



1982

## Formal observation of family interaction during structured play

Darell C. Provencher  
*University of the Pacific*

Follow this and additional works at: [https://scholarlycommons.pacific.edu/uop\\_etds](https://scholarlycommons.pacific.edu/uop_etds)

 Part of the [Psychology Commons](#)

---

### Recommended Citation

Provencher, Darell C.. (1982). *Formal observation of family interaction during structured play*. University of the Pacific, Thesis. [https://scholarlycommons.pacific.edu/uop\\_etds/2069](https://scholarlycommons.pacific.edu/uop_etds/2069)

This Thesis is brought to you for free and open access by the Graduate School at Scholarly Commons. It has been accepted for inclusion in University of the Pacific Theses and Dissertations by an authorized administrator of Scholarly Commons. For more information, please contact [mgibney@pacific.edu](mailto:mgibney@pacific.edu).

Formal Observation of Family Interaction  
During Structured Play

A Thesis

Presented in Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts

by

Darell C. Provencher

September, 1982

This thesis, written and submitted by

Darell C. Provencher

is approved for recommendation to the Committee  
on Graduate Studies, University of the Pacific.

Department Chairman or Dean:

Martin T. Gison

Thesis Committee:

J. B. Bauch Chairman  
Martin T. Gison  
Michael T. Davis

Dated

9/30/87

### Acknowledgements

I would like to express my gratitude to Dave Phillips for his direction and encouragement to develop the thesis from my research apprenticeship with him. I am also grateful to Alison Agras and Dudley Blake for their long hours of training and observing families. I would like to thank Doug Matheson for his technical expertise in building the audio timer and for the computer printout text used for the AABT paper presentation. I am grateful to my committee members, Mike Davis and Martin Gipson, for their reviews and critiques of the manuscript. I am greatly indebted to my chairperson, Ken Beauchamp, for his wise tutelage, analyses of computer printouts, and his editorial assistance and support of the APA paper presentation. I wish to thank the Liberato and Little families for volunteering for videotaping used in observer training sessions. I am most grateful and forever indebted to my wife, Jan Provencher, for her invaluable roles as observer, typist, graphic artist, critic, and friend. Finally, I am thankful for the participation of the twelve families that made the thesis possible in the first place.

### Abstract

The present study explored how behavioral interactions in two-male-sibling families during structured play may be affected by the relative ages of siblings and by the interaction situations involved. Six dyadic interaction situations of 30 minutes duration each were observed among members of 12 normal families in their homes, once a week for five consecutive weeks. Families were categorized into three groups: (a) a younger sibling and an older sibling between 2-5 years of age, (b) 2-5 year-old younger sibling and 6-9 year-old older sibling, and (c) a younger sibling and an older sibling between 6-9 years of age. The interaction situations consisted of (a) child-directed interaction with mother, (b) child-directed interaction with father, (c) child-directed interaction with older sibling, (d) mother-directed interaction, (e) father-directed interaction, and (f) older sibling-directed interaction. The coding system included 34 discrete behaviors. When interaction situations were combined into parent-child and older sibling-child interaction situations, a linear combination of six behaviors correctly classified cases 89% of the time. A second stepwise discriminant analysis grouped families such that one group contained older siblings that were of preschool age and the second group contained older siblings of elementary school age. A linear combination of five behaviors was able to correctly classify cases 87% of the time. Three canonical correlations showed significant relationships between parent/sibling and child behaviors. The nature of these relationships tended to support reciprocal influence as an important element in family interaction. Results of discriminant analyses indicated that, for families with a preschool male, patterns of interaction are influenced by whether the older male sibling is of preschool or elementary school age.

## Formal Observation of Family Interaction During Structured Play

Within the last decade, interest in the behavioral study of family interaction has increased partially as a result of a growing awareness and concern over child abuse and other family problems. By studying the everyday interactions that occur within relatively normally functioning families, researchers may begin to discover which interactions or systems of interactions predict or precipitate abuse, neglect, or other family problems.

Presently there is little information available about the typical behavioral interactions of a normal family. Of the data that have been collected, most have been either unreliable or ambiguous. In addition, there has been little or no examination of normal families in clinical training, thus there is no actual baseline from which to measure the presence or degree of psychopathology in problem families (Haley, 1972). Usually when a family which is experiencing problems with a child sees a therapist, the therapist will base the treatment on his or her own clinical experience or on anecdotal information from other therapists. Given some normative information about the type of family being treated, the therapist could determine whether the child's behavior was within normative ranges and if the problem was actually more of a parent problem than a child problem. At the least, such information would greatly facilitate and give immediate direction to the treatment process.

In a methodological review of parent-child interaction studies, Lytton, (1971) stated that in the historical development of family studies, researchers have made a grave error in not conducting descriptive, normative studies of family interaction. One of the major stumbling blocks to conducting well-defined normative studies has been the lack of an appropriate, reliable observational methodology. What follows is a brief synopsis of the major methodological approaches that have been used to study family interaction.

### Methodological Approaches

Social scientists who have studied family life and family interaction have utilized a variety of observational methods and settings to gather information on how families function. Reviews of these studies have attempted to categorize these methods into several major classifications (Behles, 1974; Doyle, 1974; Dysart, 1973; Fontana, 1966; Lytton, 1971). Although a variety of procedures have been used in studying family interaction, it appears that based on the structure of these procedures, four major methods of observation have emerged. These methods of observation are: (a) informal observation, (b) interview techniques, (c) streams of behavior, and (d) formal observation.

Informal observation. The method of conducting informal observations of family functioning, especially parent-child or child-child interactions, was one of the first and most popular techniques used. This method usually involved making simple descriptions of several aspects of the child's and/or parents' (usually the mother's) activities. These observations are commonly made at unsystematic intervals and use no formal system for coding behaviors. The direct value of

informal observation methods are generally minimal at best. The one value that such a method has had in family research has been to give direction to studies that were subsequently more rigorous and systematic in their methodological approach.

Some of the more well-known studies using this approach were labeled "baby biographies." One of the early observational studies by Bayley and Schaefer (1960) used, as one of their techniques, mothers' descriptions of their children's activities from birth to 3 yrs of age. These maternal observations were combined with other data over a period of 25 yrs and converted to a system of objective scores that were used to determine changes in mother-child relationships over time. The reliability of such data remains questionable.

Church (1966) asked three mothers to keep detailed diaries of their newborns for a period of 2 years. Church gave the mothers some general guidelines to follow in writing their descriptions about activities of the child they found to be amusing, puzzling, or surprising. Studies such as Church's are weak in external validity, since there was no standardization of situations or standardized methods of describing the child's behavior.

A more advanced method of informal observation, which incorporated a standardized situation and was replicated over many years, was developed by Piaget (Droz & Rahmy, 1976). Using this "clinical method" Piaget was able to observe and record the developmental changes that occurred in children's behaviors. Piaget's method for observing however, was informal, incorporating his own subjective reactions and interpretations into his notes.



Interview techniques. Most of the early research done on parent-child interactions relied heavily upon interview techniques. Family studies using interview techniques usually entailed asking the parents of the child to give an account of the child's past behaviors or activities. Sometimes a questionnaire was also included in the interview procedure. In some studies interviews were very structured and controlled, while in other studies they were constructed so that parents could elaborate on particular situations using a less structured format.

One of the major problems encountered with interviews is that they are subject to serious errors resulting from sources such as parental bias. Results from several studies have shown that more often than not there is a considerable disagreement between what families report about themselves and what was actually observed (Kenkel & Hoffman, 1963; Levinger, 1963; Olson, 1969). In general, results of retrospective studies have been found to be unreliable, and questionnaire studies have not yielded high correlations between questionnaire data and behavioral observation data.

Streams of behavior. The method of collecting samples of an individual's activities, noting the context in which the activities occurred over systematic periods of time, and then coding the samples of behavior and events into meaningful units has often been called the collection of "streams of behavior." The format for the observations is designed so that the observations are a representative sample of a child's or parent's repertoire of behaviors. Initially the data are recorded without any systematic plan of observation. Afterwards the information is coded using specific rules and procedures. This proce-

dure allows for the use of independent observers and for measurement of interobserver agreement.

Major proponents of observing child-family interactions using the streams of behavior approach were Barker and his associates (1978). These researchers studied the typical daily activities of children in a small town that was called "Midwest." Detailed recordings were made of every behavior exhibited by a child and the environmental context or situations in which the behavior occurred. These "specimen records" were then coded into two basic units: (a) "behavior episodes" which described a behavioral interaction by the child; and (b) "behavior settings" that described the environmental setting in which the behavior episodes occurred. These units were then grouped into larger sequences, and conclusions were then made regarding typical child experiences and child-family interactions.

Barker and his associates (1978) based their research on the "ecological" approach, which states that the only behaviors that are truly worth studying are those that involve the interaction of persons with their natural environment. Barker believes that there is a great need to collect data that is descriptive of typical human behavior patterns (i.e., within the family), otherwise there is little or no foundation upon which to compare experimental findings. Although this method of observation does not always identify the determinant of a particular behavior, it does provide a systematic format for describing behavior in the natural environment and is frequently used to generate ideas for future areas of research.

Formal observation. The formal observation approach to observing family behavior involves using systematic observing and recording procedures. The following are usually established prior to the observation sessions: the specific time intervals of observation, the precise behaviors to be observed, and the procedures to be used to record the behaviors. One of the more commonly used types of formal observation is the frequency of occurrence of behaviors within a standardized time interval. A formal observation method also allows for interobserver agreement evaluations of independent observers.

A study by Green, Forehand, and McMahon (1979) illustrates this method. Green et al. studied the effects of parental manipulation on compliance and noncompliance in normal and deviant children. Child Compliance and Noncompliance were defined as follows:

Compliance: This behavior is determined by the presence of an observable cue reflecting the initiation of compliance within 5 seconds of the termination of the maternal command.

Noncompliance: This is determined by the presence of an observable cue reflecting (a) the failure to initiate compliance within 5 seconds of the termination of the maternal command or (b) the initiation of a prohibited activity within the 5 seconds following the termination of the command to inhibit the activity. (p. 251)

Frequency of behaviors were recorded within 15 sec intervals. A cassette tape recorder was used to signal the observer every 15 sec via an earphone. The frequency of occurrence method is most useful when observation periods are short in duration, as in the present study.

Observer agreement estimates tend to lower when longer observation intervals are used. Observer agreement was measured by having a calibrating observer independently record 40% of the sessions with the regular observer. Percent agreement was calculated as follows: agreements (behaviors coded by both observers) divided by agreements plus disagreements (occurred when only one observer coded a behavior) multiplied by 100.

The use of formal observation as a method of studying family interaction developed from the application of behavior modification techniques to the treatment of problem families. In tracing the development of behavior modification approaches to working with families, Mash, Hamerlynck, and Handy (1976) outlined some of the early major emphases which gave direction to subsequent research. Initially the behavioral approach to working with problem families focused on the deviant child as the individual targeted for behavior change. In a relatively short period of time behavioral researchers began to see the need to deal with members of the family as a system of reciprocal influence (Lytton, 1971). In order to study reciprocal influences in problem families, Patterson and his colleagues developed the Behavior Coding System (Patterson, Ray, & Shaw, 1969), a formal observation coding system of 29 operationally defined behaviors thought to provide a comprehensive list of important social behaviors emitted by parents and children.

As the behavioral approach to working with problem families became more sophisticated (e.g., use of coding systems such as Patterson's), researchers began to conduct control group studies in order to evaluate

whether the behavioral interactions observed in problem families differed significantly from those of "normal" families (Lobitz & Johnson, 1975; Patterson, 1976; Patterson & Cobb, 1973; Sallows, 1973; Shaw, 1972). Studies in which control groups have been used often made an a priori assumption that since control or normal families do not possess any of the characteristics defined by the investigator as "abnormal," then these control families can be considered "normal" or typical of most American families. Only within the last 5 years have researchers become aware of the inadequacy of the above assumption, and have begun to address the need for the application of behavioral analysis with representative samples of nonproblem families. Perhaps the best summary of the need for behavioral analysis with nonproblem families has been presented by Mash, Hamerlynck, and Handy (1976):

In considering any behavior change program a key question relates to the base rate of various behaviors. This knowledge is essential for developments which attempt to foster positive behaviors in non-deviant populations, as well as in evaluating the effectiveness of programs for deviant populations. In effect the question here is basically one of behavioral norms. The normative question in a behavioral approach attempts to relate behavioral occurrence to specific situations. (p. xvii)

### Normative Studies Using Formal Observation

Only a few studies have dealt directly with the issue of obtaining normative data on the behavioral interactions between members of normal families. Each of these studies have used slightly different methodologies and different structured and unstructured situations to accomplish their individual purposes. One of the purposes of these studies of normal families has been to identify specific situations that can be observed in the home and in a clinic setting. By finding a situation that is easy to observe in a clinic setting and is also analogous to what actually occurs in the home, researchers have hoped that such situations would be useful for the family therapist that does not have the resources or time to observe a family at home.

Dysart (1973) observed 30 "average" families for three evenings as they ate dinner in their own homes. An additional session was conducted in the clinic structured to simulate the dinner hour. Each family met the following criteria: (a) both natural parents were living together in the home, (b) two to four children were living in the home, (c) the target child was between 4.0 and 6.0 yrs of age and had no history of treatment for behavioral problems, and (d) no family member was under current psychiatric care. The purpose of Dysart's study was to provide behavioral descriptions of parent-child and sibling-child interactions, and to investigate the relationship between observed family behavior in the clinic and observed similar behaviors in the home. Interactions between the target child and other family members were recorded by trained student observers using a modified

version of the behavioral coding system developed by Patterson, Ray, and Shaw (1969).

Results of the study showed that the total number of deviant behaviors emitted by the target child was very low, averaging less than 2% of the total behaviors observed per observation session. There was also a correspondingly low rate of response to the target child's deviant behaviors by other family members. When fathers and mothers did consequence deviant behaviors, they did it almost four times more often with positive responses than with negative ones. Siblings consequence the target child's deviant behaviors at about one-fourth the rate of the father and mother for both positive and negative responses. All family members responded to deviant behaviors of the target child more frequently with a neutral response than with positive and negative responses combined. The positive response rate of mothers and fathers to target children's nondeviant behaviors averaged one response per minute. Nondeviant behaviors included behaviors such as "Command," "Leave," "Talk," "Approve," and "Laugh." Siblings responded positively to target children's nondeviant behaviors at about one-third the rate of parents. Very few of the target children's nondeviant behaviors were consequence negatively by any family members.

Approximately 80% of the interactions that took place with the target child involved the father and mother. Sibling interactions with the target child varied greatly from one family to the next, from as low as zero behaviors per min for a third of the families to as high as one verbal interaction per min for three families. Dysart did not find any consistent variation between the amount of verbal interactions and

number and ages of siblings. A possible explanation for the low rate of child-sibling interaction that Dysart gives is that parents often discourage interactions between siblings at the dinner table for the sake of order, particularly if the children are very young.

Johnson, Wahl, Martin, and Johansson (1973) observed 33 normal target children and their families at home, 1 hr prior to dinner, with all family members present. Family members were restricted to a two-room area with no visitors, television off, and short incoming phone calls. The rate of deviant behavior for the target child averaged .324 behaviors per min. In the study conducted by Dysart (1973), family members were confined to the dinner table, and the average rate of target child deviant behaviors was .135 per min. It may be that parents exert stronger control over deviant behavior during dinner since they can directly attend to sibling behaviors and parents are less able to attend to sibling behaviors either before or after dinner, thereby increasing the likelihood of child deviant behaviors.

Dysart's (1973) assessment of response patterns across the clinic and home setting showed that only the fathers' verbal behaviors for all three home sessions correlated significantly with their clinic behaviors, and only when positively responding to target children's non-deviant behaviors. Otherwise, data recorded for clinic and home settings showed no other statistically significant relationships.

The results of the two studies above point out how methodological variations, such as the actual time of observation (during dinner or prior to dinner), can have significant impact on the behavior rates observed. Studies such as those by Dysart (1973) and Johnson, Wahl,



Martin, and Johansson (1973) are steps in the right direction, but also point out that, as reviewed by Kniskern (1979), researchers are presently not able to show a significant relationship between clinic and home observations (Eyberg & Johnson, 1974; Forehand & Kay, 1977; Martin, 1970; Rapaport & Benoit, 1975; Schalock, Note 1), nor are they able to discriminate behavior problem families from normal families (Kogan & Wimberger, 1971; Lobitz & Johnson, 1975; Robinson & Eyberg, Note 2).

Kniskern (1979) concludes that little has been done to identify which variables affect which behaviors in family interactions, and why some variables may be more important than others. Thus Kniskern argues for the systematic variation of certain variables to determine their impact on family members' behaviors. A common response to this logical suggestion is that such an approach is complicated and cumbersome, due to the infinite combinations of dozens of possibly important variables that can affect family behaviors. However, when one considers who will benefit most from it--the practicing clinician or family therapist--the effort to meet the complexity of the task seems justifiable.

When focusing on families with relatively young children, one task or situation that is typical of parent-child and sibling-child interaction is play. Kniskern (1979) used structured play situations to investigate the effects of the absence or presence of a sibling on mother-target child interactions. Forty nonreferred families participated in the study. Each family consisted of at least two children. The mean age for the target child was 4.9 yrs with a range of 2.7 yrs, and the mean age of the sibling was 6.9 yrs with a range of 2.1 yrs.

The sample was randomly divided into two groups of 20 families for either observation in the home, or observation in the clinic. Both groups were observed on two consecutive days. The mother and target child were observed in three structured play situations based on research by Hanf (Note 3): (a) child-directed interaction, (b) parent-directed interaction, and (c) cleanup period directed by the mother. Each situation required approximately 5 min for observation, and was coded using the Dyadic Parent-Child Interaction Coding System (DPICS) developed by Eyberg, Robinson, Kniskern, and O'Brien (Note 4). The same three play situations were then repeated with the sibling present to assess the impact on mother-target child behavior.

Results showed that fewer target child deviant behaviors were emitted in the presence of the sibling than when the mother and target child were playing alone. Mothers gave nearly twice as many commands during the sibling absent condition than in the sibling present condition. Kniskern concludes that the higher level of parental commands in the sibling absent condition could perhaps explain the difference in rates of target child deviant behaviors under the sibling absent or present conditions. The finding that sibling presence results in less target child deviant behaviors is in contrast to Patterson and Cobb's (1973) findings that a sibling often facilitates or accelerates deviant behavior in a problem target child. Kniskern did find however, that the target child's rate of noncompliance did increase in both the home and clinic when the sibling was present. In terms of target child compliance, target children complied with 70.8% of mothers' commands, there was no opportunity to comply with mothers' commands 21% of the

time, and they noncomplied to mothers' commands 8.1% of the time. These percentages were computed across home and clinic settings.

Although Kniskern's (1979) findings on the effects of sibling presence or absence on mother-child interactions are of substantial clinical importance, he acknowledges that the generalizability of the results to the whole family unit across other variables is limited by several factors inherent in the design of the study. First, mothers were recruited that had "at least" two children. Kniskern does not report how many mothers in the study had more than two children. Mothers who have more than two children may interact differently when with the target children than would mothers that have exactly two children. Another variable that was not controlled was the mothers' marital status. Approximately 38% of mothers were divorced. Perhaps divorced mothers interact with their children differently than mothers who are married. Third, the sex and ages of siblings were not systematically controlled, which again could have effects on the behavioral interactions that were observed. It is possible that siblings of pre-school age would interact differently with their parents and each other than would siblings of elementary school age.

The purpose of the present study was to expand upon the methodology of Kniskern (1979) by modifying the Dyadic Parent-Child Interaction Coding System (Eyberg, Robinson, Kniskern, & O'Brien, Note 4) to record the interactions of the target child with mother, father, and older sibling. In addition, the present study explored how behavioral interactions in two-male-sibling families during structured play may be affected by the relative ages of the siblings involved. Of particular

interest was the exploration of which behaviors may be able to discriminate one family group from another, or one interaction situation from another.

### Method

#### Participants

Twelve families, in which the children had never been referred for behavioral problems, were recruited from Lodi, Stockton, and Manteca, California. Both the mother and father in each family were the natural parents. Families were recruited through nursery schools, family recreational agencies, and elementary schools. Once lists of families were obtained from these organizations, letters of recruitment were mailed to potential participants (see Appendix 1).

School age group. Each family had two male children, and was categorized by age and birth order into three groups of four families each: (a) both children of preschool age (2-5 yrs); (b) one child of preschool age (2-5 yrs) and one child of elementary school age (6-9 yrs); and (c) both children of elementary school age (6-9 yrs).

Income. The median interval of adjusted gross income was \$23,000-23,999/yr, with a range of \$18,000-50,000/yr.

Education. The median number of years of formal education was 14 yrs for both mothers and fathers. Out of a total of 24 parents, the highest educational degree attained for 12 (50%) parents (mothers = 7, fathers = 5) was the high school diploma. The next largest degree group were those with the B.S./B.A. degree, accounting for 25% (mothers = 3, fathers = 3) of the total sample. The A.A. degree was

attained by 16.7% of parents (mothers = 2, fathers = 2), and graduate degrees by 8.3% of parents (mothers = 0, fathers = 2).

Occupation. At the time that the data were collected, none of the mothers reported a full-time employment position, and 2 of 12 mothers reported part-time employment. Managerial business occupations were reported by 50% (n = 6) of the fathers, followed by 25% (n = 3) in medical/science professional positions and 25% (n = 3) in city/county positions.

Religion. All families indicated a religious preference; 58.3% (n = 7) were Protestant and 41.7% (n = 5) were Catholic.

Incentive for participation. Since families were asked to be observed for several sessions, it was important that all families complete all of the observational sessions. Thus, an incentive was needed that would motivate the families to complete the study. Upon completion of the study each child received a \$25.00 U.S. savings bond. This type of monetary incentive was believed to be more appealing to most families than cash payment because of its focus on the children. Research does indicate that payment for participation is an effective method of motivation (Patterson, McNeal, Hawkins, & Phelps, 1967; Toobert, Note 5).

### Procedure

Each family was observed in their home for 30 min, once a week for 5 consecutive weeks. Family interactions were recorded once a week rather than five consecutive evenings because the possibility exists that families with small children will often have "runs" of bad days and atypical "bad" interactions. According to Patterson (Note 6) this

is a sound argument for using spaced sampling sessions and is relatively consistent with his data. The use of five observation sessions is more than adequate to obtain relatively stable measures of behavior. Other family interaction studies have reported analyses which lead them to conclude that a minimum of three sessions appear to provide stable measures for most behavioral code categories (Cobb, 1970; Dysart, 1973; Harris, 1970; Patterson, Cobb, & Ray, 1973).

As much as possible, each weekly session occurred on a different day of the week (Sunday through Friday). Each session began approximately 1/2 hr after dinner. Observation took place in either the family or living room. Each family was asked to have no visitors. Audio or visual entertainment systems, including radio, stereo, and television, were turned off. No outgoing phone calls were made, but incoming phone calls were answered briefly. Each 30 min of interaction was recorded by two observers working independently.

At the conclusion of the study a questionnaire was mailed to each family which asked for information on family income, religion, family activities, and frequency with which parents played with their children (see Appendix 2). In addition, families were sent a preliminary report of results. Included in the results were the procedure for assessing behavior code interobserver agreement and one-way analyses of variance that were computed for each behavior across school age groups and interaction situations (see Appendix 3).

Interaction coding system. The coding system used was a modification of the Dyadic Parent-Child Interaction Coding System (Eyberg, Robinson, Kniskern, & O'Brien, Note 4) and provided a frequency count

of 34 positive and negative behaviors which may occur between parent/sibling and child during play. Most of the behavior categories and their definitions have been described in coding manuals developed by Hanf (Note 3), by Patterson, Ray and Shaw (1969), and in a subsequent revision by Eyberg (1974). An additional 10 behavior categories were created by combining child ignore and responded-to categories (e.g., Laugh Ignored and Laugh Responded-To equals Child Laugh).

Two standard play situations make up the Dyadic Parent-Child Interaction Coding System procedures: (a) child-directed interaction (CDI); and (b) parent-directed interaction (PDI). In the present study a third play situation was added in which the older sibling was the agent directing the interaction between himself and the younger target child. This third situation was called sibling-directed interaction (SDI).

The standard procedure for the Dyadic Parent-Child Interaction Coding System requires the child-directed play situation to occur first, followed by the parent-directed play situation. No protocol has been established for the order of presentation of mother-directed, father-directed or sibling-directed play situations for the present coding system. Therefore, the order of presentation of these three play situations, following the child-directed play situation, were determined randomly for each family. In the child-directed play situation there were three dyadic interaction situations. The order of presentation of these three child-directed interactions were also randomly determined for each family.

By involving the younger child with all three family members, six interaction situations were generated: (a) child-directed interaction with mother, (b) child-directed interaction with father, (c) child-directed interaction with sibling, (d) mother-directed interaction, (e) father-directed interaction, and (f) sibling-directed interaction. In the child-directed interaction situations (a, b, and c above) the younger child was told, "In this situation, choose any activity you wish, and (parent or sibling) is to play along with you as you wish." Instructions to the parent or sibling in the parent or sibling-directed interaction situations (d, e, and f above) were: "In this situation, it is your turn to choose the game. You may choose any activity. Keep (younger child) playing with you according to your rules."

A frequency count of all parent/sibling and child behaviors occurring in the interactions was recorded at 1 min intervals. Each coding sheet represented 1 min of data collection. In order to reduce the obtrusiveness of the coding sheets, each sheet was taped into a page of an oversized magazine (e.g., Life), to give the appearance that the observers were reading a magazine. Each 60 sec the observers received an auditory signal through earphones from a timer attached to the belt of one of the observers (see Appendix 4). At the sound of the "beep," the observers turned to the next page of their magazines. Each situation involved 5 min of interaction. The total coding procedure required 30 min of observation.

For ease in performing computer data analyses and interpretation, each 5 min interaction situation was redefined by using the term "case." The total number of cases possible in the study were 360



(12 families x 5 sessions x 6 interaction situations). One case of sibling-directed interaction and one case of father-directed interaction in two families were not recorded. In one case the target child decided to sit in an observer's lap (during the first session) and in the second case the father was called away on an emergency. Therefore these data were discarded and a total of 358 cases were reported.

Toys. A standard set of toys that allowed for relatively quiet play activity was used for each family. These toys consisted of (a) natural wood blocks, (b) a Tinkertoy construction set, (c) a set of Lincoln Logs, (d) two Tente multipieced construction toys, (e) coloring books with a set of 48 crayons, (f) a Fisher-Price ring toss, (g) a Nerf car, (h) a stuffed toy seal, and (i) a stuffed toy elephant.

Observer training. Four observers participated in the study. The author coded all 60 sessions for all 12 families, while two observers coded 35 and 25 sessions, respectively. These two observers received monetary remuneration for work in the study. One of the two observers mentioned above and a fourth observer conducted six intermittent agreement checks over the 60 sessions. Observers began their training by studying the Dyadic Parent-Child Interaction Coding System manual (Note 4) with addendum regarding modifications for the present study (see Appendix 5). Each observer received approximately 22 hrs of training in the use of the coding system. The training involved practice sessions viewing videotapes of family interaction depicting the play situations, and live practice sessions with a volunteer family. Observers continued coding videotapes until they reached an inter-observer agreement level of  $\bar{r} = .80$ . Once the observers demonstrated

complete knowledge of the code categories and met the agreement criterion via coding of videotapes and a volunteer family, and completion of training manual materials, they were allowed to take part in the study.

Observer agreement. Robinson and Eyberg (Note 2) have reported interobserver agreement coefficients of  $\underline{r} = .91$  for parent behaviors and  $\underline{r} = .92$  for child behaviors for the Dyadic Parent-Child Interaction Coding System. Interobserver agreement is based on the ability of two or more observers to record the same information while independently watching the same situation at the same time (Patterson, 1977).

The coded behaviors recorded by the two observers in each 60 sec interval were collapsed into 5 min situations or "session" intervals. Agreement of the resulting interval data recorded by the two observers was computed using the Pearson product-moment correlation ( $\underline{r}$ ). Acceptable values of session reliability for  $\underline{r}$  should exceed .60 (Hartmann, 1977).

Agreement checks were conducted by two observers. One agreement observer was a graduate student who trained for 22 hrs on the coding system and conducted three agreement checks during the first 35 sessions. The other agreement observer had been a full-time observer for the first 35 sessions and afterwards conducted three intermittent agreement checks during the remaining 25 sessions. Six agreement checks were conducted on six different families during the 5th, 9th, 33rd, 36th, 56th, and 57th sessions. All six agreement checks were made "unannounced"; that is, neither the author nor the other regular

observer were aware of a future agreement check until several hrs before the session began.

Observer drift. Observer drift may occur when an observer unintentionally but consistently changes a way of observing or recording a behavior. Patterson, Reid, and Maerov (1979) mention at least two ways in which observer drift can occur. First, observers may change their way of recording behaviors after or between sessions in which their performance is monitored. This phenomenon has been noted by DeMaster, Reid, and Twentyman (1977), Reid (1970), and Taplin and Reid (1973). Second, observers that record together may eventually drift together in their use of the behavior codes so that they agree with one another but no longer agree with the standard definitions. This type of observer drift has been reported by DeMaster, Reid, and Twentyman (1977), and Romanczyk, Kent, Diament, and O'Leary (Note 7). The following procedures were implemented to control for observer drift: (a) one observer recorded the behaviors for all 12 families, so as to check agreement of coding with the second and third observers; (b) a fourth observer was trained and used in checking the agreement of the three full-time observers; and (c) bimonthly recalibration training sessions were held during the course of the study, using standard video tapes, in which observers compared their observations, discussed discrepancies, and reran tapes until all observers agreed.

Observer bias. Observer bias may occur when observers hold assumptions that lead to distortions in the data. Patterson, Reid, and Maerov (1979) note that observer bias most often occurs when the experimenter conveys his or her expectations to the observers, thereby

exerting a subtle influence on the coding decisions which they make. Skindrud (1973a) investigated the observer bias effect on informed and uninformed observers who were well trained and had several years of field experience with the coding system developed by Patterson et al. (1969). Results showed that there were no significant differences in the data between the two groups for family status (baseline or termination). In a second study Skindrud (1973b) trained 28 women observers in the use of the Patterson et al. (1969) coding system and then divided them into three groups for the purpose of looking at experimenter expectancy effects as they coded 12 sessions of video tapes of parent-child interactions. One group was given a bias to expect a 30% increase in deviant child behavior. A second group was given a bias to expect a 30% decrease in deviant behavior. The third group was not given a bias regarding experimenter expectations. Results indicated no significant differences between the three groups in the recorded data. In a similar study, Kent, O'Leary, Diament, and Dietz (1974) were able to replicate Skindrud's findings. Patterson, Reid, and Maerov (1979) concluded that if observers are well trained and the observer training procedures stated above are carried out, observer bias should not be a major problem for a properly designed observation study.

Observer presence effects. At present it is difficult to accurately assess the impact of observer presence on parent-child interactions. According to Patterson, Reid, and Maerov (1979) the studies completed to date have focused their attempts around the following three points of inquiry: (a) Do subjects orient to the observer (novel

stimulus)? (b) Does observation result in an increase in social interaction rates? (c) Do subjects habituate to observer presence?

Connolly and Smith (1972) collected observational data in nursery schools and suggest that observer presence elicited high rates of orienting behavior, especially during the first few sessions. After eight sessions habituation effects were reported but orienting behaviors did not fall to zero. High rates of orienting behavior have also been observed in an elementary classroom setting in which children were observed regularly. These behaviors persisted over a 6 mo period (Grimm, Parsons, & Bijou, 1972).

Some studies have indicated that observer presence increases rates of interactions. Zergib, Arnold, and Forehand (1975) observed 12 mother-child pairs as they sat in a waiting room. On two successive visits they were either informed or uninformed that they were being observed. Results showed that mothers increased their rate of play interaction and the use of positive verbal comments and attempts to structure the interaction when under the informed conditions. Other studies have shown that observer presence increased task oriented interaction (Mercatoris & Craighead, 1974), time working (Surrott, Ulrich, & Hawkins, 1969), and socially appropriate behaviors (Moos, 1968). Observer presence appears to increase some specific task-oriented to socially-oriented behaviors, but it is not characterized as a global attempt to "look good" (Patterson, Reid, & Maerov, 1979). People appear to select one or two behaviors appropriate to the setting and increase their rates while being observed.

In terms of habituation, Patterson and Cobb (1973) and Johnson and Bolstad (1975) found that in limited samples of families and only 6 to 10 observation sessions, there was no evidence for changes in mean level over sessions for family interaction. Kniskern (1979) found that behaviors recorded by the Dyadic Parent-Child Interaction Coding System of both normal mothers and their children were very consistent across two days of observation in a clinic and in their homes. Kniskern states that this consistency in behavior rates may be indicative of little or no reactivity to observer presence. Harris (1970) and Patterson and Harris (Note 8) suggest that the effects of observer presence are not of such a high magnitude that they can be detected with small samples of subjects.

Patterson and Cobb (1973) stated that there have been no data which clearly demonstrate significant observer presence effects for observational studies. Patterson, Reid, and Maerov (1979) updated this conclusion by suggesting that observer presence may accelerate a small number of setting-specific behaviors. Patterson et al. (1979) point out that none of the studies which have tested this hypothesis have used more than 20 sessions, and this in turn severely limits any statements that can presently be made regarding habituation. As stated regarding observer bias effects, Patterson et al. point out that for well-trained observers, observer presence effect is not a major problem.

In the present study, an attempt was made to minimize observer presence by keeping observers at least 2 m away (and not more than 3 m away). Observers positioned themselves no closer than 1 m to each other. The coding sheets were attached to the pages of large, current

magazines so as to be less obtrusive. While in the training sessions, observers were instructed that, during periods of observation, they were to keep a "low profile" and not to acknowledge any family member's behavior with either physical gestures or verbal behavior.

## Results

### Behavior Code Agreement

Using the frequency of a behavior recorded during a 5 min interaction situation as the unit of measurement ( $n = 30$  for 10 families;  $n = 29$  for 2 families), 528 Pearson  $r$  correlations were computed on 44 behaviors between the first and second observer for each family (see Appendix 6). An additional 264 correlations were computed between the first observer and the third agreement observer and another 264 correlations between the second observer and a third agreement observer, with both sets of correlations ( $n$  of cases = 6) computed on six families (see Appendix 7). A total of 1056 correlations were computed to assess behavior code interobserver agreement. There were a total of 27 behavior codes for which coefficients could not be computed across all families. This result occurred when a behavior was never observed in a family during the five sessions. Thus the variability of the behavioral occurrence for one or both observers was zero, leaving the Pearson  $r$  undefined (Hartmann, 1977). When Pearson  $r$  coefficients could not be computed on a behavior code for one or more families, it was eliminated from further analysis. One exception to the above rule was Child Change Activity which had an undefined correlation for one family. Inspection of the data on this family indicated that there was no recorded occurrence of this behavior during any session by the two

observers nor by an agreement observer. Correlation coefficients for the other 11 families were of sufficient magnitude to warrant the inclusion of this behavior code in further analyses.

After median correlation values were computed, 12 behavior codes remained which had median correlation values in the mid .90's, with a range of .78 to 1.0. These 12 behavior codes were the only codes to be used in subsequent data analyses and consisted of 8 parent/sibling behaviors, and 4 child behaviors.

Table 1 shows the median Pearson  $r$  values for the first observer with the second observer, and median Pearson  $r$  values for the third agreement observer with the first and second observers. Based on third observer median correlations with the first and second observers, the second observer had higher agreement coefficients for seven behavior codes and the first observer had higher coefficients for five behavior codes. Since the second observer had higher agreement coefficients for more behavior codes than did the first observer, all data analyses were performed on the data recorded by the second observer.

Data analyses were conducted in three stages. First, normative data are presented on the eight parent/sibling behavior codes and four child behavior codes. Means and standard deviations were computed for each behavior code per 5 min interval across school age groups, interaction situations, and sessions. One-way analyses of variance were computed on each behavior code to determine if there were significant differences in mean rates of behaviors across interaction situations, school age groups, and sessions.



