erp    USED    0 TIMES  =    0.00% OF PARENT RESPONSES
CODE cr     USED    1 TIMES  =    0.38% OF PARENT RESPONSES
CODE expr   USED    0 TIMES  =    0.00% OF PARENT RESPONSES
CODE extr   USED    2 TIMES  =    0.75% OF PARENT RESPONSES
CODE wh     USED    5 TIMES  =    1.89% OF PARENT RESPONSES
CODE occ    USED    0 TIMES  =    0.00% OF PARENT RESPONSES
CODE yn     USED    4 TIMES  =    1.51% OF PARENT RESPONSES
CODE erq    USED    1 TIMES  =    0.38% OF PARENT RESPONSES
CODE erpq   USED    0 TIMES  =    0.00% OF PARENT RESPONSES
CODE crq    USED    5 TIMES  =    1.89% OF PARENT RESPONSES
```

```
r CODES     USED    5 TIMES  =    1.89% OF PARENT RESPONSES
   CODE er     USED    2 TIMES  =   40.00% OF r CODES
   CODE erp    USED    0 TIMES  =    0.00% OF r CODES
   CODE cr     USED    1 TIMES  =   20.00% OF r CODES
   CODE expr   USED    0 TIMES  =    0.00% OF r CODES
   CODE extr   USED    2 TIMES  =   40.00% OF r CODES

cq CODES    USED   21 TIMES  =    7.92% OF PARENT RESPONSES
   CODE wh     USED    5 TIMES  =   23.81% OF cq CODES
   CODE occ    USED    0 TIMES  =    0.00% OF cq CODES
   CODE yn     USED    4 TIMES  =   19.05% OF cq CODES
   CODE erq    USED    1 TIMES  =    4.76% OF cq CODES
   CODE erpq   USED    0 TIMES  =    0.00% OF cq CODES
   CODE crq    USED    5 TIMES  =   23.81% OF cq CODES
   CODE exprq  USED    0 TIMES  =    0.00% OF cq CODES
   CODE extrq  USED    6 TIMES  =   28.57% OF cq CODES

ao CODES    USED   21 TIMES  =   81.13% OF PARENT RESPONSES
   CODE etc    USED  190 TIMES  =   88.37% OF ao CODES
   CODE rtc    USED    7 TIMES  =    3.26% OF ao CODES
   CODE o      USED    6 TIMES  =    2.79% OF ao CODES
   CODE f      USED   10 TIMES  =    4.65% OF ao CODES
   CODE aa     USED    2 TIMES  =    0.93% OF ao CODES


CHILD CODE SUMMARY

CODE ci     USED   60 TIMES  =   19.80% OF CHILD RESPONSES
CODE cip    USED   80 TIMES  =   26.40% OF CHILD RESPONSES
CODE co     USED    6 TIMES  =    1.98% OF CHILD RESPONSES
CODE cw     USED  157 TIMES  =   51.82% OF CHILD RESPONSES


PARENT CODE SUMMARY

r  CODES    USED    5 TIMES  =    1.89% OF PARENT RESPONSES
cq CODES    USED   21 TIMES  =    7.92% OF PARENT RESPONSES
ao CODES    USED   21 TIMES  =   81.13% OF PARENT RESPONSES
a  CODES    USED   19 TIMES  =    7.17% OF PARENT RESPONSES
c  CODES    USED    5 TIMES  =    1.89% OF PARENT RESPONSES

---------- TURN CODES - DATA REPORT ----------


TOTAL NUMBER OF CHILD UTTERANCES PER CATEGORY

Total number of child utterances in     ci    =  44
Total number of child utterances in     cip   =  54
Total number of child utterances in     cw    =  65
Total number of child utterances in  ci + cip =  98
Total number of child utterances in  cip + cw =  119

