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FRIENDSHIP AS RELATED TO COMMUNICATION AND TASK PERFORMANCE IN SELECTED GROUPS OF CHILDREN AGES THREE THROUGH SEVEN

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Jason Philip Aronoff, B.A., M.A.

* * * * *

The Ohio State University
1973

Approved by

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Adviser
Department of Psychology
ACKNOWLEDGMENTS

For their contributions to this Dissertation I want to express my gratitude to:

Dr. Jean Dickerscheid, Director of The Ohio State University Nursery School, Nursery School teachers Rebecca Blauser and Linda Fowler, and the children for a delightful set of experiences at the Nursery School.

Janice Harris, School Psychologist for the Olney Public Schools for authorizing the public school whose children served as subjects, and Principal Z. W. Wulber, the staff and students at Montrose Elementary School who made my return to elementary school enjoyable.

The following Ohio State University students who served so capably as experimenters: Janice Aikers, Diana Ankrim, Laurie Chun, Diana Cohen, Catherine Coulter, Carol Frysinger, Irene Mann, Sue McKenny, Kerry Wohlstein, and Peggy Wesner.

Arthur Spencer, John O'Hara, Deborah Loveland, and Bev Carter for their astute technical assistance.

Dr. George G. Thompson and Dr. Charles Wenar for their constructive suggestions.

Dr. Philip M. Clark whose tolerance, incisive criticism, and optimism have helped to sustain me during
my graduate program, and particularly during the completion of this Dissertation.
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INTRODUCTION

If two people regard each other as "Friends" at least three major assumptions can usually be made about the pair. One is that the two persons have numerous interests and attitudes in common. The second is that they mutually share these interests and, in the sharing process, they meaningfully coordinate signals (verbal, vocal, written, body cues, etc.) indicating their relationship. And the third is that the relationship is mutually satisfying both intellectually and affectively. Put more succinctly, two friends communicate easily and meaningfully, and reciprocally. In general, research on interpersonal attraction (See Byrne, 1971, and Bersheid and Walster, 1969 for some particular aspects in the befriending-attraction process) supports these assumptions. The assumptions also receive support from experiences common to most people having close friendships. (See Vygotsky's 1962, analysis of a conversation of lovers in Tolstoy's Anna Karenina. The conversation analyzed is an example of highly effective, unspoken communication between two persons who intimately share experiences and feelings.)

Conversely, the above assumptions would not be made for people who do not regard each other as friends.

1
That is, they do not share similar interests and attitudes, do not meaningfully communicate often, and do not share a mutually positive, affective relationship.

The assumptions made about friends pertain to adult relationships. The questions of concern in the present study are: Do young children (ages 3-7) who are friends evidence a similar capacity to communicate more meaningfully with one another than do young children who are not friends? Does the dimension of friendship vs. nonfriendship make a difference in how well two children communicate with each other? And, does the egocentric behavior often attributed to young children preclude successful collaborative efforts even if the children are friends?

The literature on childhood friendships has yielded very little on how friends communicate. (For a rather complete review of research on childhood friendships see Swift, 1964; Adams, 1967; Hartup, 1970; and Wenar, 1971.) Thus, definitive answers to the questions listed above are not forthcoming from the childhood friendship research. There are several studies which suggest answers to these questions. These studies will be presented in the "Literature Review."

It is believed here that the three assumptions noted at the outset are basically true for young children as well as for adults: that the positive affective com-
ponent operating between two friends may, in certain situations, enable them to be less egocentric than they might ordinarily be if each were alone or with someone with whom there were no rapport.

The present study was designed to assess whether two young children who are friends can more effectively complete a communication task than two children who do not regard each other as friends. Briefly, the communication task required each pair of children to match unusual designs while being visually separated; that is, one child, the speaker, was instructed to tell the other child which design he (the speaker) was looking at, and the other child, the listener, was instructed to find the same design from among the several designs he had before him. The two children were asked to match six designs. The study included samples of children from 3 through 7 years of chronological age.
THEORETICAL BACKGROUND

Since there are no theories specifically relating friendship and communication, two theories casually related to the present research on these topics are briefly reviewed. They are: George Herbert Mead's theory highlighting the development in the ability to assume reciprocal roles, and Jean Piaget's theory on the place of egocentrism in a child's development. Though neither Mead nor Piaget have formally discussed close friendships, their analyses imply the importance of peers at various points in a child's life.

George Herbert Mead

Although Mead does not mention anything specific on friendships, he does discuss the communicational process and how it affects a child's "self" growth. His discussion of how a person becomes a "self" seems to presuppose close parent-child and peer-peer relationships. For example, when Mead (1953) writes of "taking the attitudes of other individuals toward oneself" as steps toward becoming an object to oneself, significant other persons like a parent or a peer are assumed to be the "other individuals." For Mead, the sequence of a meaning-
ful interchange between the child and an important other would be: 1) child says or does something, 2) mother responds to what the child said or did, and 3) the child observes-interprets mother's response to his initial behavior. The child's behavior became meaningful to himself after his mother responded to it; e.g., she may have validated, or agreed, or responded in a positive way to the child's behavior.

In addition to assuming the adult, usually parental, influences, in the form of essential models for behavior, Mead, in accounts of games like hide and seek, and baseball, assumes the importance of playmates or age-mates. The playmates obviously allow for trial and error, as say, in learning the intricacies of the various positions in baseball. And in learning the game of baseball, to a considerable extent each playmate must validate one's own baseball self, and the other selves in the game. "I'm the first baseman, and Sammy is the left fielder, and Bobby bats leadoff, etc." These summaries, like "I'm the first baseman," imply, among other things, knowledge of the rules of the position, the inter-relatedness of positions, and an idea of how well "I" know my position. The cooperative endeavor of the game implies the probability of friendships among the team members.

The main contributions of Mead to this discussion
are: (1) he points to the reflexive nature of human communication, i.e., the affect another individual's response to our behavior has on our later behavior; (2) he notes the development of a self through specific and generalized acts and attitudes the person adapts from a larger social process, i.e., the general process of taking a role, having it validated in various ways, and elaborating upon it; (3) he implies, in his social framework, close, meaningful interchanges between and among children at different levels in the development of their "selves."

Mead's theoretical formulations were among those which stimulated Flavell et al. (1967) to undertake their research efforts (to be discussed below) on role-taking and communication patterns in children across various age groups. His theorizing also bears similarities to Piaget's ideas on egocentrism and the ability to decenter. (For a more complete comparison of Mead and Piaget on points related to the present discussion, see Flavell et al., 1967; pp. 14-21.)

Jean Piaget

In his treatment of egocentrism Piaget has proposed a set of principles on the basis of data collected in several different developmental domains (moral, language, perceptual, intellectual). In the various domains Piaget
demonstrates some of the ways children move from near total egocentricity in infancy and early childhood, through the relatively high level of reciprocity they possess at age 8 or 9, to the multifaceted and propositional mutuality children attain during adolescence.

For Piaget, 7 or 8 years of age seems to be a key time for becoming less egocentric. At this age, 7 or 8, "the child becomes capable of cooperation because he no longer confuses his own point of view with that of others. He is able both to dissociate his point of view from that of others and to coordinate these different points of view." (Piaget, 1967, p. 39) Before age 7 or 8, the child is dominated by his percepts in intellectual functioning, and by the constraints exercised by his parents in social functioning. The increased contact with peers in various situations submits the 7 or 8 year old's percepts, and his concepts of authority, to modifications; modifications toward increasing objectivity.

Piaget's data (e.g., 1926; 1932; and 1966) support the time of transition, age 7 or 8, to social cooperation. In Piaget's framework, the child usually does not take another's view of things into account, and does not enter into a reciprocal relationship before age 7 or 8. In fairness to Piaget, he does not focus on particular two-person social relationships, but on behaviors more typical
of groups of children at particular ages and stages. However, his data seem to indicate that children younger than 7 would not be able to engage in mutually cooperative, reciprocal behavior regardless of the relationship. It is believed here that two children who are younger than age 7, who consider each other "friends," and who do spend much time together, engage in reciprocal relationships.

Mead's and Piaget's theories and Piaget's research suggest that if mostly cognitive factors are measured, age 7 or 8 is the time of transition away from egocentric behaviors. The contention here is that the addition of affective factors, as connoted in a close friendship, existing between two friends, ages 3 through 7, helps diminish egocentric behavior in certain situations; for example, in situations where the friends must work together to solve a task.
LITERATURE REVIEW

The review of literature is presented in two sections. The first section presents studies which point to the affective bond between pairs of young children who consider each other a "friend." The second section presents research pertaining to egocentric communication during childhood.

Research on Childhood Friendships

In her study of aggressive behavior in a group of six 3 year olds, in addition to the aggressive behavior, Fite (1940) also studied friendships. Fite observed the children at three times, each time separated by six months. Friendship was assessed by the amount-percent of time the children spent together, by Fite's observations of their expressions of shared sympathy for each other, and by other displays of caringness between the two children involved. Several of the pairs formed close friendships. In at least one pair, the close friendship lasted more than six months before one of the pair began drifting to more associations with other children.

Regarding the subject of her inquiry, aggression and the factors influencing the child's attitudes about it,
Fite said that in her sample the "development of strong friendships, and the increase in age of 'group feeling' tended to bring with it increasing independence of adult rules." (p. 307) Close friends, at times, became allies who would support one another in arguments against what they viewed as unreasonable and absolute adult authority. In so doing they helped each other be more objective, more able to make judgements about the nature of the adult's rules. Additionally, Fite gave observational data on other cooperative, seemingly less egocentric behaviors than might be expected of 3 and 4 year olds.

Isaacs (1933) gives numerous examples of her observations of "friendliness" toward agemates. The thirty-one children in her school were, excepting three younger, and three older, between 3 and 6 years of age. One of her examples of friendliness was the following:

Dan (age 4) had not seen Priscilla (age 6) for some weeks, and when he heard that she was returning to the school today, he was very eager for her arrival. When Penelope and Tommy arrived, he said to them, 'Oh, you should have been Priscilla.' When she came he greeted her with great delight, and took possession of her. They walked arm-in-arm, and said, 'We'll talk to each other won't we? because we like each other.' (p. 103)

Although she does not present data about any particular friendship, Isaacs does draw upon her observations on friendliness to give possible reasons accounting
for the momentary nonegocentric times children share with each other and with some adults. One of the most common bases for the friendliness she observed was in gift giving and gift receiving. (Another common basis was services rendered and services received.) But rather than seeing affection to the givers as simple greed for the gift, she views the affection (or "love" in Isaacs' framework) of the receiver in "the giving, even more than the gift. Both giving and gift are to them love itself." (p. 272)

Another feature Isaacs mentions is the "sense of reciprocity" the children evidence when they are in a common activity. She saw the children respond with togetherness to accomplish a task; a togetherness which seemed to be mutually satisfying.