Table 1  
Behavior Code Reliability Coefficients

	Observer 1 and 2 Median <u>r</u>	Observer 1 and 3 Median <u>r</u>	Observer 2 and 3 Median <u>r</u>
Acknowledge	.857	.890	.935
Critical Statement	.845	.970	.900
Laugh	.935	.970	.960
Unlabeled Praise	.920	.940	.980
Descriptive/Reflective Question	.945	.975	.980
Descriptive Statement	.830	.810	.930
Direct Command	.905	.925	.905
Respond to Child Laugh	.945	.995	.990
Compliance/Direct Command	.875	.810	.915
Child Change Activity	.780	.800	1.00
Child Laugh	.940	.980	.970
Child Whine	.875	.875	.945

After determining what behaviors were able to differentiate interaction situations, school age groups, or sessions, the second stage of analysis explored whether there were particular combinations of behaviors which would reliably distinguish one group from another, one interaction situation from another, or one session from another. For this purpose stepwise discriminant analyses were performed on parent/sibling and child behaviors with respect to school age groups, interaction situations and sessions. Because of the variety of behaviors observed and the differences in mean rates across situations and groups, it was possible that a collection of particular behaviors could be identified as discriminating variables. The statistical objective of discriminant analysis is to assign weights and linearly combine these discriminating variables in such a way that groups or interaction situations are forced to be as statistically distinct as possible (Klecka, 1975; Lindemann, Merenda, & Gold, 1980).

The final stage of data analysis explored the possibility of significant relationships between parent/sibling behaviors and child behaviors. Specifically, canonical correlation analysis was used to determine if there were collections or groups of parent/sibling behaviors that were significantly related to collections of child behaviors (Warwick, 1975). The basic objective of canonical correlation analysis is to derive a linear combination from the set of parent/sibling behaviors and a linear combination from the set of child behaviors in such a way that the correlation between these two linear combinations is maximized. Many such pairs of linear combinations between the two sets can be formed, and are known as canonical variates. These canonical

variates account for residual variance such that each variate produces linear combinations of variables from the sets of parent/sibling and child behaviors that are independent or uncorrelated with other canonical variates. Thus, it is possible to look at relationships between collections of parent/sibling behaviors and collections of child behaviors.

### Mean Behavior Rates

The means and standard deviations for each of the 12 behaviors were computed per 5 min interval of observation. One-way analyses of variance were computed for each behavior, across sessions, school age groups, and interaction situations.

Sessions. Table 2 shows the means, standard deviations, and results of one-way analyses of variance for each behavior code across the five observation sessions. No significant differences across sessions were shown for any parent/sibling or child behavior code.

School age groups. Table 3 shows the means, standard deviations, and results of one-way analyses of variance for each behavior code across preschool, preschool-and-elementary, and elementary school age groups of families. There were no statistically significant differences between school age groups for the following parent/sibling behaviors: Acknowledge, Critical Statement, Laugh, Descriptive Statement, and Respond to Child Laugh. One child behavior, Compliance to Direct Command, was not significantly different between groups.

Parents and siblings in the preschool family group gave the highest rates of Unlabeled Praise to the child, while parents and siblings in the elementary school age group emitted slightly higher rates of

Table 2

Comparison of Means, Standard Deviations, and Univariate F-Ratios  
Between Observation Sessions

Behavior Code	Session One		Session Two		Session Three		Session Four		Session Five		df	F	p
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
Acknowledge	3.46	4.45	2.54	2.64	2.87	2.75	2.70	2.88	2.82	2.52	4,353	-	-
Critical Statement	2.32	3.52	2.44	3.57	2.66	3.25	2.58	2.70	2.38	2.42	4,353	-	-
Laugh	1.18	4.17	.89	1.99	.65	1.47	.71	1.46	.61	1.43	4,353	-	-
Unlabeled Praise	1.20	1.99	1.11	1.60	1.00	1.53	1.24	1.76	1.08	2.00	4,353	-	-
Desc/Ref1 Question	9.34	7.72	9.75	9.25	9.44	8.46	8.70	7.22	8.11	6.84	4,353	-	-
Descriptive Statement	7.49	5.85	7.76	5.48	7.94	6.14	8.93	5.30	7.94	5.43	4,353	-	-
Direct Command	4.79	6.72	4.32	5.50	3.67	4.61	4.56	5.48	3.22	3.85	4,353	1.07	-
Respond to Child Laugh	.51	1.92	.85	2.20	.78	2.05	.79	2.53	.79	2.13	4,353	-	-
Compl/Direct Command	2.46	4.21	2.29	3.72	2.04	2.90	2.24	2.98	1.64	2.69	4,353	-	-
Child Change Activity	1.38	2.56	.96	1.97	.93	2.11	1.13	1.76	.88	1.47	4,353	-	-
Child Laugh	.59	2.36	1.07	2.50	1.03	2.29	.97	2.67	.94	2.14	4,353	-	-
Child Whine	.73	1.55	.84	1.85	.76	1.56	.89	2.60	.99	1.72	4,353	-	-

Table 3

Comparison of Means, Standard Deviations, and Univariate F-Ratios  
Between Preschool, Preschool/Elementary, and Elementary School Age Groups

Behavior Code	Preschool		Preschool & Elementary		Elementary		F	p
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Acknowledge	2.63	3.54	3.05	3.00	2.96	2.79	2,355	-
Critical Statement	2.64	2.72	2.54	3.65	2.26	2.91	2,355	-
Laugh	.81	1.48	.96	3.50	.67	1.45	2,355	-
Unlabeled Praise	1.7	2.15	.66	1.14	1.0	1.7	2,355	10.95 <.0001
Descriptive/Reflective Question	12.12	9.98	9.15	7.22	5.97	4.36	2,355	19.91 <.0001
Descriptive Statement	8.60	6.28	8.20	5.86	7.25	4.61	2,355	1.81 -
Direct Command	5.86	6.02	3.34	5.44	3.13	3.86	2,355	10.18 <.0001
Respond to Child Laugh	1.13	2.71	.49	2.02	.60	1.59	2,355	3.01 -
Compliance/Direct Command	2.34	3.15	2.22	4.18	1.83	2.50	2,355	-
Child Change Activity	2.6	2.77	.25	.63	.32	.70	2,355	74.46 <.0001
Child Laugh	1.37	2.77	.59	2.34	.81	1.94	2,355	3.42 <.0337
Child Whine	1.61	2.5	.34	.95	.58	1.64	2,355	16.25 <.0001

Unlabeled Praise than the preschool-and-elementary school age group. Parents and siblings in the preschool group emitted the highest rates of Descriptive/Reflective Question, and the lowest rates were observed with parents and siblings in the elementary school age group which asked Descriptive/Reflective Questions at half the rate of the preschool group. Parents and siblings in the preschool group gave significantly higher rates of Direct Command than did parents and siblings of preschool-and-elementary, and elementary school age groups, which gave Direct Commands at very similar rates. Children in the preschool group changed activities at a much higher rate than the other two groups. Rates of Change Activity for the other two groups occurred at similar rates and were approximately at one-tenth the rate of Change Activity emitted by the preschool group of children. Rates of Child Laugh were highest for children in the preschool group. Children in the elementary school age group laughed slightly more often than children in the preschool-and-elementary school age group. Children in the preschool group had the highest rates of Whine, while children in the other two groups whined at substantially lower rates.

Interaction Situations. Table 4 shows the means, standard deviations, and results of one-way analyses of variance for each behavior code across all six interaction situations. There were no statistically significant differences between interaction situations for the following behaviors: parent/sibling Respond to Child Laugh and Child Laugh.

In all six interaction situations there were significant differences in mean behavior rates between family members for several

Table 4

Comparison of Means, Standard Deviations, and Univariate F-Ratios  
Between Interaction Situations

Behavior Code	Child-Directed Interaction			Parent/Sibling-Directed Interaction			F	df	p						
	Mother Mean	Father Mean	Sibling Mean	Mother Mean	Father Mean	Sibling Mean									
Acknowledge	4.37	3.30	3.12	2.90	.88	1.39	4.15	3.07	.59	.98	5,352	23.61	<.0001		
Critical Statement	1.37	2.48	1.08	1.43	2.65	3.89	3.33	2.86	3.22	3.09	3.24	3.57	5,352	6.77	<.0001
Laugh	1.27	2.24	.33	.66	.35	.92	1.02	1.66	.54	1.00	1.36	4.75	5,352	2.34	<.0412
Unlabeled Praise	1.48	1.65	1.50	2.03	.08	.33	1.45	1.63	2.14	2.45	.10	.30	5,352	16.01	<.0001
Desc/Refl Question	13.02	7.62	13.40	8.00	3.88	4.85	12.13	6.90	10.32	7.24	1.56	2.38	5,352	36.50	<.0001
Descriptive Statement	8.48	4.91	6.87	4.47	4.92	4.45	11.77	6.07	10.86	4.96	5.19	5.11	5,352	19.53	<.0001
Direct Command	3.10	3.11	4.10	5.39	1.27	1.87	5.22	5.28	9.52	7.16	1.49	2.00	5,352	26.42	<.0001
Respond to Child Laugh	.58	1.78	.47	.96	.23	.89	1.00	2.28	1.22	3.24	.97	2.72	5,352	1.81	-
Compliance/Direct Command	1.45	1.64	2.52	3.95	.47	.95	2.70	2.82	5.17	4.92	.52	1.06	5,352	21.09	<.0001
Child Change Activity	.85	1.29	.70	1.38	1.38	2.43	.75	1.38	.61	1.24	2.03	3.18	5,352	4.72	<.0003
Child Laugh	.67	2.00	.62	1.06	.43	1.21	1.10	2.39	1.34	3.33	1.39	3.28	5,352	1.73	-
Child Whine	.42	1.11	.22	.58	1.58	2.34	.95	1.64	.76	1.61	1.14	2.86	5,352	4.31	<.0008

behaviors. In describing these relationships between family members, these interaction situations are grouped into Child-Directed Interaction situations and Parent/Sibling-Directed Interaction situations.

Mothers' rates of Acknowledgement of the target child were 1.4 times higher than fathers and almost five times higher than siblings during Child-Directed Interaction situations. In Parent/Sibling-Directed Interaction situations mean rates of Acknowledgement were the same for mothers and fathers, while siblings acknowledged their younger brothers at one-seventh the rate of parents.

In Child-Directed Interaction situations siblings emitted the highest rates of Critical Statement, which were 1.9 times higher than mothers and 2.4 times higher than fathers. Although siblings emitted the highest rates of Critical Statement in Child-Directed Interaction situations, in Parent/Sibling-Directed Interaction situations all family members emitted similar rates of Critical Statements towards the target child.

Siblings' rates of Laugh were 1.3 times higher than mothers and 2.5 times higher than fathers during Parent/Sibling-Directed Interaction situations. In Child-Directed Interaction situations mothers laughed with the target child 3.8 times more often than did fathers or siblings.

In Child-Directed Interaction situations siblings gave virtually little or no Unlabeled Praises to their younger brothers while mothers and fathers responded at essentially the same rates, which were nearly 19 times more often than siblings. In Parent/Sibling-Directed Interaction situations fathers delivered the highest rates of Unlabeled Praise and mothers gave the target child Unlabeled Praises at two-thirds the



rate delivered by fathers. Parents delivered Unlabeled Praises at a rate 14 to 21 times more often than siblings.

Mothers and fathers emitted similar, high rates of Descriptive/Reflective Questions during Child-Directed Interaction situations which were 3.5 times higher than siblings. Mothers asked the most Descriptive/Reflective Questions and did so 1.2 times more often than fathers and 7.8 times more often than siblings during Parent/Sibling-Directed Interaction situations.

Mothers emitted the highest rates of Descriptive Statement during Child-Directed Interaction situations which were 1.2 times higher than fathers and 1.7 times higher than siblings. As in Child-Directed Interaction situations mothers also emitted the highest rates of Descriptive Statement during Parent/Sibling-Directed Interaction situations. Mothers' rates of Descriptive Statements were 1.1 times higher than fathers and 2.3 times higher than siblings.

Fathers gave more Direct Commands than mothers or siblings in both Child-Directed and Parent/Sibling-Directed Interaction situations. Fathers' rates of commands more than doubled when they directed the situation, and occurred 1.8 times more often than when mothers directed and 6.4 times more often than when siblings directed the interaction situation. During Child-Directed Interaction situations fathers gave Direct Commands 1.3 times more often than mothers and 3.2 times more often than siblings. Siblings gave fewer commands compared to parents, regardless of the type of interaction situation.

Children complied most frequently to the Direct Commands of their fathers in both Child-Directed and Parent/Sibling-Directed Interaction

situations. In Child-Directed Interaction situations the target child complied to the father 1.7 times more often than to the mother and 5.4 times more often than to the sibling. In Parent/Sibling-Directed Interaction situations the target child complied to the father 1.9 times more often than to the mother and 9.9 times more often than to the sibling.

Children were most active when interacting with siblings in both types of interaction situations. Children's rates of Change Activity were highest when siblings directed the activity and were 2.7 to 3.3 times higher than when parents directed the interaction situation. During Child-Directed Interaction situations the rate of Child Change Activity with sibling was 1.6 times higher than with mother and two times higher than with father.

Children's rates of Whine were highest when they were interacting with siblings regardless of the type of interaction situation. When children interacted with their siblings, they whined the most when they directed their older brothers in play. The mean rate of Child Whine in Child-Directed Interaction with sibling was 3.8 times higher than with mother and 2.7 times higher than with father. In Parent/Sibling-Directed Interaction situations children whined when with siblings 1.2 times more often than with mothers and 1.5 times more often than with fathers. Children whined at a higher rate when interacting with their mothers than fathers in both situations.

### Stepwise Discriminant Analyses

Stepwise discriminant analyses (Klecka, 1975) were performed on parent/sibling behaviors and child behaviors with respect to school age group, interaction situations, sessions, and combinations thereof.

Sessions. A stepwise discriminant analysis of discrete behaviors on the sessions variable found that both univariate F-ratios and minimum tolerance levels for all behavior codes were insufficient (minimum F to enter = 1.0) for inclusion in the analysis, indicating that rates of parent/sibling and child behaviors did not discriminate one session from another.

School age groups. Results of a stepwise discriminant analysis of discrete behaviors found that the linear combination of Child Change Activity, Descriptive/Reflective Question, Child Whine, and Unlabeled Praise in Function 1 correctly classified only 57% of cases as members of the school age groups to which they actually belonged (see Table 5).

In the above analysis an inspection of the group centroids defined by the first discriminant function in Table 6 showed that the preschool age group was distinguishable from the other two groups. As a result of this finding, an additional stepwise discriminant analysis involved grouping families such that one group contained older siblings that were of preschool age (2-5 yrs), and the second group contained older siblings of elementary school age (6-9 yrs), combining the former preschool-elementary group and elementary-elementary group.

Tables 7 and 8 show the results of the stepwise discriminant analysis. Table 7 shows that a linear combination of Child Change Activity, Child Whine, Descriptive/Reflective Question, Unlabeled

Table 5  
 Classification Results on School Age Groups

Actual Group	No. of Cases <sup>a</sup>	Predicted Group Membership		
		1	2	3
Group 1 Preschool	119	91 76.5%	24 20.2%	4 3.4%
Group 2 Pre/Elementary	119	8 6.7%	59 49.6%	52 43.7%
Group 3 Elementary	120	12 10.0%	54 45.0%	54 45.0%

Percent of "grouped" cases correctly classified: 56.98%

a Number of cases = 4 families x 5 sessions x 6 situations (minus one situation from Preschool Group and one situation from Pre/Elementary Group).

Table 6  
Stepwise Discriminant Analysis on School Age Groups

Step	Action Entered	Wilk's Lambda	Sig.
1	Change Activity	.704484	<.0001
2	Descriptive/Reflective Question	.605263	<.0001
3	Whine	.530582	<.0001
4	Unlabeled Praise	.492620	<.0001

#### Canonical Discriminant Functions

Function	Eigenvalue	Percent Variance	Cumulative Percent	Canonical Correlation	After Function	Wilk's Lambda	$\chi^2$	D.F.	p
					0	.4926196	250.28	8	<.0001
1*	.93675	95.11	95.11	.6954651	1	.9540822	16.616	3	<.0008
2	.04813	4.89	100.00	.2142845					

\*Marks the 1 canonical discriminant function to be used in the remaining analysis.

#### Standardized Canonical Discriminant Function Coefficients

Behavior Code	Function 1
Unlabeled Praise	.35097
Descriptive/Reflective Question	.49842
Whine	.51825
Change Activity	.90902

#### Canonical Discriminant Functions Evaluated at Group Means (Group Centroids)

Group	Function 1
Preschool	1.36571
Preelementary	-.66186
Elementary	-.69799

Table 7

Classification Results on Preschool Sibling  
and Elementary Sibling Groups

Actual Group	No. of Cases <sup>a</sup>	Predicted Group Membership	
		1	2
Group 1 Preschool Sibling	119	92 77.3%	27 22.7%
Group 2 Elementary Sibling	239	19 7.9%	220 92.1%

Percent of "grouped" cases correctly classified: 87.15%

a Number of Cases for Group 1 = 4 families x 5 sessions x 6 interaction situations (minus one situation). Number of Cases for Group 2 = 8 families x 5 sessions x 6 interaction situations (minus one situation).

Table 8

Stepwise Discriminant Analysis on  
Preschool Sibling and Elementary Sibling Groups

Step	Action Entered	Wilk's Lambda	Sig.
1	Change Activity	.704657	<.0001
2	Descriptive/Reflective Question	.623734	<.0001
3	Whine	.546959	<.0001
4	Unlabeled Praise	.516431	<.0001
5	Laugh	.501217	<.0001

Canonical Discriminant Functions

Function	Eigenvalue	Percent Variance	Cumulative Percent	Canoncial Correlation	After Function	Wilk's Lambda	$\chi^2$	D.F.	p
1	.99514	100.00	100.00	.7062455	0	.5012172	244.17	5	<.0001

Standardized Canonical Discriminant Function Coefficients

Behavior Code	Function 1
Unlabeled Praise	.36163
Descriptive/Reflective Question	.49767
Child Laugh	.24571
Whine	.53756
Change Activity	.89620

Canonical Discriminant Functions Evaluated  
at Group Means (Group Centroids)

Group	Function 1
Preschool Sibling	1.40978
Elementary School Sibling	- .70194

Praise, and Child Laugh were able to correctly classify cases 87% of the time. In other words, if all that was known about the families were their recorded dyadic interaction situations on the above five behaviors, one would be able to correctly classify these interaction situations as belonging to the preschool sibling group or the elementary sibling group 87% of the time. The purpose for deriving a classification percentage is to determine how effective the discriminating variables are. If the percentage classification is low, then the linear combination of behaviors selected are poor discriminators.

Table 8 shows that before the first function was removed Wilk's lambda was .5012. Wilk's lambda is a measure of the discriminating power in the variables not yet removed by the discriminant functions. The value obtained for lambda is inversely related to the variables' discriminating power such that the smaller the value, the more information remaining to be discriminated by the canonical discriminant function. The corresponding chi-square value was 244.17 with a probability level of  $p < .0001$ . This means that a lambda of .5012 or smaller has a  $p < .0001$  occurring due to chance, if there was no discriminating information to be accounted for by the first function. Thus, a lambda of .5012 indicated considerable discriminating power in the five behaviors and their ability to discriminate the preschool sibling group of families from the elementary sibling group.

Evaluation of the canonical discriminant function coefficients of each behavior at group centroids indicated that all five behaviors contributed positively to the preschool sibling group function and negatively to the elementary sibling group function. This relationship



between the canonical discriminant function and group centroids is further illustrated by the results of one-way analyses of variance of the five behaviors shown in Table 9. The negative weighting of the five behaviors with the elementary sibling group of families appears to correspond with significantly lower rates of these behaviors when compared to the preschool group of families. Conversely, the positive weighting of the five behaviors with the preschool sibling group of families corresponded to one-way analyses of variance which indicated that families with preschool siblings had significantly higher rates of Child Change Activity (nine times higher), Child Whine (four times higher), Descriptive/Reflective Question (1.6 times higher), Unlabeled Praise (two times higher), and Child Laugh (two times higher) than did families with older siblings of elementary school age.

Interaction situations. Although Table 10 shows that the percentage of cases correctly classified was low (41%), further inspection of Table 11 shows that the first discriminant function evaluated at group centroids indicated a clear separation between parent-child (Groups 1, 2, 4, & 5) and sibling-child (Groups 3 & 6) interaction situations. An additional discriminant analysis was performed in which interaction situations were combined into parent-child and sibling-child interaction situations.

Tables 12 and 13 show the results of the stepwise discriminant analysis. A linear combination of three parent/sibling behaviors-- Acknowledge, Unlabeled Praise, Descriptive/Reflective Question, and three child behaviors--Compliance to Direct Command, Whine, and Change Activity, correctly classified cases 89% of the time. Table 13 shows

Table 9

Comparison of Means, Standard Deviations, and Univariate F-Ratios  
Between Preschool Sibling and Elementary Sibling Groups

Group	Behavior Code	Mean	S.D.	df	F	p
Preschool Sib Elem Sib	Change Activity	2.597 .284	2.775 .663	1,356	149.2	<.0001
Preschool Sib Elem Sib	Child Whine	1.605 .464	2.505 1.343	1,356	31.45	<.0001
Preschool Sib Elem Sib	Desc/Refl Quest	12.118 7.552	9.981 6.154	1,356	28.38	<.0001
Preschool Sib Elem Sib	Unlabeled Praise	1.697 .841	2.153 1.486	1,356	19.33	<.0001
Preschool Sib Elem Sib	Child Laugh	1.370 .699	2.774 2.150	1,356	6.341	<.01

Table 10  
 Classification Results on Interaction Situations

Actual Group	No. of Cases <sup>a</sup>	Predicted Group Membership					
		1	2	3	4	5	6
Group 1 CDI/Mother	60	27 45.0%	7 11.7%	13 21.7%	9 15.0%	1 1.7%	3 5.0%
Group 2 CDI/Father	60	20 33.3%	17 28.3%	13 21.7%	3 5.0%	4 6.7%	3 5.0%
Group 3 CDI/Sibling	60	3 5.0%	2 3.3%	14 23.3%	2 3.3%	1 1.7%	38 63.3%
Group 4 MDI	60	21 35.0%	5 8.3%	6 10.0%	17 28.3%	8 13.3%	3 5.0%
Group 5 FDI	59	16 27.1%	8 13.6%	2 3.4%	10 16.9%	20 33.9%	3 5.1%
Group 6 SDI	59	0 0.0%	1 1.7%	3 5.1%	3 5.1%	1 1.7%	51 86.4%

Percent of "grouped" cases correctly classified: 40.78%

a Number of Cases = 1 interaction situation x 12 families x 5 sessions (minus one session for FDI and one session for SDI).

Table 11  
Stepwise Discriminant Analysis on Interaction Situations

Step	Action Entered	Wilk's Lambda	Sig.
1	Descriptive/Reflective Question	.658540	<.0001
2	Compliance to Direct Command	.503143	<.0001
3	Descriptive Statement	.446472	<.0001
4	Acknowledge	.339522	<.0001

Canonical Discriminant Functions

Function	Eigenvalue	Percent Variance	Cumulative Percent	Canonical Correlation	After Function	Wilk's Lambda	$\chi^2$	D.F.	p.
					0	.3995221	322.96	20	<.0001
1*	.88342	74.26	74.26	.6848729	1	.7524678	100.11	12	<.0001
2*	.19644	16.51	90.77	.4051983	2	.9002810	36.977	6	<.0001
3*	.09998	8.40	99.18	.3014880	3	.9902937	3.4333	2	<.1797
4	.00980	.82	100.00	.098524					

\*Marks the 3 canonical discriminant functions to be used in the remaining analysis.

Standardized Canonical Discriminant Function Coefficients

Behavior Code	Function 1	Function 2	Function 3
Acknowledge	-.41794	.19817	.48260
Desc./Reflect. Question	-.69826	.59196	-.38657
Descriptive Statement	-.13634	-.60954	.74628
Compliance to Direct Command	-.39162	-.58841	-.79971

Canonical Discriminant Functions Evaluated  
at Group Means (Group Centroids)

Interaction Situation	Function 1	Function 2	Function 3
CDI/Mother	-.57560	.54825	.28287
CDI/Father	-.52274	.47593	-.49055
CEI/Sibling	1.17069	.08887	-.05267
MDI	-.70205	-.19575	.44639
FDI	-.81024	-.74378	-.24798
SDI	1.45062	-.18907	.05879

Table 12

Classification Results on  
Parent-Child and Sibling-Child Interactions

Actual Group	No. of Cases <sup>a</sup>	Predicted Group Membership	
		1	2
Group 1 Parent	239	211 88.3%	28 11.7%
Group 2 Sibling	119	10 8.4%	109 91.6%

Percent of "grouped" cases correctly classified: 89.39%

a Number of Cases for Group 1 = 12 families x 4 interaction situations x 5 sessions (minus one situation). Number of Cases for Group 2 = 12 families x 5 sessions x 2 interaction situations (minus one situation).

Table 13  
Stepwise Discriminant Analysis on  
Parent-Child and Sibling-Child Interactions

Step	Action Entered	Wilk's Lambda	Sig.
1	Descriptive/Reflective Question	.680625	<.0001
2	Acknowledge	.579849	<.0001
3	Compliance to Direct Command	.540228	<.0001
4	Change Activity	.515035	<.0001
5	Unlabeled Praise	.493078	<.0001
6	Whine	.481193	<.0001

Canonical Discriminant Functions

Function	Eigenvalue	Percent Variance	Cumulative Percent	Canonical Correlation	After Function	Wilk's Lambda	$\chi^2$	D.F.	p
1*	1.07817	100.00	100.00	.7202824	0	.4811932	258.21	6	<.0001

\*Marks the 1 canonical discriminant function to be used in the remaining analysis.

Standardized Canonical Discriminant Function Coefficients

Behavior Code	Function 1
Acknowledge	.34321
Unlabeled Praise	.31398
Descriptive/Reflective Question	.70109
Compliance to Direct Command	.30878
Whine	-.21702
Change Activity	-.29753

Canonical Discriminant Functions Evaluated  
at Group Means (Group Centroids)

Interaction Situation	Function 1
Parent	.73064
Sibling	-1.46741

that Wilk's lambda was .4812. The corresponding chi-square was 258.21 with a probability level  $<.0001$ , which indicated considerable discriminating power in the behaviors before the function was removed. An evaluation of the canonical discriminant function coefficients of each behavior at group centroids indicated that Descriptive/Reflective Question, Acknowledge, Unlabeled Praise, and Child Compliance to Direct Command were high frequency behaviors associated with the parent-child interaction situations, and Child Change Activity and Child Whine were high frequency behaviors associated with the sibling-child interaction situations. The relationships found between the canonical discriminant function coefficients and group centroids are further supported by one-way analyses of variance (see Table 14) of the six behavior codes which indicated that: (a) parents asked questions of the target child at six times the rate of the older siblings, (b) parents acknowledged the target child four times more often than did older siblings, (c) parents gave twice as many unlabeled praises of the target child than older siblings gave, (d) the target child complied to direct commands three times more often when interacting with parents than with siblings, (e) the target child changed his play activity twice as often with the older sibling than when with parents, and (f) the target child whined twice as often when interacting with the older sibling than with parents.

#### Canonical Correlation Analysis

Table 15 shows the results of a canonical correlation between (a) the set of parent/sibling behaviors, Acknowledge, Critical Statement, Unlabeled Praise, Descriptive/Reflective Question, Descriptive

Table 14

Comparison of Means, Standard Deviations, and Univariate F-Ratios  
Between Parent-Child and Sibling-Child Interactions

Group	Behavior Code	Mean	S.D.	df	F	p
Parent-Child Sibling-Child	Desc/Refl Quest	12.226 2.731	7.499 3.989	1,356	167.0	<.0001
Parent-Child Sibling-Child	Acknowledge	3.946 .739	3.240 1.210	1,356	108.8	<.0001
Parent-Child Sibling-Child	Unlabeled Praise	1.640 .092	1.976 .319	1,356	71.99	<.0001
Parent-Child Sibling-Child	Compliance/Dir- rect Command	2.950 .496	3.775 .999	1,356	48.54	<.0001
Parent-Child Sibling-Child	Change Activity	.728 1.706	1.321 2.832	1,356	19.85	<.0001
Parent-Child Sibling-Child	Child Whine	.586 1.361	1.332 2.609	1,356	13.88	<.0002



Table 15

Canonical Correlation Analysis Between  
Parent/Sibling and Child Behaviors

Number	Eigenvalue	Canonical Correlation	Wilk's Lambda	$\chi^2$	D.F.	p
1	.37925	.61583	.43747	290.603	24	-.0001
2	.25286	.50286	.70474	123.001	15	-.0001
3	.05388	.23211	.94325	20.536	8	-.008
4	.00304	.05512	.99696	1.070	3	-.784

Coefficients for Canonical Variates  
of the First Set, Parent/Sibling Behaviors

Behavior Code	Canonical Variate 1	Canonical Variate 2	Canonical Variate 3
Acknowledge	-.13439	.71288	.28314
Critical Statement	.02966	.17992	.87352
Unlabeled Praise	-.04714	.38936	.25747
Descriptive/Reflective Question	.03899	-.32492	.18168
Descriptive Statement	.35435	.32398	-.23746
Laugh	.90934	-.12797	-.15958

Coefficients for Canonical Variates  
of the Second Set, Child Behaviors

Behavior Code	Canonical Variate 1	Canonical Variate 2	Canonical Variate 3
Compliance to Direct Command	.08374	.94657	.12089
Laugh	.98591	-.19367	.09231
Whine	-.01307	.08318	.94827
Change Activity	-.11871	-.25135	.27492

Statement, and Laugh, and (b) the set of child behaviors, Compliance to Direct Command, Laugh, Whine, and Change Activity. Canonical correlation is a statistical method that, through a least-squares analysis, forms two linear composites of each of two sets of variables with the linear composites differentially weighted so as to maximize the correlation between the two linear composites. The correlation between the two composites is the canonical correlation (Warwick, 1975). The summary table shows that three canonical correlations were produced which were statistically significant. The value of the first canonical correlation was .616, which indicates that the amount of variance shared by the first two canonical variates was 38% (its eigenvalue). In other words, 38% of the variance in the composite of four measures of child behavior can be accounted for by a linear combination of six parent/sibling behaviors. Before removal of the first canonical variates the residual variance remaining was 56% (Wilk's lambda = .437). The second canonical correlation value was .503, which indicated that the second canonical variates shared 25% of their variance. Before removal of the second canonical variates the residual variance remaining was 30% (Wilk's lambda = .705). The third canonical correlation, which was .232, indicated that the third canonical variates shared 5% of their variance. Before removal of the third canonical variates the residual variance remaining was 6% (Wilks lambda = .943).

The second half of Table 15 shows the coefficient loadings of the individual behavior codes on the three pairs of canonical variates. Examination of the loadings of the individual behavior codes on the first pair of canonical variates shows that parent/sibling behaviors

Laugh and Descriptive Statement were positively associated with Child Laugh. Loadings of the behavior codes on the second pair of canonical variates appears to show a positive association between the parent/sibling behaviors, Acknowledge, Unlabeled Praise, and Descriptive Statement, and the child behavior, Compliance to Direct Command. The third pair of canonical variates appears to show a positive association between parent/sibling Critical Statement and Child Whine.

### Discussion

#### Session Analysis

None of the statistical analyses performed on the sessions variable were significant, which indicated that frequencies of coded behaviors did not vary appreciably over sessions. These results would appear to indicate there was no apparent reactivity to being observed, and tend to concur with earlier studies which have obtained similar results.

Patterson and Cobb (1973) found that in limited samples of families and only 6 to 10 observation sessions, there was no evidence for changes in the mean level of behaviors over sessions. Kniskern (1979) found that behaviors recorded by the Dyadic Parent-Child Interaction Coding System for normal mothers and their children were very consistent across 2 days of observation in a clinic and in their homes. Kniskern states that this consistency in behavior rates may be indicative of little or no reactivity to observer presence. Harris (1970) also suggests that the effects of observer presence are not of such a high magnitude that they can be detected with small samples of subjects.

Presently there are no data in the literature that clearly demonstrate significant observer presence effects for observation studies

(Patterson & Cobb, 1973). Patterson, Reid, and Maerov (1979) point out that none of the studies that have tested observer presence effects have used more than 20 sessions, and this in turn severely limits any statements that can presently be made regarding habituation to observer presence.

### School Age Groups

Normative data comparisons of family interactions by school age group clearly show that families with a preschool child and preschool sibling were the most active of the three groups. The frequency of all behaviors among family members was much higher for preschool families than preschool-and-elementary or elementary families. There were no substantial differences in the frequency of parent or sibling behaviors between families in the preschool-and-elementary or elementary groups. Children in the elementary group had slightly higher frequencies of behaviors than the preschool-and-elementary group.

Based on the normative data presented it is fairly clear that family members in the preschool group interacted with each other at substantially higher frequencies than did the families in the preschool-and-elementary or elementary groups. It is also important to note those behaviors for which there were no statistically significant differences between groups: parent/sibling Acknowledge, parent/sibling Critical Statement, parent/sibling Descriptive Statement, parent/sibling Laugh, parent/sibling Response to Child Laugh, and Child Compliance to Direct Command.

Results of stepwise discriminant analyses on the school age groups variable showed that it was possible to distinguish among two groups of

families (those with preschool siblings compared to those with elementary school-age siblings) and correctly classify 87% of cases on the basis of a linear combination of a set of observable, discrete behaviors. The vector of standardized weights corresponding to the canonical discriminant function as shown in Table 8 indicates that the relative contributions of Child Laugh, Unlabeled Praise, Descriptive/Reflective Question, Child Whine, and Child Change Activity were approximately in the proportion 2:3:4:4:7.2. Interpretation of these standardized weights is analogous to the interpretation of beta weights in multiple regression. Thus, Child Change Activity is about three and a half times as important as Child Laugh in the standardized canonical discriminant function. Discriminant analysis also shows similarities with factor analysis, in that these standardized weights or coefficients can be used to name the function by identifying the dominant characteristic that they appear to be measuring. In this instance one could define the discriminant function, based on the standardized coefficients, as principally a function of the target child's rate of activity, negative communication (Child Whine), and parent/sibling questioning (Descriptive/Reflective Question).

It is interesting to note that the behaviors which define this function, although not defined sequentially, may also correspond to a common sequence of play which is frequently observed of preschool children. Vygotsky (1967) made the observation that preschool children at play tend to gratify their desires immediately. When given many things to choose from, as in this study, the child may try out many of them, hence a high frequency of changing play activities. If the child

cannot acquire what is desired, the child may object physically and/or verbally (Child Whine). The final actions of such a sequence may involve parental or sibling questioning of the child (Descriptive/Reflective Question, e.g., "What do you want?"), and either the offering of the object or its removal.

An evaluation of the group centroid (or group means) for the two groups showed that the group consisting of families with preschool siblings had a much higher mean than the group of families with elementary school-age siblings. Thus, the two groups differed significantly on the basis of the canonical discriminant function, which, when evaluated at group centroids showed all behaviors positively weighted with the preschool sibling group of families and negatively weighted with the elementary school-age group of siblings. Thus, high rates of changing activities, negative communication, and parent/sibling questioning appear to be more dominant in families with preschool siblings.

It would appear that in families where both children are of preschool age there is a greater frequency of play-related behaviors. These play-related family behaviors decrease significantly when one or both of the children in the family unit is of elementary school age. One possible explanation of this effect is that the nature of play changes for the child entering elementary school (i.e., play becomes more rule-governed), and the subsequent changes in this child's play behaviors may somehow affect the interaction patterns of all family members when they are involved together in a play situation.

### Interaction Situations

Normative data recorded during interaction situations showed that parents and siblings interacted at slightly higher rates with the children when they were able to direct the play situation. Overall, mothers interacted with their children at a higher frequency than did fathers or siblings. The only parent/sibling behavior for which there was no statistically significant difference between situations was parent/sibling Response to Child Laugh.

Child behaviors increased substantially when interacting with the sibling for both child-directed and parent/sibling-directed situations, except in the case of Child Compliance to Direct Commands which increased markedly when commanded by the father. Children complied to their fathers' commands approximately three times more often than they did to their mothers or siblings. Child behaviors increased when parents or siblings directed play activity. Child Laugh was the only child behavior that was not statistically significantly different across interaction situations.

On the basis of a linear combination of parent/sibling and child behaviors it was possible to distinguish between two types of interaction situations and correctly classify 89% of cases through the use of stepwise discriminant analyses. The two types of interaction situations, Parent-Child and Sibling-Child, differed significantly on Child Whine, Child Change Activity, Child Compliance to Direct Command, Unlabeled Praise, Acknowledge, and Descriptive/Reflective Question. The standardized canonical discriminant function coefficients of the above behaviors (see Table 13) show their relative contributions to be

approximately in the proportion -2:-3:3:3:3:7. Thus, Descriptive/Reflective Question is about three times more important than Child Whine, and about twice as important as the other four measures in its contribution to the discriminant function and hence its ability to discriminate interaction situations. The dominant characteristic of the discriminant function would appear to be questioning of the target child.