Total number of child utterances (all 3 categories)=  163
```

TOTAL NUMBER OF ADULT RESPONSES PER CATEGORY

Total number of adult responses in r = 6
Total number of adult responses in cq = 21
Total number of adult responses in ao = 113
Total number of adult responses in a = 19
Total number of adult responses in c = 4

Total number of adult responses (all 5 categories)= 163

PERCENT OF EACH CELL (TOTAL)

Key	ci	cip	cw	ci+cip	cip+cw	ci+cip+cw
r	0.61	1.84	1.23	2.45	3.07	3.68
cq	6.13	3.07	3.68	9.20	6.75	12.88
ao	19.02	20.25	30.06	39.26	50.31	69.33
a	1.23	7.36	3.07	8.59	10.43	11.66
c	0.00	0.61	1.84	0.61	2.45	2.45

PERCENT OF EACH ELEMENT (TOTAL)

Major	Minor	ci	cip	cw	ci+cip	cip+cw	ci+cip+cw
r	er	0.00	0.61	1.23	0.61	1.84	1.84
r	erp	0.00	0.00	0.00	0.00	0.00	0.00
r	cr	0.00	0.61	0.00	0.61	0.61	0.61
r	expr	0.00	0.00	0.00	0.00	0.00	0.00
r	extr	0.61	0.61	0.00	1.23	0.61	1.23
cq	wh	2.45	0.61	0.61	3.07	1.23	3.68
cq	occ	0.00	0.00	0.00	0.00	0.00	0.00
cq	yn	0.61	0.61	0.61	1.23	1.23	1.84
cq	erq	0.00	0.00	0.61	0.00	0.61	0.61
cq	erpq	0.00	0.00	0.00	0.00	0.00	0.00
cq	crq	1.84	0.61	0.61	2.45	1.23	3.07
cq	exprq	0.00	0.00	0.00	0.00	0.00	0.00
cq	extrq	1.23	1.23	1.23	2.45	2.45	3.68
ao	etc	18.40	16.56	25.77	34.97	42.33	60.74
ao	rtc	0.61	0.61	1.84	1.23	2.45	3.07
ao	o	0.00	0.00	0.61	0.00	0.61	0.61
ao	f	0.00	3.07	1.84	3.07	4.91	4.91
ao	aa	0.00	0.00	0.00	0.00	0.00	0.00
a	a	1.23	7.36	3.07	8.59	10.43	11.66
c	c	0.00	0.61	1.84	0.61	2.45	2.45

PERCENT OF R, CQ, MO, A, AND C WITHIN A CHILD CATEGORY

Key	ci	cip	cw	ci+cip	cip+cw
r	2.27	5.56	3.08	4.08	4.20
cq	22.73	9.26	9.23	15.31	9.24
mo	70.45	61.11	75.38	65.31	68.91
a	4.55	22.22	7.69	14.29	14.29
c	0.00	1.85	4.62	1.02	3.36

PERCENT OF CODES FOR R

Key	ci	cip	cw	ci+cip	cip+cw
er	0.00	33.33	100.00	25.00	60.00
erp	0.00	0.00	0.00	0.00	0.00
cr	0.00	33.33	0.00	25.00	20.00
expr	0.00	0.00	0.00	0.00	0.00
extr	100.00	33.33	0.00	50.00	20.00

PERCENT OF CODES FOR CQ

Key	ci	cip	cw	ci+cip	cip+cw
wh	40.00	20.00	16.67	33.33	18.18
occ	0.00	0.00	0.00	0.00	0.00
yn	10.00	20.00	16.67	13.33	18.18
erq	0.00	0.00	16.67	0.00	9.09
erpq	0.00	0.00	0.00	0.00	0.00
crq	30.00	20.00	16.67	26.67	18.18
exprq	0.00	0.00	0.00	0.00	0.00
extrq	20.00	40.00	33.33	26.67	36.36

PERCENT OF CODES FOR MO

Key	ci	cip	cw	ci+cip	cip+cw
etc	96.77	81.82	85.71	89.06	84.15
rtc	3.23	3.03	6.12	3.13	4.88
o	0.00	0.00	2.04	0.00	1.22
f	0.00	15.15	6.12	7.81	9.76
aa	0.00	0.00	0.00	0.00	0.00

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