In a study of nursery school children's friendships and quarrels Green (1933) also found strong friendships among the children. The number of strong friendships increased markedly between ages 3 and 5. The friendships tended to be same-sex ones. (Friendships were determined by ratio of the number of opportunities they had for playing with one another.) In addition to evidencing friendly behavior, mutual friends were more quarrelsome with each other. As Wenar (1971) says about these findings, "differing and then resolving differences, even at this early age, is an important feature of a close social
relation." (p. 270) The quarrelsomeness between friends then suggests a kind of reciprocality in meeting each other's affective needs.

More recently, in a study of peer reinforcement and sociometric status among thirty-two nursery school children, Hartup, Glazer, and Charlesworth (1967) found that social acceptance (being chosen "most liked" by a number of peers) was significantly correlated with the frequency of giving positive reinforcement, e.g., "affection," and "personal acceptance," but not with the frequency of giving negative reinforcement, e.g., "interference," and "attacking others." Conversely, social rejection (being chosen "least liked") was significantly correlated with giving negative reinforcement to one's peers but not with giving positive reinforcement. The specific behavioral indicators observed by Hartup et al. seemed to indicate that the most accepted children were more sensitive, than the least accepted children, to their peer's feelings and need to be positively recognized.

The literature on friendships among nursery school children also indicates that one child's choices or preferences for particular other children can be relatively stable. The studies by Fite and Green noted stability in some close friendships lasting several months. In one study expressly designed to assess stability of
friendships, McCandless and Marshall (1957), in their sample of forty-eight nursery school children, found the children's sociometric choices to be stable at least through three weeks which was the duration of their study.

It appears, then, that close nursery school friendships can be stable across, at least, several weeks, and can manifest reciprocally reinforcing behaviors across the time of the friendships.

Whether the socioemotional, reciprocally reinforcing behaviors between friends are also part of friendships during the early elementary school years is difficult to ascertain. The paucity of research on the nature of friendships during these years (5-8 years of age) explains the difficulty. Given the lack of data, it is assumed that friendships during the early elementary school years help meet the intellective and affective needs of each child, and thus depend upon some reciprocal behaviors to meet those needs. Of course, with the increase in age and ability to more fully comprehend experiences, the mutual, nonegocentric behaviors between friends are assumed to be more sophisticated than those of nursery school children.

Pertinent Research on Egocentric Communication

The subject of the inquiry at hand is whether or not young children are less egocentric, or more informa-
tionally facilitative with individuals they call their "friends" than they are with nonfriends. If young children between the ages of 3 and 8 did evidence less egocentric behavior with their friends than with nonfriends, it would seem to indicate an ability to decenter, or a basis—perhaps noncognitive—for decentering, not usually presumed to be operative before age 8 or 9.

In addition to Piaget's theory and research, the positive relationship between the ability to decenter and chronological age has also been found more recently in the work of two groups of researchers: (1) Flavell et al. (1967), and (2) Krauss and associates (Krauss and Rotter, 1968; Krauss and Glucksberg, 1969; and Glucksberg, Krauss, and Weisberg, 1966).

A major emphasis in the Flavell group, as might be expected from Flavell's (1963) expertise on Piaget, was to obtain data on egocentric vs. nonegocentric communication patterns in children. Flavell et al. write:

To the extent that the child fails to discriminate those role attributes of the other which are relevant to the sort of message the child should send to the other, in the latter's role as listener, to that extent is the message likely to be ill-adapted to the other's informational needs and hence inadequately communicative. Conversely, to the extent that the child does take an accurate measure of the other's listener role attributes, and then actively uses this knowledge to shape and adapt his message accordingly, to that extent might the communication be an effective,
nonegocentric one. An important part of what is involved in effective communicating might be conceptualized as a coding-then-recoding process, in which the recoding component is 'monitored,' so to speak, by role-taking activity. An ineffective, egocentric communication, on the other hand, is essentially arrested at the initial, coding step of the process. (p. 8)

The Flavell group seems to place heavy emphasis on role-taking in understanding communication patterns in children. They define role-taking activity "as the attempted discrimination of another person's role attributes, 'discrimination' and 'role attributes' taken in a very inclusive sense (p. 207)." The definition seems too broad to note what specific knowledge about the other the role-taker is taking into account. In many of the Flavell et al. tasks, it appears that the child is simply to "take" the physical or visual perspective of the other child, and not necessarily to "take" any role the other may be playing. Defining "role" then is in order for the Flavell group. Is "role" equivalent to where another happens to be observing from? Or, is it some recognition of particular behaviors another manifests in a given situational complex? The latter would be consistent with Mead's concept of a "role." Given the descriptive-exploratory nature of the group's work, these criticisms asking for more stringent definitional clarity may be too pedantic, and perhaps should be reserved for subsequent studies on this topic by Flavell et al.
Regarding early childhood, Flavell et al. (1967) found an increasing awareness of recognition of perspective differences from age 3 to age 6, but the awarenesses were not consistently apparent. On one task a child may be aware of a different perspective, yet on another task, the same child, age 5 or 6, may not be aware of perspective differences. The Flavell group cites (on pp. 182-183) three interrelated things the late preschool child learns to do. He learns: (1) how to infer whether a given stimulus is or is not visible to O (the other), at least where the cues for such inference are strong and readily noticeable; (2) that when an object is interposed between himself and O, O will not see what he sees but sees whatever view is presented on the opposite side of the object; and (3) to recognize that, when he and O are at opposite ends of X (a display) and are looking down at it, O will see it upside down if he himself sees it right side up and vice versa. These elemental visual percepts, then, seem to precede more intricate role-taking behaviors which begin to occur in middle- and late-childhood.

Using a task requiring visually separated subjects to communicate about abstract designs, Krauss and associates (Krauss and Glucksberg, 1969; and Glucksberg, Krauss, and Weisberg, 1966) have found that older children, third and fifth graders, showed a rapid decrease in the number of
communication errors over eight trials. Younger children, particularly kindergarteners, evidenced no appreciable decrease. They continued to communicate in a noninformative manner. Krauss and Glucksberg (1969) believe their work sheds light on the speaker-listener interaction. In their task one subject is "speaker," the other is designated as the "listener."

This view of the speaker-listener interaction suggests that in construing a message a speaker must perform two rather subtle informational analyses: (1) of the stimulus array, in order that his message will take into account those attributes of the referent which distinguish it from nonreferents; and (2) of his listener, in order that a message may be formulated which is compatible with the listener's knowledge and capabilities (p. 256).

In a second experiment in the same study (Krauss and Glucksberg, 1969), the essence of these two above mentioned points, plus the increasing task accomplishment with age, is made clearer. From the first experiment, which was done exclusively with children, the authors, who had tape recorded the children's original responses, used the first six names for the six abstract designs each "speaker" used during the first trial. Then in Experiment II, adult subjects were asked to find the block design the "speaker" was describing. The accuracy of the adults in selecting the appropriate blocks increased with the increasing grade level of the children. The older children seemed to be better able to take into account both the
peculiarities of the design, and what description(s) the listeners could best use to select the correct block.

Above it was noted that the Flavell group's general term "role-taking" seemed to be attributing more information about another, or another's role, than the child may have actually had available. Similarly, Krauss and Glucksberg's words "listener's knowledge and capabilities" seem to imply that the speaker is cognizant of characteristics of a specific listener. It may also be that a child aged 11 years, as opposed to one 5 years of age, may not need any particular listener on the other side of the screen (as in the Krauss-Glucksberg task) at all. The older child, due to his verbal facility, might, in response to the task directions, verbalize about the designs in intelligible ways no matter who is on the other side.

What will be considered is, in one condition, the presence of a speaker's friend as listener, and, in the other condition, the presence of someone a speaker does not know, or does not consider to be a friend, as listener. In a developmental-descriptive sense (see Flavell et al., 1967; pp. 2-3), it is believed that 3, 4, 5, 6, and 7 year old speaker-listener pairs who are friends should perform the Krauss-Glucksberg task better than speaker-listener pairs who do not know one another, or who do not consider
one another as friends. One implication is that the commonalities two children share as mutual friends somehow enables them to relate more closely, than do nonfriends, in order to solve a joint task problem. Another implication would be that with their friends, children may evidence less egocentric behavior.

Hypotheses

Three major hypotheses were investigated in the present study. All three relate to a task necessitating a pair of visually separated subjects to communicate about abstract designs so one member of the pair, the listener, can match his set of designs with the ones which the other member of the pair, the speaker, describes. (The task is more thoroughly presented in the "Methods" chapter.)

Hypothesis 1

Friend pairs will perform the experimental task more successfully than will nonfriend pairs.

Hypothesis 2

The older the pairs, the more successful the performance on the experimental task. For example, second grade pairs (7 year olds) will do better than kindergarten pairs (5 year olds).
Hypothesis 3

There will be no sex differences in either the friend or the nonfriend conditions.
METHOD

This chapter is divided into two sections: the first on the sociometric test, and the second on the communicational task. The results of the sociometric test were prerequisite to the presentation of the communication task, since the pairs of children, the friend pairs and the nonfriend pairs for the communication task were matched by their choices on the sociometric test.

Method for Sociometric Test

Subjects

A sociometric test was administered to all children in a public elementary school in the Columbus, Ohio area, and to all children attending The Ohio State University Nursery School during Winter Quarter 1971. The subjects were from predominantly, white middle-class communities. Table 1 shows the number of children, by grade level, to whom a sociometric was administered.

Procedure

Since the age range was from 3 to 12 and thus the children differed in their ability to read directions, three different sociometric tests were used. What was
asked of the children was essentially the same for all grades.

**TABLE 1**

**NUMBER OF CHILDREN RESPONDING TO SOCIOMETRIC TEST**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number of Children</th>
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<tbody>
<tr>
<td>Nursery School--3 year olds</td>
<td>12</td>
</tr>
<tr>
<td>Nursery School--4 year olds</td>
<td>14</td>
</tr>
<tr>
<td>K</td>
<td>53</td>
</tr>
<tr>
<td>1</td>
<td>54</td>
</tr>
<tr>
<td>2</td>
<td>55</td>
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<tr>
<td>5</td>
<td>62</td>
</tr>
<tr>
<td>6</td>
<td>44</td>
</tr>
<tr>
<td><strong>Total Number</strong></td>
<td><strong>405</strong></td>
</tr>
</tbody>
</table>

For the nursery school and the kindergarten children the type of sociometric test suggested by Dunnnington (1957), and by McCandless and Marshall (1957) was used. In this form pictures of each child are together on a bulletin board, and individually, each child is asked to point and to name his three best friends. The experimenter simply asks: "Who is your best friend of all these children? Who is your second best friend? Who is your third (or next) best friend?" With the Nursery School children the variant "Who of all these boys and girls do you like to play with the most (or best)? etc.," was used.
For the nursery school, small, color, full-frontal view photos of each child were randomly mounted on a cork bulletin board. Prior to the second sociometric session, the photos were again randomized on the bulletin board.