When the canonical discriminant functions were evaluated at the group means for Parent-Child and Sibling-Child interaction situations, it was found that high frequency of Child Whine and Child Change Activity is associated with Sibling-Child interaction situations, and high frequency of Descriptive/Reflective Question, Acknowledge, Unlabeled Praise, and Child Compliance to Direct Command is associated with Parent-Child interaction situations. It would appear that for the families in this study, the predominant behaviors in parent-child play that distinguished these situations from sibling-directed play were "controlling," positive kinds of behaviors.

Parents tended to take "control" of the play situation by directing the child's activity, often through the use of commands and questions. Parents also attended to the child's activity by acknowledging and praising his actions. As shown by the weights of the canonical discriminant function coefficients, parental questioning of the child was one and a half to more than three times more important than the other behavior measures in defining the function which discriminated parent-child interactions from sibling-child interactions. Siblings on the other hand tended to be less controlling of play situations. The



target child tended to change his activities more often when interacting with his sibling and was generally more negative and whiny (see Table 14). Siblings asked fewer questions, used fewer commands, and were less attentive to the target child. A reasonable explanation for these results is that the sibling may have generally been more interested in his own activity, while parents became more involved with and focused on the target child's activities.

### Canonical Correlation

The maximum number of pairs of canonical variates that could be identified by the canonical correlation method in this particular application was four, which was the minimum number of variables in the set of child behaviors. Of these, canonical correlations between three pairs of canonical variates were statistically significant at  $p < .008$ . Each canonical correlation is a measure of the degree of linear relationship between two linear composites of variables, one calculated for each set of parent/sibling and child behaviors. Generally speaking, one usually finds that only the largest canonical correlations are meaningful. In the present analysis however, each significant canonical correlation appears to represent a meaningful dimension of the behavioral interactions between parent/sibling and child.

An evaluation of the first and largest canonical correlation indicates that each variable set of parent/sibling behaviors and child behaviors is measuring only one behavioral dimension that is meaningfully related to both sets of behaviors, which is the behavior code Laugh. In addition, parent/sibling Descriptive Statement appears to be an important contributing factor to the parent/sibling canonical

variate, although its weight relative to parent/sibling Laugh is only at a ratio of 1:2.6. One-way analyses of variance showed there were no significant differences in the mean frequencies of Laugh for parents compared to siblings, nor were there any significant differences in the mean frequency of Child Laugh when the target child played with parents or older sibling. The first canonical correlation would appear to show that one of the more dominant patterns of interaction between the target child and other family members during play is laughter. These results, along with anecdotal information from observers, appear to indicate that the play situations were highly enjoyable for all family members and that laughter for parents, siblings, and target children were highly associated with each other.

The second canonical correlation is an index of the relation between two linear combinations of parent/sibling and child variables, independent of the first pair of combinations. Based on this second canonical correlation, it appears that a meaningful relationship exists between Child Compliance to Direct Command in the child behavior set and parent/sibling Acknowledge, Unlabeled Praise, and Descriptive Statement in the parent/sibling set. A closer inspection of these behavior categories in the parent/sibling set shows that parents generated these behaviors at significantly higher rates than did siblings. Parents' mean rates of behaviors ranged from 1.64/5 min for Unlabeled Praise to 9.49/5 min for Descriptive Statement. Sibling mean rates ranged from .09/5 min for Unlabeled Praise to 5.05/5 min for Descriptive Statement. Only the mean rates for Descriptive Statement exceeded 1.0/5 min for siblings. Thus, these behaviors in the parent/sibling

set were predominantly parent behaviors rather than sibling behaviors. Likewise, child compliance to direct commands occurred three times more often with parents than with siblings. It would seem reasonable that the second canonical correlation describes a relationship which is predominantly parent-child. Although the coding system used is not entirely sequential, it would appear that the dimension being measured by the parent/sibling set of behaviors is parental Acknowledgement and approval of the target child's Compliance to a Direct Command. This is reasonable considering that parent/sibling behaviors such as Acknowledgement and Unlabeled Praise tend to be consequences to antecedent child behaviors. Thus, after the positive association of laughter, the next most substantial association in the data reflects another aspect of parent-child interaction during play, which is a significant relationship between the target child's compliance to direct commands and parental acknowledgement and reinforcement.

The third and last significant association between sets of observables appears to show only one parent/sibling behavior that is meaningfully related to a child behavior. There is a significant relationship between parent/sibling Critical Statement and Child Whine. Further inspection of the mean rates of these two behaviors for parents, sibling, and target child shows that parents and siblings had similar rates for Critical Statement (parental mean rate was 2.25/5 min and sibling mean rate was 2.94/5 min), while the target children whined nearly twice as often when interacting with siblings than with parents (mean rate with sibling was 1.36/5 min and with parents was .59/5 min).

In summary, results of the canonical correlation analysis tend to support prior research data regarding reciprocity in social interaction (Patterson & Reid, 1969). The first two canonical correlations showed significant relationships between parent/sibling positive behaviors and child positive behaviors, while the third canonical correlation showed a significant relationship between a parent/sibling negative behavior and a child negative behavior. It would appear then, that when parents and older siblings interacted with the target children, each member of the dyad tended to respond in kind to the behavior they experienced.

A summary of the results can be made as follows. Rates of parent/sibling and child behaviors did not discriminate one session from another. There were no linear combinations of behaviors that could significantly discriminate all three school age groups from each other or all six interaction situations from each other. Further inspection of the data (i.e., group centroids) indicated important trends which led to selective recombinations of the levels of the original interaction situation and school age group variables. Additional stepwise discriminant analyses were run using the reclassified groups and interaction situations. Results of these analyses indicated that there were specific linear combinations of behaviors that were highly accurate in their ability to correctly classify cases according to group or interaction situation. Families with older siblings of preschool age, and families with older siblings of elementary school age could be correctly classified 87% of the time based on the linear combination of five behaviors, Child Change Activity, Child Whine, Descriptive/Reflective Question, Unlabeled Praise, and Child Laugh. Parent-child and sibling-

child interaction situations could be correctly classified 89% of the time based on the linear combination of six behaviors, Descriptive/Reflective Question, Acknowledge, Unlabeled Praise, Compliance to Direct Command, Child Change Activity, and Child Whine. Results of the canonical correlation analysis indicated there were three canonical correlations which showed significant relationships between parent/sibling and child behaviors. The nature of these relationships tended to support the idea that reciprocal influence is an important element in the study of family interaction.

There were several methodological limitations in this study which may have influenced the results. The 12 families that participated in the study may not have been truly representative of the majority of two-male-sibling families. The sample of families chosen was not random, but rather each family volunteered to be observed in their homes. The resources through which the author obtained participants may be fairly representative of agencies with which two-male-sibling families come in contact (i.e., nursery schools and recreational agencies), but based on demographic data these families tended to be middle to upper middle income class. The participating families had a median income level of \$23,000-23,999/yr in 1979-1980. Both parents had a median of 14 years of formal education. Fathers were the primary income earners, with only two mothers reporting part-time employment. All families reported a religious preference. Results of the present study may not be representative of families whose demographic characteristics differ from those of the present sample.

A volunteer bias may have existed in which parents may have tried to manipulate their children in such a way as to appear more socially desirable or normative. Results of the present study however, did indicate that some negative behaviors were prevalent enough to discriminate one family group from another or one interaction situation from another. Any parental bias towards social desirability may have had only a minimal effect on the data (Lobitz & Johnson, 1975).

Finally, the demand characteristics of the play situations may not have been truly "natural" or representative of how family members interact with each other during play. Since only dyadic interactions were investigated with all family members present, no conclusions can be made regarding the interactions of more than two family members, or the presence or absence of other family members during the play interaction. In addition, for some family members the semi-structured dyadic play situations may have seemed unnatural, even though they may have habituated to the observers' presence.

Some significant contributions to the field of family interaction research have been made as a result of this study. This was the first study using the Dyadic Parent-Child Interaction Coding System to add sibling interaction situations. Prior to this study only the effects of the presence or absence of a sibling on parent-child interactions had been studied using DPICS (Kniskern, 1979). The addition of sibling interaction situations provides more information on the nature of interactions between all family members and further contributes to the understanding of the relationships between siblings. The normative data obtained in this study provides additional information about the

frequency of specific behaviors and how they may vary from one family member to the next and from one interaction situation to the next. This information is critical for family therapists seeking to determine what types and rates of interactions are typical for different types of family units. A final contribution from this study showed that families could be distinguished from each other according to interaction situations and ages of siblings. This last result appears to be especially significant since it shows that there were differences in frequencies of behaviors among families as a function of the ages of the siblings. This result points to the need for understanding the dynamics of family interaction from a developmental perspective. Further systematic research into age intervals between siblings and school age classifications could provide additional information about changes in typical patterns of family interaction as siblings progress from one stage of development to another.

## Reference Notes

1. Schalock, H. D. Observations of mother-child in the laboratory and in the home. Unpublished manuscript, University of Nebraska, 1956.
2. Robinson, E., & Eyberg, S. Systematic behavioral observation of normal and behavior problem children. Paper presented at the meeting of the American Psychological Association, Toronto, August, 1978.
3. Hanf, C. Facilitating parent-child interaction: A two-stage training model. Unpublished manuscript, University of Oregon Medical School, 1972.
4. Eyberg, S., Robinson, E., Kniskern, J., & O'Brien, P. Manual for coding dyadic parent-child interactions. Unpublished manuscript, University of Oregon Health Sciences Center, 1978.
5. Toobert, D. Personal communication, Oregon Social Learning Center, August 20, 1979.
6. Patterson, G. R. Personal communication, July 30, 1979.
7. Romanczyk, R. G., Kent, R. N., Diament, C., & O'Leary, K. D. Methodological problems in naturalistic observation. Paper presented at the meeting of the Second Annual Symposium on Behavior Analysis, Lawrence, Kansas, May 1971.
8. Patterson, G. R., & Harris, A. Some methodological considerations for observational procedures. Paper presented at the meeting of the American Psychological Association, San Francisco, 1968.



## References

- Barker, R. G., & Associates. Habitats, environments, and human behavior. San Francisco: Jossey-Bass, 1978.
- Bayley, N., & Schaefer, E. S. Maternal behavior and personality development: Data from the Berkeley growth study. Psychiatric Research Reports, 1960, 13, 155-173.
- Behles, M. W. A naturalistic investigation of a nonclinical family (Doctoral dissertation, University of Tennessee, 1973). Dissertation Abstracts International, 1974, 5632B. (University Microfilms No. 75-11, 144)
- Church, J. (Ed.). Three babies: Biographies of cognitive development. New York: Random House, 1966.
- Cobb, J. A. The relationship of discrete classroom behaviors to fourth grade academic achievement. Oregon Research Institute Research Bulletin, 1970, 10 (10).
- Connolly, K., & Smith, P. K. Reactions of preschool children to a strange observer. In N. Blurton-Jones (Ed.), Ethological studies of child behavior. Cambridge: Cambridge University Press, 1972.
- DeMaster, B., Reid, J. B., & Twentyman, C. The effects of different amount of feedback on observers' reliability. Behavior Therapy, 1977, 8, 317-329.
- Doyle, D. G. Extended observation of in-home family communication (Doctoral dissertation, University of Tennessee, 1977). Dissertation Abstracts International, 1977, 4449B. (University Microfilms No. 7801997)

- Droz, R., & Rahmy, M. Understanding Piaget. New York: International Universities Press, 1976.
- Dysart, R. R. A behavioral description of family interactions in the home and the clinic: Inter and intra setting analysis (Doctoral dissertation, University of Houston, 1973). Dissertation Abstracts International, 1973, 34, 1744B. (University Microfilms No. 73-22, 901)
- Eyberg, S. Behavior problem children treated. Pediatric Psychology, 1974, 2, 6.
- Eyberg, S. M., & Johnson, S. M. Multiple assessment of behavior modification with families: Effects of contingency contracting and order of treated problems. Journal of Consulting and Clinical Psychology, 1974, 42, 594-606.
- Fontana, A. F. Familial etiology of schizophrenia: Is a scientific methodology possible? Psychological Bulletin, 1966, 66, 214-227.
- Forehand, R., & Kay, E. H. Noncompliant children. Behavior Modification, 1977, 1, 93-108.
- Green, K. D., Forehand, R., & McMahon, R. J. Parental manipulation of compliance and noncompliance in normal and deviant children. Behavior Modification, 1979, 3, 245-266.
- Grimm, J. A., Parson, J. A., & Bijou, S. W. A technique for minimizing subject-observer looking interactions in a field setting. Journal of Experimental Child Psychology, 1972, 14, 500-505.

- Haley, J. Critical overview of present status of family interaction research. In J. L. Framo (Ed.), Family interaction: A dialogue between family researchers and family therapists. New York: Springer, 1972.
- Harris, A. Observer effect on family interaction (Doctoral dissertation, University of Oregon, 1969). Dissertation Abstracts International, 1970, 31, 1075A. (University Microfilms No. 70-15, 342)
- Hartmann, D. P. Considerations in the choice of interobserver reliability estimates. Journal of Applied Behavior Analysis, 1977, 10, 103-116.
- Johnson, S. M., & Bolstad, O. M. Reactivity to home observation: A comparison of audio recorded behavior with observers present or absent. Journal of Applied Behavior Analysis, 1975, 8, 181-185.
- Johnson, S. M., Wahl, G., Martin, S., & Johansson, S. How deviant is the normal child? A behavioral analysis of the preschool child and his family. In R. D. Rubin, J. P. Brady, & J. D. Henderson (Eds.), Advances in behavior therapy (Vol. 4). New York: Academic Press, 1973, 37-54.
- Kenkel, W. F., & Hoffman, D. K. Real and conceived roles in family decision making. Marriage and Family Living, 1963, 18, 311-316.
- Kent, R. N., O'Leary, K. D., Diament, C., & Dietz, A. Expectation biases in observational evaluation of therapeutic change. Journal of Consulting and Clinical Psychology, 1974, 42, 774-780.

- Klecka, W. R. Discriminant analysis. In N. H. Nie, C. H. Hull, J. G. Jenkins, K. Steinbrenner, & D. H. Bent (Eds.), Statistical package for the social sciences, (2nd ed.). New York: McGraw-Hill, 1975, 434-467.
- Kniskern, J. R. A comparison of mother-child interaction in home and clinic settings. Unpublished master's thesis, University of Oregon, 1979.
- Kogan, K. I., & Wimberger, H. C. Behavior transactions between disturbed children and their mothers. Psychological Reports, 1971, 28, 395-404.
- Levinger, G. Supplementary methods in family research. Family Process, 1963, 2, 357-366.
- Lindemann, R. H., Merenda, P. F., & Gold, R. Z. Introduction to bivariate and multivariate analysis. Glenview, Ill.: Scott, Foresman, and Company, 1980.
- Lobitz, G. K., & Johnson, S. M. Normal versus deviant children: A multimethod comparison. Journal of Abnormal Child Psychology, 1975, 3, 353-374.
- Lytton, H. Observational studies of parent-child interaction: A methodological review. Child Development, 1971, 42, 651-684.
- Martin, S. The comparability of behavioral data in laboratory and natural settings. Unpublished doctoral dissertation, University of Oregon, 1970.
- Mash, E. J., Hamerlynck, L. A., & Handy, L. C. (Eds.). Behavior modification and families. New York: Brunner/Mazel, 1976.

- Mercatoris, M., & Craighead, W. E. The effect of nonparticipant observation on teacher and pupil classroom behavior. Journal of Educational Psychology, 1974, 66, 512-519.
- Moos, R. Behavior effects of being observed: Reactions to a wireless transmitter. Journal of Consulting and Clinical Psychology, 1968, 32, 383-388.
- Olson, J. Self-report versus observation. Journal of Marriage and the Family, 1969, 31, 545-550.
- Patterson, G. R. The aggressive child: Victim and architect of a coercive system. In E. J. Mash, T. A. Hamerlynck, & T. C. Handy (Eds.), Behavior modification and families. New York: Bruner/Masel, 1976.
- Patterson, G. R. Naturalistic observation in clinical assessment. Journal of Abnormal Child Psychology, 1977, 5, 309-322.
- Patterson, G. R., & Cobb, J. A. Stimulus control for classes of noxious behaviors. In J. F. Knutson (Ed.), The control of aggression: Implications for basic research. Chicago: Aldine, 1973.
- Patterson, G. R., Cobb, J. A., & Ray, R. S. A social engineering technology for retraining the families of aggressive boys. In H. E. Adams & I. P. Unikel (Eds.), Issues and trends in behavior therapy. Springfield, IL: C. C. Thomas, 1973.
- Patterson, G. R., McNeal, N., Hawkins, N., & Phelps, R. Reprogramming the social environment. Journal of Child Psychology and Psychiatry, 1967, 8, 181-195.

- Patterson, G. R., Ray, R., & Shaw, D. Manual for the coding of family interactions. (Available from ASIS National Auxiliary Publications Service, 1969, under Document No. 01234.)
- Patterson, G., & Reid, J. Reciprocity and coercion: Two facets of social systems. In C. Nevringer and J. Michael (Eds.), Behavior modification in clinical psychology. New York: Appleton, Century, and Crofts, 1969.
- Patterson, G. R., Reid, J. B., & Maerov, S. L. The observation system: Methodological issues and psychometric properties. In J. B. Reid (Ed.), A social learning approach to family intervention: Observation in home settings (Vol. 2). Eugene, OR: Castalia, 1979.
- Rapaport, J. L., & Benoit, M. The relation of direct home observation to the clinic evaluation of hyperactive school age boys. Journal of Child Psychology and Psychiatry, 1975, 16, 141-147.
- Reid, J. B. Reliability assessment of observation data: A possible methodological problem. Child Development, 1970, 41, 1143-1150.
- Sallows, G. Responsiveness of deviant and normal children to naturally occurring consequences (Doctoral dissertation, University of Oregon, 1973). Dissertation Abstracts International, 1973, 33, 6092B. (University Microfilms No. 73-13,767)
- Shaw, D. Family maintenance schedules for deviant behaviors (Doctoral dissertation, University of Oregon, 1972). Dissertation Abstracts International, 1972, 32, 5459B-5460B. (University Microfilms No. 72-8599)

- Skindrud, K. D. An evaluation of observer bias in experimental-field studies of social interaction (Doctoral dissertation, University of Oregon, 1972). Dissertation Abstracts International, 1973a, 33, 4989A. (University Microfilms No. 73-7960)
- Skindrud, K. D. Field evaluation of observer bias under overt and covert monitoring. In L. Hamerlynck, L. Handy, & E. Mash (Eds.), Behavior change: Methodology concepts and practice. Champaign, Ill: Research Press, 1973b.
- Surrott, P. R., Ulrich, R. E., & Hawkins, R. P. An elementary student as behavioral engineer. Journal of Applied Behavior Analysis, 1969, 2, 85-92.
- Taplin, P. S., & Reid, J. B. Effects of instructional set and experimental influence on observer reliability. Child Development, 1973, 44, 547-554.
- Vygotsky, L. S. Play and its role in the mental development of the child. Soviet Psychology, 1967, 5, 6-18 (abridged).
- Warwick, P. V. Canonical correlation analysis: Subprogram CANCEOR. In N. H. Nie, C. H. Hull, J. G. Jenkins, K. Steinbrenner, & D. H. Bent (Eds.), Statistical package for the social sciences (2nd ed.). New York: McGraw-Hill, 1975, 515-527.
- Zergib, L., Arnold, S., & Forehand, R. An examination of observer effects in parent/child interaction. Child Development, 1975, 46, 509-512.

Appendix 1  
Recruitment Letter





DEPARTMENT OF PSYCHOLOGY

**COLLEGE OF THE PACIFIC***a College of Arts and Sciences***UNIVERSITY OF THE PACIFIC** Stockton, California Founded 1851  
95211

The purpose of our letter is to request permission for you and your family to participate in a family study project that will begin soon at the University of the Pacific. Our project is broadly concerned with normal family development. By studying the everyday interactions that occur within normally functioning families we may begin to discover which interactions or systems of interactions differentiate normal families from problem families, whose members are experiencing severe and chronic abuse, neglect, or other aversive or troublesome problems. At present there is a lack of information as to how a normal family interacts. Such information would be very valuable to the clinician or therapist who attempts to teach the parents and children of disturbed families how to interact in ways thought to be more normal.

In particular, we are presently studying two-child families, of which both children are male and between the ages of 2 and 9 years. If your family does not consist of these characteristics, you need not read further. However, if you know of a family that meets these requirements for our project, please have them contact us at the Psychology Department if they are interested in participating.

This project has been thoroughly discussed with Dr. Martin Gipson, Professor and Chairperson of the Psychology Department, and Dr. Michael Davis, Assistant Professor of Psychology. In addition, the project has been approved by the Research Committee at the University of the Pacific, which oversees research involving human subjects.

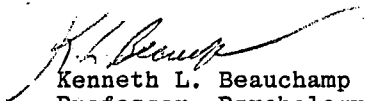
Your participation in the project would involve observation of your family in your home, once a week for 1 hour, for five consecutive weeks. Each session will begin approximately half an hour after dinner. Audio or videotape recordings will not be used. Either one or two specially trained observers will be present during each session.

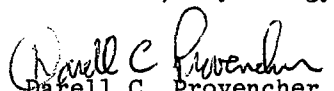
Upon completion of the five one-hour sessions, each child in your family will receive a \$25.00 U.S. savings bond, in appreciation of your family's desire and commitment to improving the quality of family life through family study and research.

If you are interested in having your family participate in this project, please fill out the enclosed permission form and return it in the self-addressed, stamped envelope. We will be contacting you by phone within a few days after receiving the permission form, to confirm your desire to participate, and to arrange a schedule of convenient meeting times.

In closing, let us emphasize that this project will not involve anything unpleasant for your family, nor will it involve any psychological testing. You and your family's participation in this project will be kept confidential; the individual observations will remain confidential; and the results of your participation will be used in a public report of group results. In the event that you have any further questions about your family's possible participation, please feel free to contact us at the UOP Psychology Department. Our phone number is 946-2132.

Sincerely,

  
Kenneth L. Beauchamp  
Professor, Psychology

  
Darrell C. Provencher  
Graduate Student, Psychology

Enc.  
DCP:jp



**COLLEGE OF THE PACIFIC**

*a College of Arts and Sciences*

**UNIVERSITY OF THE PACIFIC** Stockton, California Founded 1851  
95211

DEPARTMENT OF PSYCHOLOGY

**FAMILY STUDY PROJECT PERMISSION FORM**

MOTHER'S NAME \_\_\_\_\_ AGE \_\_\_\_\_

FATHER'S NAME \_\_\_\_\_ AGE \_\_\_\_\_

MOTHER'S OCCUPATION \_\_\_\_\_ PHONE \_\_\_\_\_  
ADDRESS \_\_\_\_\_

FATHER'S OCCUPATION \_\_\_\_\_ PHONE \_\_\_\_\_  
ADDRESS \_\_\_\_\_

MOTHER'S HIGHEST LEVEL OF EDUCATION (Indicate degrees where appropriate)

FATHER'S HIGHEST LEVEL OF EDUCATION (Indicate degrees where appropriate)

NAME OF FIRST CHILD \_\_\_\_\_ BIRTHDATE \_\_\_\_\_

NAME OF SECOND CHILD \_\_\_\_\_ BIRTHDATE \_\_\_\_\_

We have read and understand the purpose and procedures of this project, and we voluntarily consent to have our family participate in the study described in the attached letter.

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(signature)

Appendix 2  
Family Questionnaire

**COLLEGE OF THE PACIFIC***a College of Arts and Sciences*UNIVERSITY OF THE PACIFIC Section, California Founded 1851  
95211

DEPARTMENT OF PSYCHOLOGY

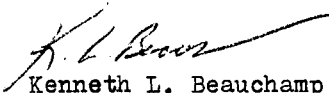
April 22, 1980

In order to help us better describe the social and economic characteristics of the families who have participated in the family study project, the enclosed anonymous questionnaire asks for information on income, religious preference, and family activities. The questionnaire should require no more than 5 minutes to complete. The individual information that you give is strictly voluntary and will remain confidential. The information gathered here will be reported on a group basis and included in the final report, which will probably be available to you in late May or mid-June.

Upon completing the questionnaire please enclose it in the self-addressed, stamped envelope and mail it to us as soon as possible. Please do not include your return address.

Again, thank you very much for your participation in this project. We hope you will find the results interesting. Should you have any questions or additional comments, feel free to contact us. The Department of Psychology's phone number is 946-2132. Darell Provencher's home phone is 951-1936.

Sincerely,



Kenneth L. Beauchamp



Darell C. Provencher



## COLLEGE OF THE PACIFIC

*a College of Arts and Sciences*

UNIVERSITY OF THE PACIFIC Stockton, California Founded 1851

95211

DEPARTMENT OF PSYCHOLOGY

### Family Study Project Questionnaire

1. Please mark with an "X" the category to which your children belonged at the time the project began with your family.

\_\_\_\_\_ both children of preschool age

\_\_\_\_\_ one child of preschool age and the other of elementary school age

\_\_\_\_\_ both children of elementary school age

2. Please mark with an "X" the appropriate range of your family's annual adjusted gross income (as designated on 1979 income tax form).

_____ under \$12,000	_____ 24,000-24,999	_____ 37,000-37,999
_____ 12,000-12,999	_____ 25,000-25,999	_____ 38,000-38,999
_____ 13,000-13,999	_____ 26,000-26,999	_____ 39,000-39,999
_____ 14,000-14,999	_____ 27,000-27,999	_____ 40,000-40,999
_____ 15,000-15,999	_____ 28,000-28,999	_____ 41,000-41,999
_____ 16,000-16,999	_____ 29,000-29,999	_____ 42,000-42,999
_____ 17,000-17,999	_____ 30,000-30,999	_____ 43,000-43,999
_____ 18,000-18,999	_____ 31,000-31,999	_____ 44,000-44,999
_____ 19,000-19,999	_____ 32,000-32,999	_____ 45,000-45,999
_____ 20,000-20,999	_____ 33,000-33,999	_____ 46,000-46,999
_____ 21,000-21,999	_____ 34,000-34,999	_____ 47,000-47,999
_____ 22,000-22,999	_____ 35,000-35,999	_____ 48,000-48,999
_____ 23,000-23,999	_____ 36,000-36,999	_____ 49,000-49,999
		_____ 50,000 & over

3. Please mark with an "X" your family's religious preference.

None  Catholic  
 Protestant  Jewish  
 Other (specify) \_\_\_\_\_

4. Please mark with an "X" the following activities that one or more family members engage in on a regular or "seasonal" basis.

<input type="checkbox"/> attend PTA meetings	<input type="checkbox"/> ice skating classes
<input type="checkbox"/> bicycling club	<input type="checkbox"/> nursery school
<input type="checkbox"/> church camps	<input type="checkbox"/> PTA officer
<input type="checkbox"/> cooperative day care	<input type="checkbox"/> soccer league
<input type="checkbox"/> cub scouts	<input type="checkbox"/> track or jogging club
<input type="checkbox"/> 4-H club	<input type="checkbox"/> YMCA programs
<input type="checkbox"/> attend conferences on parenting	<input type="checkbox"/> baseball (little league)
<input type="checkbox"/> neighborhood block parent	<input type="checkbox"/> neighborhood watch program
<input type="checkbox"/> football (e.g., Pop Warner)	<input type="checkbox"/> swimming and/or tennis/ racquetball club

5. Please mark with an "X" how many days/week you usually play some game (e.g., aggravation, tic-tac-toe, monopoly) or semi-structured activity (e.g., block-building, frisbee, kite flying) with your children.

Mother	Father
<input type="checkbox"/> daily	<input type="checkbox"/> daily
<input type="checkbox"/> 6 days/wk	<input type="checkbox"/> 6 days/wk
<input type="checkbox"/> 5 days/wk	<input type="checkbox"/> 5 days/wk
<input type="checkbox"/> 4 days/wk	<input type="checkbox"/> 4 days/wk
<input type="checkbox"/> 3 days/wk	<input type="checkbox"/> 3 days/wk
<input type="checkbox"/> 2 days/wk	<input type="checkbox"/> 2 days/wk
<input type="checkbox"/> 1 day/wk	<input type="checkbox"/> 1 day/wk
<input type="checkbox"/> 0 days/wk	<input type="checkbox"/> 0 days/wk

Appendix 3  
Preliminary Report to Participating Families





## COLLEGE OF THE PACIFIC

*a College of Arts and Sciences*

UNIVERSITY OF THE PACIFIC Stockton, California Founded 1851  
95211

DEPARTMENT OF PSYCHOLOGY

August 1, 1980

Enclosed is a preliminary report of some of the data collected in the Family Study Project. At least three different groups will be reading this report: (a) the families that participated in the Project; (b) families interested in the Project but who were unable to participate; and (c) individuals from preschools, elementary schools and family agencies, without whose cooperation and assistance this Project would never have been able to begin. Due to the wide range of familiarity with the Project among the above recipients of the report, some of the information reported will be redundant to some and new to others. Similarly, we assume that there is a wide range of knowledge among our readers regarding the use and application of statistics. With that in mind, the following section is a brief primer on the statistics included in this report. Readers who are acquainted with this area may wish to go straight to the report itself, which immediately follows the statistics primer section.

### A primer on statistics used in this report

Mean. There are many problems in which we have to represent data by means of a single number which, in its way, is descriptive of the entire set. The most popular measure used for this purpose is what is commonly called an "average" and what, in statistics, is called an arithmetic mean, or simply a mean. Generally the word "average" has a loose connotation and different meanings. For example, we often speak of a batting average, an average housewife, a person with average taste, and so on. The mean of a set of  $n$  numbers is defined simply as their sum divided by  $n$ .

Standard deviation. Since the variation of a set of numbers is small if they are bunched closely about their mean, and it is large if they are spread over considerable distances away from their mean, it is reasonable to define variation in terms of the distances (deviations) by which numbers depart from their mean. Stated simply, the standard deviation numerically summarizes the average amount of variation about the mean of a set of numbers.

One-way analysis of variance. This statistical procedure is used to decide whether observed differences among more than two means can be attributed to chance, or whether they are indicative of actual differences between the means (each mean would represent

its own set of numbers). For example, if we want to find out if the mean rates of critical statements for preschool, preschool/elementary, and elementary family groups are significantly different from one another, then an analysis of variance (ANOVA) would be performed on these data.

Median. This measure is simply the value of a middle item when the data are arranged in an increasing or decreasing order of magnitude.

Statistical significance. Statistical tests deal with the probability of a particular event occurring by chance. The obtained differences between groups are said to be significant if the results are unlikely to occur on the basis of chance.

Naturalistic Observation of Family Member Directed  
Interaction During Play

The purposes of the present study were to provide normative data on specific behaviors of interest to the clinician that may facilitate the evaluation of clinical data in similar environmental settings, and to systematically explore the parameters believed to be important in shaping family interaction. This study explored how the age and birth order of siblings in two-male-sibling families may differentially affect interactions between family members, and how family-member-directed interaction situations involving play affect the interactions of interest.

Participating Families

Twelve families, in which the children had never been referred for behavioral problems, were recruited from Lodi, Stockton, and Manteca, California. Both the mother and father in each family were the natural parents.

Income. The median level of adjusted gross income was \$23,000-23,999/yr, with a range of \$18,000-50,000+/yr.

Education. The median number of years of formal education was 14 yrs for both mothers and fathers. Out of a total of 24 parents, the highest educational degree attained for 12 (50%) parents (mothers = 5, fathers = 7) was the high school diploma. The next largest degree group were those with the B.S./B.A. degree, accounting for 25% (mothers = 3, fathers = 3) of the total sample. The A.A. degree was

attained by 16.7% of parents (mothers = 1, fathers = 4), and graduate degrees by 8.3% of parents (mothers = 0, fathers = 2).

Occupation. At the time that the data were collected, none of the mothers reported a full-time employment position, and 2 of 12 mothers reported part-time employment. Managerial business occupations were reported by 50% (n = 6) of the fathers, followed by 25% (n = 3) in medical/science professional positions and 25% (n = 3) in city/county positions.

Religion. All families indicated a religious preference; 58.3% (n = 7) were Protestant and 41.7% (n = 5) were Catholic.

School age group. Each family had two male children, and was categorized by age and birth order into three groups of four families each: (a) both children of preschool or nursery school age (2-5 yrs), (b) one child of preschool age and one child of elementary school age (6-9 yrs); and (c) both children of elementary school age.

### Procedure

Each family was observed in their home for 30 min once a week for 5 consecutive weeks. As much as possible, each weekly session occurred on a different day of the week (Sunday through Friday). Each session began approximately 1/2 hr after dinner. Observation took place in either the family or living room. Each family was asked to have no visitors. Audio or visual entertainment systems, including radio, stereo, and television, were turned off. No outgoing phone calls were made, but incoming phone calls were answered briefly. Each 30 min of interaction was recorded by two observers working independently.

Interaction coding system. The coding system used was designed to provide a frequency count of 34 positive and negative behaviors which may occur during play. These "discrete" behavior categories can also be grouped into larger types of behaviors, such as child positive versus child negative behaviors. Appendix 1 of this report presents definitions of the behaviors recorded.

The coding system was constructed to involve the younger child in all six interaction situations: (a) child-directed interaction with mother; (b) child-directed interaction with father; (c) child-directed interaction with sibling; (d) mother-directed interaction; (e) father-directed interaction; and (f) sibling-directed interaction.

In the child-directed interaction situations, (a, b, and c above) the younger child was told: "In this situation, choose any activity you wish, and (parent or sibling) is to play along with you as you wish." Instructions to the parent or sibling in the parent/sibling-directed interaction situations (d, e, and f above) were: "In this situation, it is your turn to choose the game. You may choose any activity. Keep (younger child) playing with you according to your rules."

A frequency count of all parent/sibling and child behaviors occurring in the interactions was recorded at 1 min intervals. Each coding sheet represented 1 min of data collection. In order to reduce the obtrusiveness of the coding sheets, each sheet was taped into a page of an oversized magazine (e.g., Life), to give the appearance that the observers were reading through a magazine. Every 60 sec the observers received an auditory signal through earphones from a timer attached to

the belt of one of the observers. At the sound of the "beep," the observers turned to the next page of their magazines. Each situation involved 5 min of interaction. The total coding procedures required 30 min of observation.

Toys. A standard set of toys that allowed for relatively quiet play activity was used for each family. These toys consisted of: (a) natural wood blocks; (b) a Tinkertoy construction set; (c) a set of Lincoln Logs; (d) Tente multi-pieced construction toys; (e) coloring books with a set of 48 crayons; (f) a Fisher-Price ring toss; (g) a Nerf car; (h) a stuffed toy seal; and (i) a stuffed toy elephant.

Behavior code reliability. Reliability refers to the degree of consistency of agreement between two or more observers on recording the frequency of the behavior codes which occur. Reliability was measured statistically using the Pearson  $r$  correlation. Correlations were performed on 59 discrete and grouped behaviors between the first and second observers for each family, which produced 708 correlations. An additional 354 correlations were computed between the first and third reliability check observers and another 354 correlations between the second and third reliability check observers, both for six families. Thus a total of 1416 correlations were computed to assess behavior code reliability. A final analysis of these correlations found 20 discrete and grouped behavior codes whose median correlation values were in the high .90's. These will be the only behavior codes that will be used in all later statistical analyses:

- A. Parent/sibling discrete behaviors
  - 1. Acknowledge
  - 2. Critical statement
  - 3. Unlabeled praise
  - 4. Descriptive/reflective question
  - 5. Descriptive statement
  - 6. Laugh
  - 7. Responded to child's laugh
  
- B. Child discrete behaviors
  - 1. Compliance to direct command
  - 2. Laugh
  - 3. Whine
  - 4. Change activity
  
- C. Parent/sibling grouped behaviors
  - 1. Positive behaviors
  - 2. Negative behaviors
  - 3. Total commands
  - 4. Direct commands
  - 5. Total responses to child behaviors
  - 6. Total parent/sibling behaviors
  
- D. Child grouped behaviors
  - 1. Child positive behaviors
  - 2. Child negative behaviors
  - 3. Total child behaviors

### Preliminary Results

Graphs are presented on only those behaviors for which there is a statistically significant difference between groups. One-way analyses of variance were computed for each behavior, across either school age groups or interaction situations. Means and standard deviations are reported for each behavior on the graph being referred to. The means for each behavior are computed per 5 min interval. For example, if the mean for parent/sibling Unlabeled Praise for preschool age group families was 5.2, it would mean that in any given 5 min interaction situation parents and siblings emitted 5.2 unlabeled praises.