For the kindergarten children, a class picture in which each child has in his or her own square, a small, color photo of head and shoulders, was the stimulus object. Since they might be unable to write their friends' names, each first and second grader was supplied with a sheet of paper having the name of each child in the class typed in a small square. The child was asked to circle the names of his three best friends, indicating by numbers next to his circle who was his first (#1), second (#2), and third (#3) best friends. Appendix A is a sample of this form.

For grades three through six the same form that Skorepa, Horrocks, and Thompson (1963) used was employed. Each child was asked to list, in order, his three best friends. Appendix B includes samples of this form.

The sociometric test was administered twice, with a two week interval between the first and second times. At both sessions the directions were read aloud by the experimenter, making sure each child understood what was asked of him. At the second session essentially the following directions were added: "The people you list
this time may or may not be those you listed before."

Method of Communication Task

Subjects

The subjects were 100 boys and girls, 74 of whom were from a Columbus, Ohio area elementary school, and the remaining 26 from The Ohio State University Nursery School. Of the 74 elementary school children, 26 were from one kindergarten class, 20 from one first grade class, and 28 from one second grade class. Of the 26 nursery school children, 12 were in the three year olds' class, and 14 were in the four year olds' class. The subjects were from the pool of children to whom the sociometric test had been administered and were selected as indicated below.

Experimenters

Six undergraduates, all females, served as experimenters. The experimenters were trained by the author how to administer the communication task. The pairs of children were randomly assigned to the experimenters who were not informed whether they were testing a friend pair or a nonfriend pair.

Procedure for Pairing

The ideal method of pairing the children would be to assign those children who selected each other as first choice on both sociometrics to be a "friend" pair, and to
assign those who did not select one another for any choice on either sociometric to be a "nonfriend" pair. Only for the nonfriend pairs in the elementary school sample was the ideal realized. In the nursery school sample, a few of the nonfriend pairs included one child who chose the other on one of the two sociometrics. For each class, these children were randomly assigned to be in nonfriend pairs.

Only in the first grade class did the friend pairing approximate the ideal. Of the five friend pairs, three were mutual first choices on both sociometrics. One of the remaining two friend pairs selected each other on both sociometrics but were not mutual first choices both times. Since there were no other mutual choices on both sociometrics, the other pair was chosen because, on the second sociometric, one chose the other as a first choice, while the other chose the one as her second choice. On the first sociometric one of these girls made the other her first choice, but was not selected in return. In Table 2, not being selected in return is indicated by a "0." Table 2 lists the friend pairs by grades and mutuality of choices on the first and the second sociometrics.

For the kindergarten class, except pair number 3 where neither chose the other on the first sociometric, the other nonmutual choices on one of the sociometrics had
## TABLE 2

**MUTUALITY IN SOCIOMETRIC CHOICES FOR FRIEND PAIRINGS**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Pair Number</th>
<th>First Sociometric</th>
<th>Second Sociometric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursery 3</td>
<td>1</td>
<td>1 - 1</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Nursery 3</td>
<td>2</td>
<td>2 - 1</td>
<td>1 - 1</td>
</tr>
<tr>
<td>Nursery 3</td>
<td>3</td>
<td>3 - 3</td>
<td>2 - 2</td>
</tr>
<tr>
<td>Nursery 4</td>
<td>1</td>
<td>1 - 2</td>
<td>1 - 1</td>
</tr>
<tr>
<td>Nursery 4</td>
<td>2</td>
<td>1 - 1</td>
<td>3 - 1</td>
</tr>
<tr>
<td>Nursery 4</td>
<td>3</td>
<td>2 - 2</td>
<td>2 - 2</td>
</tr>
<tr>
<td>Nursery 4</td>
<td>4</td>
<td>2 - 2</td>
<td>3 - 1</td>
</tr>
<tr>
<td>K 1</td>
<td>1</td>
<td>0 - 1</td>
<td>3 - 1</td>
</tr>
<tr>
<td>K 2</td>
<td>2</td>
<td>1 - 2</td>
<td>2 - 2</td>
</tr>
<tr>
<td>K 3</td>
<td>3</td>
<td>0 - 0</td>
<td>1 - 2</td>
</tr>
<tr>
<td>K 4</td>
<td>4</td>
<td>1 - 2</td>
<td>3 - 1</td>
</tr>
<tr>
<td>K 5</td>
<td>5</td>
<td>2 - 2</td>
<td>0 - 1</td>
</tr>
<tr>
<td>K 6</td>
<td>6</td>
<td>2 - 2</td>
<td>0 - 2</td>
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<tr>
<td>K 7</td>
<td>7</td>
<td>1 - 1</td>
<td>1 - 0</td>
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<td>2 - 1</td>
</tr>
<tr>
<td>1 2</td>
<td>2</td>
<td>1 - 1</td>
<td>1 - 1</td>
</tr>
<tr>
<td>1 3</td>
<td>3</td>
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<td>1 - 1</td>
</tr>
<tr>
<td>1 4</td>
<td>4</td>
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<td>1 - 2</td>
</tr>
<tr>
<td>1 5</td>
<td>5</td>
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<td>1 - 1</td>
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<td>2 1</td>
<td>1</td>
<td>2 - 3</td>
<td>3 - 3</td>
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<tr>
<td>2 2</td>
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<td>2 - 1</td>
</tr>
<tr>
<td>2 3</td>
<td>3</td>
<td>2 - 1</td>
<td>3 - 1</td>
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<tr>
<td>2 4</td>
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<td>3 - 3</td>
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<td>6</td>
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</tr>
<tr>
<td>2 7</td>
<td>7</td>
<td>1 - 1</td>
<td>1 - 1</td>
</tr>
</tbody>
</table>
one of the pair choosing the other as a first or second choice. In all friend pairings the highest possible mutual selections were designated as "friends."

With the small classes in the nursery school there were both numerous mutual selections, as in the friend pairs, and a few instances where one member of the nonfriend pair selected the other as a friend but was not selected in return.

Table 3 lists the number of friend pairs by sex. Table 4 lists the number of nonfriend pairs by sex. (For a more complete analysis of the sociometric data see Appendix C.)

Materials and Procedure

Excepting the substitution of verbal praise for a small plastic charm as a reward for any errorless trial, the following materials and procedures for the communication task are the same as those designed, and cited, by Krauss and Glucksberg (1969).

Subjects were required to deal with six novel designs (see Figure 1). Each of these figures was affixed on the four vertical facets of a 2 x 2 x 2-inch wooden block. The blocks had a 1/2 inch hole drilled vertically through the center so that six of them can be stacked on a 14-inch wooden peg. One S of each pair was randomly designated the "speaker," and the other, the "listener."
### TABLE 3

**NUMBER OF FRIEND PAIRS BY SEX**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Male</th>
<th>Female</th>
<th>Male-Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursery 3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Nursery 4</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>K</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

### TABLE 4

**NUMBER OF NONFRIEND PAIRS BY SEX**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Male</th>
<th>Female</th>
<th>Male-Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursery 3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Nursery 4</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>K</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
FIGURE 1

NOVEL DESIGNS
(from Krauss and Glucksberg, 1969)
Speaker and listener were each given a duplicate set of six blocks and a peg. The speaker received his blocks in a dispenser so constructed that they have to be removed one at a time in a predetermined order. The listener's blocks were laid out before him randomly. The Ss were seated on opposite sides of an opaque screen so that they could see neither each other nor each other's blocks. Additional sets of six blocks, imprinted with animal pictures (see Figure 2), were constructed for use in a pretraining task. The experimental situation is illustrated in Figure 3. All sessions were tape recorded and transcribed. The experimental task was introduced to the subjects as a game called "Stack the Blocks." The object of the game was to build two matching stacks of blocks. The speaker was instructed to remove his blocks one at a time from the dispenser and to stack them on his peg. At the same time he removed the blocks, he must inform his partner, the listener, which block to stack. No restrictions were placed on Ss' verbal behavior. When all six blocks have been stacked on the peg, the two stacks were compared in full view of both Ss. If the two stacks were identical, each S was given verbal praise by the experimenter. If they were not, Ss were encouraged to see if they "can match stacks on the next trial." Each "game"
FIGURE 2

ANIMAL DESIGNS
FIGURE 3

EXPERIMENTAL SETTING FOR COMMUNICATION TASK
(from Krauss and Glucksberg, 1969)
(stacking six blocks) constituted a single trial.

Before the Ss played the game with the novel forms, they were given pretraining trials with the animal blocks. Since virtually all children could readily discriminate and name the animals pictured, this procedure simplified teaching the rules and the goal of the game. At the same time, it insured that defective performance in the experimental task could be attributed to difficulties in communicating about the novel forms and not simply to a lack of understanding of the game.

In all, eight trials with the novel designs were run for each pair. There were two pretraining trials with the animal pictures for each pair.
RESULTS

Although they were all able to complete the two practice trials with the animal blocks, there were only two pairs (one friend pair and one nonfriend pair) of 3 year olds, and four pairs (two friend pairs and two nonfriend pairs) of 4 year olds, from the nursery school groups, who were able to complete eight trials of the communicational task. Hence, the nursery school groups were not included in the statistical analyses. However, since other information was obtained from observations of them, they will be included in the comments in the "Discussion" chapter.

Assessment of Hypotheses

The first hypothesis predicted that friend pairs would perform the communicational task more successfully than would nonfriend pairs. Table 4 shows the Friend-Nonfriend X Grade Means and Standard Deviations across the eight trials. Figures 4, 5, and 6 show the differences between friend pairs and nonfriend pairs, at each grade level, on the mean number of errors per trial. As is evident from Table 4 and Figures 4, 5, and 6 there is a clear difference between the friend pairs and the non-
<table>
<thead>
<tr>
<th>F-NF</th>
<th>Grade</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>K</td>
<td>2.000</td>
<td>2.714</td>
<td>1.143</td>
<td>2.143</td>
<td>1.000</td>
<td>2.143</td>
<td>1.429</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>1.414</td>
<td>2.138</td>
<td>1.574</td>
<td>2.340</td>
<td>1.732</td>
<td>2.734</td>
<td>2.507</td>
<td>1.732</td>
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<td>1.750</td>
<td>1.000</td>
<td>1.250</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>2.363</td>
<td>1.915</td>
<td>1.500</td>
<td>1.915</td>
<td>2.000</td>
<td>2.363</td>
<td>2.000</td>
<td>2.500</td>
</tr>
<tr>
<td>F</td>
<td>2</td>
<td>2.429</td>
<td>2.000</td>
<td>1.429</td>
<td>0.571</td>
<td>1.143</td>
<td>0.857</td>
<td>0.571</td>
<td>0.286</td>
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<tr>
<td></td>
<td>SD</td>
<td>1.813</td>
<td>1.633</td>
<td>1.512</td>
<td>0.976</td>
<td>1.464</td>
<td>1.464</td>
<td>0.976</td>
<td>0.756</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>1.941</td>
<td>1.225</td>
<td>1.722</td>
<td>2.066</td>
<td>2.317</td>
<td>1.814</td>
<td>1.366</td>
<td>1.378</td>
</tr>
<tr>
<td>NF</td>
<td>1</td>
<td>3.600</td>
<td>3.200</td>
<td>2.800</td>
<td>3.200</td>
<td>2.400</td>
<td>3.600</td>
<td>4.000</td>
<td>3.400</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>1.817</td>
<td>2.280</td>
<td>1.924</td>
<td>2.168</td>
<td>1.673</td>
<td>2.302</td>
<td>2.550</td>
<td>2.408</td>
</tr>
<tr>
<td>NF</td>
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<td>2.143</td>
<td>2.143</td>
<td>2.286</td>
<td>2.000</td>
<td>2.429</td>
<td>1.714</td>
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<td></td>
<td>SD</td>
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<td>2.070</td>
<td>1.215</td>
<td>2.478</td>
<td>2.430</td>
<td>2.000</td>
<td>2.149</td>
<td>2.360</td>
</tr>
</tbody>
</table>
FIGURE 4

MEAN NUMBER OF ERRORS ACROSS TRIALS ON THE COMMUNICATION TASK: KINDERGARTEN PAIRS

X = Friend Pairs
● = Nonfriend Pairs
FIGURE 5

MEAN NUMBER OF ERRORS ACROSS TRIALS ON THE COMMUNICATION TASK: FIRST GRADE PAIRS

\[ X = \text{Friend Pairs} \]
\[ \text{●} = \text{Nonfriend Pairs} \]
FIGURE 6

MEAN NUMBER OF ERRORS ACROSS TRIALS ON THE COMMUNICATION TASK: SECOND GRADE PAIRS

\[ x = \text{Friend Pairs} \]
\[ \bullet = \text{Nonfriend Pairs} \]
friend pairs. The former made fewer average errors than the latter on every trial. The analysis of variance (for unequal cell frequencies as in Winer, 1962) results in Table 5 indicate the highly significant \( p < .005 \) main effect of the Friend-Nonfriend variable.

The second hypothesis stated that there would be a grade difference; that the first grade pairs would be more successful at the task than the kindergarten pairs, and the second graders would be more successful than subjects in both the other grades. The analysis of variance results in Table 5 show no significant effect of grade on the differences found. The Friend-Nonfriend X Grade \( A_B \) interaction was not significant either. Thus the predicted grade differences were not found.

Hypothesis three predicted no difference between male pairs and female pairs and mixed pairs across grades in both friend and nonfriend conditions. The analysis of variance verified this prediction: there was no significant main effect of sex.

Comparisons Between Friends and Nonfriends on Speaker Responses and on Listener Responses

In an attempt to assess more specific communicational differences between the Friend and Nonfriend pairs, the transcripts from the communication task were analyzed. From the transcripts of each pair of children completing,
<table>
<thead>
<tr>
<th>Source</th>
<th>dF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Friends and Nonfriends A (Grades) B</td>
<td>1</td>
<td>144.500</td>
<td>144.500</td>
<td>9.618*</td>
</tr>
<tr>
<td>AB</td>
<td>2</td>
<td>37.552</td>
<td>18.776</td>
<td>1.250</td>
</tr>
<tr>
<td>SS (within) AB</td>
<td>30</td>
<td>450.726</td>
<td>15.025</td>
<td></td>
</tr>
<tr>
<td>Within Trials (I)</td>
<td>7</td>
<td>49.109</td>
<td>7.016</td>
<td></td>
</tr>
<tr>
<td>TX A</td>
<td>7</td>
<td>7.722</td>
<td>1.103</td>
<td></td>
</tr>
<tr>
<td>TX B</td>
<td>14</td>
<td>26.562</td>
<td>1.897</td>
<td></td>
</tr>
<tr>
<td>TX AB</td>
<td>14</td>
<td>28.912</td>
<td>2.065</td>
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</tr>
<tr>
<td>Error</td>
<td>210</td>
<td>449.970</td>
<td>2.143</td>
<td></td>
</tr>
</tbody>
</table>

*p < .005

For the speaker, verbal responses to the stimulus blocks were grouped into four categories: (1) "Nominal" was used when the speaker called the novel design a name, for example, "It looks like a hat;" (2) "Figural," was used when the design was described in terms of its shape, as in the statement, "It has two triangles on it;" (3) "Both," was used when nominal and Figural were employed in the same
description on one novel design; (4) "Questions" was used when the speaker asked the listener about the design.

In general, speakers' responses to the stimulus designs were predominantly Nominal. Nominal descriptions were used more than twice as often as the Figural descriptions, and as descriptions using Both. Only one Question, concerning the designs, was asked by a speaker of his listener.

Comparisons between Friend means and Nonfriend means on these categories showed no significant differences both on overall means and on the grade means.

For the listener, five categories were used to group the verbal responses:

(1) "Questions Nominal" (QN) was used when the listener asked the speaker if the design is a thing of some kind as in the question, "Does it look like a hat?;"

(2) "Questions Figural" (QF) was used when the listener asked the speaker if the design was a particular shape as in the question, "Does it have two triangles in it?;"

(3) "Questions Both" (QB) was used when QN and QF were used in the same sequence of the listener's questioning;
(4) "Answers" (A) was used when the listener simply replied something like "I've got it," after the speaker described the block, or something telling the speaker to go on to the next block, and;

(5) "No Response" (NR) was used when the listener said nothing in response to the speaker's description. In the last mentioned category, NR, the speaker usually either paused for a short time after his description, then, hearing nothing, continued on to describe the next design, or continued on after the listener dropped his block on the stacking stick; the drop causing a cracking or hitting sound cueing the speaker that the listener had selected a block, stacked it, and was ready for the next one.

Comparisons between Friend means and Nonfriend means on the listener categories showed no significant differences in the by-grade means. However, the comparisons for the overall (all grades) means in the "Answer" category revealed a significant difference, $p < .05$, between the Friend listeners and the Nonfriend listeners. The Friend listeners answered or replied to their speakers' descriptions significantly more often than did the Nonfriend listeners to their speakers' descriptions.

In the "No Response" category, the comparisons for the overall means indicated a near significant difference
(p < .05 = t value of 2.042 or better for 32 df; the obtained t value was 1.972) between the Friend listeners and the Nonfriend listeners. The Nonfriend listeners more frequently did not respond to their speakers' descriptions than did the Friend listeners to their speakers' descriptions.
DISCUSSION

The primary aim of this study was to assess whether Friend pairs differed from Nonfriend pairs on a communication task. And, if there was a difference, a secondary aim was to assess what Friends do in one another's presence which differs from what Nonfriends do in one another's presence. The communication task was utilized to help determine how effectively Friend and Nonfriend pairs could share information to complete the task successfully.

A discussion of the communication task findings for the nursery school children and then for the elementary school children is presented. These are followed by a discussion of other possible differences between the Friend and Nonfriend pairs; possible differences based upon the author's impressions based on the transcripts.

Communication Task Findings for the Nursery School Children

Among the pairs of nursery school children to whom they administered the communication task, Glucksberg, Krauss and Weisberg (1966) found the following: (1) there were no errorless trials; (2) although speakers' descriptions tended to be consistent for the particular
designs, listeners' responses were inconsistent to the same descriptions; and (3) there were no indications of systematic improvement across trials. The findings in the present pairs of nursery school children were quite comparable: 1) there were only five errorless trials (1 F pair among the 3 year old pairs, and 2 F pairs and 2 NF pairs among the 4 year old pairs); 2) there was inconsistency between pair members particularly the listeners' responses; and 3) excepting one F pair of 4 year olds, here too there was no apparent systematic improvement across trials. The mutual attentiveness and interchanges across trials of that last mentioned pair, a F pair of girls, culminated in an errorless last trial after which the girls smiled and laughed, and seemed proud of their joint success in matching stacks.

At the youngest age-grade, most (8 of 12) of the 3-4 year old children could not direct their attention to the task for a sufficient amount of time so the trials could be completed. (Incidentally, the four children who did focus on the task, 1 F pair of girls, and 1 NF pair of a boy and a girl, were later characterized by their teacher as being more intellectually mature and verbally facile than most of the other children in that class.) The pairings into F and NF pairs did not prevent a rapid loss of interest in the task. It may have simply required
too much time, been too repetitive, and too abstract for these children. Like Glucksberg et al.'s youngest pairs (six pairs with an age range from 33 to 49 months), these children could not, and did not particularly want to, "play the game." The reciprocal involvement, both motivationally and intellectually, necessary to complete the task was not present; each child's view of things, and ways of behaving, seemed to be predominantly egocentric.

With the children in the 4 year old nursery class, it might be possible to attribute the paucity of errorless trials and the lack of systematic improvement to egocentric speech and to an egocentric view of things in a two person situation. However, from observing all the nursery school pairs (through a one-way mirror) it appeared to this observer that four (3 F and 1 NF) of the seven 4 year old pairs seemed to want to do well on the task. Some descriptions by the speaker were undoubtedly idiosyncratic to him but he seemed to recognize, from the listener's questions, or long pauses, or sounds of puzzlement, his partner's difficulty. After this listener behavior, these speakers often paused, looked at their design again, and then tried to offer another, clearer description. Sometimes the description was basically like the one offered before. Motivationally then, it seemed that these pairs were less egocentric than the others:
the members, particularly the speakers, of these pairs seemed to be acknowledging the other's difficulties. For these pairs, perhaps another explanation such as impoverished verbal-vocabulary skills could account for the lack of success on the communication task.

As McNeill (1970) points out in his discussion of Krauss and Glucksberg's communication data on young children, the young speakers have difficulty encoding a message which the listener can easily decode. The brief object descriptions of many speakers, like "a hat," lack sufficiently meaningful details for listeners to be able to decode well. Krauss and Glucksberg (1969) employing adult listeners to listen to the descriptions offered by the child speakers in an earlier study, found that adult listeners were progressively more accurate in identifying the correct design as the age of the speakers increased. The older children gave more better worded and/or more complete, verbal descriptions than did the younger subjects. Conversely, on the listeners' end, Glucksberg et al. (1966) demonstrated that, with an adult as the speaker and with a 4-5 year old child as the listener, most (8 of 12) listener children could reach Glucksberg et al.'s criterion of two errorless trials.

McNeill's ideas, and the Glucksberg and associates findings together with the author's subjective impression
that at least four of seven 4 year old speakers wanted to help their listener to choose the correct designs, suggests an explanation based more on verbal difficulties than one based simply on egocentrism. The lag in the development of an active, speaking vocabulary behind a passive, recognition vocabulary could account for the speakers' difficulties encoding messages adequately enough about the unusual designs. Words suggesting common meanings between the pair members were not at the disposal of the speakers. Also, because of the same lag, the listeners could not aid the speakers much in the encoding-decoding process.

In sum, the Friend-Nonfriend dimension in the nursery school groups yielded little of significance, and other findings tended to agree with those of Glucksberg et al. (1966). Due to the numerous incomplete trials and the small sample sizes the generalizations on the nursery school findings should be regarded as tentative ones.