## Results

Figure 1. Parents and siblings in the preschool family group gave the highest range of unlabeled praises to the children, while parents and siblings in the elementary group emitted a slightly higher rate of unlabeled praises than the pre/elementary group.

Figure 2. Parents and siblings in the preschool group emitted the highest frequency of descriptive/reflective questions, followed by the pre/elementary group parents and siblings which emitted approximately  $\frac{3}{4}$  of the amount emitted by preschool age group parents and siblings. Parents and siblings in the elementary group emitted the lowest frequency of descriptive/reflective questions, at about  $\frac{1}{2}$  the rate emitted by parents and siblings in the preschool group.

Figure 3. Parents and siblings in the preschool group emitted the highest frequency of total parent/sibling behaviors, followed by the pre/elementary group, and then by the elementary group.

Figure 4. Parents and siblings in the preschool group had the highest frequency of positive behaviors, while mean frequencies for the other two groups were similar.

Figure 5. Parents and siblings in the preschool group emitted a substantially higher frequency of command per 5 min situation when compared to the pre/elementary group of families and the elementary group of families, which emitted very similar lower rates of total commands.

Figure 6. Parents and siblings in the preschool group emitted a substantially higher rate of commands per 5 min situation when compared to the pre/elementary group and the elementary group of families, which gave indirect commands at similar but lower frequencies.



### OCCURRENCE OF UNLABELED PRAISE BY SCHOOL AGE GROUP

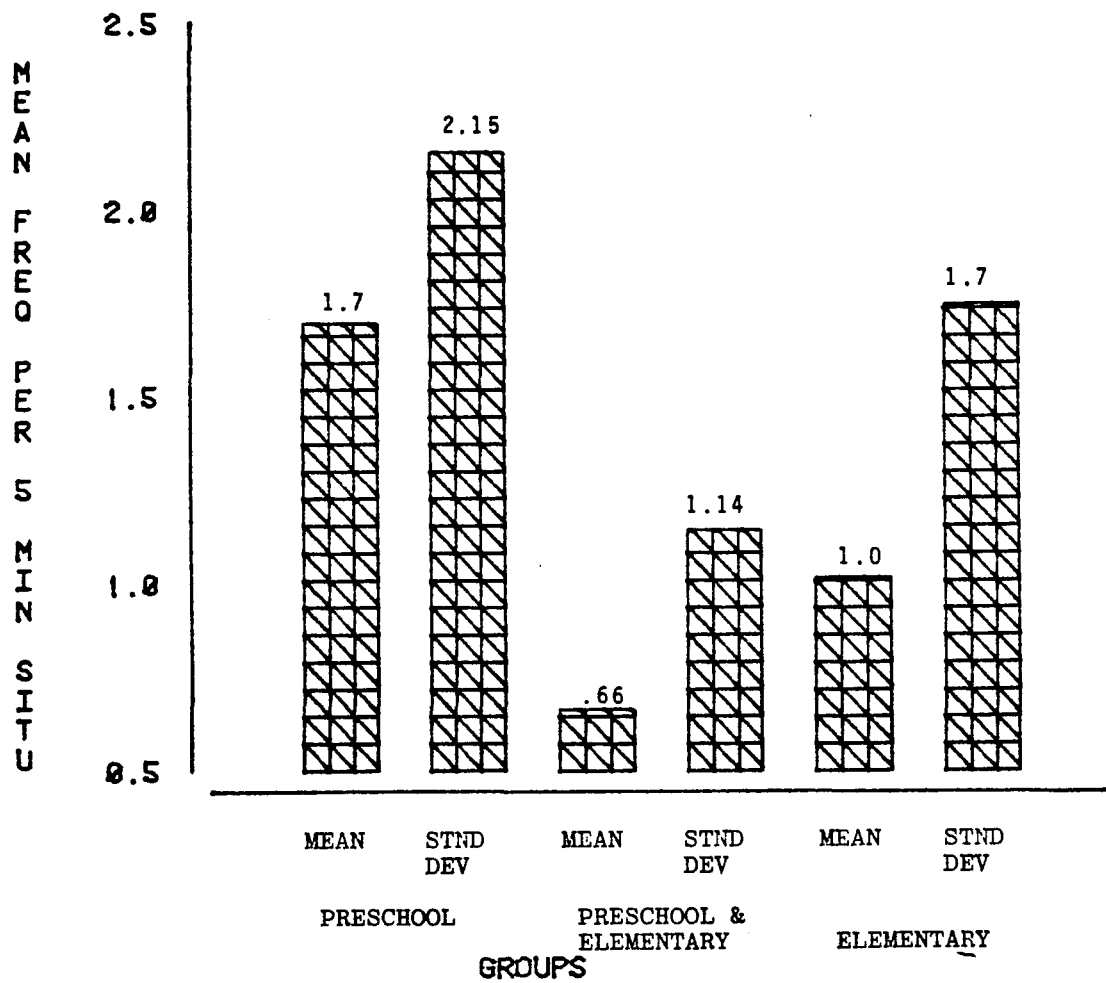


Figure 1

## OCCURRENCE OF DESC/REFL QUESTION BY SCHOOL AGE GROUP

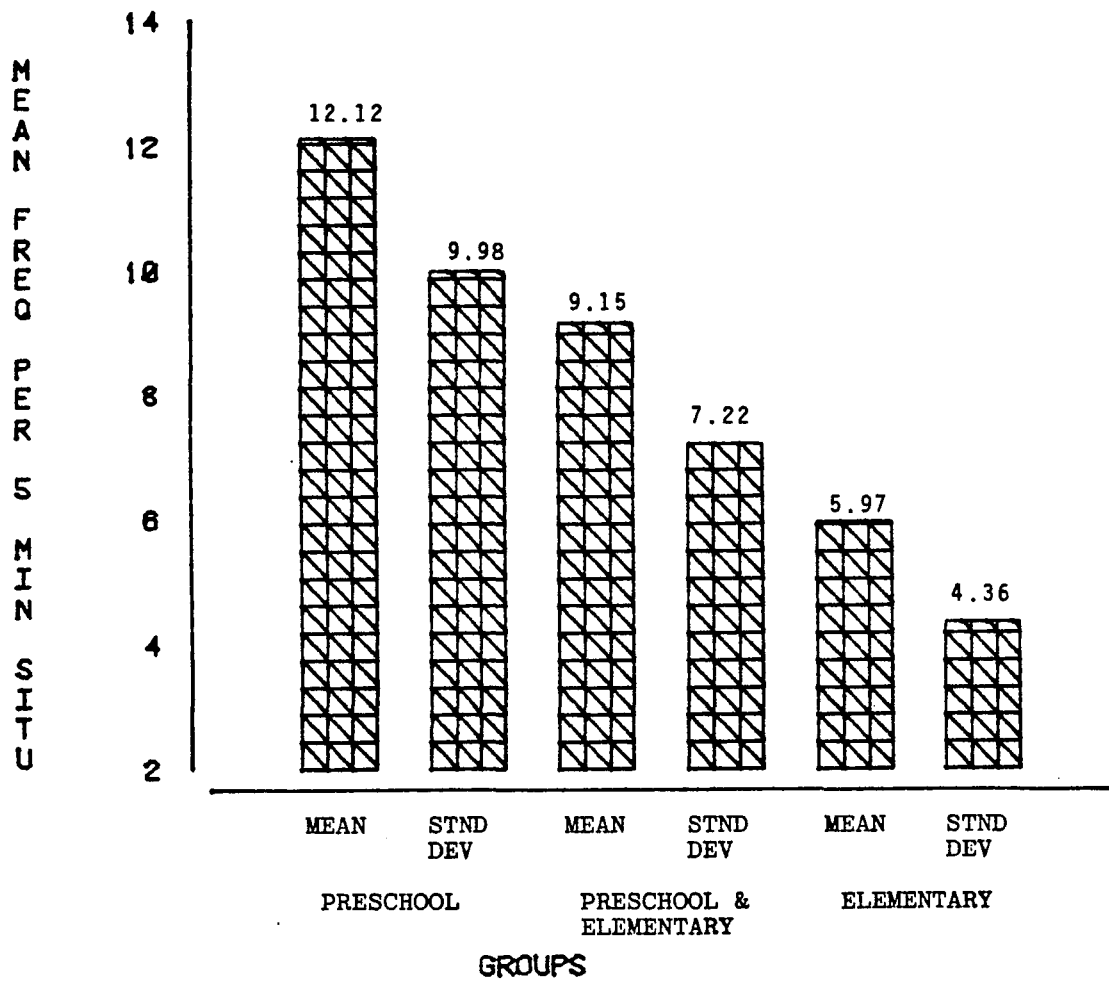


Figure 2

### OCCURRENCE OF PAR/SIB BEHAVIORS BY SCHOOL AGE GROUP

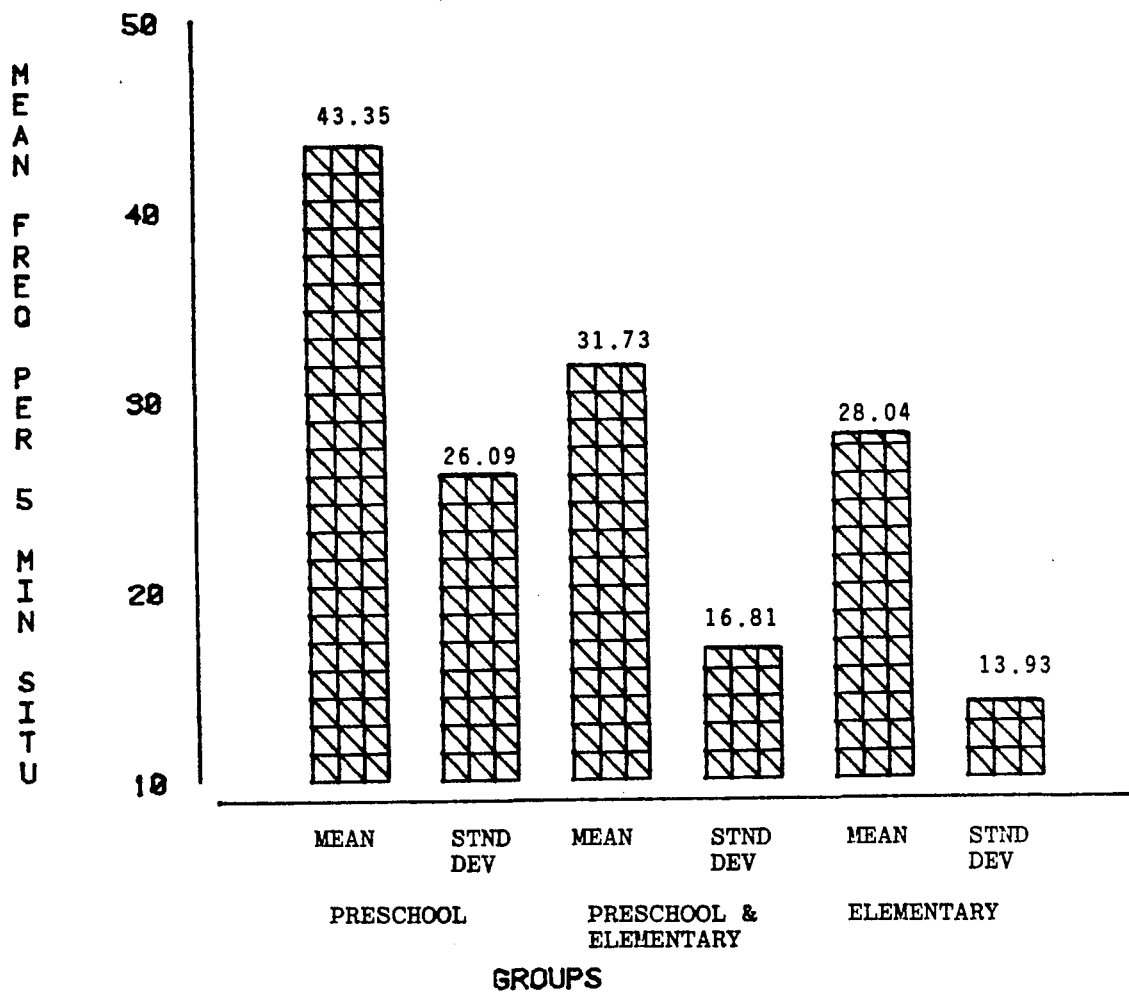


Figure 3

PARENT/SIBLING POSITIVE BEHAVIORS BY SCHOOL AGE GROUP

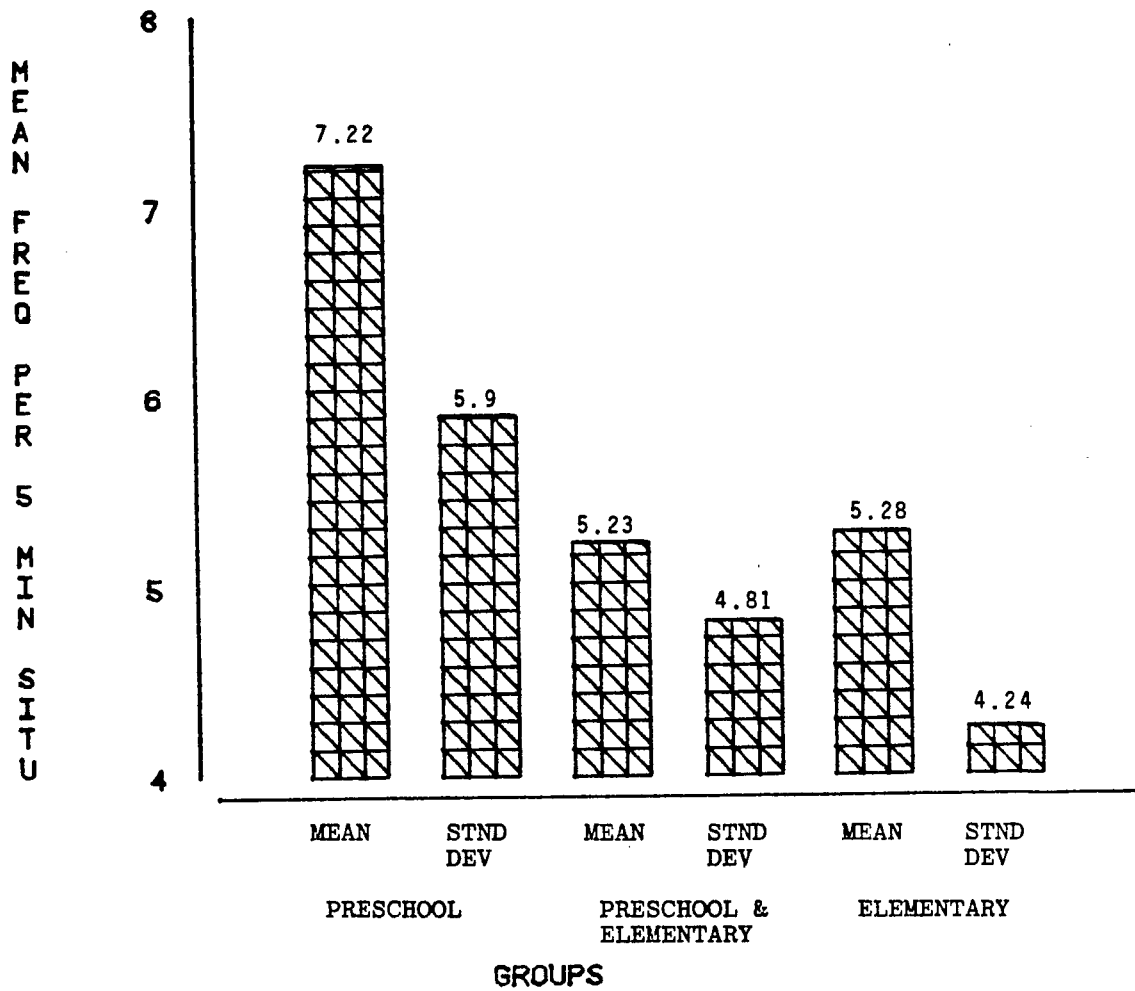


Figure 4

TOTAL PARENT/SIBLING COMMANDS BY SCHOOL AGE GROUP

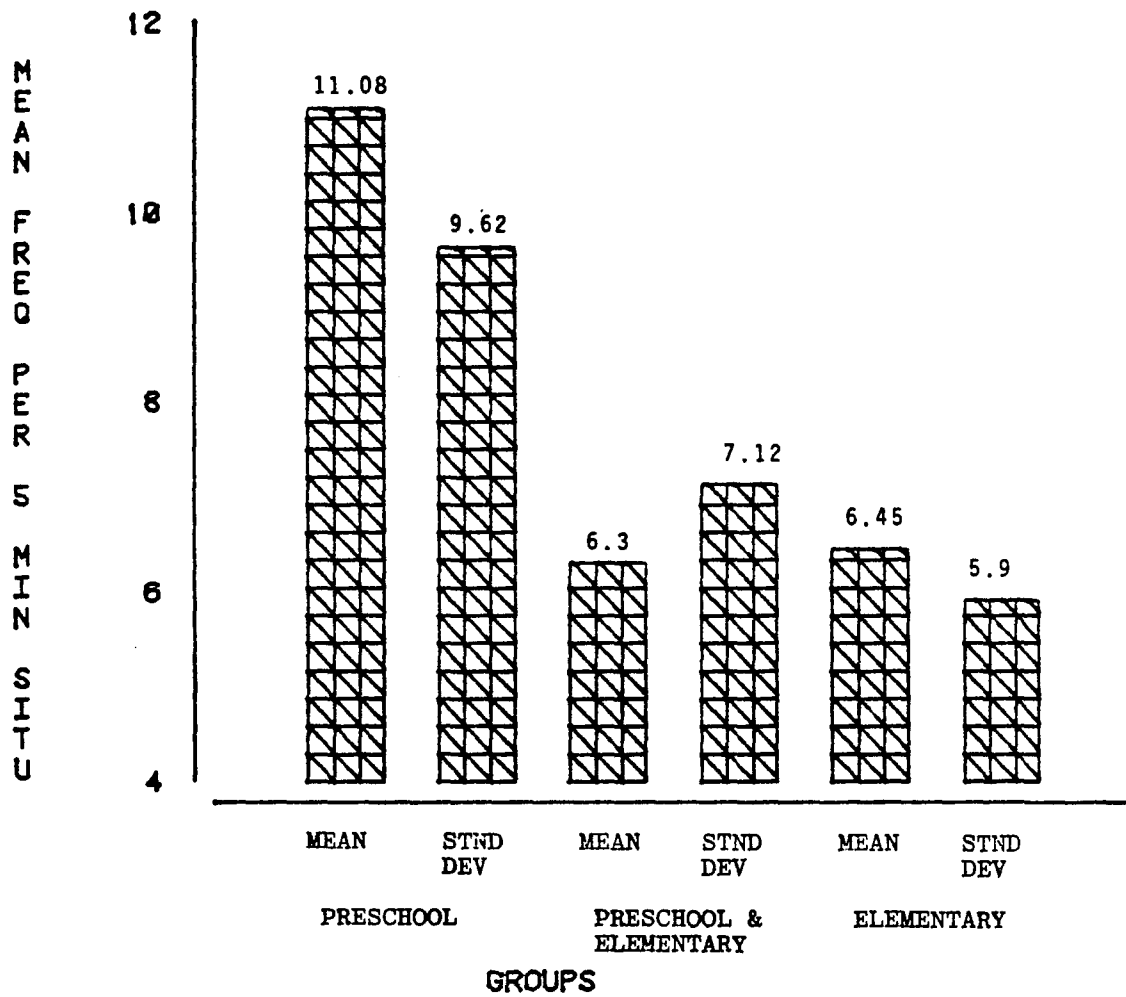


Figure 5

PARENT/SIBLING DIRECT COMMANDS BY SCHOOL AGE GROUP

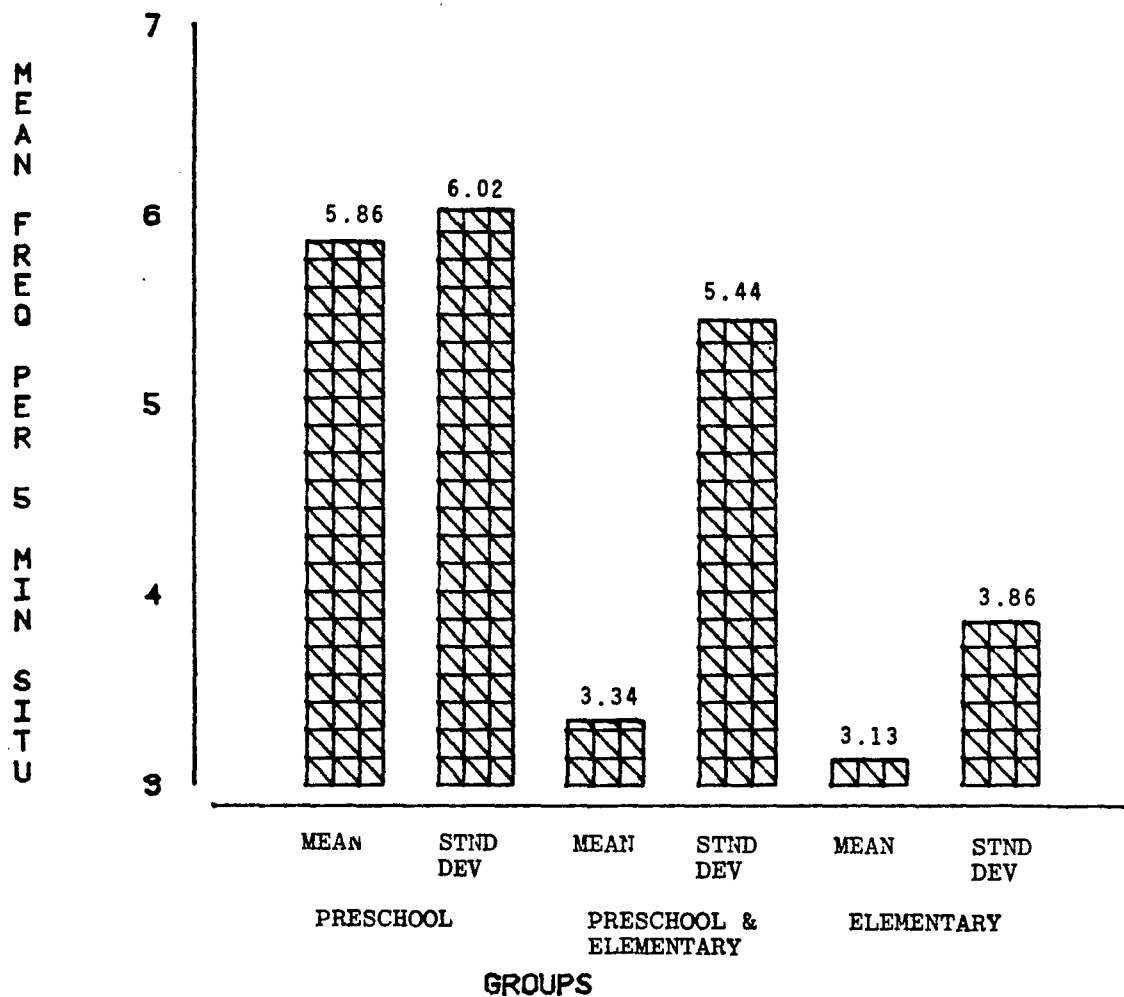


Figure 6

Figure 7. The sequence of a parent or sibling responding to the child's behaviors was at a higher frequency for the preschool group, than either the pre/elementary or elementary group. Parents and siblings in the elementary group responded more often to child behaviors than parents and siblings in the pre/elementary group.

Figure 8. Children in the preschool group laughed most frequently. Children in the elementary group emitted slightly more laughs per situation than children in the pre/elementary group.

Figure 9. Children in the preschool group and the elementary group whined at substantially lower rates.

Figure 10. Children in the preschool group emitted more positive behaviors per situation than either children in the pre/elementary group or the elementary group. Children in the pre/elementary school group emitted the fewest positive behaviors per situation.

Figure 11. Children in the preschool group emitted the highest frequency of negative behaviors. Children in the elementary group emitted the next highest frequency, and children in the pre/elementary group emitted the lowest frequency of negative behaviors.

Figure 12. Children in the preschool group changed activity during a 5 min situation at a much higher frequency than the other two groups. Change of activity for the pre/elementary group and the elementary group occurred at similar rates and were approximately at 1/10 the rate of activities emitted by the preschool group of children.

Figure 13. A substantially higher mean frequency of total child behaviors was emitted by children in the preschool group than in the pre/elementary or elementary groups. Children in the elementary group