Communication Task Findings For the Elementary School Children

The results on the communication task for the kindergarten, first, and second graders showed no differences by sex across pairs and grades, highly significant differences between Friend pairs and Nonfriend pairs, and no significant effect by grades.
It was predicted that there would be significant differences between grades in mean number of errors made; that is, first graders would make less errors than kindergartners and so on. As noted in the "review of research" section Krauss and Glucksberg (1969), using kindergarten, first, third, and fifth grade subjects, all male, found the youngest group to make significantly more errors than the other groups, with the older groups becoming progressively more proficient at the task.

That significant differences were not found here is somewhat puzzling. Perhaps the age-grade range used here was not broad enough to reveal more marked differences. Another possible answer is that the Friend-Non-friend effect negated the grade differences. Separating each class into two groups on the basis of sociometric choice may have somehow prevented what might have occurred if the children had been assigned to the pairs randomly.

A third possible answer is that the present sample of children may have had more extensive vocabularies than did the sample used by Krauss and Glucksberg. Their children were children from an orphanage. Even though "the institution's screening policy insured a reasonably homogeneous and normal level of intellectual functioning," it may have been that the elementary school children's experiences were more educationally diverse than those the orphanage children encountered, and had been so from an
earlier age. "More educationally diverse" is meant to imply richer adult-child interchanges which might enhance a child's vocabulary so by the time he is in kindergarten he would be able to suggest alternate descriptions for unusual designs.

The result of central concern here was the highly significant analysis of variance main effect of Friend vs. Nonfriend. The F pairs had fewer mean errors across all trials than did the NF pairs. What factors may have contributed to this difference in performance?

One factor, operating during the task itself, may have been the difference between F listeners and NF listeners in their mode of responding. As reported in the "Results," the F listeners had a significantly higher mean number of times "Answering," or somehow acknowledging the speakers' descriptions than did NF listeners. Similarly, the NF listeners' mean number of times "Not Responding" were quite close to being significantly higher than those of the F listeners.

Figure 7 shows the predominant (majority) mode of responding, either "Answers" or "No Response," used by the 17 pairs with the highest mean number of errors, and the 17 pairs with the lowest mean number of errors. (Two other pairs' transcripts were too incomplete to be included in the transcript analyses.) For F listeners, 13
FIGURE 7
PREDOMINANT RESPONSE MODES OF FRIEND AND NONFRIEND LISTENERS

Number of Errors per Pair Across 8 Trials

Group I: 1-13 Errors
17 Pairs
12F 5NF
10A 2NR 3A 2NR

Group II: 13-35 Errors
17 Pairs
5F 12NF
3A 2NR 5A 7NR

F=Friend pairs
NF=Nonfriend pairs
A=Answers
NR=No Response
of 17 answer their speakers, and 10 of those 13 were among the more successful on the communication task. The other Answer-No Response categories were not so distinct, but for 9 of 17 NF listeners, not responding was the predominant mode of interacting with their speakers.

These added findings suggest a greater level of responsivity to the F speakers and/or their descriptions. In general, NF speakers were being acknowledged less; a lack of acknowledgment which may have indicated to the speaker some disinterest from the listener. After having to initiate a sequence of descriptions by hazarding guesses about the designs, the speaker may have needed some sign of encouragement, or some question about his description; some words spoken by the listener meaning "Let's do this task together;" some verbal feedback indicating constructive, reciprocal possibilities in correctly matching stacks.

Among the F pairs, the listeners answering their speaker friends may have represented a continuation of "being friends." Acknowledging the other in some way or another is an integral part of friendships. In a situation like the communication task where many physical, nonverbal cues could not be utilized, verbal cues could be. Answers to the speakers' descriptions were often "OK," "I've got it," "Ready," and "Go ahead."
Other Possible Differences Between Friend Pairs and Nonfriend Pairs on the Communication Task

In this section a few specific examples from the transcripts of the communication task performances will be used, in part, to corroborate the differences between F and NF pairs already noted, but also to suggest further differences which are not reflected in the statistical data. Some general inferences about F and NF pairs will be drawn from several verbal exchanges chosen to be representative of F or of NF behavior, with particular emphases on mutual exchanges, or on ones indicative of egocentric patterns.

Examples of some NF behaviors which militated against effective communication can be illustrated by reading the transcript of a NF pair of kindergarten boys. This example demonstrates four characteristics more prevalent of NF pairs than F pairs: 1) a lack of coordinated sequence, the speaker gets ahead of his listener; 2) the speaker attaches a particular description to a design and fails to elaborate sufficiently; 3) the listener fails to clarify for himself to which design the speaker's description referred; and 4) in general, a lack of collaborative effort.

In all examples to be given, a fictitious name has been assigned to each child. After the first description of each block you will notice a set of numbers in paren-
theses "(1-6-4)." The first number refers to the first (second, etc.) block the speaker pulled from his dispenser-shute on that particular trial. The second number refers to the number corresponding to the design, as presented in Figure 1, the speaker is describing. And the third refers to the design the listener stacked, the design he thought the speaker was describing. So (1-6-4) means the first block from the shute in that trial, with design 6 on it, which the listener believed to be design 4 from the speaker's description. If the last two numbers are the same then the pair correctly matched on that design.

For the first pair, the NF kindergarten boys, the second and the sixth trial will be reproduced. Blank spaces mean the words were indistinct.

Second Trial

Robert (R): A shirt. (1-5-4)
Stanley (S): A shirt. This one? (asks E)
Experimenter (E): (to facilitate the session) Ok. Put it on the block.
R: Sand Crystal. (2-6-5)
R: (repeats) Sand crystal.
E: Ok, he didn't. . . .
St: Crystal, where's a crystal? (to self? E? or Speaker? not clear)
E: Oh, wait a minute he didn't catch you yet.
R: Sand crystal.
St: Right here.
R: A shirt. (3-4-6)
St: (like to self) Shirt.
R: And line. . . .
St: (says simultaneously with R above) Next shirt.
R: And, line up and line down, and line down and line up, and line down-up, and a line down. (4-3-3)
St: Up-down, up-down? (to self) This.
R: (to E who in putting blocks in the shute evidently
turned one of the blocks upside down.) Hey, you
got the house upside down. (then to St.) And
then the house. (5-2-1)

St: Ok.
R: And the key. (6-1-2) That's all.

Sixth Trial

R: Ok Stanley. The crystal ball. (laughs) (1-6-2)
St: Which crystal ball?
R: A crystal ball with lines on it. (Goes quickly on.)
Then a shirt. A shirt with, without curving lines.
E: (to R) Wait a minute.
St: Curving lines?
R: Ok, now the shirt. (2-5-4)
St: (to self) Shirt, shirt. Give me both the shirts.
R: Ok. The key. (3-1-1)
St: (to self) Key.
R: And then the house. (4-2-3)
St: House.
R: (has trouble getting block from dispenser-shute)
Let me get my house out. There. And then the
designs. (5-3-5. This is shortened from the "up-
down" sequence of earlier.)
St: Designs. Where are the designs? Designs.
R: Then the shirt. (6-4-6)
St: Then the shirt.
R: I hope we. . . .
St: We better be right this time.
E: (compares the two stacks)
R: Ah heck. The shirt.
St: The designs.
R: You're wrong Stanley. I can never. . . .
St: You mean the, you mean whi..., which do you mean
are the crystal ball?
R: This one you dummy. (evidently pointing)
St: Which one?
R: That one you dummy. (evidently pointing again)
St: I thought that was always a shirt. Which one's
the shirt you mean? That one?
R: That one and that one. (This visual relating
of names to designs occurs quickly as E is finishing
noting St.'s responses on that trial.)
E: C'mon let's try again.

On the next trial the boys correctly matched all
designs, but missed two on the last trial. After the
last trial Robert called Stanley a "dummy" twice more.

It was only after six trials that the boys collaborated to reach agreement on names for the designs. Prior to that, the speaker (R) seemed to assume the listener (St.) knew to which design his names, like "shirt" and "shirt," referred. If he did assume the listener knew which design was being described, he could proceed on to the next block unaware of the listener's dilemma on the other side of the screen.

Similarly, the speaker in a NF pair of first grade boys was giving lengthy and seemingly vague descriptions of the designs. Intent on being correct, the listener asked numerous questions which seemed designed to clarify the design being described. He was obviously struggling with the speaker's descriptions. Added to his difficulties was the speaker's hurried and hurrying descriptions usually finishing with an insistent "Got it?" In the following brief example the listener's plight is evident. The speaker's name is Lon, and the listener's name is Rick.

From the Fourth Trial

L: It looks like a girl, a girl with legs and a dress on. (3-2-3) Got it?
R: A hm. What's a better way to explain it? Can you think. . . .
L: Yeah, it looks like half of a girl wearing a dress and legs.
R: Dress and Legs?
L: Another way? Got it?
R: A-hu ("No") Still can't figure it out.
L: Can't? It looks like. . . .
R: . . . a girl. . . .
L: . . . a girl with legs and a dress.
R: Oh yeah, except she has her head goin' this way.
L: Head goin' ----------------- .
R: Oh yeah, except she has her head goin' this way.
L: It looks like an airplane with a -------- a round
and square. It looks like a teensie-weensie air­
plane. You got it? (4-3-5)
R: I don't know. Boy this is hard.
L: I think this is easy. (emphasis mine--JPA)
R: A girl. The girl's the one I'm having trouble with.
This, this one that I've got my hands, this, this
is the right one.
L: Ok, it looks like big airplanes around a triangle.
You got it? (Still 4-3-5)
R: Yeah, I got that one, but I can't get the girl.

Not only did the speaker go too quickly so he and
the listener were working on different blocks, but on
this brief sequence he gave two different descriptions of
an "airplane" while Rick was working on the "girl." At
other times Lon gave similar or nearly the same descrip­
tions for two designs in succession. This pair showed no
improvement across eight trials, averaging four errors per
trial. The speaker's approach to the "game" failed to
consider his listener's role, and it could thus be labeled
"egocentric."

In seven NF pairs the task was performed in a most
perfunctory way. The speaker gave a description, the
listener stacked the block, said "Go ahead," or said
nothing. This pattern usually held through all trials.
Even after it was apparent that they were not doing well,
the listener did not ask questions and the speaker did not
elaborate upon the descriptions he continued to give. Also, unlike the F pairs who seemed more intent on getting the designs to match correctly and who were alert to post-trial feedbacks, these NF pairs did not benefit from post-trial cues such as the experimenter's showing them their stacks, her telling them how they were doing and encouraging different, more precise descriptions from the speaker, and cues like the questions by the listener about what the speaker was saying. Although it is difficult to assess, F pairs, particularly listeners, seemed to quickly notice disparities in names and designs when the post-trial information became available, and actively tried to remedy errors during the next trial. These relatively inactive NF pairs appeared simply to want to finish the requisite number of trials. Each member of the pair was almost a self-contained entity. It may be that going into a strange situation with a nonfriend and a stranger (the experimenter) produced some type of fear; a fear, or hesitate, preventing a loose, playful attitude toward the task. This hesitance or fear, together with the numerous errors made in the early trials may have rapidly led to the segmented, nonreciprocal approach of each member of the pair.

With the perfunctory pairs who performed poorly, "egocentric" may be less apt a term to apply to their behavior than it was in the other examples above. At
face value the speakers' descriptions were egocentric in that they were often brief, lacking sufficient detail for the listeners, and since the descriptions were not succeeding, they were repetitiously perseverative. Likewise, if the listeners sought no clarifications and just assumed their responses were "right," then they might have been performing "egocentrically;" especially so after several trials with the same errors being made on each trial. However, if some fear, some excessive uneasiness, was motivating the response styles of the speakers and the listeners, then they may have been reacting more to the situation than to their partners. The listeners may have been able to take the speakers' role, or vice-versa, but they may have been more interested in being done than letting the speakers know they were not performing their role adequately. Or, the speakers may have known the listeners needed more vivid descriptions but they too wanted to be away from an unpleasant situation.

The absence of a friend in the situation as a central factor contributing to a lack of mutuality looms important when the behaviors of most NF pairs are contrasted with those of most F pairs. As a group, when compared with the NF pairs, the F pairs seemed to interact more reciprocally, and persevered longer in trying to exchange fruitful information. The F pairs seemed more intent on doing the
task well, and did not seem negatively affected by the situation or the experimenter. It was as if having a friend there with them enabled each member to be more open and spontaneous, and more able to think about what the other needed to know, or about what the other was saying. Having an opportunity to play together, i.e., at the task, most of the F pairs seemed to make the communication task enjoyable for themselves.

Examples from the transcripts of two F pairs will be cited to, in part, substantiate the points made above on NF pairs. In the first pair, from the kindergarten class, note how active Toni, the listener, is. She almost forces Jimmy, the speaker, to recognize that she needs more information. It is as if they exchange roles at times. In the fifth trial note how the speaker's descriptions have been abbreviated so just the essential words cue Toni about the design. Also, in that trial, note how Toni delightfully tells Jimmy she has found the correct design.

Second Trial

Jimmy (J): This one has one with three triangles and a little triangle in the middle. (1-3-3)

Toni (T): A little triangle in the middle?

J: Yeah.

T: I think I got that one. Now do you have, is there three triangles on the outside?

J: Yes.

T: Alright I got you.

J: This is one with straight lines, and two points, and, and one --------- ------- -------. And, then a straight line --------- -------. (2-1-1)
T: Well, does it, does it look like a jacket?
J: A jacket. No.
T: A water fountain?
J: No.
T: A cup of something?
J: No.
T: Is there three, is there a little one and a big one inside of the things?
J: No.  Point... .
T: Is it something like a dragon's mouth or something?
J: No.
T: Is it like a - no. Is it, does it have something underneath of it attached to it?
J: Yes, a curve line. (pause) You got me yet. (my emphasis--JPA)
T: No. (long pause)
E: Describe it some more Jimmy.
J: ----- ----- ------- ------- -------
T: Um-hmm.
J: It looks like a flying saucer, with two. . . .
T: Alright I got you.
J: This one looks like lips. (3-5-5)
T: Lips?
T: Does it look like a dragon's lips?
J: No, looks like a mommy's dragon's lips.
T: Does it look like a big curve--like something?
J: There's two little curves, there's, there's. . . .
T: Is there something like a cup or something?
J: One curve, two curves, three curves, four curves, and five curves, with straight lines. . . .
T: Alright I think I got you.
J: Here's one like a bird. (4-4-4)
T: (says quickly) A bird, a bird, a bird.
J: And two arms. . . .
T: Two arms, now I've got you. Does it look like a jacket or something?
J: No.
T: Two arms like a pot?
J: It doesn't, it's not like a jacket. It has two arms like a jacket, like a pot, but the two arms are going down.
T: Alright.
J: (sniffs) And this one will be my last one after this one. This one looks like a bird. . . . (5-6-6)
T: A bird. (Says it as if repeating it to herself.)
J: A bird with a big triangle, with a big triangle, and a little triangle. . . .
T: Is there something . . . Is there a little triangle on top?
J: A lit... a big triangle on top, and a little triangle on the bottom. Got me?
T: Hmm? Alright, I think I got you now.
J: My next one looks like a Chinese hat. (6-2-2)
T: I got you now.
E: Oh boy, you did that one right too. Take a look at your piles. Did you match?
J: Yep.
E: Yep. Hey that's pretty good, twice in a row. Ok we're gonna try it again and see if you can do it again. You two are doing really good. (Both children can be heard in the background "Ooo-ing with glee.)
T: Oh great. . . .
J: Oooo. . . .

Trial 5

J: The first one is a triangle, and a little triangle and a big triangle and two curvey lines and a bird. (1-6-6)
T: Now wait, wait, wait. Is there a big triangle on the top?
J: Yes.
T: And a little triangle on the bottom?
J: Yes.
T: Two curvey lines like flapping wings?
J: Yes, like a bird.
T: I have got youuuuu! (T. obviously enjoys saying this. It is enjoyable to hear too.-JPA)
J: You got me. Like dragon lips. (2-5-5)
T: Dragon lips. I have got youuuu!
J: Like a flying saucer. (3-1-1)
T: A flying saucer. I have got youuuu!
J: Like a Chinese hat. (4-2-2)
T: I have got youuuuu! (The children are doing these very quickly.)
J: Two, I mean three triangles and triangle in the middle, a little one. (5-3-3)
T: I have got youuuuu!
J: Oh, my, my last one. A bird's body. (6-4-4)
T: I have got you.

In the second F pair, two first grade girls, the speaker evidently gave informative descriptions in the first trial, because each of the listener's selections was
correct. This pair had no errors throughout and used essentially the same descriptions on all eight trials. In the following excerpt, the seventh trial and some of the post-trial conversation are presented. Note the casual air of the post-trial conversation. The F pairs tended to verbally interact, exchange pleasantries more with each other and with the experimenter than did NF pairs. Teresa was the speaker and Margaret was the listener.

Seventh Trial

Teresa (T): It looks like the bottom of a thing with a top on.
Margaret (M): A what? (T's description was more careless than usual.)
T: Two little triangles put together. . . . (1-6-6)
M: Ok.
T: A ring. (2-2-2)
M: Ok.
T: A shoe with a hole in it. (3-5-5)
M: A shoe with a hole in it?
T: A hole, yeah.
M: Ok.
T: A pan with two long arms. (4-4-4)
T: A spaceship with a "F" on it. (5-1-1)
M: Ok.
T: A triangle with two ---------. (6-3-3)
M: Ok. Very good.
T: One more time. Yea!
E: One more time. There we go.
T and M: (both laugh--giggle)
T: ------ ------ a game.
E: Oh, we'll mix it (the blocks--JPA) up one more time.
T: Do you have another class to teach?
E: Do I? I have some more people from your class to bring in.
T: Who?
E: I don't know. Let's see. Dick and Kirk. Do you know Dick and Kirk?
M: (venomously) I hate Kirk.
E: Oh now, now.
T: (with much less conviction than M's previous comment) I don't like Kirk.
M: Well, he's my partner.
E: (trying to decrease M's negative affect) Careful sweetheart.
T: (excitedly to E) I know, I know, he has, he thinks he loves, he loves Mar..., Margaret. She doesn't love him.
E: Oh really?
M: I, I have a boyfriend in Illinois.
E: (impressed) In Illinois. What's he doing up in Illinois, huh?
M: (answers softly, is masked as at same time T. talks)
T: I have a boy friend that lives across, lives across from, by my teacher.
E: Oh?
(At this point the recording tape jammed. Thus the remainder of these revelations on early heterosexual role development was not transcribed.)

One other characteristic of the successful F pairs should be mentioned. For a number of the F pairs, after they had completed an errorless trial or two, one or both of the children requested that they be allowed to change sides. Listeners in particular were interested in giving the descriptions to their partner. Becoming more active, which included pulling blocks from the dispenser, and being more in command of the game may have made being the speaker more glamorous. This attitude, of wanting to change sides, could be construed as a request to take the "role of the other." Also, the listener had already been successful in concert with the speaker and simply may have wanted to see if he could be a capable speaker; i.e., to meet a new challenge.
From the above discussion of the findings and related issues it seems apparent that who the "other" is makes a difference in how well two children perform on the communication task. The affective bond between Friend pairs, aged 5-7 years, seemed to produce effects Piagetian theory on egocentrism would not have predicted: that F pairs below age 7 or 8 can reciprocally communicate in order to solve a basically perceptual-cognitive task. The difference between the results of the Krauss and Glucksberg studies and the present results lends support to the contention that friends are less egocentric with one another than are children who do not regard each other as a "friend."

In the present communicational context, one, or both, of the F pairs was (were) much more adept at taking into account the other's role and his needs in that role. Unlike the mostly perspective-role taking tasks of Flavell et al., where the "other" was usually a neutral, geographic other ("If X were seated there, what would he see?"), the F pairs and the NF pairs provided a definite other, in a definite role, to whom or with whom each child could relate. For the F pairs the other, the role he played, and being in the context together seemed to produce a highly motivated, pleasant social encounter in which each child seemed to want to give descriptions the other needed
to have so they could match stacks. The NF pairs, as a group, did not evidence these abilities to decenter from themselves nor the motivation to do so.

In conclusion, several directions research in the area of friendship and communication may take will be suggested.

Since little is known about early extra-familial friendships, a developmental-descriptive approach (See Flavell, 1963, pp. 422-425), with focus on recording behaviors between friends, would seem to be in order. As Flavell has noted, much of Piaget's incisive theorizing has come from observations he so meticulously recorded; i.e., by a developmental-descriptive approach. One particularly important time to utilize this approach is at the beginning of the first year of elementary school when the children begin forming patterns of interactions (patterns of communication) with their peers. And assiduously doing this type of data collecting at each age-grade level should reveal many subtleties in peer communication development.

Similarly, the method Hartup, Glazer, and Charlesworth (1967) employed to study peer reinforcement and sociometric status could be adapted to assess particular behaviors operating between two children who prefer one another's company. The contingencies of reinforcement
operating between two friends would seem to be as available for scrutiny as those operating among members of a class of peers. In addition to possible differences in numbers and patterns of reinforcement as children age, qualitative differences in interpersonal communication would probably emerge from the observation-cataloging of reinforcements technique Hartup et al. have used.

In the present study, while friendship and communication effectiveness were operationally defined, "egocentrism" was not. Inferences were made about egocentric behavior of pair members from the communication task data. Using either Flavell et al. (1967) perspective tasks or the Piagetian egocentrism tasks (e.g., the irregularly shaped model mountain as seen from various vantage points), children at each age (4-7) could be assigned a relative egocentrism status, say "egocentric," or "not egocentric." Then pairs of each group could be assigned to do the Krauss-Glucksberg communication task. The prediction would be that the "not egocentric" children would complete the communication task more successfully than the "egocentric" pairs regardless of age. Also, if a large sample of children is available, a "Friend and Nonfriend" condition could be added to the research design. Among other results, it may be found that "NF-not egocentric" pairs would communicate more effectively
than "F-egocentric" pairs.