## PAR/SIB TOTAL RESPONSES TO CHILD BEHAVIORS BY SCHOOL AGE GROUP

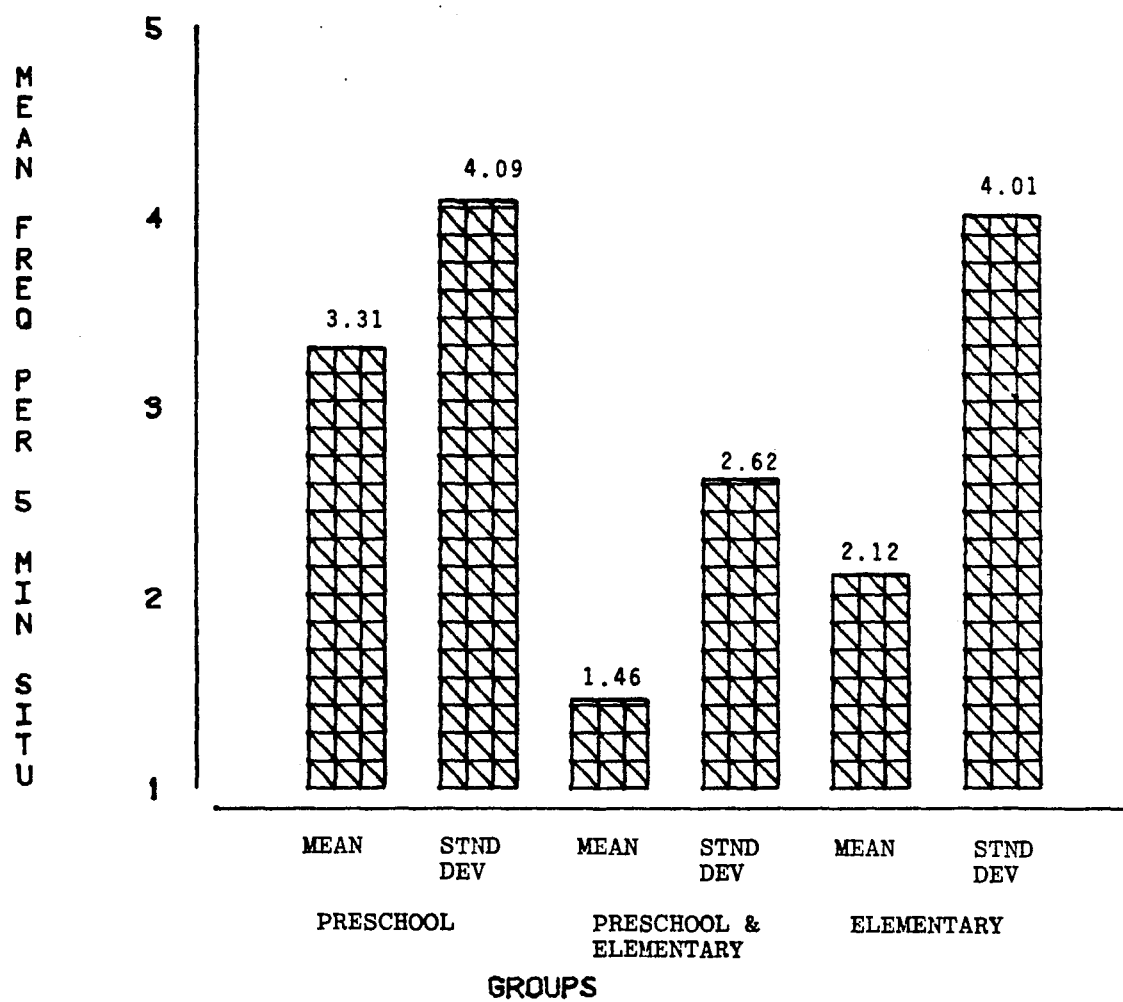


Figure 7



OCCURRENCE OF CHILD LAUGH BY SCHOOL AGE GROUP

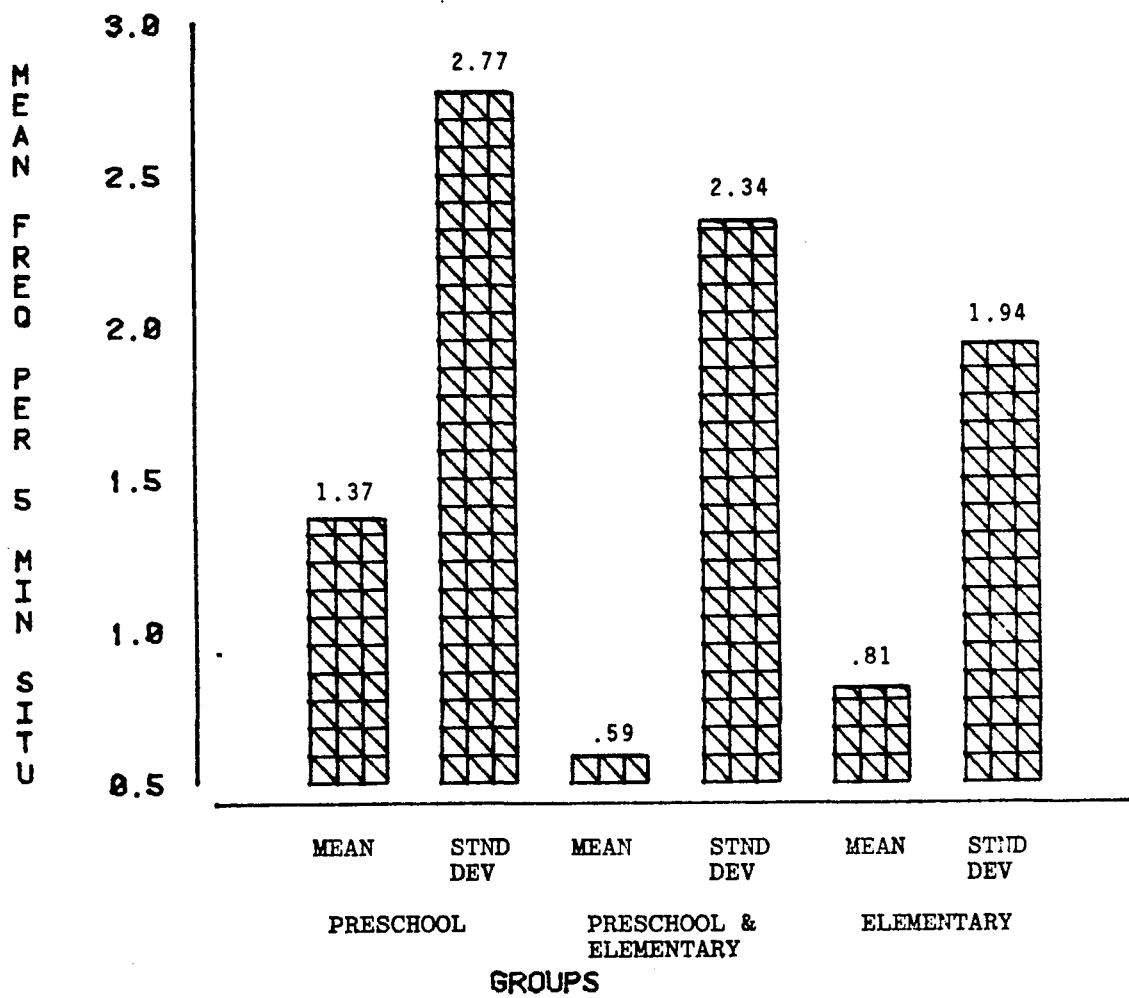


Figure 8

OCCURRENCE OF CHILD WHINE BY SCHOOL AGE GROUP

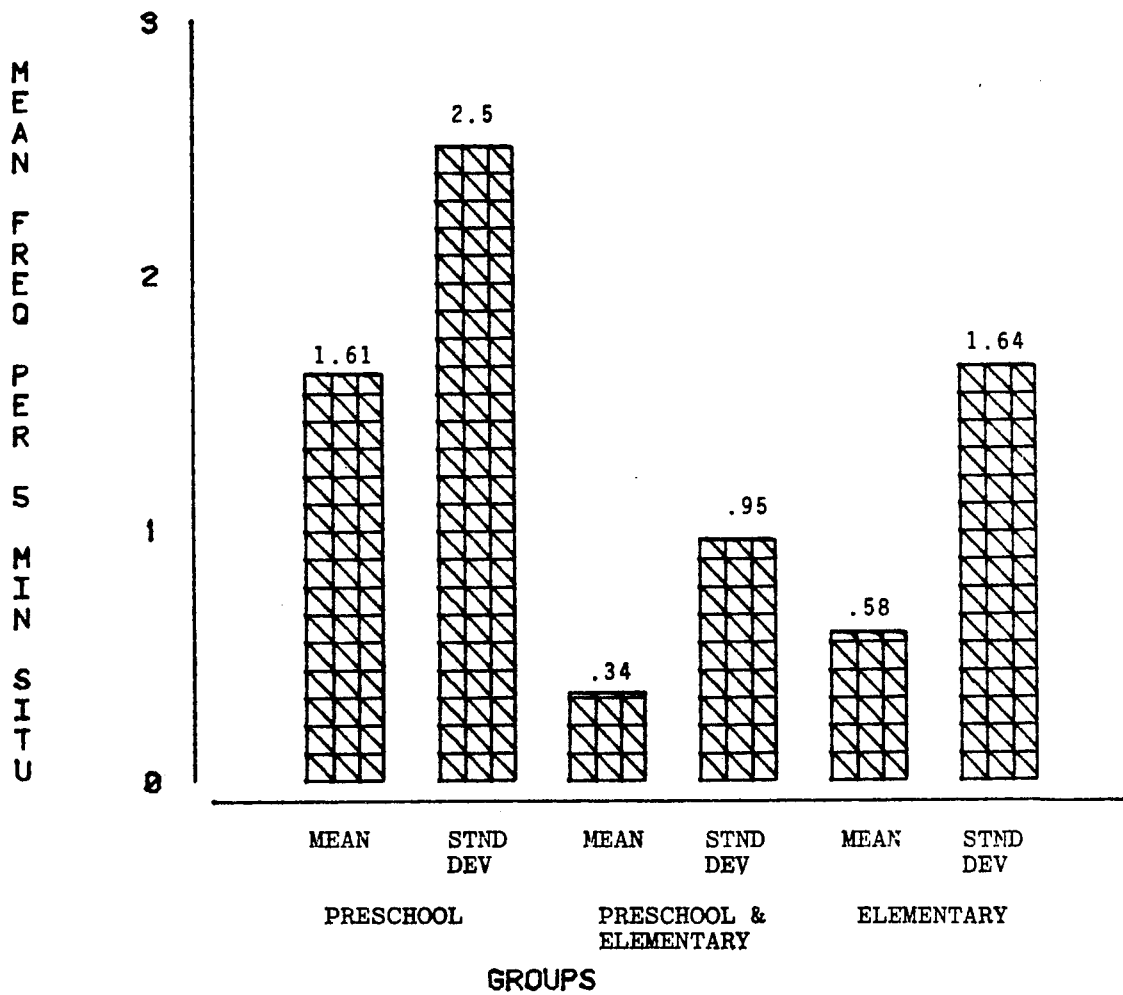


Figure 9

## TOTAL CHILD POSITIVE BEHAVIORS BY SCHOOL AGE GROUP

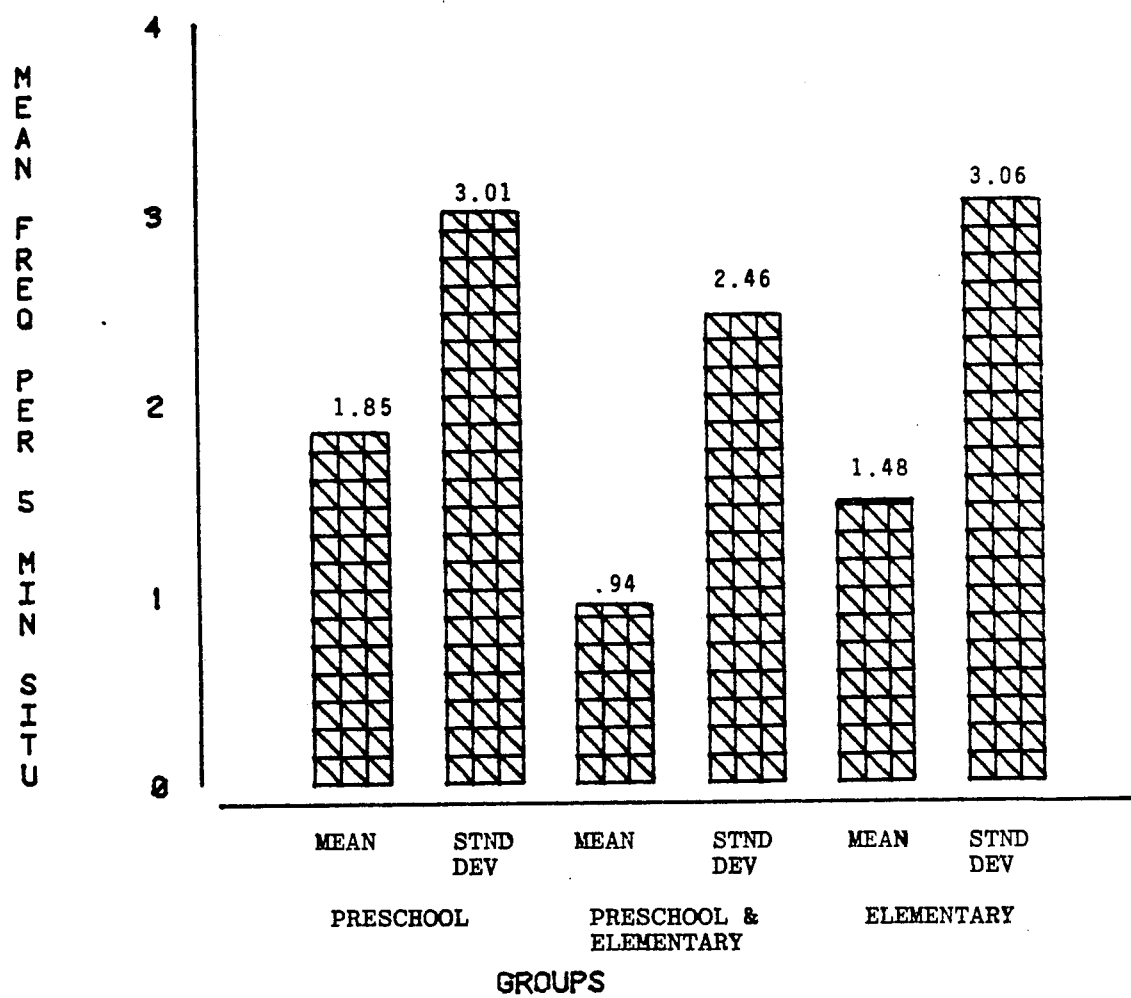


Figure 10

TOTAL CHILD NEGATIVE BEHAVIORS BY SCHOOL AGE GROUP

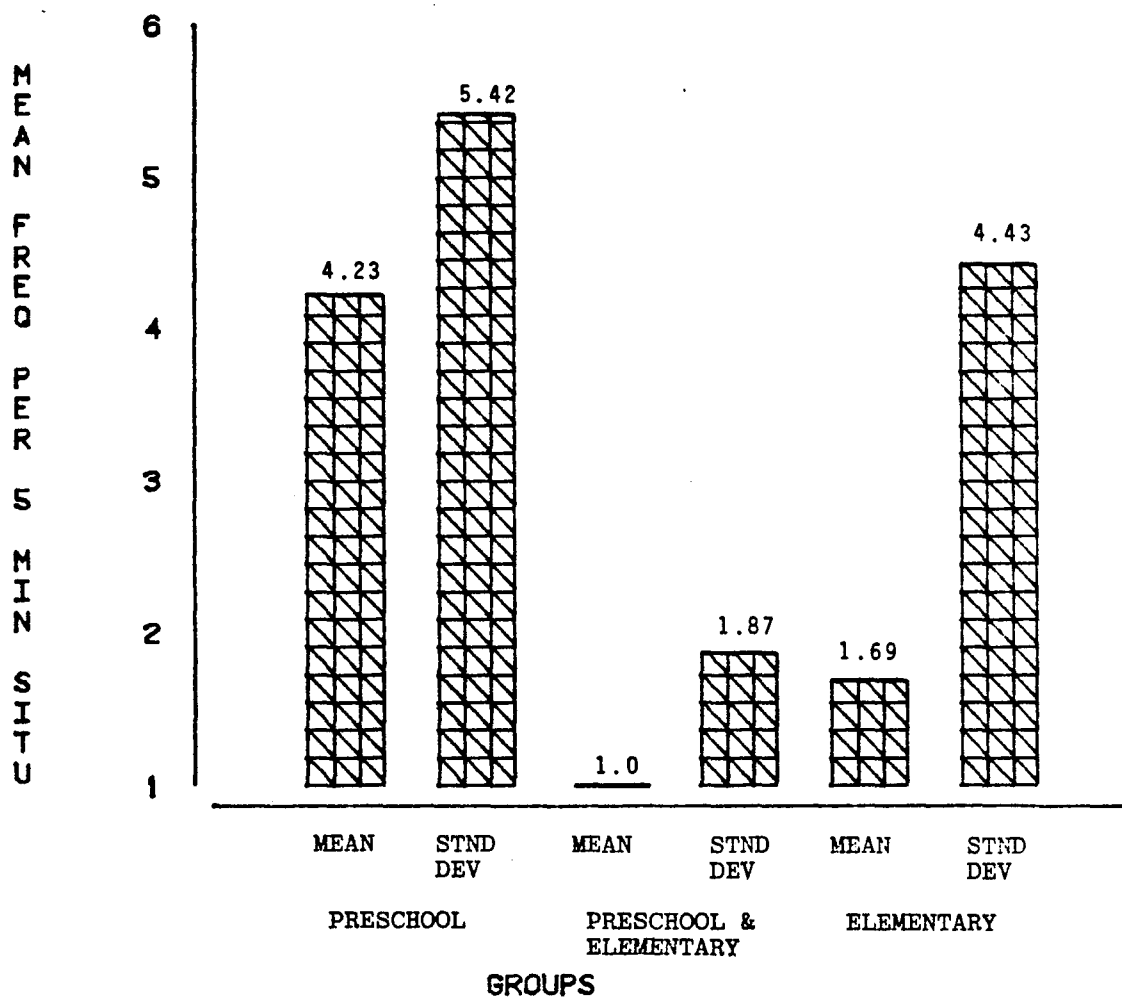


Figure 11

## OCCURRENCE OF CHILD CHANGE ACTIVITY BY SCHOOL AGE GROUP

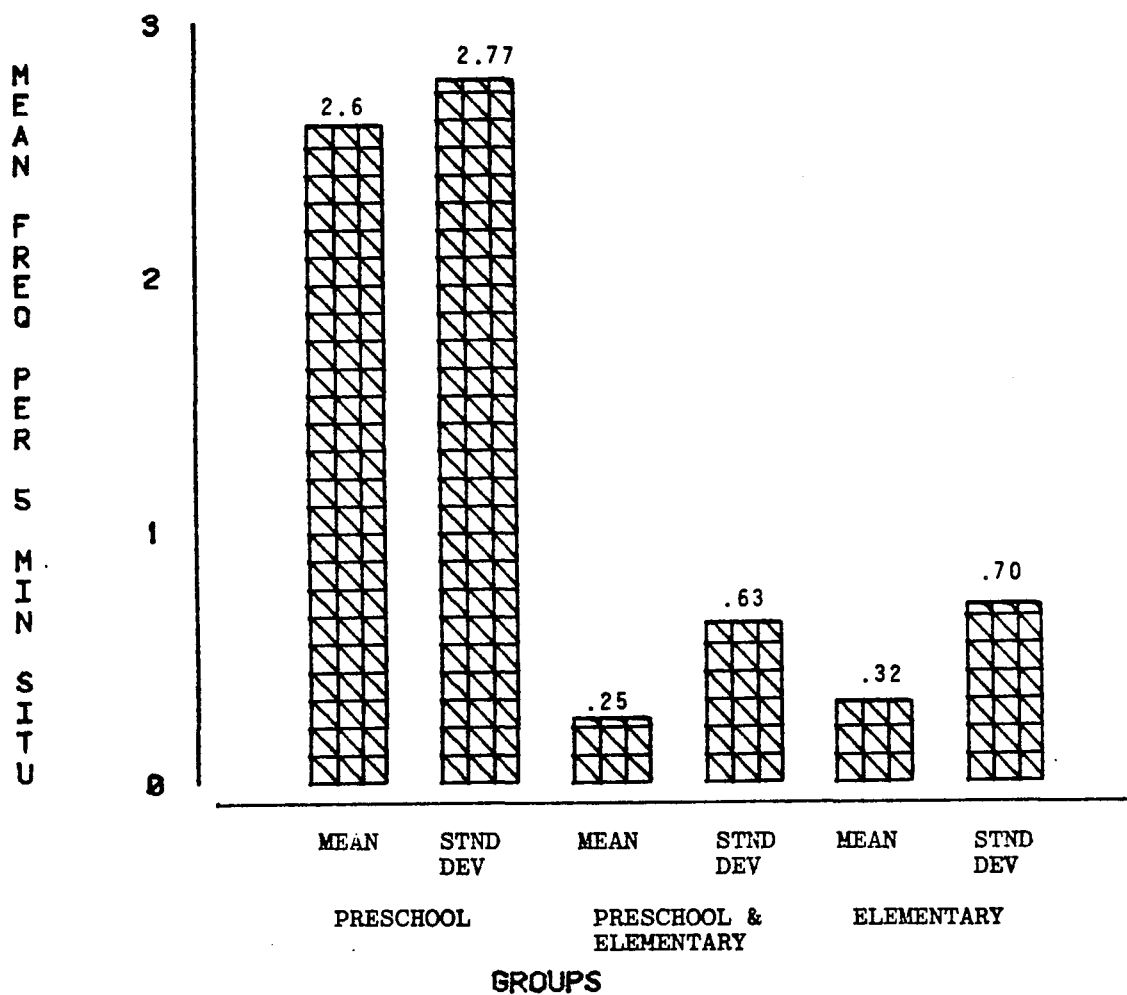


Figure 12

### OCCURRENCE OF TOTAL CHILD BEHAVIORS BY SCHOOL AGE GROUP

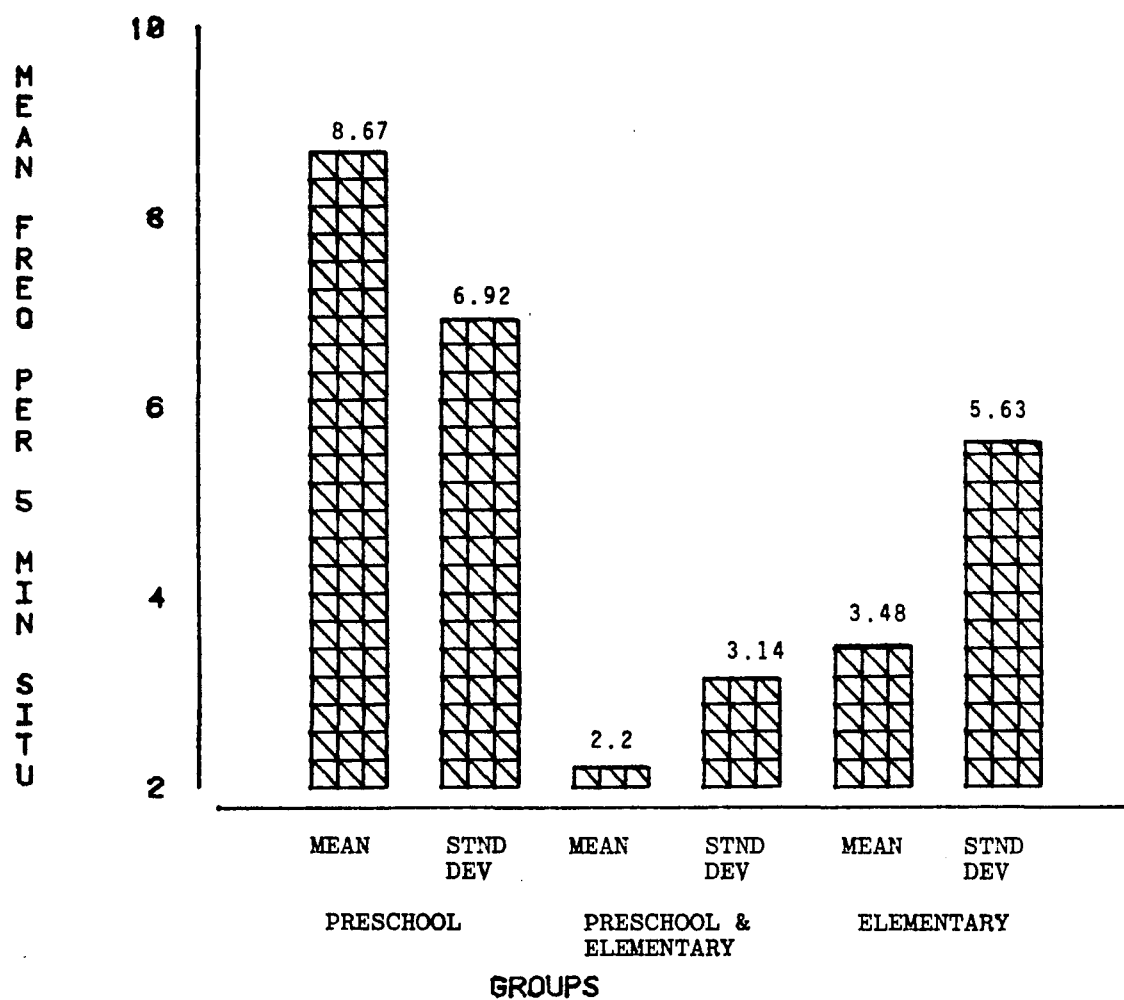


Figure 13

emitted more behaviors per situation than children in the pre/elementary group.

#### Results for Interaction Situations

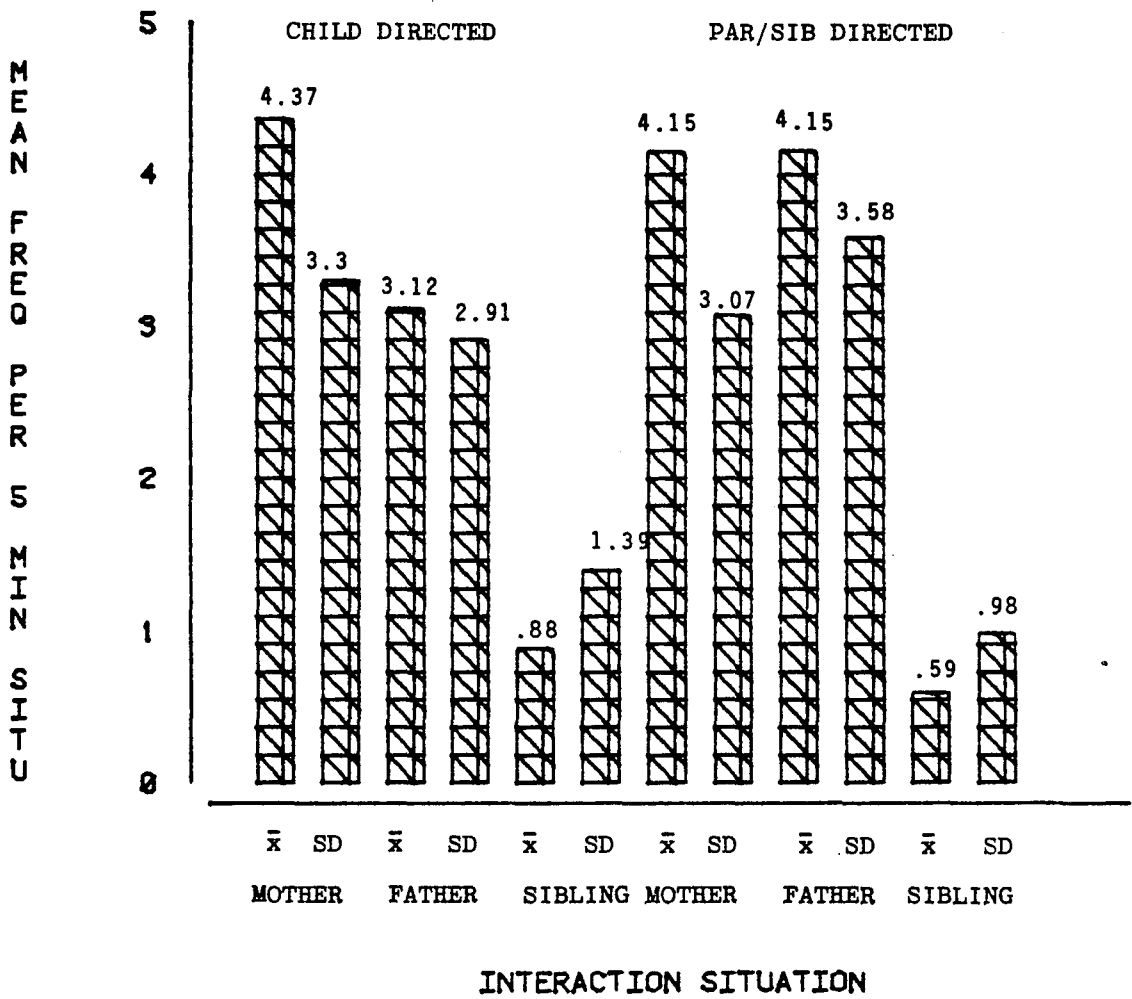
Figure 14. In the child-directed interactions mothers acknowledged children's behaviors most frequently and siblings did so least. In the parent/sibling-directed situations mothers and fathers acknowledged their children at similar rates, while siblings acknowledged their younger brothers least.

Figure 15. In child-directed interaction situations siblings emitted the highest frequency of critical statements. Mothers emitted the next highest frequency, and fathers emitted the lowest frequency of critical statements. In the parent/sibling-directed situations all family members emitted similar rates of critical statements towards the children.

Figure 16. Mothers laughed at a substantially higher frequency with their children than did the fathers or siblings in child-directed interaction situations. Fathers and siblings laughed at very similar, low rates. In parent/sibling-directed situations, siblings laughed with the children more often than mothers or fathers, and mothers laughed at a higher rate than fathers.

Figure 17. While mothers and fathers delivered unlabeled praises to their children at very similar rates in the child-directed situations, siblings gave their younger brothers little or no unlabeled praises. In the parent/sibling-directed situations, siblings again gave a negligible amount of unlabeled praises to their younger brothers. Fathers delivered the highest rate of unlabeled praises and

OCCURRENCE OF PARENT/SIBLING ACKNOWLEDGEMENT BY INTERACTION SITUATION



MEAN=  $\bar{x}$   
STANDARD DEVIATION=SD

Figure 14



PAR/SIB CRITICAL STATEMENTS BY INTERACTION SITUATION

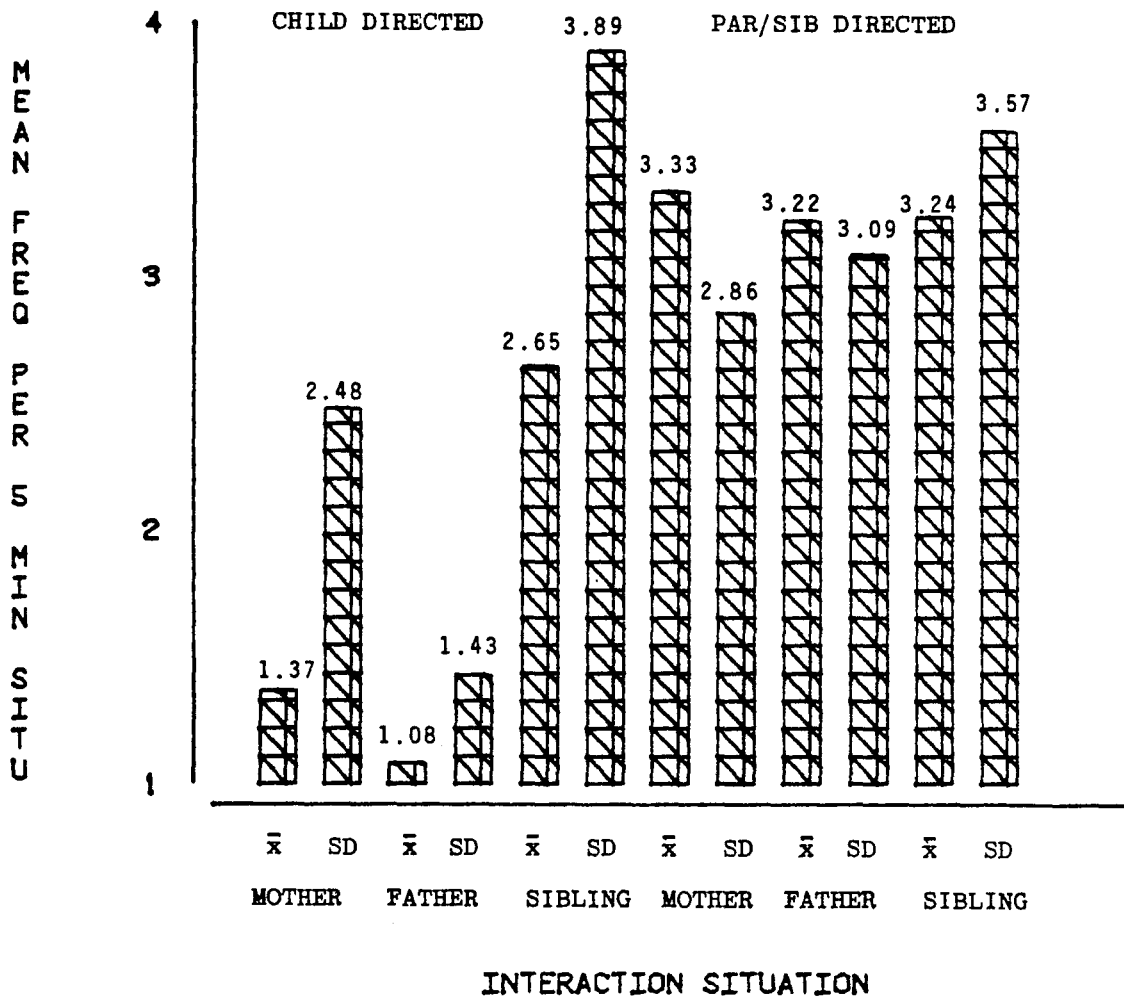


Figure 15

PARENT/SIBLING LAUGH BY INTERACTION SITUATION

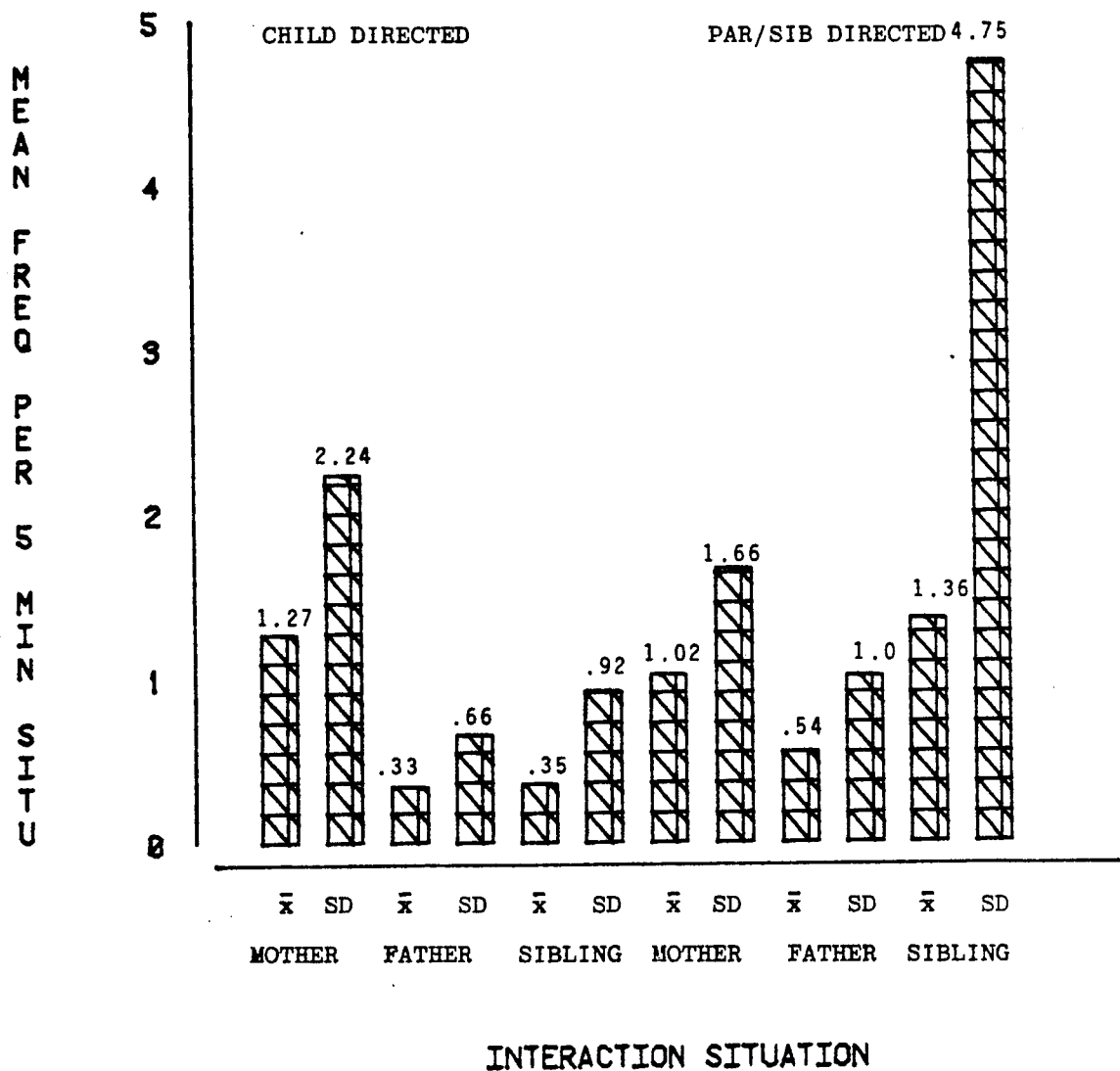


Figure 16

. PARENT/SIBLING UNLABELED PRAISE BY INTERACTION SITUATION

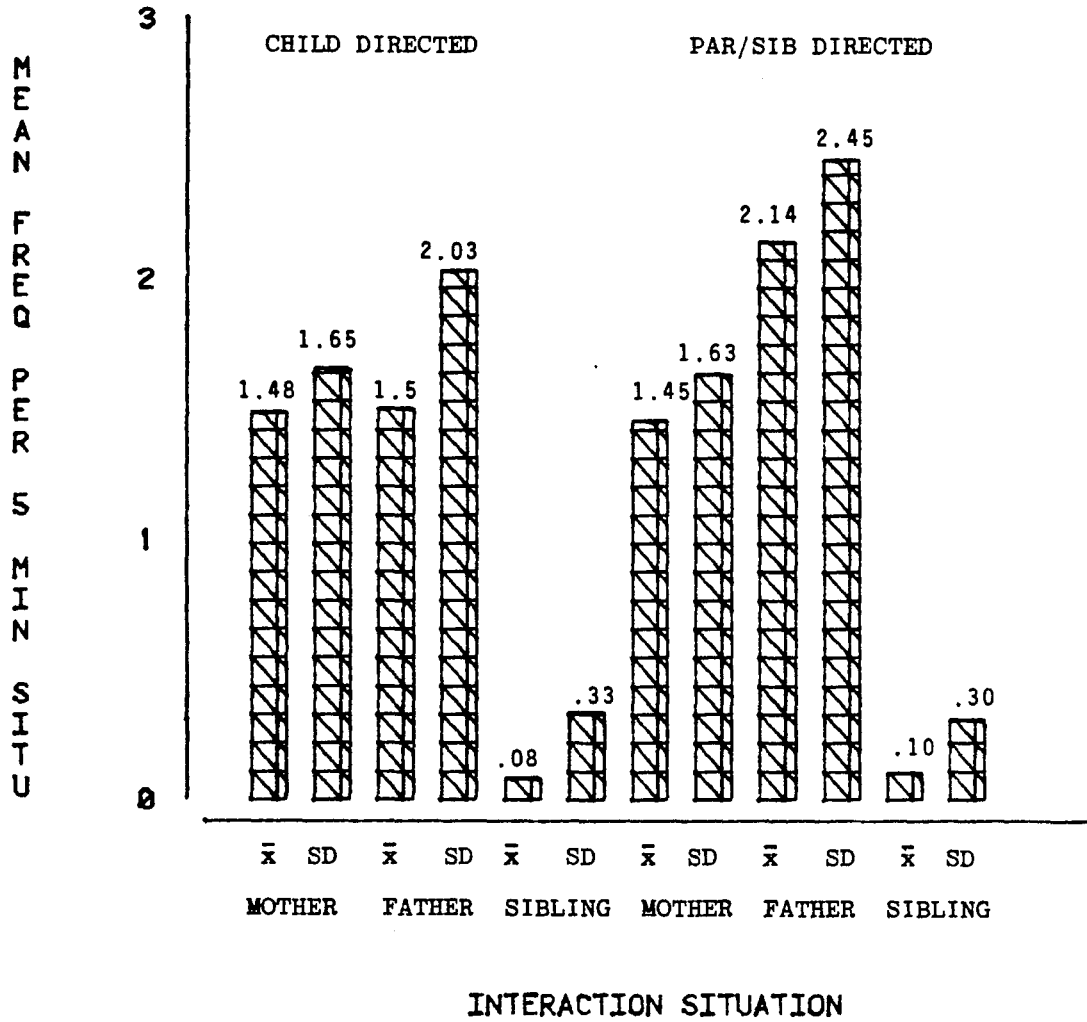


Figure 17

mothers gave their children unlabeled praises at approximately 2/3 of the rate delivered by fathers.

Figure 18. Family members emitted more descriptive statements during parent/sibling-directed situations than during child-directed situations. In both types of situations mothers emitted the highest rates of descriptive statements, followed next by fathers, and then by siblings who emitted substantially lower rates than parents.

Figure 19. During child-directed interaction situations mothers and fathers emitted similar, high rates of descriptive/reflective questions to their children, while siblings asked descriptive/reflective questions at a substantially lower rate. In parent/sibling-directed situations mothers asked the most questions, followed by fathers, and siblings, who again emitted a very low rate of descriptive/reflective questions.

Figure 20. In child-directed situations mothers emitted substantially more positive behaviors with their children than did fathers or siblings, and fathers emitted substantially more positive behaviors than siblings. Fathers emitted slightly more positive behaviors than mothers in parent/sibling-directed situations, while siblings emitted few positive behaviors when compared to both parents.

Figure 21. When compared to both parents' similar low rates of negative behaviors, siblings emitted negative behaviors at twice the rate of both parents in child-directed situations. All three family members' rates of negative behaviors increased in parent/sibling-directed situations, and occurred at similar levels.

PAR/SIB DESCRIPTIVE STATEMENT BY INTERACTION SITUATION

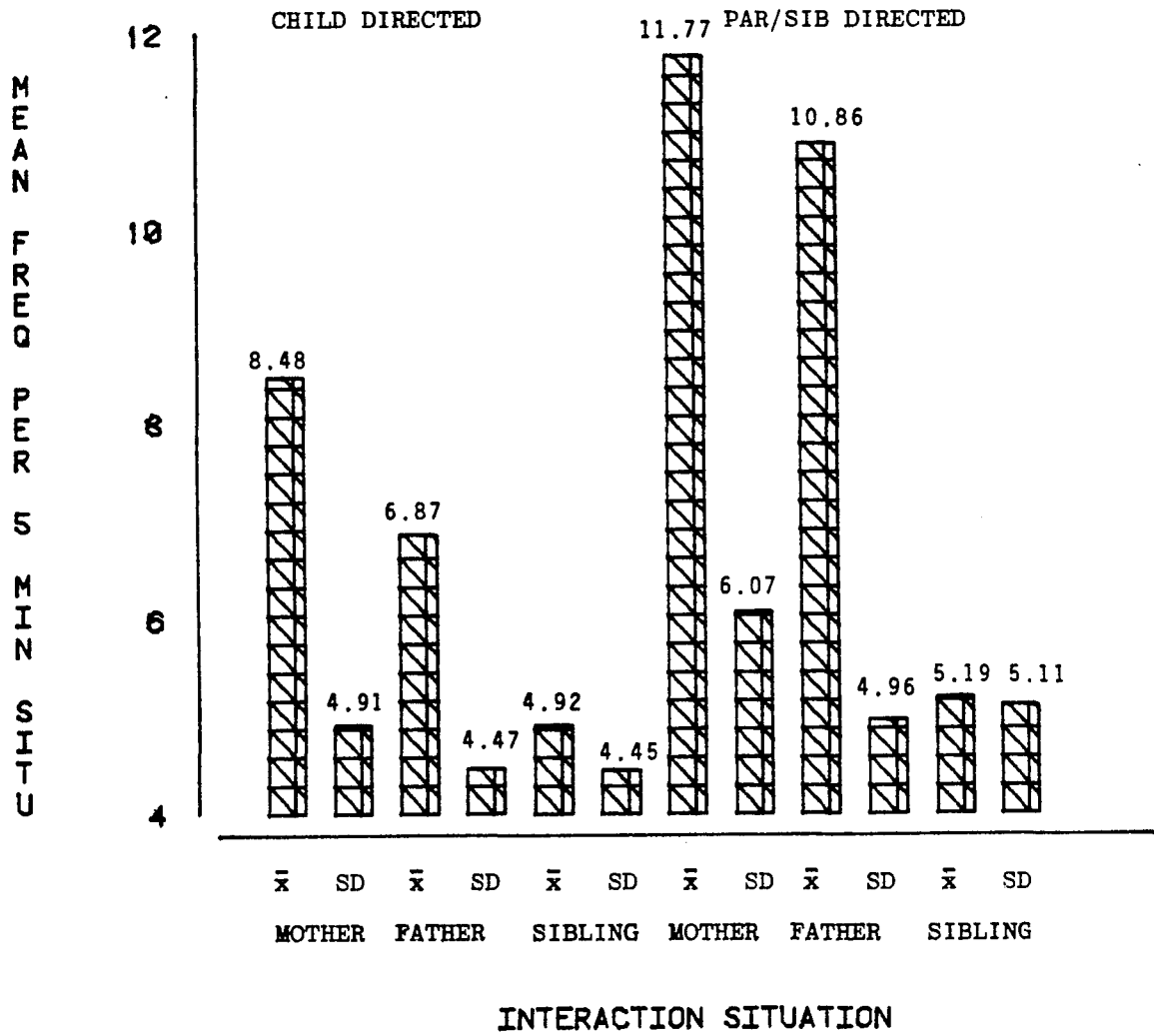


Figure 18

PAR/SIB DESCRIPTIVE/REFLECTIVE QUESTION BY INTERACTION SITUATION

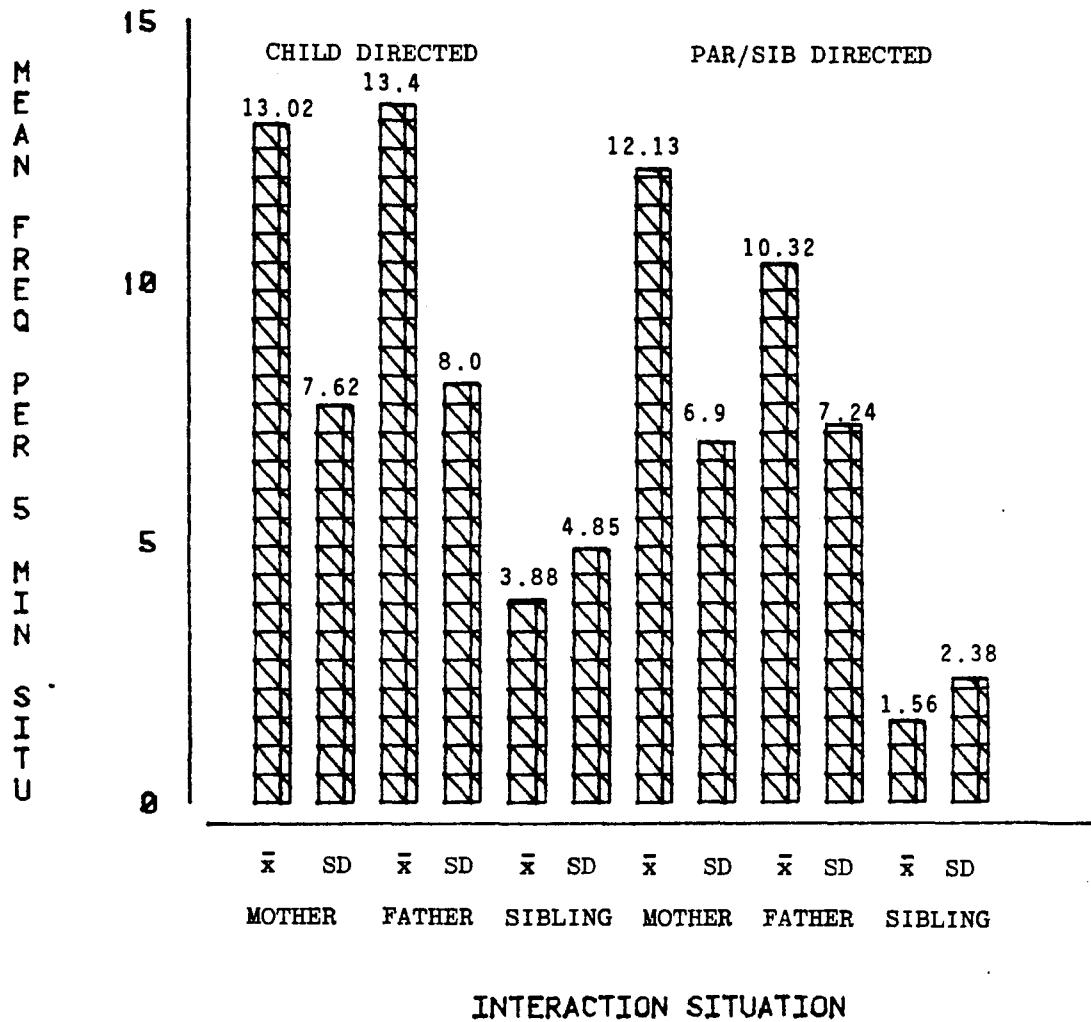


Figure 19

TOTAL PAR/SIB POSITIVE BEHAVIORS BY INTERACTION SITUATION

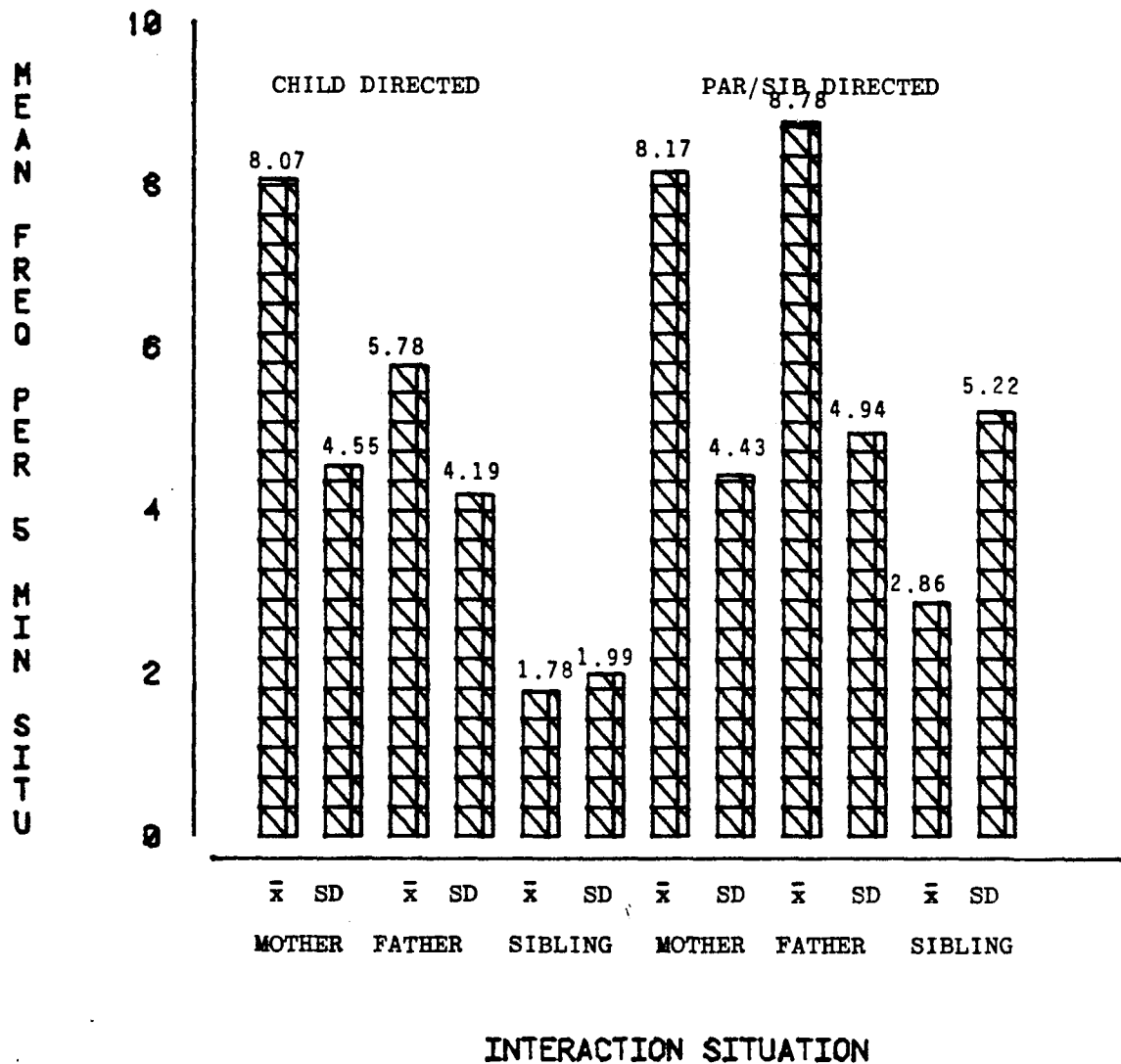


Figure 20

TOTAL PAR/SIB NEGATIVE BEHAVIORS BY INTERACTION SITUATION

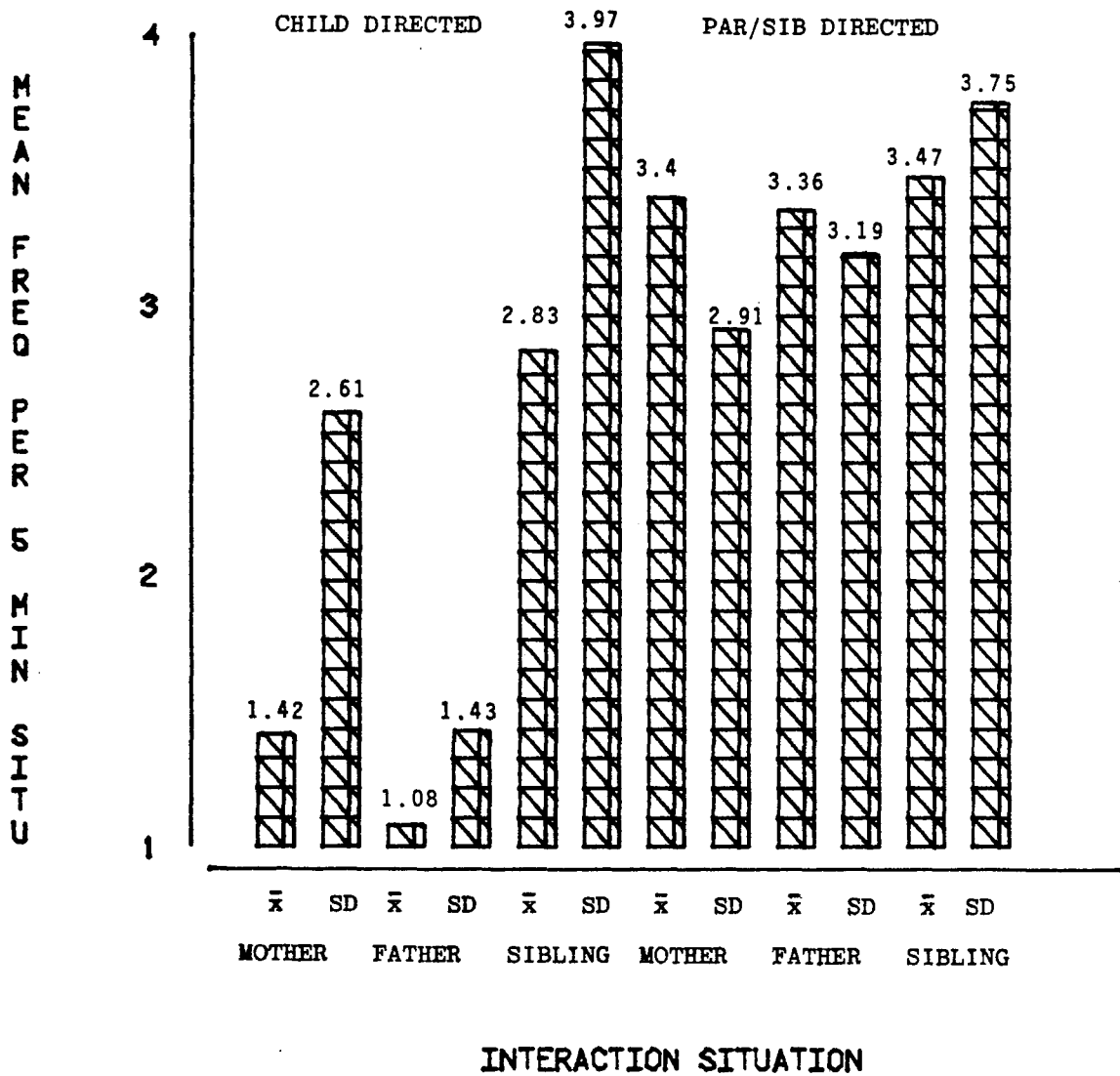


Figure 21.



Figure 22. Fathers gave more total commands than mothers or siblings in both child-directed and parent/sibling-directed situations. Fathers' rate of commands doubled when they directed the situation. Mothers' rate of commands increased some in parent/sibling-directed situations. Siblings gave few commands compared to parents, regardless of the type of situation.

Figure 23. This graph of direct commands shows a nearly identical pattern to Figure 22.

Figure 24. In situations in which the child directed the activity, mothers emitted more total behaviors than fathers, and siblings emitted behaviors at 1/3 the rate of parents. When parents directed the activity, mothers and fathers increased their behaviors and were at very similar rates. Siblings' rates of behaviors increased slightly when they directed the activity.

Figure 25. Siblings responded more to their younger brothers' behaviors than did mothers or fathers in child-directed situations. Mothers responded more than fathers. When parents or siblings directed the activity, fathers responded more often than mothers or siblings, who responded at similar rates.

Figure 26. Children complied most to the direct commands of their fathers in both child-directed and parent/sibling-directed situations. The next highest rates of compliance were to mothers, with children complying at a higher rate in mother-directed situations than in child-directed with mother situations. Children complied to siblings' direct commands at relatively low similar rates for both types of situations.

TOTAL PARENT/SIBLING COMMANDS BY INTERACTION SITUATION

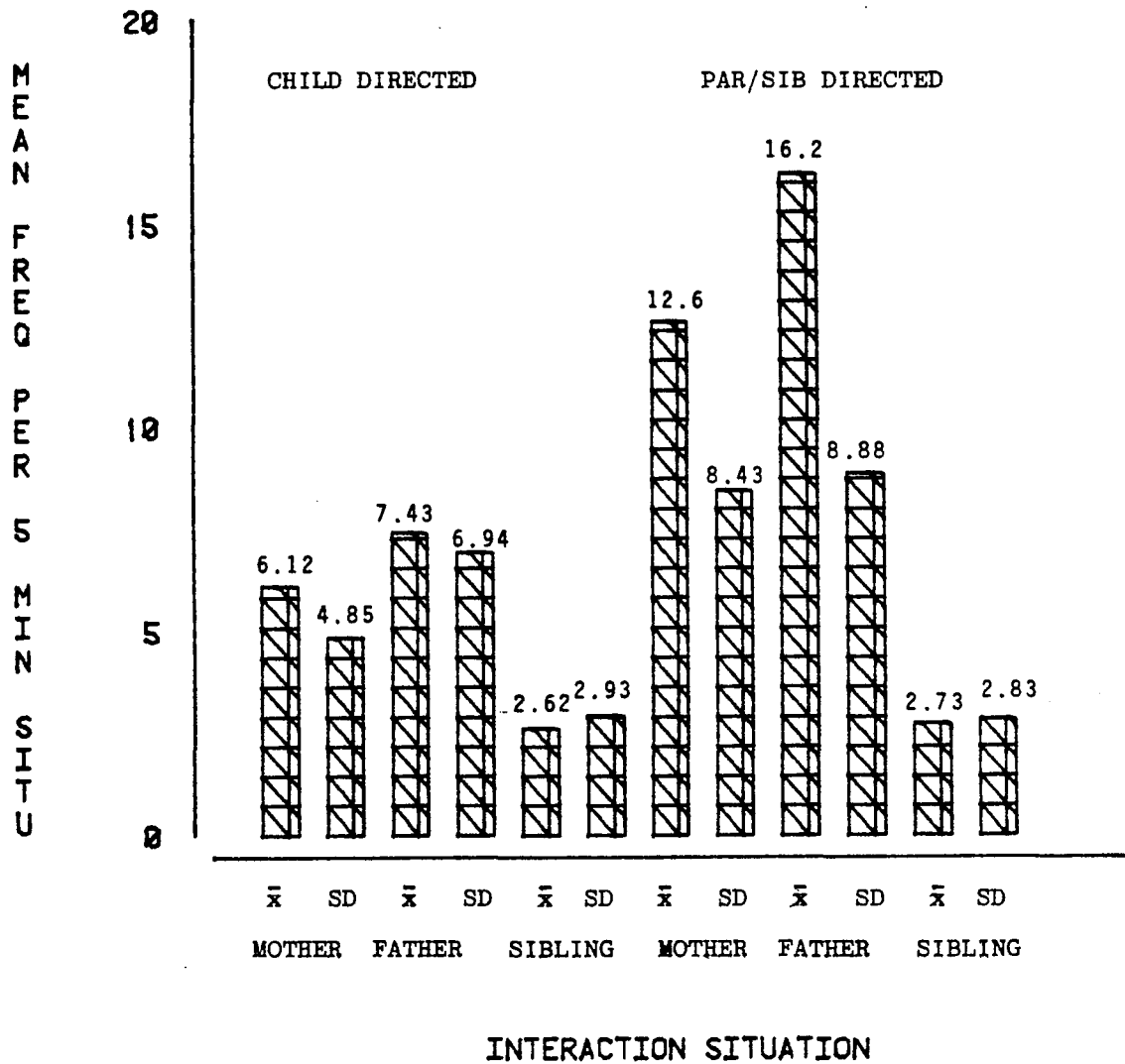


Figure 22

PARENT/SIBLING DIRECT COMMANDS BY INTERACTION SITUATION

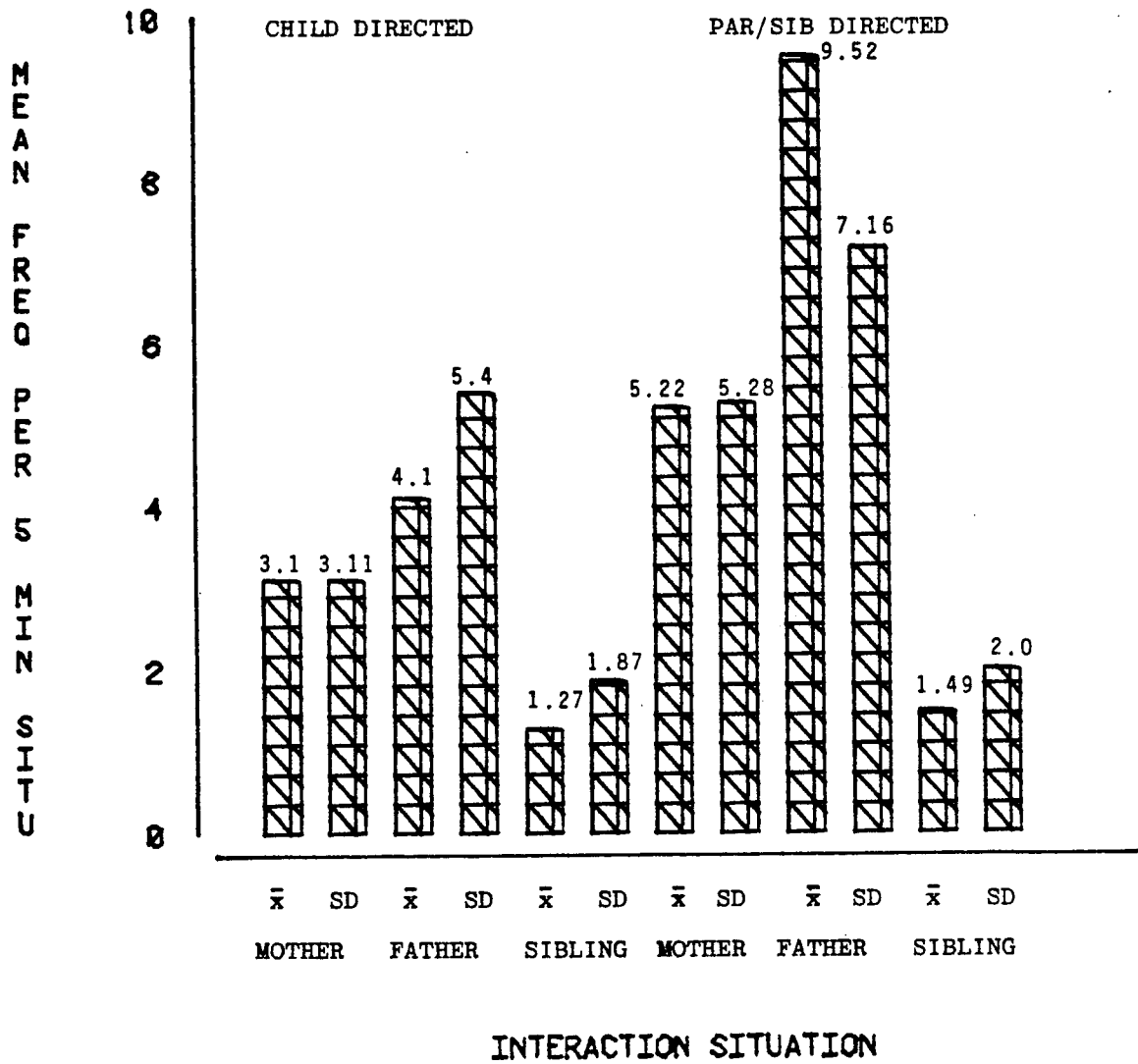


Figure 23

TOTAL PARENT/SIBLING BEHAVIORS BY INTERACTION SITUATION

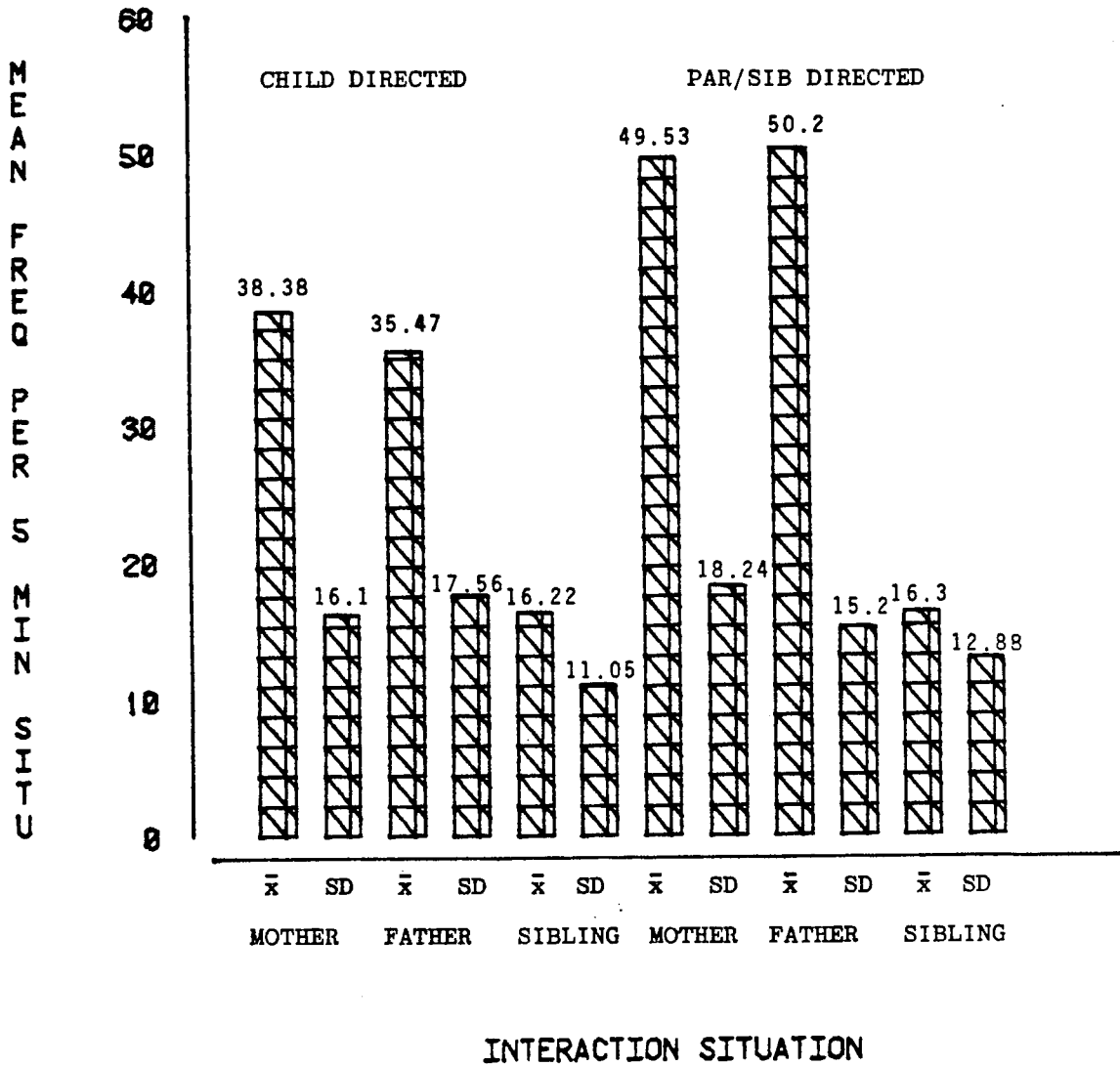


Figure 24

TOTAL PAR/SIB RESPONSES TO CHILD BEHAVIORS BY INTERACTION SITUATION

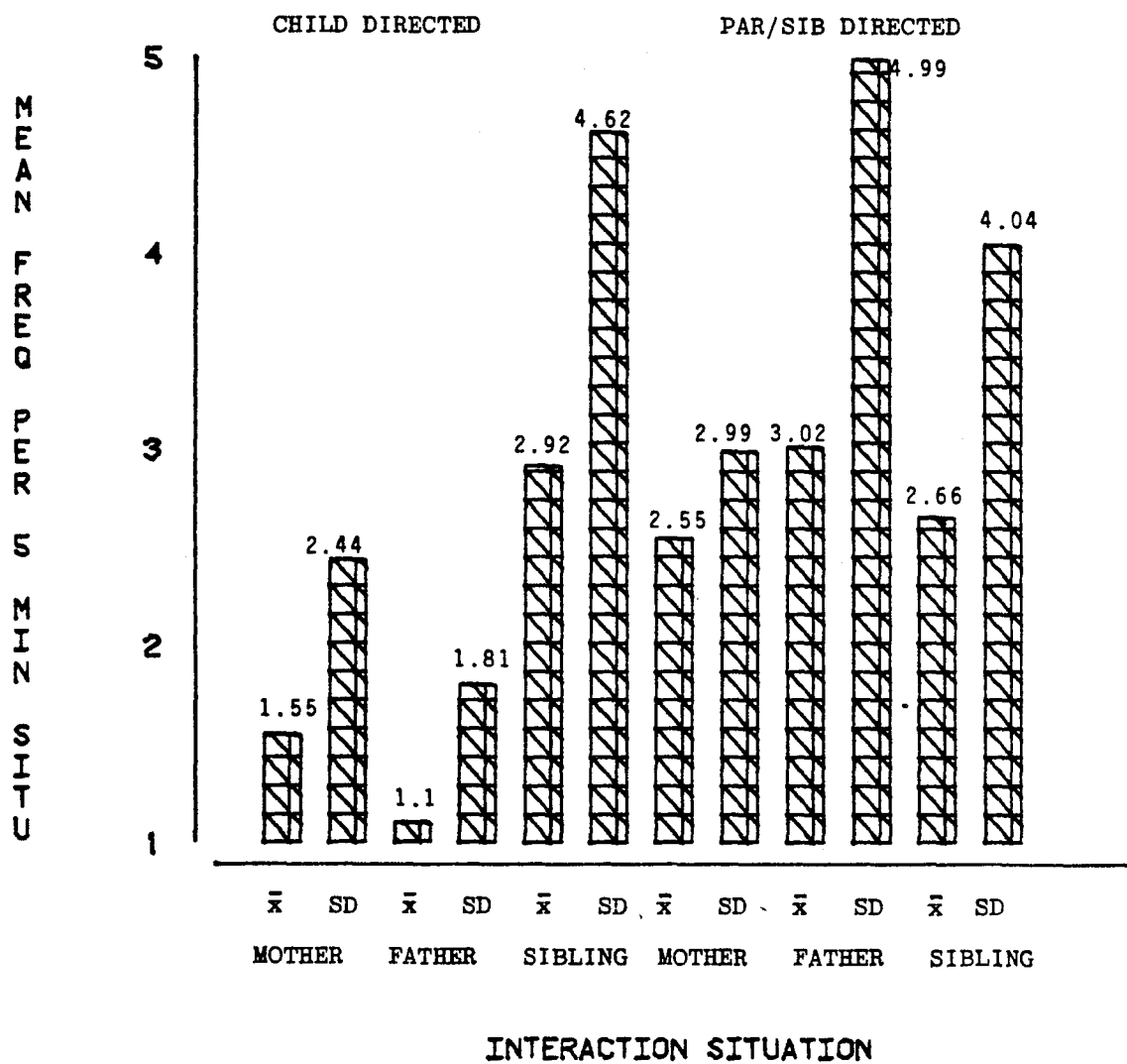


Figure 25

## CHILD COMPLIANCE TO PAR/SIB DIRECT COMMANDS BY INTERACTION SITUATION

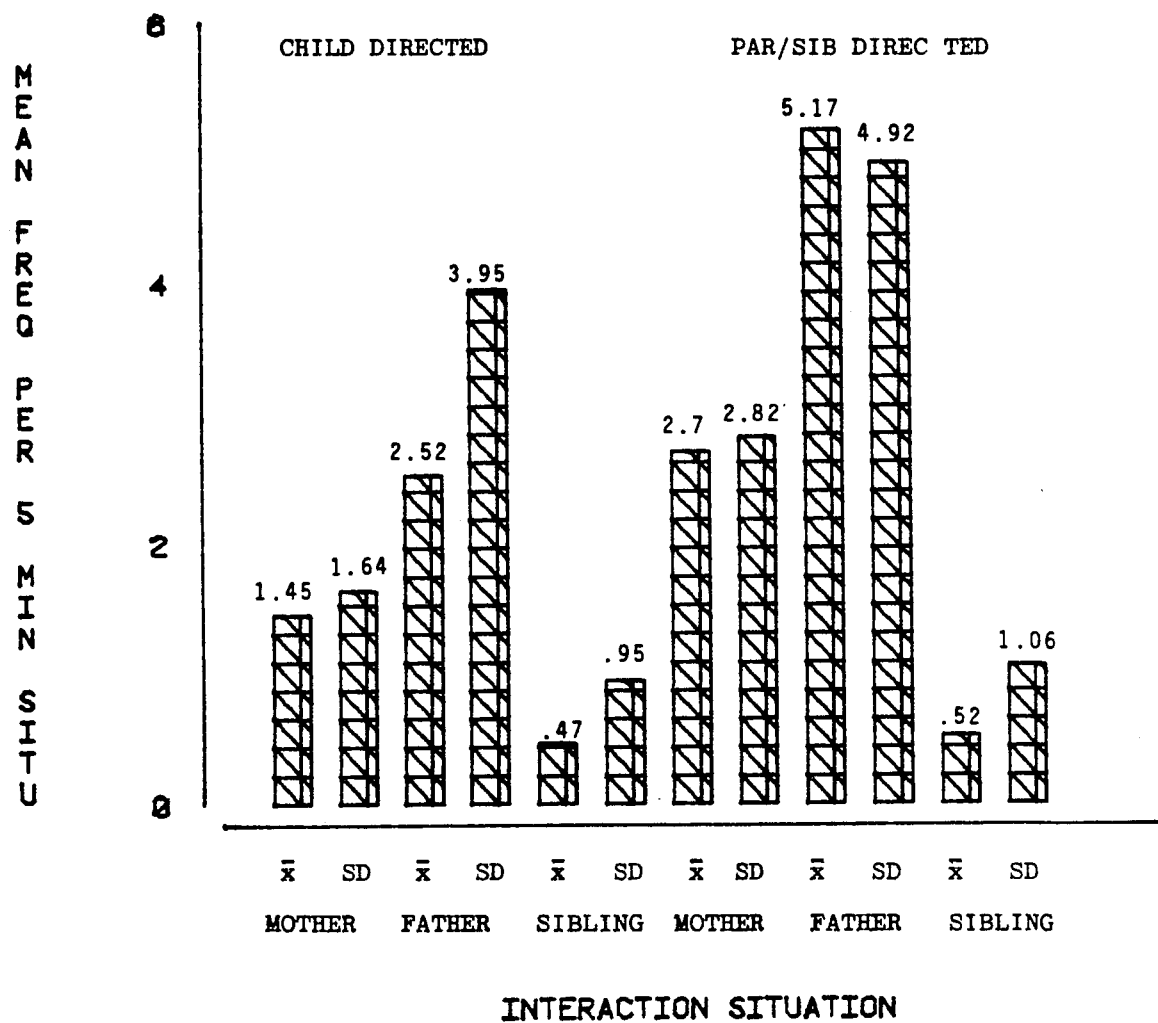


Figure 26

Figure 27. Children whined most when they were interacting with siblings regardless of the type of situation. When children interacted with their siblings, they whined the most when they directed their older brothers in play. Children whined at a higher rate when interacting with their mothers than fathers in both situations.

Figure 28. Children were most active when interacting with siblings in both types of situations. Children changed activities most often when siblings directed the activity. Children were slightly more active with mothers than fathers in both child-directed and parent/sibling-directed situations.

Figure 29. As in Figure 28, children emitted more total behaviors when interacting with siblings in both child-directed and parent/sibling-directed situations, and the highest rate of child behaviors occurred in sibling-directed situations. In child-directed situations, children emitted more total behaviors with mothers than with fathers. When parents directed the situations, children emitted more behaviors when interacting with fathers than with mothers.

Figure 30. Children were most negative when interacting with their siblings, regardless of the type of situation. Children emitted more negative behaviors when parents directed the activity. In child-directed situations children were slightly more negative with their mothers than with fathers, while in parent-child situations, children were more negative with fathers than with mothers.