The Krauss-Glucksberg communication task might have to undergo some changes to make it more adequate to assess the extent to which children mutually work to solve a problem. In its present form, even though (1) the listener is told he can ask the speaker any questions he wants, and (2) the children's verbal behavior is not restricted, the speaker's role is more active than the listener's. The former has the dispenser, and, as directed in the "instructions" must initiate descriptions, while the latter's role is simply to find the block the speaker is describing. A task in which each child had one part of a two part puzzle (of geometric shapes or unusual designs) would seem to necessitate more mutuality between the children in order to solve the problem. Each child could have a dispenser and they could alternate initiating a description of their part of the puzzle. An arrangement like this might enable the researcher to more fully note each child's communicative abilities than is the case with the task in its present form.

As noted earlier in this chapter Friend pairs appeared to be more highly motivated to do well than Nonfriends. Future research employing the communication task with Friend and Nonfriend pairs could attempt to manipulate motivational factors. A design pairing Friends
or Nonfriends with one of three reward conditions, that is, high, low, and no reward, might suffice. Rather than using verbal praise as a "reward," as was done in this study, material rewards could be dispensed differentially depending on which condition the pairs were in.

To assess whether or not Friend pairs tend to expend more energy than Nonfriend pairs in a testing situation, a relatively simple motor task, on which both children would contribute to a final total, could be used. Friend and Nonfriend pairs would be assigned to one of three incentive conditions: high reward, low reward, and no reward.
SUMMARY

The present study was designed to assess whether two young children between the ages of 3 and 7, who chose one another as "friends" could perform a communication task more effectively than two children who did not choose one another as Friends. Previous research in related areas has suggested no clear prediction as to which pairs would perform more effectively: some studies indicate that young friends can communicate meaningfully and with mutuality in some situations, while other studies suggest that communication of this sort is not possible for young children. Piagetian theory would appear to be consistent with the latter findings.

Three main hypotheses were tested:

(1) Friend pairs would perform the communication task significantly better than Nonfriend pairs;

(2) There would be significant differences between grade levels with the older children doing better than the younger children;

(3) There would be no sex differences among the pairs.

From the results of a sociometric questionnaire administered twice with a two week interval between
administrations, the children in two nursery school classes, and in kindergarten, first-, and second-grade classes were paired into two groups: a Friend group in which each child had selected the other child as a "Friend;" and a Nonfriend group in which each child had not selected the other on either sociometric.

On the communication task, two children were visually separated by an opaque screen. One child, the "speaker" was instructed to pull six blocks, one-by-one, from a dispenser and tell the "listener" what he was seeing on each block. Each block had a different unusual design on it. From the six blocks randomly arranged before him, the listener had to select a block with the design the speaker was describing. After the listener had selected a block, he and the speaker placed the block, which had a hole drilled through the center, on a wooden stick. When all six blocks were stacked, the stacks were compared. There were eight trials per pair. Effective communication was measured by the number of blocks the two children matched per trial.

Since most of the nursery school pairs did not complete eight trials, they were not included in the statistical analyses. For the elementary school children, Friend pairs performed significantly better, that is, had more correctly matched designs on the communication task,
than did the Nonfriend pairs. There were no significant differences between grades, and no significant sex differences among the pairs.

Further analyses showed that Friend listeners responded and interacted with the speakers significantly more often than did Nonfriend listeners. Nonfriend listeners tended not to respond at all after the speaker had described the designs.

From subjective impressions it seemed that Friend pairs enjoyed each other's company in the task situation and were more highly motivated to do well than Nonfriend pairs. Nonfriend pairs seemed simply to want to complete the trials, and generally performed perfunctorily. Attempting to control for motivational differences between Friend and Nonfriend pairs, and adding each child's level of cognitive egocentrism as an additional variable to the present design were among the suggestions for future research involving the communication task and friendship status.
APPENDIX A

Sample 1

Name__________________________
Grade__________________________
Date of Birth____________________
Teacher________________________

Please circle the names of the people in your classroom who you regard as your three (3) best friends. Circle the one you like best, first, and put a big number 1 under that name. Circle the one you like second best, second, and put a big number 2 under that name. And, circle the one you like third best, third, and put a big number 3 under that name.

<table>
<thead>
<tr>
<th>Jennifer Klitch</th>
<th>Mike Williams</th>
<th>Jody Jackson</th>
<th>Brent Whitney</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kent Hickman</td>
<td>Bev Carter</td>
<td>Tina Gomer</td>
<td>Paul Johns</td>
</tr>
<tr>
<td>Susan Boyer</td>
<td>Adam Burkley</td>
<td>Richard Neal</td>
<td>Judy Newberg</td>
</tr>
<tr>
<td>Denny Morgan</td>
<td>Susan Beverly</td>
<td>Mary Lynne Vincent</td>
<td>Andy Carroll</td>
</tr>
<tr>
<td>Erin Doll</td>
<td>Jim Nelson</td>
<td>Cynthia Nixon</td>
<td>Erik Bright</td>
</tr>
</tbody>
</table>

73
Please circle the names of the people in your classroom who you regard as your three (3) best friends. Circle the one you like best, first, and put a big number 1 under that name. Circle the one you like second best, second, and put a big number 2 under that name. And, circle the one you like third best, third, and put a big number 3 under that name. The people you list this time may or may not be those you listed before.

<table>
<thead>
<tr>
<th>Jennifer Klitch</th>
<th>Mike Williams</th>
<th>Jody Jackson</th>
<th>Brent Whitney</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kent Hickman</td>
<td>Bev Carter</td>
<td>Tina Gomer</td>
<td>Paul Johns</td>
</tr>
<tr>
<td>Susan Boyer</td>
<td>Adam Burkley</td>
<td>Richard Neal</td>
<td>Judy Newberg</td>
</tr>
<tr>
<td>Denny Morgan</td>
<td>Susan Beverly</td>
<td>Mary Lynne Vincent</td>
<td>Andy Carroll</td>
</tr>
<tr>
<td>Erin Doll</td>
<td>Jim Nelson</td>
<td>Cynthia Nixon</td>
<td>Erik Bright</td>
</tr>
</tbody>
</table>
APPENDIX B

Sample 1
Name__________________________
Grade________________________
Date of Birth___________________
Teacher_______________________

Please write below the names of the people who you regard as your three best friends in your classroom. List the one you like best, first; the second best, second; and the third best, third.

_________________________________
_________________________________
_________________________________

Thank you.

Sample 2
Name__________________________
Grade________________________

Please write below the names of the people who you regard as your three best friends in your classroom. List the one you like best, first; the second best, second; and the third best, third. The people you list this time may or may not be those you listed before.

_________________________________
_________________________________
_________________________________

Thank you.
Results on the Sociometric Test

Although no hypotheses were to be tested, the results will be included, and will provide some comparisons with earlier studies (e.g., the Horrocks and associates' studies on friendship fluctuation) using a similar approach.

The measure of friendship fluctuation for each child, and then for each group of children, was found by the same method first devised by Horrocks and Thompson (1946). See any of the Horrocks and associates studies for an account of their method of finding the index of fluctuation scores (see also Thompson and Horrocks, 1947; Skorepa, Horrocks, and Thompson, 1963; and Horrocks and Buker, 1951).

Before presenting the sociometric comparisons it should be noted that the nursery school children's mean fluctuation scores will not be compared with the elementary school children due to the small sample size.
The indices shown in Table 6 indicate the stabilization in friendship selections as the children age. Excepting a moderate mean increase in fluctuation at age 10, the mean fluctuation scores have a progressive decrease from age 5 on.

**TABLE 6**

**INDICES OF FRIENDSHIP FLUCTUATION SCORES BY AGE**

<table>
<thead>
<tr>
<th>Chronological Age</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
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<tr>
<td>3</td>
<td>12</td>
<td>4.50</td>
<td>2.598</td>
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<tr>
<td>4</td>
<td>14</td>
<td>4.14</td>
<td>2.952</td>
</tr>
<tr>
<td>5</td>
<td>53</td>
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<tr>
<td>6</td>
<td>55</td>
<td>5.545</td>
<td>2.463</td>
</tr>
<tr>
<td>7</td>
<td>54</td>
<td>5.111</td>
<td>2.794</td>
</tr>
<tr>
<td>8</td>
<td>55</td>
<td>4.636</td>
<td>2.169</td>
</tr>
<tr>
<td>9</td>
<td>56</td>
<td>3.035</td>
<td>2.699</td>
</tr>
<tr>
<td>10</td>
<td>62</td>
<td>3.548</td>
<td>2.322</td>
</tr>
<tr>
<td>11</td>
<td>44</td>
<td>2.886</td>
<td>2.309</td>
</tr>
</tbody>
</table>

The progressive decreases are quite evident also from the comparisons between the means between age levels. As seen in Table 7, the only comparisons in which there was not a significant difference between the following age groups: 6 and 7, 7 and 8, 9 and 10, 9 and 11, and 10 and 11. This indicates two things: the tendency for the upper age levels (9, 10, 11) to stabilize in fluctuation i.e., not to fluctuate as much, and, or the six comparisons between adjoining age groups, four were not
### TABLE 7

**t-TEST COMPARISONS BETWEEN AGE GROUPS ON THE INDICES OF FRIENDSHIP FLUCTUATION SCORES**

<table>
<thead>
<tr>
<th>Chronological Age</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3.226&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(107)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>3.842&lt;sup&gt;d&lt;/sup&gt;</td>
<td>.854</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(106)</td>
<td>(108)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>5.384&lt;sup&gt;d&lt;/sup&gt;</td>
<td>2.051&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.983</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(107)</td>
<td>(109)</td>
<td>(108)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>8.043&lt;sup&gt;d&lt;/sup&gt;</td>
<td>5.080&lt;sup&gt;d&lt;/sup&gt;</td>
<td>3.924&lt;sup&gt;d&lt;/sup&gt;</td>
<td>3.413&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(108)</td>
<td>(110)</td>
<td>(109)</td>
<td>(110)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>7.733&lt;sup&gt;d&lt;/sup&gt;</td>
<td>4.467&lt;sup&gt;d&lt;/sup&gt;</td>
<td>3.242&lt;sup&gt;d&lt;/sup&gt;</td>
<td>2.602&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.091</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(114)</td>
<td>(116)</td>
<td>(115)</td>
<td>(116)</td>
<td>(117)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>8.487&lt;sup&gt;d&lt;/sup&gt;</td>
<td>5.482&lt;sup&gt;d&lt;/sup&gt;</td>
<td>4.278&lt;sup&gt;d&lt;/sup&gt;</td>
<td>3.812&lt;sup&gt;d&lt;/sup&gt;</td>
<td>.294</td>
<td>1.439</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(96)</td>
<td>(98)</td>
<td>(97)</td>
<td>(98)</td>
<td>(99)</td>
<td>(105)</td>
<td></td>
</tr>
</tbody>
</table>

**a<p> < .01**

**b<p> < .02**

**c<p> < .05**

**d<p> < .002**
significant, which suggests the subtleness in the trend toward less fluctuation in friendship choices.

Comparisons between boys and girls at each age level reveal no acceptable levels of significant differences between their fluctuation scores. Table 8 shows the boys-girls comparison figures.