CHILD WHINE BY INTERACTION SITUATION

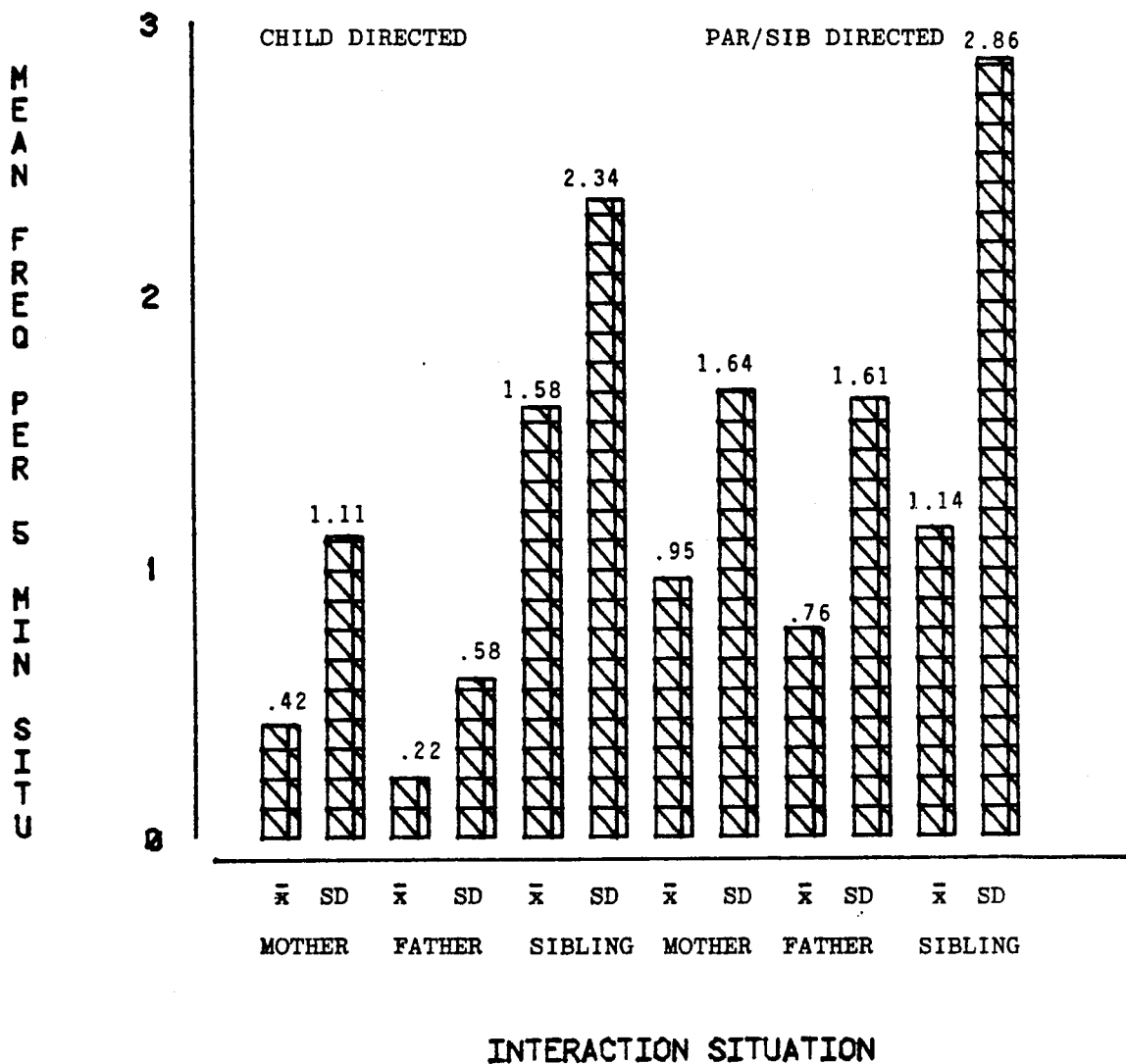


Figure 27



CHILD CHANGE ACTIVITY BY INTERACTION SITUATION

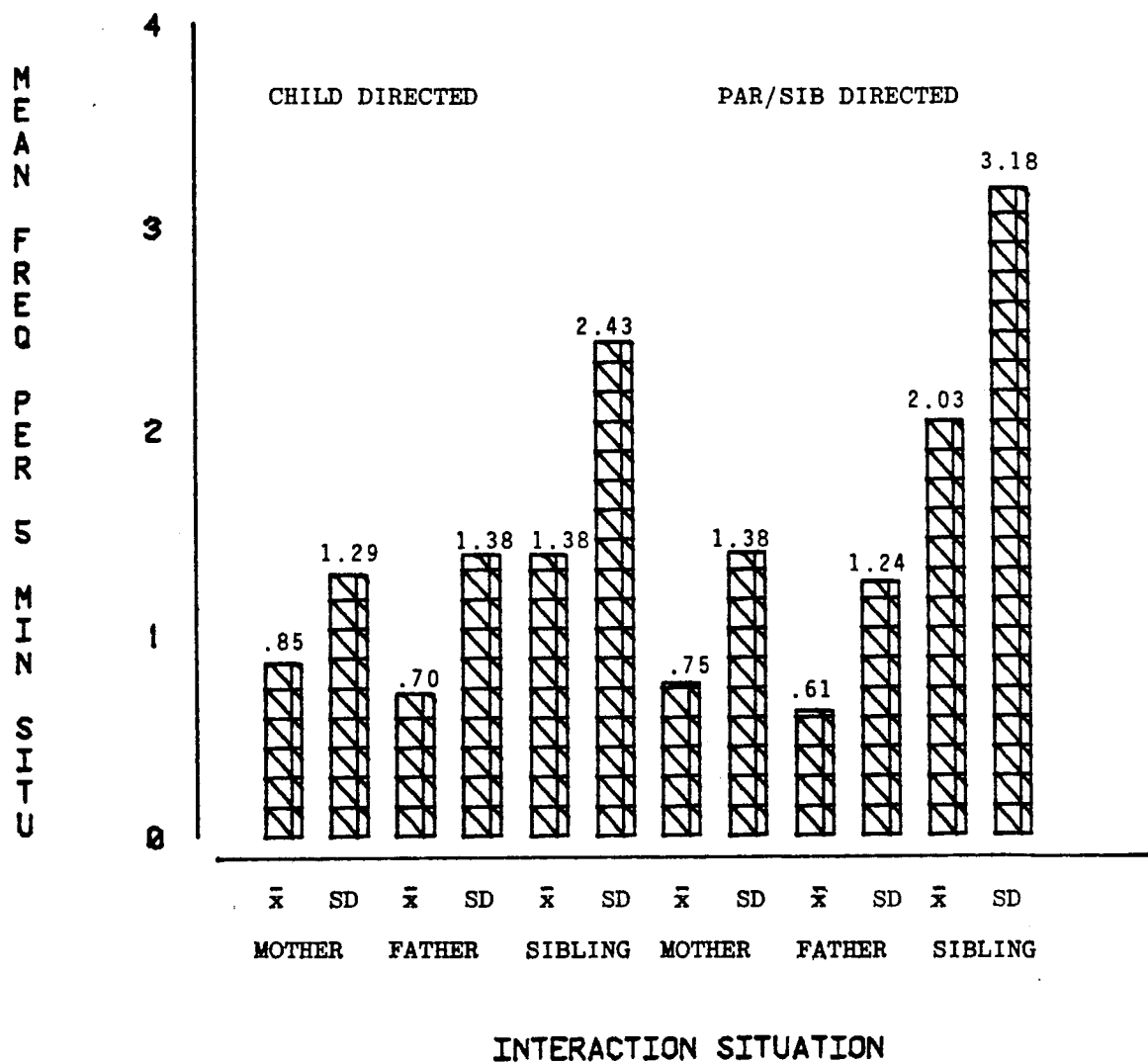


Figure 28

TOTAL CHILD BEHAVIORS BY INTERACTION SITUATION

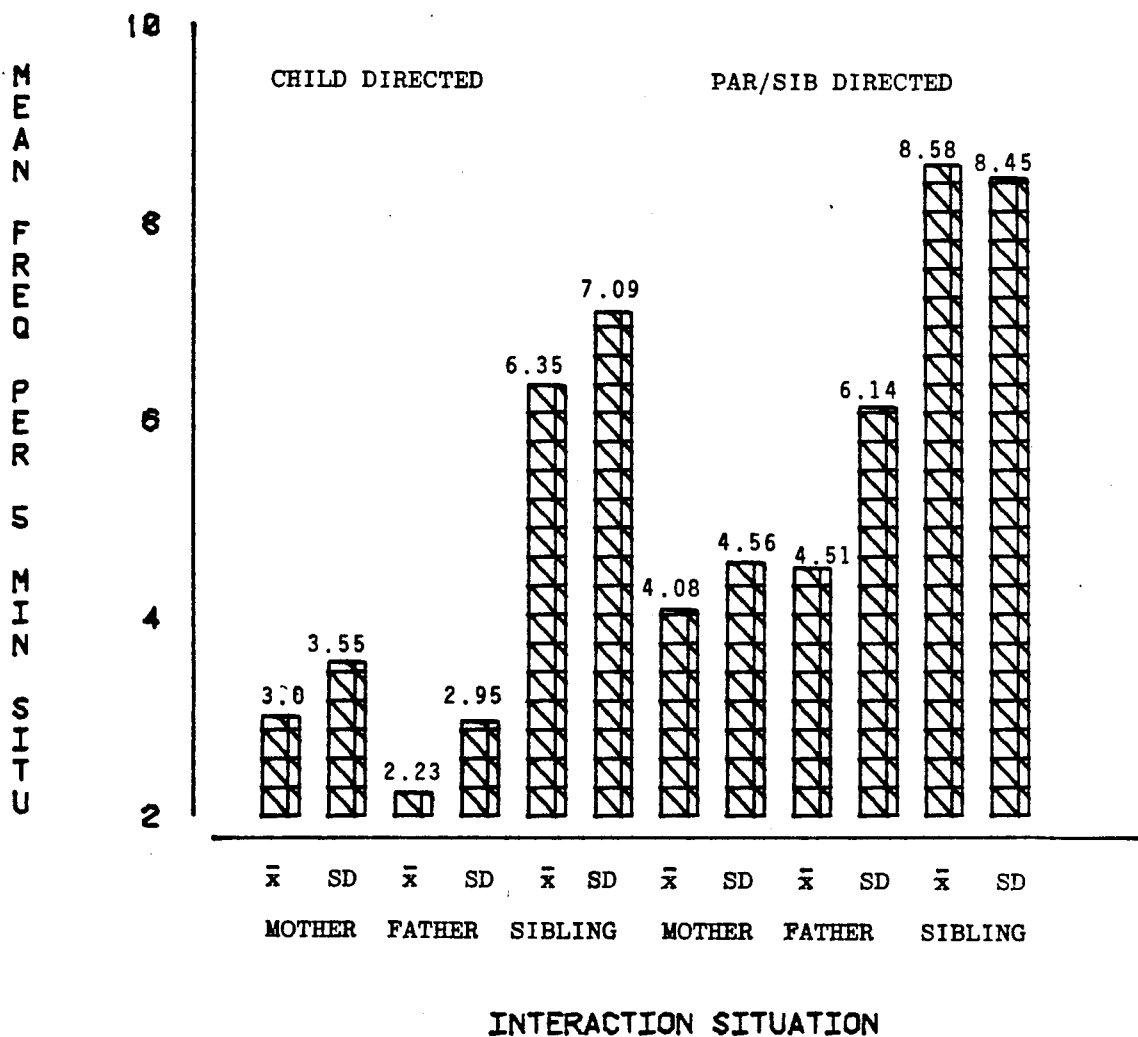


Figure 29

## TOTAL CHILD NEGATIVE BEHAVIORS BY INTERACTION SITUATION

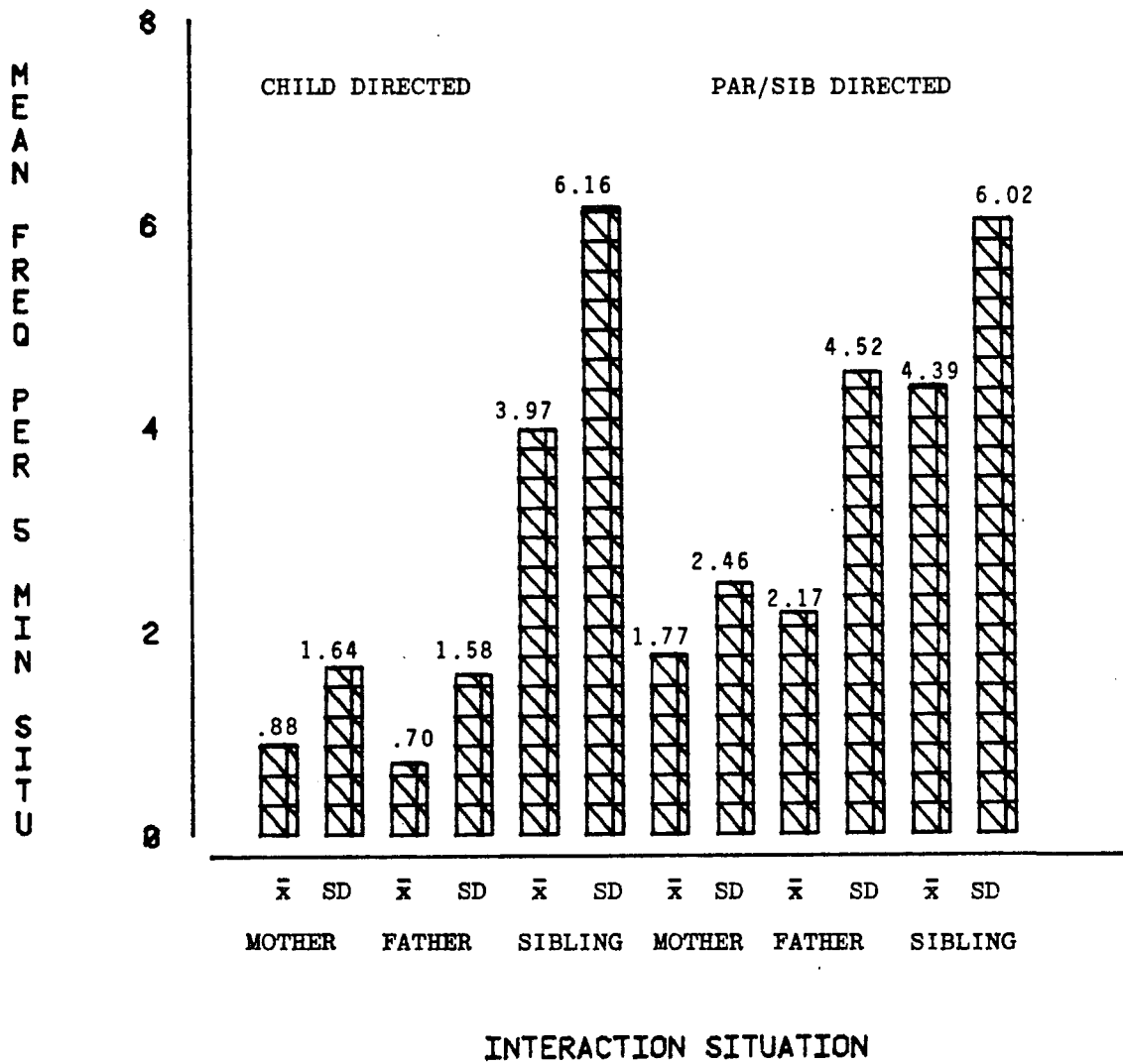


Figure 30

## Discussion

### Family Group Comparisons

A comparison of family interactions by school age group clearly shows that families with a preschool child and preschool sibling were the most active of the three groups. The frequency of all behaviors among family members was much higher for preschool families than pre/elementary or elementary families.

There were no substantial differences in the frequency of parent or sibling behaviors between families in the pre/elementary or elementary groups. Children in the elementary group had a slightly higher frequency of behaviors than the pre/elementary group.

Based on the data presented here it is fairly clear that family members in the preschool group interacted with each other at a substantially higher frequency than did the families in the pre/elementary or elementary groups. It is also important to note those behaviors for which there were no statistically significant differences between groups (behaviors for which there were no graphs). For these behaviors there were no observed significant differences between family groups: parent/sibling acknowledge, parent/sibling critical statement, parent/sibling descriptive statement, parent/sibling laugh, parent/sibling response to child laugh, parent/sibling negative behaviors, and child compliance to direct command.

### Interaction Situation Comparisons

In this section we are going to ignore the groups variable and discuss the data from the 12 families only in terms of the interaction situation variable.

Parent/sibling discrete behaviors. Parents and siblings interacted at a slightly higher rate with the children when they were able to direct the play situation. Overall, mothers interacted with their children at a higher frequency than did fathers or siblings. The only parent/sibling discrete behavior for which there was no statistically significant difference between situations was parent/sibling response to child laugh.

Parent/sibling grouped behaviors. When discrete behaviors were grouped together, it was found that parents' and siblings' rates of group behaviors were consistently higher when they were able to direct the child during play. Fathers had consistently higher rates of grouped behaviors when directing child play than did mothers or siblings. Fathers were substantially more commanding of their children and also had higher rates of positive behaviors, particularly when they directed play.

No one family member in child-directed play situations was consistently more dominant than another. Mothers emitted more behaviors in total than fathers or siblings in child-directed play, and were also more positive in their interactions than the other members. Siblings on the other hand were more negative in their interactions with their younger brothers and responded more often to their brothers' behaviors. As mentioned above, fathers gave more commands than mothers or

siblings. All of the parent/sibling grouped behaviors were statistically significant across interaction situations.

Child discrete behaviors. Child discrete behaviors increased substantially when in the presence of the sibling for both child-directed and parent/sibling-directed situations, except in the case of child compliance to direct commands which increased markedly when commanded by the father. Child behaviors increased when parents or siblings directed play activity. Child laugh was the only discrete behavior that was not statistically significant across interaction situations.

Child grouped behaviors. As with child discrete behaviors, child grouped behaviors also seemed to follow a similar pattern. Child grouped behaviors increased when parents or sibling directed the play situations. Total child behaviors and child negative behaviors were at their highest rates when interacting with the siblings. It was also found that a large proportion of the variance in total child behaviors, approximately 61%, was accounted for by child negative behaviors ( $r = .78$ ), across all situations. There were no statistically significant differences across interaction situations for child positive behaviors. Thus, children's rates of positive behaviors were relatively similar with all family members and situations, but children's rates of negative behaviors were very different, depending on which family member the child interacted with and the situation.


#### Further Analyses, Future Reports

This report represents only an initial presentation of some of the wealth of the data collected. Further, more sophisticated analysis (currently in progress) such as a multivariate analysis of variance and

stepwise discriminant analyses will help us greatly to identify with confidence from which combinations of groups and situations certain behaviors or types of behaviors are likely to occur.

Future plans include a second report of the study's results to be sent during October. Between now and that time the data analysis will continue at as fast a pace as humanly possible. Darell Provencher is now in Santa Clara. His address, should anyone like to correspond with him directly, is: 1730 Halford Avenue #348, Santa Clara, CA 95051. Ken Beauchamp may be reached at the UOP Psychology Department after August 18. The Department phone number is 946-2132. We are deeply indebted to your participation in this study. Thank you.

Sincerely,



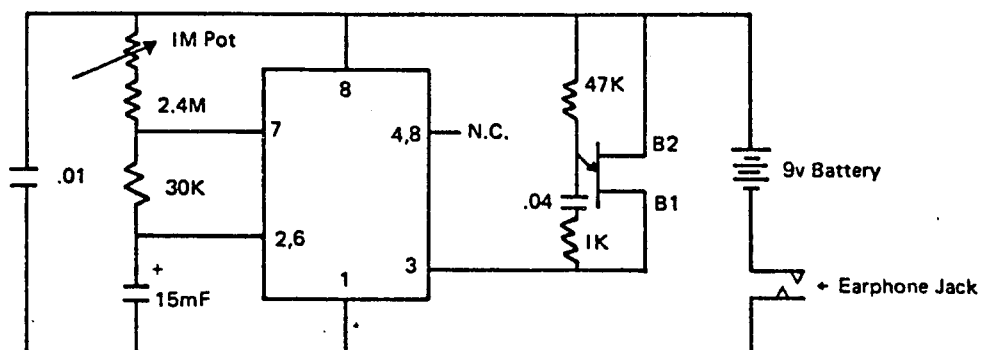
Darell Provencher

Ken Beauchamp

## APPENDIX 4

## SCHEMATIC: BEHAVIOR OBSERVATION TIMER

Behavior Observation Timer  
(60 Second Interval)



I.C. is 555 type timer

Transistor is Unijunction type (Motorola HEP 310 is suitable)

Preassembled timers or kits of a circuit similar to the above  
are available from:

RCS Enterprises  
2287 Olive St.  
Eugene, OR 97405



Appendix 5  
Observer Training Manual

Descriptive Analysis of Normal Family Interaction:  
Observer Training Manual

The purpose of this manual is to outline the steps necessary for learning the coding system for the present study. The coding system is a modified version of the Dyadic Parent-Child Interaction Coding System developed by Sheila Eyberg (1978) and her associates at the University of Oregon Health Sciences Center. The procedural steps to be used in this manual are nearly identical to those set forth by Maerov, Brummet, and Reid (1979) and may be found in Chapter 5 of John Reid's (1979) A Social Learning Approach to Family Intervention: Observation in Home Settings (Vol. 2), which is available in the UOP Library. There are three steps that will need to be mastered before going into the field to collect data. These steps are outlined below.

Step One

Familiarize yourself with the general concept of naturalistic observation and the methodological issues associated with any observation system. A reading of Chapter 3 in Reid's (1979) book will provide you with the more salient issues.

Step Two

Memorize the coding system. THIS IS A MUST! Construct a set of flash cards with the behavioral category on one side and the definition or an example situation on the other. These cards will be used in group training sessions and on your own time and should facilitate the acquisition of behavioral code definitions and competence in applying the coding system.

### Step Three

Practice using the coding system. You will now begin to apply the behavioral codes to units of observed behavior. You can practice using the coding system while watching television (especially commercials involving family members), or you can think of appropriate behavior codes as observe people interacting with one another. A videotape of family interaction will also be shown and the behaviors will be coded and checked for reliability. Finally an in vivo training session with a family will be conducted.

The next section of the manual begins at Step One. Read Patterson, Reid, and Maerov (1979), "The Observation System: Methodological Issues and Psychometric Properties."

### Step Two: Interaction Coding System

Coding of the interactions will be similar to the Dyadic Parent-Child Interaction Coding System, developed primarily for use with conduct problem children by Eyberg and her associates at University of Oregon Health Sciences Center. The Dyadic Parent-Child Interaction Coding System is designed to describe both aggressive and prosocial behavior, and consists of 24 discrete behavioral categories and provides a frequency count of all parent and child behaviors occurring in the interaction. Most of the behavioral categories and their definitions have been described in a coding manual developed by Hanf (1972), by Patterson, Ray, Shaw, and Cobb (1969), and in a subsequent revision by Eyberg (1974). There are two standard sets of play situations that make up the coding procedure: (a) child-directed interaction (CDI); and (b) parent-directed interaction (PDI). These two situations were constructed by Hanf, and high validity coefficients of these situations, as an index of problem behaviors in mother-child interaction in daily life, have been reported.

#### Toys

A standard set of toys that allow for relatively quiet play activity will be used for each family. These toys will consist of wooden blocks, "Lincoln Logs", "Tinker Toys", crayons and paper, a simple wooden jigsaw puzzle, two dolls, plastic cars and trucks, and plastic animals.

#### Child-Directed Interaction

The first set of play situations to be observed and coded is child-directed interaction. Directions given to the parent for

the child-directed interaction with the mother or father are as follows: "In this situation, tell (child's name) he may play whatever he chooses. Let him choose any activity he wishes. You just follow his lead and play along with him as he wishes."

In the child-directed interaction with sibling situation, the directions are given to the mother: "In this situation, tell (sibling's name) that (child's name) may play whatever he chooses. (child's name) may choose any activity he wishes. (sibling's name) is to follow his lead and play along with as he wishes."

#### Parent-Directed Interaction

The second set of play situations is the parent-directed interaction. In this set of situations the mother or father is told: "That was fine. Now we'll switch to another situation. Tell (child's name) that it is your turn to choose the game. You may choose any activity. Keep him playing with you according to your rules."

#### Sibling-Directed Interaction

An additional interaction situation directly involves the target child's older sibling. For this situation the following directions will be given to the mother: "That was fine. Now we'll switch to another situation. Tell (older sibling's name) that it is his turn to choose the game. He may choose any activity. (target child's name) is to play with him according to his rules."

#### Order of Presentation

The child-directed set of interactions will be presented first. In the child-directed interaction situations, there are three dyads consisting of child with: (a) mother; (b) father; and (c) sibling. The order of the dyads will be determined randomly for each family.

The order of the parent-directed and sibling-directed interaction situations will also be determined randomly. These situations are: (a) mother-directed interaction; (b) father-directed interaction; and (c) sibling-directed interaction. The behavioral code categories for parent-directed interaction and sibling-directed interaction will be identical, being that both of these situations involve commands from the directing agents. Each situation will involve 5 minutes of interaction. The total coding procedures will require 30 minutes of observation.

#### Recording Intervals

Each observation situation will be divided into five 1-minute intervals. Every 60 seconds the observers will receive an auditory signal through an earphone from an electronic timer. At this point, the observers will shift to the next coding sheet.

#### Sequences of Behavior

Two types of continuous sequences of behavior will be recorded: (a) parental or sibling response following negative child behavior; and (b) the target child's response following a command by the parent or sibling, which involves whether the child complied, noncomplied, or had no opportunity to respond.

#### Observer Reliability

Reliability will be measured based on interobserver agreement. Interobserver agreement is based on the ability of two or more observers to record the same information while independently watching the same situation at the same time (Patterson, 1977). Percent agreement will be calculated as the proportion of the total number of events recorded by each observer for which they were in agreement divided by the sum of the total number of events recorded by

the total number of observers. Reliability coefficients will be computed for parent, sibling, and child behaviors.

#### Observer Presence

An attempt will be made to minimize observer presence by keeping observers at least 2 meters from the observed family members and not more than 3 meters away. Observers will position themselves to each other no closer than 1 meter. The clipboards containing the coding sheets will be inserted into large, current magazines so as to be less obtrusive. Before periods of observation observers' conversations with family members should be short and about neutral subjects (e.g., weather). Offers of drink or food should be refused in a polite manner. Observers should dress appropriately. Jeans, cut-offs, T-shirts, or halter tops should not be worn. Casual clothing such as corduroy pants, and short sleeve or long sleeve shirts are adequate. Overdressing should be avoided. During periods of observation observers are not to acknowledge any family member's behavior with either physical gesturing or verbal behavior. Observers should keep a low profile while coding interactions. If an observer becomes confused while coding, s/he should take a break. It is always better to lose data than to code inaccurately.

## Review Questions for Observer Training

## Reliability and Drift

1. Parental reports tend to accurately represent how their children act when at home. T F
2. Different interviewers may obtain very different information from the same set of parents. T F
3. The lack of research support for the validity of parents' global judgments about their child has given strength to the need for observational procedures and measures. T F
4. Mothers and fathers see their children's traits as very similar. T F
5. Parents have a bias to report improvement in the behavior of problem children when no observable changes have occurred. T F
6. Reliability has been shown to vary as a function of subjects, sex, personality characteristics, complexity of the code and even socio-economic status. T F
7. Observers should meet once per month to recalibrate and discuss problems in observation. T F
8. The tendency for observers to gradually change their use of the observation codes is called \_\_\_\_\_.
9. Observers may have high inter-observer agreement yet have low agreement levels when compared to precoded tapes. T F
10. Observer drift must be prevented through \_\_\_\_\_.
11. Groups of observers are susceptible to \_\_\_\_\_.



12. When two observers attend and observe the same scene for the purpose of doing a reliability check, one observer is called the \_\_\_\_\_.
13. Percentage agreement between observers is calculated by the following formula:

#### Observer Bias

1. Experimenters' or therapists' expectancies do not affect, to a significant degree, the data collected by well-trained observers. T            F
2. The act of giving monitors feedback concerning their decline in levels of agreement will produce a return to higher levels of agreement for a lengthy period of time. T            F

#### Coding Observed Behaviors

1. Every 20 seconds, the observer receives an auditory signal. T            F
2. The observer may begin writing on any line of the coding sheet and progress to the next line when s/he feels it is appropriate. T            F
3. Each family interaction situation is the subject of \_\_\_\_\_ minutes of observation during each session.
4. Each page of coding represents what length of time? \_\_\_\_\_
5. Families are allowed to watch TV during observations, but only if the volume is low enough for the observer to hear family members talking. T            F
6. What problems can arise from having unstructured observation

sessions? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

#### Behavioral Definition Questions

1. Mother grabs a child's arm and shoves the child. Code as \_\_\_\_\_.
2. "I give up. No matter what you do, you can't do it. You can try 100 times, but you can't get it. You can show me all you want, but you can't." Code as \_\_\_\_\_.
3. When a person uses a slurring, nasal, or high-pitched voice, use this category. The content of the statement can be of an approving, disapproving, or neutral quality. The main element is the voice quality. This is the definition for \_\_\_\_\_.
4. "Johnny, it's time to pick up your toys." Code as \_\_\_\_\_.
5. Smiles, head nods. Code as \_\_\_\_\_.
6. In a sing-song voice, one child says to another, "You got in trouble and I didn't." Code as \_\_\_\_\_.
7. A small child puts his hand on someone's arm. No other overt behavior is occurring. Code this \_\_\_\_\_.
8. Child touches mother and asks a question. Mother turns away or walks away. Code mother \_\_\_\_\_.
9. "Stop that right now!" Code as \_\_\_\_\_.
10. A hug, a pat, a kiss. Code this \_\_\_\_\_.

Manual for Coding Dyadic Parent-Child Interactions

Dr. Sheila M. Eyberg

University of Oregon Health Sciences Center

Dr. Elizabeth Robinson, Jonathan Kniskern, Patricia O'Brien

University of Oregon

1978

## INTRODUCTION

The behavior coding system described in this manual is designed to provide a frequency count of dyadic parent-child social interaction in two standard laboratory situations. The coding system has been designed specifically for use in assessing progress and outcome in an operant oriented treatment program for preschool children which focuses on changing general parent-child interaction patterns. Many of the behavioral categories and definitions have been defined previously in the coding manual constructed by Hanf (cf. 1972), in a revision of the Manual for Coding Family Interactions (Patterson, Ray, Shaw, & Cobb, 1969), and a subsequent revision by Eyberg (1974).

All interaction observations are conducted with only one parent-child dyad at a time present in a playroom equipped with a standard sound system and a two-way mirror, a table, four chairs, a large movable screen, and several toys permitting creative play of a relatively quiet nature. One chair is always placed in the far corner of the room, facing the wall and blocked from view of the table by the screen. The table is placed near the mirror. Observers are to be located in an observation room behind the mirror for all data recording. The child is not informed that the interaction is being observed.

The format of the two standard situations is derived from the work of Hanf, who has reported high validity coefficients of these situations as an index of problem behaviors in mother-child interaction in daily life situations (cf. Hanf, 1972). The first situation to be observed involves "Child-Directed Interaction." For this situation the following directions are given to the parent:

"In this situation, tell (child's name) he may play whatever he chooses. Let him choose any activity he wishes. You just follow his lead and play along with him as he wishes."

The second situation to be observed involves "Parent-Directed Interaction." Directions to the parent for this situation are:

"That was fine. Now we'll switch to another situation. Tell (child's name) that it is your turn to choose the game. You may choose any activity. Keep him playing with you according to your rules."

The Child-Directed Interaction is always coded prior to the Parent-Directed Interaction. In both situations, each category is coded in terms of frequency during a 5-minute period of observation for each situation. For categories of verbal behavior, one unit of behavior is coded for every sentence emitted unless otherwise indicated in this manual.

## ACKNOWLEDGEMENT

Definition

This category includes parent verbalizations in response to the child's statement, question, or compliance that contain no manifest content.

Examples:

Yeah	Sure
Yes	All right
No (in response to question)	Uh-huh
O.K.	Um-hmm

Rules:

1. The verbalization must be a response to the child.

- a. It may be a response to something the child said

Example: The child asks a question and the parent answers, "Yes," "No," or "O.K." These responses would be coded Acknowledgements.

- b. It may be a recognition of the child's compliance to a command.

Example: The child has finished putting the blocks away as the parent has requested and the parent says, "O.K.!" This response would be coded Acknowledgement.

2. The verbalization must be free of additional content, as the content categories take precedence over Acknowledgement.

Example: "This is a green tractor." (child)

"Uh-huh, a tractor." (parent - Reflective Statement)

"Uh-huh, you drew a beautiful tractor (parent - Labeled Praise)

"Uh-huh, you've got another toy." (parent-Descriptive)

3. Use the "two second rule" to determine if a verbalization is an independent response or simply the introduction to a sentence.

Example: "O.K." (in response to the child's compliance and following a pause of more than two seconds). "Now put the truck in the toybox." (Acknowledgement + Direct Command)

"O.K. Now put the truck in the toybox." (no pause so Direct Command only)

Do Not Code as Acknowledgement:

1. Do not code as Acknowledgement non-content verbalizations that introduce or follow a sentence.

Example: "O.K. Let's pick up the toys." (Indirect Command)

"Pick up the toys, alright?" (Indirect Command)

2. Do not code as Acknowledgement non-content verbalizations that are not a clear response to the child.

Example: The parent is thinking out loud and says, "O.K....

Now let's play with the Leggos." (O.K. is not coded and the other statement is an Indirect Command)

Doubtful Cases:

1. When you are not sure if the verbalization is Acknowledgement or some other content category such as: Reflective, Descriptive, Reflective-Descriptive Question, Direct Command, Indirect Command, Labeled Praise, or Unlabeled Praise, code Acknowledgement.

## CRITICAL STATEMENT

Definition

This category includes any statement by the parent that indicates disapproval or clear correction of the child. Tone of voice is taken into account.

Examples:

No!	Stop that!
Don't put that block here.	You stinker!
No, put the block here.	Uh-uh.
Why are you just giving up?	That's a lousy tower.
Don't be a quitter.	You're being silly.

Rules:

1. Critical Statements clearly correct the child.

Examples: You should have made the tower better.

That is a crummy job.

All you do is whine.

Why can't you play as nicely as Danny does?

2. Remember even a well-meaning correction is critical.

Examples: It is very nice, but not straight enough.

Not that one, sweetheart.

3. Certain Indirect and Direct Commands are Critical Statements if they interrupt the child's activity to correct it, but not if they precede or follow it. In such cases note if the child has already begun an action when the parent speaks; if so, the statement is critical.

Examples: Parent: Put the other block on. (child does so)

= Direct Command

+ Compliance

(Child starts to put a block on the tower)

Parent: Put the other block on. = Critical Statement

Child: Now I'm gonna make the tower real tall. (child has not yet picked up the block)

Parent: Now be careful. = Indirect Command

Child: Now I'm gonna make the tower real tall. (child picks up the block and as he puts it on top, the tower starts to wobble)

Parent: Now be careful. = Critical Statement

(Child is piling blocks up in a tower)

Parent: Make the tower straight. Critical Statement

(Child builds a tower and finishes it.)

Parent: (pointing to a different spot on the floor) Now make a straight tower. = Direct command.

4. Negative commands are critical.

Examples: Don't put that away yet. No!

Stop hitting me. Not that one.

5. "No" is a separate Critical Statement if it is separated by two or more seconds from the statement following.

Example: No. . . (2 seconds). . . now we'll build a big tower.

= Critical Statement + Indirect Command

No, we're going to build a tower instead. = Critical Statement.

6. Statements beginning with "no" are Critical UNLESS the "no" is a piece of information given in response to the child's question..

Examples: Child: Does this piece fit here?

Parent: No, it won't fit. = Descriptive Statement

Child: Is it time to go?

Parent: No, not yet. = Descriptive Statement

Child: Can I play with the truck?

Parent: No, you must play with the leggos now. = Direct Command.

7. Remember that tone of voice or clear criticism makes any of the above parent statements critical.

Examples: No, it won't fit, stupid. = Critical Statement

No, of course it is not time to go (said in an irritated tone). = Critical Statement

8. A critical, threatening, sarcastic, or angry tone of voice makes any statement or question a Critical Statement, i.e., Critical takes precedence over Descriptive, Reflective, Desc/Refl Question, Indirect or Direct Command, Irrelevant, or Acknowledge.

Examples: That is such a wobbly tower. = Descriptive

That is such a wobbly tower (said in a disgusted voice). = Critical

Child: I'm making the horsie run.

Parent: You're making the horsie run fast! = Reflective  
You're making the horsie run too fast! (said in an irritated tone) = Critical Statement

Child: This is a house I've built.

Parent: You've built a house? = Desc/Refl Question

That's a house (said sarcastically) = Critical

Why don't you pick that up? = Indirect Command

Why don't you pick that up! (shouted) = Critical Statement.

Do Not Code as a Critical Statement:

Do not code as Critical Statement if a comment describes in a non-critical or non-corrective way.

Examples: That is a wobbly tower. = Descriptive

That is not a very neat tower = Critical (describes in a criticizing way)



Doubtful Cases:

When in doubt, do not code as Critical Statement.

## DESCRIPTIVE STATEMENT

Definition:

This category includes statements of the parent which describe the ongoing activity and which are free of praise, criticism or correction, and reflection. This includes:

- a) that which the child is doing
- b) toys or objects in the room
- c) immediate actions, thoughts, or feelings of the parent
- d) some general situation

Examples:

- a) You're piling those blocks up.  
Now you have the green one.  
Looks like you're thinking about which toy to choose.
- b) Here's one  
Here is the green one.  
This is the right size for that hole.
- c) I think this piece fits here.  
I'll help you build this one.  
Mommy wants to put this puzzle together.
- d) It is almost time to go.  
This tower will be finished soon.  
We are building this little by litte.

Rules:

1. The statement must describe ongoing activity.
2. If two descriptive Statements are joined with the word "and," count as two only if there is a pause of two or more seconds between the separate phrases.  
  
Example: You're putting the square block on top...and...(2 sec.)  
looking for another block to use. = Descriptive + Desc.
3. A list or set of numbers said all in one breath is counted as one Descriptive Statement. Words said slowly, one by one (such as counting blocks), are counted individually.

Do Not Code as Descriptive Statement:

1. Do not code as Descriptive Statement if the statement if the statement contains praise, criticism or correction, or reflection.

Examples: You are building a tower. = Descriptive Statement

What a great tower you are building. = Labeled Praise

What a messy tower you are building. = Critical Statement

Child: I'm gonna build a tower.

Parent: Now you want to build a tower. = Refl Statement

2. Do not code as Descriptive if nothing in the phrase refers to the immediate play situation.

Examples: You are coloring the grass green. = Descriptive Statement

You colored a nice picture yesterday. = Irrelevant Statement

For further examples see IRRELEVANT STATEMENT

3. Do not code as Descriptive Statement if the statement attempts to direct the child's behavior through use of pronouns (we, you, us) which describe future behavior. Such statements are Indirect Commands.

Examples: It is time to clean up now. = Descriptive Statement

We are cleaning up now. = Descriptive Statement

We are going to clean up now. = Indirect Command

I want to put together the puzzle. = Indirect Command

I want us to put together the puzzle. = Indirect Command

I want you to put together the puzzle. = Indirect Command

4. Do not code as Descriptive Statements in the following cases:

a) Parent makes puppets or dolls talk.

b) Parent talks to him or herself, for example while ignoring the child or when the child is on the chair.

c) Parent counts as part of a game, such as hide-and-go-seek, or when timing the child at a game.

Such verbalizations are not coded at all.

## DESCRIPTIVE/REFLECTIVE QUESTION

Definition:

This category is coded when a descriptive or reflective statement is expressed in question form.

Examples:

That's a red one, huh?

You're pushing it along the floor, aren't you?

Child: I want to play with the doll.

Parent: You want to play with the doll?

Play with the dolly?

The dolly?

You want to play with her, don't you?

Rules:

1. The phrase must be a question.
2. It must be a rhetorical question and not require a verbal response from the child.

To differentiate between an Indirect Command, which is a question which does require a verbal response from the child, use these criteria:

- a) Is it clearly a question that requires a verbal response from the child?

Then code it as an Indirect Command.

Examples: What time is it?

What do you want to play now?

What color is this?

- b) Is it a question which requires a behavioral response from the child?

Then code it as an Indirect Command.

Examples: Aren't you going to put the dolly to bed?

Why don't you give me that block?

How about closing the door?

Are you going to fix that?

- c) A rhetorical question, however, can be "turned around" into a Descriptive Statement...and is coded as Desc/Refl Question.

Examples: Isn't that car nice and shiny? = Desc/Refl Question because it means: The car is nice and shiny.

Aren't you going to fix that? = Indirect Command because it means: You are going to fix that.

Do Not Code as Desc/Refl Question:

1. Do not code as Desc/Refl Question, questions that clearly require a verbal or behavioral response from the child.
2. Do not code as Desc/Refl Question, commands that are put in question form.

Examples: That's a red one, isn't it? = Desc/Refl Question

Put that red one here, ok? = Indirect Command

Doubtful Cases:

1. When in doubt as to whether a statement is an Indirect Command or Desc/Refl Question, code it as a Des/Refl Question.
2. When in doubt as to whether a statement is a Descriptive Statement, a Reflective Statement, or a Desc/Refl Question, code either Descriptive or Reflective.

## DIRECT COMMAND

Definition:

This category is coded whenever the parent issues a direct, clearly stated order, demand, or direction in declarative form. The statement must be sufficiently specific as to indicate clearly the behavior that is expected from the child.

Examples:

Put that block here.

Please clean up now.

Come here.

Let me pick up the block.

Put the Lincoln Logs back in their box.