TABLE 8

SEX DIFFERENCES IN INDICES OF FRIENDSHIP FLUCTUATION

<table>
<thead>
<tr>
<th>Chronological Age</th>
<th>Girls N</th>
<th>Mean</th>
<th>SD</th>
<th>Boys N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>27</td>
<td>6.814</td>
<td>2.778</td>
<td>26</td>
<td>7.423</td>
<td>2.256</td>
<td>.861</td>
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<tr>
<td>6</td>
<td>25</td>
<td>4.920</td>
<td>2.413</td>
<td>30</td>
<td>6.066</td>
<td>2.338</td>
<td>1.741a</td>
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<tr>
<td>7</td>
<td>25</td>
<td>5.640</td>
<td>2.560</td>
<td>29</td>
<td>4.655</td>
<td>2.904</td>
<td>1.301a</td>
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<tr>
<td>8</td>
<td>32</td>
<td>4.156</td>
<td>1.856</td>
<td>23</td>
<td>5.304</td>
<td>2.836</td>
<td>1.888a</td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td>2.966</td>
<td>2.303</td>
<td>26</td>
<td>3.115</td>
<td>3.092</td>
<td>.198</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
<td>3.966</td>
<td>2.138</td>
<td>32</td>
<td>3.125</td>
<td>2.458</td>
<td>1.418</td>
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<tr>
<td>11</td>
<td>19</td>
<td>2.315</td>
<td>1.719</td>
<td>25</td>
<td>3.320</td>
<td>2.588</td>
<td>1.529</td>
</tr>
</tbody>
</table>

ap < .1

Other Sociometric Results

Sociograms were made for each classroom of children. In the sociograms there was an interesting trend: after the second grade there were noticeably fewer cross-sex choices than there were at the second grade and before. Table 9 shows the number of girls selected by boys, and boys selected by girls across all age-grade levels in which the sociometric questionnaires were administered.
<table>
<thead>
<tr>
<th>Grade</th>
<th>Sociometric Administration</th>
<th>Girls by Boys</th>
<th>Boys by Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>N3</td>
<td>1</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>N3</td>
<td>2</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>N4</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>N4</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>K</td>
<td>1</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>K</td>
<td>2</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>K</td>
<td>1</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>K</td>
<td>2</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
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<td>5</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
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<tr>
<td>3</td>
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<td>1</td>
<td>2</td>
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<tr>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
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<tr>
<td>4</td>
<td>2</td>
<td>0</td>
<td>0</td>
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<tr>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>4</td>
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<td>2</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
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<tr>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
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<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
Comparisons between the mean number of cross-sex choices per grade of the second grade and before grouping (Mean = 1.750) indicate a highly significant difference (p < .001).

A comparison also was done between the mean number of cross-sex choices made by girls (Mean = 4.555) and by boys (Mean = 8.111) in the second grade and before grouping. The boys more often chose girls than vice-versa, and the difference was highly significant (p < .001).

Examples of a high cross-sex choices' class, a first grade-first sociometric administration, and a low cross-sex choices' class, a fourth grade-first sociometric, and be compared from Figures 8 and 9.

Discussion of Sociometric Findings

The results from the sociometric questionnaires support earlier findings by Horrocks and his associates (Horrocks and Thompson, 1946; Thompson and Horrocks, 1947; and Horrocks and Bunker, 1951): as children age, their choices for friends tend to fluctuate less. A comprehensive discussion of friendship fluctuation from about age five years through the adolescent years can be found in Horrocks' (1969) account of "friendship."

In addition to confirming earlier findings on decreasing mean fluctuation scores as children age, the finding that there is a significant drop in cross-sex
APPENDIX D

FIGURE 8--SOCIOPHARM II

For a First Grade Class on the First Sociometric
For a Fourth Grade Class on the First Sociometric

Girls chosen by boys=0
Boys chosen by girls=0
sociometric friend choices after the second grade, or around age 7 or 8, was intriguing. Beginning at the third grade boys no longer chose girls, and girls no longer chose boys.

The majority of the sociometric choices in the two nursery school classes, kindergarten, first, and second grade were same-sex ones. Even in nursery school situations, boys and girls as young as three tend to engage in activities which are "male appropriate," like building things with blocks, or playing with toy trains and toy autos, and "female appropriate," like playing with dolls, or playing "house." (See Kagan, 1964; and Mischel, 1970 for reviews of research and theory on sex-role development.) So, that boys choose boys, and girls choose girls is not surprising. But how is it that suddenly, in the present sample anyway, the moderate number of cross-sex choices made at each age-grade level no longer occurred after the second grade?

In his "conclusion" to his review of sex typing and sex role identity, Kagan (1964) suggests a general answer to the question above when he says:

The child as young as four has dichotomized the world into male and female people and is concerned with boy-girl differences. By the time he is seven he is intensely committed to molding his behavior in concordance with cultural standards appropriate to his biological sex and he shows uneasiness, anxiety, and even anger when he is in danger of behaving in
ways regarded as characteristic of the opposite sex. The appellation of 'sissy' to a boy or 'tomboy' to a girl usually has a strong negative charge. We have argued that the desire to behave in accordance with sex role standards extends far beyond an interest in sports for boys and cooking for girls. (p. 162, italics mine—JPA)

How Kagan arrived at the age of "seven" is not clear from his review, but that age is close to the age in the present study, i.e., about 8 to 8 1/2 when the schism between the sexes, as noted by the absence of cross-sex choices, first occurs. The age (?) Kagan cites and the age of the "schism" are the approximate ages Piaget posits as the beginning of the "concrete operations" period which includes, as was noted in the theory section on Piaget, a noticeable decline in egocentrism, both intellectually and socially. Piaget's discussions of the decline in egocentric behavior (e.g., 1927 and 1932) were primarily concerned with same-sex games, like marbles, and with the ability of the child to incorporate more factors into a situation, and to more fully conceptualize about the relative merits of these factors, as in noting the importance of various rules in games, or as in taking into account another person's opinions or ideas of "justice."

It is possible that this increased ability to decenter also contributes to the clannishness of children, particularly the boys, at about age 8. That is, perhaps
the children become more aware of the crucial factors in one's sex role; they are more able to intellectually incorporate some key elements into their view of themselves which they could not do before. One prominent example would be the ability of boys at about age 8 to begin to understand the various rules and necessary physical motions necessary for sports. Using Mead's words, they begin "to take the roles of others." Using Piaget's words, "they begin to be able to take the viewpoint of others."

The example of organized sports, like baseball or football, as an example both of how a child may evidence decentering abilities, and of how male clannishness may be fostered, is far from a trifling one. Recall that prior to age 8, or to the third grade, boys selected girls significantly more than girls selected boys. So the boys' decrease in cross-sex choices at a grade three was much more marked than the girls' decrease. Using the sports' example let's speculate further about events occurring around this time period for boys' events which do not seem to have a comparable counterpart for girls.

Coupled with their ability to begin to know rules and to understand various aspects of sports, male children are subjected to strong cultural emphases on sports. The sports with these emphases of course are male-oriented, and have a long list of male heroes. From these national
heroes, and from local sports' heroes and sports' teams, from older male children, perhaps adolescents in the neighborhood, and from their fathers, boys thus have many sources from which they can become interested and actually experienced. That organized little leagues for boys occur at around age 8 is no accident. These athletic domains almost completely exclude girls. What had been a continuous, and often subtle, process of inculcating maleness, suddenly becomes a strong, frontal appeal for boys to be boys ("men?")", and for them to prove it through being on a team and competing.

Another related and more direct influence on male children undoubtedly occurs at home. With the onset of organized athletics and the ability and desire of the children to play, many fathers, perhaps for the first time, become consistently interested in their boys' activities and actively engaged in sports with their boys. From their fathers' hearty interest in sports, as spectators and possibly as participants, the boys can easily realize the importance attached to sports. Coupled with the cultural pronouncements, and the actual appeal of physically competing and achieving, the fathers' interest in their children surely must be highly potent in influencing boys. Given these circumstances, and given that prior to this time mothers and "femaleness" may have been dominant,
the opportunity to do something undeniably masculine with everyone's approval, usually including the mothers', points to a major shift in boys' attitudes about their "selves."

Lynn's (1966) theoretical discussion on "the process of learning parental and sex-role identification" lends credence to the above speculations. In Lynn's framework for males, lacking a close, male model is important. This is indicated in the following selection of hypotheses Lynn makes:

2) both males and females identify more closely with the mother than with the father. . . .
3) males tend to have greater difficulty in achieving same-sex identification than females.
7) males are more anxious regarding sex-role identification than females. . . . males tend to hold stronger feelings of hostility toward females than females toward males. (pp. 467-469. Lynn discusses each of the points he makes.)

The last mentioned hypothesis on male hostility follows from Lynn's prior comments. He says:

It is postulated that punishment often leads to dislike of the activity that led to punishment. Since it is 'girl-like' activities that provoked the punishment administered in an effort to induce sex-typical behavior in boys, then, in developing dislike for the activity which led to such punishment, boys should develop hostility toward 'girl-like' activities. Also, boys should be expected to generalize and consequently develop hostility toward all females as representatives of this disliked role. There is not thought to be as much pressure on girls as on boys to avoid opposite-sex activities. It is assumed that girls are punished neither so early nor so severely for adopting masculine sex-role behavior. (p. 469)
If Lynn is basically correct, it is small wonder that boys so readily engage in sports; the sports being all-masculine with the possibility for concomitant strengthening of the father-son identificatory process. The process is probably mutually reinforcing in that each reinforces the other in these activities at various levels of involvement: manifest levels as when the father encourages his son by enthusiastically playing catch with him, and the son encouraging the father in his expressions of enjoyment and keen interest as they toss the ball back and forth; and at more intrapsychic "self" levels as when playing catch also validates (reinforces) the father's concept of being a "father" to his son, and validates the son's as being a "man," or a masculine person.

The importance of sports for a boy at age 8 or so here is believed to be of paramount significance in the formation of sex-role behavior. The cross-sex results from the sociometric questionnaire are by no means conclusive, but they indicate the significance of that age, age 8 or so, as Piaget has done in various developmental domains before, and indicate a "rift" in cross-sex behavior.

If the above formulations are correct, it would seem probable that it is the boys who "turn off" the girls with their chauvinistic behavior. That is, the boys first discover a completely male province like athletics,
then proceed in various ways, some not so friendly, to inform the girls of "their" area of endeavor. They may become clannish, reject cross-sex behavior, and, in the process, extinguish the girls from engaging in any cross-sex behavior, including choosing a boy as a friend. Also, increased clannishness for various reasons on the girls' part may in part account for the schism. The familiar call for more supportive and other data is again apt to help unravel the issues raised by the sociometric findings on cross-sex choices.
REFERENCES