Rules:

1. If the child is told to do a series of things but only one verb is used, only one Direct Command should be coded.  
Example: Put the truck and the car and the block in the box.= 1 DirC
2. Commands strung together but separated by at least a two second pause should be coded as that number of commands.  
Example: Put the truck in the box (2 sec.) and put the car in the box (2 sec.) and put the block in the box. =3 Direct Commands

3. If the parent begins to give an Indirect Command but changes it to fit the Direct Command format, Direct Command should be coded.

Example: Why don't . . . Put the bus in the toy box. = Direct Command

Do Not Code as Direct Commands:

1. Negative commands such as "Don't put that block in the box" are always coded as Critical Statements (see that category for more information).

Doubtful Cases:

1. When you are not sure if a statement is an Indirect Command or a Direct Command, code Indirect Command.

## INDIRECT COMMAND

Definition:

This category is coded whenever the parent attempts to direct or redirect the child's verbal or physical activity by suggestions, statements, questions, OR when the direction is insufficiently specific to indicate to the child exactly what behavior is expected. This category includes any question that requires a verbal response from the child.

Examples:

Why don't we clean up now?      I want you to play this game.  
 Do you want to play with this? Now we're going to play with this game.  
 Suppose we color this picture. How about handing me that?  
 Let's take out all the blocks. Johnny! (to get his attention)

Rules

1. When the parent is stating their "wants," there must be a reference to the child in order to code the statement as an Indirect Command.
- Example: I want you to play with the puzzle. = Indirect Command  
           I want to play with the puzzle. = Descriptive Statement
2. If the child is included as part of the subject of the sentence, this is coded as an Indirect Command (if the action is to occur in the future) because it implies an expectation of some behavior on the child's part.

Example: We're going to play with the puzzle. = Indirect Command  
           We're playing with the puzzle. = Descriptive Statement

3. Interrogatives added on to the end of a command make that command an Indirect Command. Care should be taken to distinguish this type of command from statements falling in the Descriptive/Reflective Question category.

Example: Put the blocks over here, ok? = Indirect Command

That's a green house, isn't it? = Desc/Ref1 Question

4. Phrases such as "be careful," "be patient," "be good," "be neat," etc. are not specific and are coded as Indirect Commands if they precede the activity of the child. If the child is already engaged in some activity and the parents gives such a statement, it should be coded in the Critical Statement category.

Do Not Code as Indirect Commands:

1. When the command contains obvious criticism.

Example: Why don't you sit still for once in your life? = Critical Statement

Doubtful Cases:

1. When you are not sure if a statement is an Indirect Command or some other category (description, reflection, descriptive/reflective question), code the other category.

### IRRELEVANT STATEMENT

Definition:

This category is coded whenever the parent makes a statement or asks a question which is unrelated to the ongoing activity.

Examples:

I wonder what sister is doing?  
Did grandma visit you last week?  
How did you do on your spelling test today?

Rules:

1. An Irrelevant Statement must not relate to anything in the immediate situation. If it is not clear whether or not the statement or question is Irrelevant, ask yourself if it describes the ongoing activity or refers to either an object, action, or feeling present in the Immediate Play situation.

Examples: You are drawing flowers like those in Grandma's garden.

= Descriptive (action in present situation)

You drew some flowers like those yesterday. = Descriptive  
(object in present situation)

You can make another picture when we go home. = Irrelevant  
Statement (nothing in the present situation)

That car is red like Grandma's. = Descriptive (object in  
present situation)

It goes as fast as Grandma's, too. = Descriptive (object  
and action in present situation)

2. Irrelevant Statements take precedence over other categories.

Do Not Code as Irrelevant:

1. Do not code as an Irrelevant Statement when the parent is responding  
to a comment or question of the child's

Examples: Child: Why did Grandma's car break down yesterday?

Parent: The battery was dead. = Descriptive Statement

Child: I got a gold star on my spelling test this morning.

Parent: That's great! = Unlabeled Praise

In such a case the parent is "allowed" one non-Irrelevant verbaliza-  
tion following each of the child's comments or questions. Any con-  
tinuation by the parent of a conversation unrelated to ongoing  
activity is coded as Irrelevant.

Examples: Child: Why did Grandma's car break down yesterday?

Parent: The batter was dead. = Descriptive

Now she won't be able to go shopping. = Irrelevant

Child: I got a gold star on my spelling test this morning.

Parent: That's great! = Unlabeled Praise

How many did you get right? = Irrelevant Statement

Child: I think I got ten right.

Parent: Ten right? = Desc/Refl Question

That's better than you've done for a long time. =  
Irrelevant Statement

Doubtful Cases:

When in doubt, do not code Irrelvant.

## LABELED PRAISE

Definition:

This category includes any statement indicating approval and specifying exactly what act or event of the child is being approved of by the parent. This category takes precedence over Descriptive Statements and Reflective Statements.

Examples:

Thank you for putting that block there.  
 You're sitting there so nicely while I'm doing this.  
 I'ts good that you balanced that.  
 That's a pretty neat house you've built.  
 I like it when you stack the blocks up one at a time.  
 I'm so happy that you said "thank you."

Rules:

1. To determine if a statement is a Labeled Praise, ask yourself three things:
  - a) Is the parent praising a specific action of the child's? If so, code as Labeled Praise.  
 Example: "I like it when you color so nicely." = Labeled Praise
  - b) Is the parent praising an action of the child's using a specific adjective to let the child know what it is that pleases the parent? If so, code as Labeled Praise.  
 Example: "Nice job of keeping the blocks straight." = Labeled Praise.
  - c) Is the parent referring to a specific object with which the child is involved? If so, code as Labeled Praise.  
 Example: "Good job of playing with the train." = Labeled Praise.  
 A "yes" answer to any one of the above results in a coding of Labeled Praise.
2. Praise of objects is coded as Labeled Praise if, and only if, that object is a product of the child's Praise of objects not a product of the child's is coded as a Descriptive Statement.  
 Example: "That's a nice tower that you built." = Labeled Praise  
 "That's a pretty doll." = Descriptive Statement



3. If an exclamation of praise precedes a sentence, use the 2 second rule to determine the proper category.

Example: "Wow. You finished the tower." = Labeled Praise

"Wow. (2 second pause) You finished the tower." = Unlabeled Praise + Descriptive Statement

Do Not Code as Labeled Praise:

1. The following verbs are not specific and cannot be used as justification (in Rule 1a) for coding Labeled Praise:

playing	working
helping	are, being (all the "to be" verbs)

2. The following adjectives are not specific and cannot be used as justification (in Rule 1b) for coding Labeled Praise

nice	neat	any other adjectives that are too
good	patient	abstract for a 2-7 year old to
careful	clever	understand
polite	smart	

3. Do not code as Labeled Praise obvious sarcasm on the part of the parent. Tone of voice must be taken into account.
4. Do not code as Labeled Praise use of the word "right" when it means "quickly."

Example: "You put that right away." = Descriptive Statement

"You put that in the right place." ("right means "correct" in this case so it should be coded Labeled Praise)

Doubtful Cases:

1. When you are not sure if a statement is a Descriptive Statement or a Labeled Praise, code as Description
2. When you are not sure if a statement is an Unlabeled Praise or a Labeled Praise, code as Unlabeled Praise.

## PHYSICAL NEGATIVE

Definition:

This category is coded when the parent either touches the child with enough intensity to inflict pain or physically restrains the child.

Examples:

hitting	slapping
spanking	shaking
holding the child by the arm to prevent throwing	
physically restraining a child who is trying to leave the room	
holding the child at arm's length to avoid being hit	

Rules:

1. All physical contact must be coded as either Negative or Positive.  
Neutral contact is coded as Physical Positive (see Physical Positive).
2. Each slap, spank, or hit counts as one Physical Negative.  
Count a series of shakes as one Physical Negative unless it is separated from another shake or series of shakes by a 2 second pause.  
Example: shake, shake, shake (1 Physical Negative)  
shake, shake . . . (3 sec.) . . .shake, shake, shake (2 Physical Negative)
3. Each restraint counts as one Physical Negative unless it is separated from another restraint by a 2 second pause.  
Example: The child is trying to leave the room and the mother is holding him back by the arm. He breaks loose (less than 2 seconds) and the mother quickly grabs him again. (1 Physical Negative)  
The child is trying to leave the room and the mother is holding him back. He breaks loose (more than 2 seconds) and the mother grabs him again. (2 Physical Negatives)
4. If the parent strikes the child while restraining him count two Physical Negatives.
5. Shaking and spanking may be difficult to distinguish if they occur simultaneously, therefore, code simultaneous shaking and spanking as one Physical Negative.

Do Not Code as Physical Negative:

1. Do not code as Physical Negative spansks delivered contingently when the child leaves the chair.

Doubtful Cases:

1. When you are not sure if the contact has been Negative or Neutral code Physical Positive.

## PHYSICAL POSITIVE

Definition:

This category is coded whenever the parent touches the child in an affectional or neutral manner.

Examples:

hug	puts arm around
kiss	lifts in air
pats arm	tickles affectionately
ruffles hair	

Rules:

1. All physical contact must be coded as either Physical Positive or Physical Negative. Neutral contact is coded as Physical Positive.  
Example: Mother puts her hand on the child's arm and says, "Let's build a log cabin." = Physical Positive + Indirect Command
2. Count a series of pats as one Physical Positive unless it is separated from another pat or series of pats by a 2 second pause.
3. Each kiss, hug, lift, etc. counts as one Physical Positive.
4. If the parent hugs and kisses the child simultaneously count two Physical Positives.
5. Hugging and patting may be difficult to distinguish if they occur simultaneously, therefore, code simultaneous hugging and patting as one Physical Positive.

Do Not Code as Physical Positive:

1. Do not code as Physical Positive if the contact clearly causes the child pain.

Example: The parent hugs the child roughly and the child says, "Ouch!" = Physical Negative

Doubtful Cases:

1. When you are not sure if the contact has been Positive or Negative, code Physical Positive.

## REFLECTIVE STATEMENTS

Definition:

This category includes statements which reflect or "echo back" that which the child has said.

Examples:

Child: The dog is sitting by the mommy.  
Parent: The mommy and the dog sit together.

Child: I want the green block now.  
Parent: You want to put the green block on the house now.

Child: The truck is yellow.  
Parent: The truck is yellow.

Rules:

1. The statement must include the same words just used by the child.
2. The statement must retain the same essential content as the child's statement.

Example: Child: The car is going across the bridge.

Parent: The car might fall off the bridge. = Desc. Statement  
: That's a red car and a gray bridge. = Desc. Statement  
: That bridge is full of cars. = Descriptive Statement

In the same way, elaborations upon the child's words do not change a Reflective Statement into another category as long as the same essential content of the child's is retained.

Examples: Child: The dog is sitting by the mommy.

Parent: The dog and mommy sit together in the boat. = Refl. Statement

Child: The car is going across the bridge.

Parent: The red car is going across the gray bridge. = Reflective Statement

Do Not Code as Reflective Statement:

1. Do not code as Reflective Statement if a question is being asked. (tone of voice is taken into account).

Example: Child: This car is going really fast.

Parent: That car is going really fast, isn't it? = Desc/Refl Question

: That car is going really fast? = Desc/Refl Question

: Really fast? = Descriptive/Reflective Question

2. Do not code as Reflective Statement if praise, criticism, or correction is included.

Example: Child: I'm making the car go really fast.

Parent: You're doing a good job of making the car go really fast. = Labeled Praise

: You're making that car go way too fast! = Critical Statement

Doubtful Cases:

If there is a question as to whether or not the statement is Descriptive or Reflective, code Descriptive. If it is between Reflective and Desc/Refl Question, code Reflective.

## UNLABELED PRAISE

Definition:

This category is coded when the parent makes verbal statements indicating liking or approval of the child's behavior, but does not specify exactly what behavior is liked.

Examples:

Thanks.

Good for you!

That's neat.

Wow!

What a good boy.

I like it when you're Daddy's good little girl.

That's really something.

Good girl.

There you go!

You're really doing a nice job.

That's pretty clever.

Rules:

1. To determine if a statement is an Unlabeled Praise, ask yourself three things:
  - a) Is the parent praising a specific action of the child's?
  - b) Is the parent praising an action of the child's using a specific adjective to let the child know what it is that pleases the parent?
  - c) Is the parent referring to a specific object with which the child is involved?

If you answer "no" to all three questions, the statement belongs in the Unlabeled Praise category. (See Labeled Praise category for other helpful information.)

Do Not Code as Unlabeled Praise:

1. Don't code as Unlabeled Praise when less than 2 seconds separates an Unlabeled Praise from a Descriptive Statement.

Example: "That's neat. You finished the tower." = Labeled Praise

"That's neat." (2 sec.) "You finished the tower." =

Unlabeled Praise + Descriptive Statement

Doubtful Cases:

1. When you are not sure if a statement is Unlabeled or Labeled Praise, choose Unlabeled Praise.

## CHILD RESPONSES TO DIRECT AND INDIRECT COMMANDS

## COMPLIANCE

Compliance occurs whenever the child obeys or attempts to obey the parent's command.

Rules:

1. If the child begins to comply within 5 seconds of the command, code as compliance.

Example: Parent: "Put the red block on the tower."

Child: has picked up a red block but has not finished putting it on the tower when 5 seconds elapse.

(Code as Compliance)

2. If the child dawdles after beginning to comply, code as compliance.

Example: Parent: "Put the red block on the tower."

Child: picks up the block but then gazes out the window as 5 seconds elapses. (Code as Compliance)

3. If the parent issues an Indirect Command in question form, the child can respond verbally or by action to get credit for compliance to the command.

Example: When are you going to put the doll back where you found it?

Child: "Later" or puts doll back on shelf.

(Either would be coded as Compliance)

4. If the child responds to a command by saying "no" but completes the desired behavior, code Compliance and Smart Talk.

Do Not Code as Compliance:

1. Compliance is not coded if the child complies to a command after 5 seconds have elapsed.

Doubtful Cases:

1. When you are not sure if a statement is a Compliance or a Noncompliance, code Compliance.
2. When you are not sure if a statement is a Compliance or a No Opportunity, code No Opportunity

## NONCOMPLIANCE

Definition:

Code Noncompliance when the child does not obey within five seconds of the command or emits some alternate behavior that is clearly non-compliant.

Examples:

arguing	making an excuse
refusing	beginning a new, unrelated activity
counter-commanding	

Rules:

1. If the child dawdles or ignores more than 5 seconds following a command without beginning to comply, code as Noncompliance.

Example: Parent: "Put the truck on the floor."

Child: Continues to stack blocks. (coded as Noncompliance)

2. If the child says "Yes" to a command but fails to do the desired behavior, code as Noncompliance.

Example: Parent: "Put the truck on the floor."

Child: "O.K." Child then continues to stack blocks.

(Coded as Noncompliance)

When Noncompliance is coded, you must check to see if it falls into one or more Child Deviant Behavior categories. If so, code in the appropriate categories.

Doubtful Cases:

1. When you are not sure if a statement is a Noncompliance of a Compliance, code Compliance.
2. When you are not sure if a statement is a Noncompliance or a No Opportunity, code No Opportunity.



## NO OPPORTUNITY

Definition:

Code No Opportunity when commands are issued by the parent in such a way that the child does not have five seconds to comply.

Rules:

1. If a child is complying to a previous command and the parent repeats the command, code No Opportunity to the second command.
2. Commands are issued or repeated with less than five seconds separating them results in No Opportunity being coded for all but the last command.

Example: Put the crayon down on the table. (3 seconds pause)  
 Pick up the block. (coded as No Opportunity to 1st command;  
 Compliance or Non-Compliance to the 2nd depending on the  
 child's behavior)

3. If the parent gives a command that the child cannot carry out until some time in the future, code No Opportunity to this command.

Example: When you're finished cleaning up the entire room, sit down.  
 (coded No Opportunity)

4. If the parent restrains the child to force compliance or does the behavior for the child, code as No Opportunity.

Do Not Code as No Opportunity:

1. If the parent corrects own speech, do not code as No Opportunity.

Example: "Get out the blocks. . . no, no, I mean get out the Lincoln  
 Logs. (coded as one Direct Command followed by Compliance  
 or Noncompliance--depending upon the child's behavior)

2. If the child has complied to a command, the parent is immediately free to give another command even though 5 seconds have not elapsed since the last command. No Opportunity is not necessarily coded.

Example: Parent: "Put the red block on the tower." (1 second pause)  
 Child quickly does this (coded Compliance)  
 Parent: "Put the blue one on now." (1 second pause)  
 Child does this (coded Compliance).

Doubtful Cases:

1. When you are not sure if a statement is a No Opportunity or a Compliance. code No Opportunity.
2. When you are not sure if a statement is a No Opportunity or a Non-compliance, code No Opportunity.

## CHILD BEHAVIORS

## CHANGES ACTIVITY

Definition:

This category is coded each time the child changes from one physical activity to another of his own initiative.

Examples:

Child is playing with the blocks and begins running toy trucks on the floor.

Child is dressing the doll and begins to walk around the room.

Child is building a Lego fort and stops playing for more than 2 seconds to talk to the parent about another subject.

Rules:

1. The change in activity may be from one toy to another; from playing with a toy to talking about another subject, or from playing to doing nothing.

Examples: The child is playing with a truck and begins to build with blocks. (Changes Activity)

The child is playing with the truck and begins to talk to his mother about a fort he wants to build with the blocks. (Changes Activity)

The child is playing with the blocks and begins to wander around the room aimlessly. (Changes Activity)

2. The change must be initiated by the child.
3. At least a 2 second pause must elapse before the activity is defined as changed.

Do Not Code as Changes Activity:

1. When the change is in verbal behavior only.

Example: The child is playing with the bus and talking with the parent about school and changes the conversation to church, while still playing with the bus.

2. Do not code as Changes Activity when there is a momentary pause in the play activity of less than 2 seconds.
3. Do not code as Changes Activity when the child leaves the play area to get another toy to complete an ongoing activity.

Example: Child is building a garage with the blocks and goes to toy box to get a car to put in it.

Doubtful Cases:

1. If it is not clear whether the parent or child initiated a new activity, do not code Changes Activity.
2. When the conversation is tangentially related to the ongoing activity, do not code Changes Activity.

## CRY

Definition:

This category is coded whenever the child cries audibly.

Examples:

Whaaaaaa  
Ahhhhhh (snif) ahhhh  
Boo Hoo

Rules:

1. Cry is coded each time the child begins to cry. A new cry is defined as renewed crying following a two second pause.
2. Cry is coded every 5 seconds during the duration of the crying.

Example: Whaaa. . . for 12 seconds = 3 Cry

Whaaa. . . for 7 seconds = 2 Cry

3. When crying occurs simultaneously with another deviant child behavior code both,

Example: Child is crying and hits parent (Cry + Physical Negative)

Child is crying and throws toy against wall. (Cry + Destructive)

While crying, child screams very loudly, "No, I won't"  
(Cry + Yell + Smart Talk)

4. Tears need not be present. Fake crying and sniffing are coded as crying.

Doubtful Cases:

1. When in doubt, as to whether a response is a Cry or not, do not code Cry.

DESTRUCTIVE

Definition:

This category is coded whenever the child destroys, damages or attempts to damage any object. An attempt to damage is defined as any activity that could potentially damage the toy, chip paint from the walls, or break a window.

Examples:

Child attempts to remove a non-removable part from a toy, e.g., hair from doll or wheel from a truck.

Child throws blocks at the wall

Child kicks Lincoln Log box.

Child kicks wall.

Child throws toys into the toy box from more than 2 feet away.

Child beats doll or truck on the table.

Rules:

1. Inappropriate toy banging or throwing is included in this category.

Example: Banging a doll's head on the table (Destructive)

Bangs table with a Lincoln Log (Destructive)

Throws block across the room (Destructive)

Bangs table with a toy hammer (not destructive)

Throws ball across the room (not destructive)

2. Each bang of a toy on the table counts as one Destructive.

Example: Pound, pound, pound (hitting radiator with block).

(Three destructive)

3. The destructive act need not be completed to be coded. If the parent restrains the child after he has begun to throw a truck at the observation, Destructive is still coded.

Do Not Code as Destructive:

1. Do not code as Destructive activities that are just noisy.

Example: The child is putting the blocks in the toybox roughly, he is not throwing them or damaging them.

2. Do not code as Destructive appropriate toy use unless it is actually damaging to the equipment.

Example: Pounding table with toy hammer.

Knocking over a tower of blocks.

Car crashes.

3. Do not code as Destructive accidental behavior.

Example: Child is playing with cars and pushes one on the floor with his elbow.

Doubtful Cases:

1. When you are unsure whether a behavior is rough but appropriate or Destructive, do not code it Destructive.

PHYSICAL NEGATIVE

Definition:

This category is coded when the child physically attacks or attempts to attack the parent.

Examples:

hitting  
slapping  
biting

pinching  
throwing something at parent

Rules:

1. The context of the aggressive behavior is not important. The child may engage in one of the above behaviors during play and Physical Negative is still coded.
2. Each hit, bite, or slap counts as one Physical Negative.

Do Not Code Physical Negative:

1. Do not code Physical Negative if the parent and child are wrestling unless the parent indicates that the child's behavior resulted in pain.

Example; "Ouch!"

"That hurt!"

Doubtful Cases:

1. When in doubt do not code Physical Negative.

## SMART TALK

Definition:

Smart Talk is coded when the child "talks back," sasses the parent, or talks to the parent in an angry or sarcastic tone of voice. This category includes remarks that insult or degrade the parent; verbal defiance; and refusals made in response to a command.

Examples:

You're stupid.

You dummy!

No! (following any command)

So!

Why should I?

Parent: "Put the blocks in the bucket."

Child: "Not until I finish playing with the truck."

What will you give me if I do it?

Rules:

1. Either the one of voice or the content of a response can be used to distinguish Smart Talk.

Examples: "I hate you" (Smart Talk based on content)

"You are a stinky." (Smart Talk based on content)

"I'll put those away when I finish playing with the Legos."

(coded as Smart Talk if said in angry or defiant tone)

2. Clear refusals to comply (those that contain "no" or "not") are always coded as Smart Talk even if they are said in a "sweet" tone.

Examples: Parent gives a command and the child says, "Not until I finish playing with the Legos." (Smart Talk)

"I'll put those away when I finish playing with the Legos." If this is said in a pleasant tone of voice it is not coded as Smart Talk because it does not contain "no" or "not."

3. Smart Talk may be double coded with any of the other child deviant behaviors.

Examples: "Because I'm not going to do what you say," and child hits parent. (Smart Talk + Physical Negative)

"Mommy I don't want to." (if whined = Smart Talk + Whine)

Child is crying and says, "You're a big stupid." (Smart Talk + Cry)

#### Do Not Code Smart Talk:

1. Do not code Smart Talk when the child makes an excuse in response to a command.

Example: "But I haven't finished building the log cabin."

2. Do not code as Smart Talk when the child asks a clarifying question to a command.

Example: "Do I put it in here?"

#### Doubtful Cases:

1. When in doubt as to whether the child's remarks are neutral or Smart Talk, do not code Smart Talk.

### WHINE

#### Definition:

This category is coded when the child states something in a slurring, nasal, high-pitched, falsetto voice.

#### Examples:

Words and phrases often whined:

No-oo (Smart Talk + Whine)

Do I have to? (Smart Talk + Whine)

I don't want to. (Smart Talk+Whn)

When can we go home?

Mommy, I hurt my finger.

I have to go to the bathroom.

This is too hard.

I don't want to play this any more.

Rules:

1. The content of the word or phrase may be approving, disapproving, or neutral in quality, the main element is the voice quality.
2. The other child deviant behaviors may be double coded with Whine.

Examples: "Whhhhhh...I have to pee....ahhhhhhh" (Cry + Whine)

"No-oo" (Smart Talk + Whine)

Doubtful Cases:

1. When in doubt as to whether the child's voice quality is actually a whine, do not code as Whine.

## YELL

Definition:

This category is coded whenever the child shouts, screams, or talks loudly. The sound must be intense enough so that if carried on for a sufficient time it would be extremely unpleasant.

Examples:

Ahhhhhh

NO! (very loud) (Yell + Smart Talk)

YOU CAN'T MAKE ME! (very loud = Yell + Smart Talk)

Owww-wwwwww

MOMMY, LOOK AT ME! (very loud)

Rules:

1. Code Yell each time the child begins to yell. A new Yell is defined as a renewed yelling following a 2 second pause.
2. The most important determinant of Yell is the loudness. Any statement may be coded Yell if it is sufficiently loud. A yell may occur in the context of play or in reponse to a parent's question.

Example: "I DON'T WANT TO!" (Yell + Smart Talk)

"I MADE A BIIIIIGGG AIRPLANE." (neutral content Yell)

3. Screams or words shouted in the context of crying are coded as Yell

Example: Whhh...NO....ahhhhhhhh (Cry + Yell)

4. The other child deviant behaviors may be double coded with Yell.

Example: "YOU ARE A BIG STUPID!" (Yell + Smart Talk)

"MOMmmmmmmMY" (Yell + Whine)



Doubtful Cases:

1. When in doubt as to whether the verbalization is loud enough to be considered a Yell, don't code Yell. The sound must be very loud and unpleasant.

## IGNORES DEVIANT

Definition:

The parent is ignoring the deviant behavior if s/he turns her/his face away from the child, remains silent, and maintains a neutral facial expression.

Do Not Code as Ignores:

1. Do not code as ignores if the parent laughs, smiles, continues to look at the child, speaks to the child, physically restrains the child, frowns, signs, makes a face, or removes toys from the child.

## RESPONDS TO DEVIANT

Definition:

Code Responds to Deviant behavior if the parent makes any verbal or nonverbal response to the child.

Examples:

frown  
 Stop that (critical Statement as a response to deviant behavior)  
 sigh  
 laughs  
 continues to look at the child

## LIST OF GROUPED BEHAVIORS

Parent/Sibling Behaviors:

1. Total Positive Behaviors  
Determined by summing Acknowledge, Physical Positive, Laugh, Unlabeled Praise, and Labeled Praise.
2. Total Negative Behaviors  
Determined by adding Critical Statement and Physical Negative.
3. Total Direct Commands  
Determined by summing Direct Command No Opportunity, Direct Command Compliance, and Direct Command Noncompliance.
4. Total Commands  
Determined by adding Total Direct Commands and Total Indirect Commands.
5. Total Responses to Child Behaviors  
Determined by summing child behaviors of Laugh Responded to, Physical Positive Responded to, Physical Negative Responded to, Destructive Responded to, Yell Responded to, Smart Talk Responded to, Cry Responded to, and Whine Responded to.
6. Total Behaviors  
Determined by summing Acknowledge, Irrelevant Statement, Critical Statement, Physical Negative, Physical Positive, Laugh, Unlabeled Praise, Labeled Praise, Descriptive/Reflective Question, Reflective Statement, Descriptive Statement, Indirect Command No Opportunity, Indirect Command Compliance, Indirect Command Noncompliance, Direct Command No Opportunity, Direct Command Compliance, Direct Command Noncompliance.

Child Behaviors:

1. Positive Behaviors  
Determined by adding Laugh and Physical Positive.
2. Negative Behaviors  
Determined by summing Physical Negative, Destructive, Yell, Smart Talk, Cry, and Whine.
3. Total Behaviors  
Determined by summing Laugh Ignored, Laugh Responded to, Physical Positive Ignored, Physical Positive Responded to, Physical Negative Ignored, Physical Negative Responded to, Destructive Ignored, Destructive Responded to, Yell Ignored, Yell Responded to, Smart Talk Ignored, Smart Talk Responded to, Cry Ignored, Cry Responded to, Whine Ignored, Whine Responded to, and Change Activity.

Interaction Coding Sheet

Family Name \_\_\_\_\_ Observer \_\_\_\_\_  
 Child's Name \_\_\_\_\_ Date \_\_\_\_\_  
 Mother \_\_\_\_\_ Father \_\_\_\_\_ Sibling \_\_\_\_\_ Time \_\_\_\_\_  
 CDI/M \_\_\_\_\_ CDI/F \_\_\_\_\_ CDI/S \_\_\_\_\_ MDI \_\_\_\_\_ FDI \_\_\_\_\_ SDI \_\_\_\_\_

Session: 1 2 3 4 5 Minute: 1 2 3 4 5

Parent/Sibling Behaviors	TOTAL
Acknowledge	
Irrelevant Verbalization	
Critical Statements	
Physical Negative	
Physical Positive	
Laugh	
Unlabeled Praise	
Labeled Praise	
Desc/Refl Question	
Reflective Statement	
Descriptive Statement	
Indirect or Question Command: No Opportunity	
Compliance	
Noncompliance	
Direct Command followed by: No Opportunity	
Compliance	
Noncompliance	

Child Behaviors		TOTAL
Laugh	Ignored	
	Responded to	
Physical Positive	Ignored	
	Responded to	
Physical Negative	Ignored	
	Responded to	
Destructive	Ignored	
	Responded to	
Yell	Ignored	
	Responded to	
Smart Talk	Ignored	
	Responded to	
Cry	Ignored	
	Responded to	
Whine	Ignored	
	Responded to	
Changes Activity		

## Appendix 6

Pearson  $r$  Reliability Coefficients Between Observer One and Observer Two

Behavior Category	Family One	Family Two	Family Three	Family Four	Family Five	Family Six	Family Seven	Family Eight	Family Nine	Family Ten	Family Eleven	Family Twelve
Acknowledgement	.37	.86	.94	.69	.94	.85	.88	.90	.77	.84	.92	.97
Irrelevant Statement	1.00	.84	.69	-.05	.67	.--	.83	.95	.36	.89	.99	.96
Critical Statement	.85	.91	.91	.61	.84	.74	.78	.96	.88	.77	.91	.76
Physical Negative	.83	.73	.80	.35	.63	.--	.--	.--	-.03	1.00	.93	1.00
Physical Positive	.81	.91	.86	.71	.95	.31	.97	.96	.--	.99	.93	.85
Parent/Sibling Laugh	.98	.92	.93	.52	.94	.97	.96	1.00	.90	.99	.72	.92
Unlabeled Praise	.94	.88	.90	.86	.86	.78	.94	.95	.92	.94	.98	.92
Labeled Praise	.51	.99	.--	.--	.--	-.05	.--	1.00	.69	.69	1.00	.--
Descriptive/Reflective Question	.94	.95	.94	.96	.96	.95	.94	.95	.90	.96	.92	.94
Reflective Statement	.82	.88	.76	.62	.79	.--	.93	.31	.52	.79	.75	.40
Descriptive Statement	.78	.89	.84	.83	.90	.92	.87	.81	.60	.82	.74	.83
No Opportunity/Indirect Command	.75	.47	.76	.55	.41	.70	.58	.83	.19	.88	.86	.81
Compliance/Indirect Command	.86	.72	.45	.67	.39	.83	.66	.90	.52	.87	.92	.89
Noncompliance/Indirect Command	.70	.91	.75	.47	.28	.24	.48	.84	.55	.89	.70	.61
No Opportunity/Direct Command	.87	.70	.39	.83	.05	.65	.76	.66	.65	.74	.39	.80
Compliance/Direct Command	.88	.90	.72	.84	.93	.87	.90	.75	.81	.93	.58	.92
Noncompliance/Direct Command	.84	.88	.79	.75	.65	.--	.89	.45	.54	.58	.63	.54
Laugh/Ignored	.89	.10	.--	.79	.95	-.03	.90	.--	.63	.94	.98	.75
Laugh/Responded to	.95	.88	.99	.91	.98	.94	.95	1.00	.95	.94	.60	.87
Physical Positive/Responded to	.88	.--	1.00	.02	1.00	.80	.76	.36	.--	.97	.84	.81
Physical Positive/Responded to	.73	.--	.96	.47	1.00	.--	.74	.89	.--	.93	.99	.38
Physical Negative/Responded to	-.05	.--	.56	.--	.--	.--	.--	.--	.--	.--	1.00	.--
Physical Negative/Responded to	.83	.85	.53	-.05	-.04	.--	1.00	.--	.--	1.00	.95	.--
Destructive/Responded to	.78	.99	.--	.97	.--	.--	.--	.--	.--	.--	1.00	.--
Destructive/Responded to	.89	.23	.89	.61	.--	.--	.--	.--	.--	1.00	.--	.--

## Appendix 6 (Cont'd)

Pearson  $r$  Reliability Coefficients Between Observer One and Observer Two

Behavior Category	Family One	Family Two	Family Three	Family Four	Family Five	Family Six	Family Seven	Family Eight	Family Nine	Family Ten	Family Eleven	Family Twelve
Yell/Ignored	.82	.95	.85	.89	.88	.88	.88	.88	.88	.88	.88	.88
Yell/Responded to	.49	.89	.85	-.05	.88	.88	.88	.88	.88	.88	.88	.88
Smart Talk/Ignored	.88	.88	.69	.88	.43	.88	.69	.38	.90	.80	.98	-.03
Smart Talk/Responded to	.29	.88	.88	.88	.69	.88	.88	.94	.26	.51	.96	.64
Cry/Ignored	.98	.99	1.00	.94	.88	.88	.88	.88	.88	.88	.88	.88
Cry/Responded to	.91	.98	.88	.88	.88	.88	.88	.88	.88	.88	.88	.88
Whine/Ignored	.76	.19	.98	.21	.94	.88	.42	.88	.17	.89	.86	.88
Whine/Responded to	.77	.51	.80	.76	.44	1.00	.78	1.00	.77	.55	.91	1.00
Change Activity	.92	.78	.79	.66	.92	.69	.98	.63	.78	.72	.66	.88
Child Laugh	.92	.86	.99	.90	.99	.96	.93	.99	.98	.95	.82	.84
Destructive	.90	.94	.71	.97	.88	.88	.88	.88	.88	1.00	.98	.88
Yell	.96	.93	.88	.65	.88	.88	.88	.88	.88	.88	.78	.88
Smart Talk	.29	.88	.51	.88	.74	.88	.93	.92	.84	.71	.97	.72
Cry	1.00	.97	1.00	.86	.88	.88	.88	.88	1.00	.88	.88	.88
Whine	.89	.57	.95	.72	.93	1.00	.74	.69	.69	.86	.91	1.00
Child Physical Positive	.90	.88	.97	.15	1.00	.75	.76	.89	.88	.95	.96	.78
Child Physical Negative	.80	.80	.62	.49	-.05	.88	1.00	.88	.88	1.00	.95	.88
Indirect Command	.88	.71	.84	.74	.48	.88	.73	.90	.51	.96	.90	.89
Direct Command	.97	.93	.68	.94	.86	.91	.90	.72	.85	.96	.51	.92



## Appendix 7 (Cont'd)

Pearson  $r$  Reliability Coefficients Between Observer Three and Observer One  
and Observer Three and Observer Two

Behavior Category	Family Three		Family Seven		Family Eight		Family Nine		Family Ten		Family Twelve	
	Obs 1	Obs 2	Obs 1	Obs 2	Obs 1	Obs 2	Obs 1	Obs 2	Obs 1	Obs 2	Obs 1	Obs 2
Yell/Ignored	.63	.25	---	---	---	---	---	---	---	---	---	---
Yell/Responded to	---	---	---	---	---	---	---	---	---	---	---	---
Smart Talk/Ignored	---	---	1.00	---	---	---	---	---	---	---	---	---
Smart Talk/Responded to	---	---	---	---	---	---	---	.63	1.00	---	---	---
Cry/Ignored	---	---	---	---	---	---	---	---	---	---	---	---
Cry/Responded to	---	---	---	---	---	---	1.00	---	---	---	---	---
Whine/Ignored	.99	.99	---	---	---	---	.26	---	---	---	---	---
Whine/Responded to	.66	.73	1.00	.13	---	---	.67	.39	1.00	1.00	---	---
Change Activity	.80	.98	1.00	1.00	.63	1.00	.67	.38	1.00	1.00	---	---
Child Laugh	.99	.99	.92	.63	---	---	.98	.97	.92	.92	1.00	.99
Destructive	---	---	---	---	---	---	---	---	---	---	---	---
Yell	.25	1.00	---	---	---	---	---	---	---	---	---	---
Smart Talk	---	---	.39	.63	---	---	---	---	.63	1.00	---	---
Cry	---	---	---	---	---	---	1.00	1.00	---	---	---	---
Whine	.98	.98	.63	.85	---	---	.77	.91	1.00	1.00	---	---
Child Physical Positive	1.00	1.00	.76	.85	1.00	1.00	---	---	.97	.97	1.00	1.00
Child Physical Negative	---	1.00	1.00	1.00	---	---	---	---	---	---	---	---
Indirect Command	.96	.58	.86	.98	1.00	.97	.53	.16	.98	.96	.99	.96
Direct Command	.97	.28	.72	.97	.79	.91	.92	.90	.93	.98	.94	.88