1972

Sharing behavior in middle childhood

Sedahlia Jasper Crase

Iowa State University

Follow this and additional works at: https://lib.dr.iastate.edu/rtd

Part of the Psychology Commons

Recommended Citation

https://lib.dr.iastate.edu/rtd/4726

This Dissertation is brought to you for free and open access by the Iowa State University Capstones, Theses and Dissertations at Iowa State University Digital Repository. It has been accepted for inclusion in Retrospective Theses and Dissertations by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
INFORMATION TO USERS

This dissertation was produced from a microfilm copy of the original document. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the original submitted.

The following explanation of techniques is provided to help you understand markings or patterns which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting thru an image and duplicating adjacent pages to insure you complete continuity.

2. When an image on the film is obliterated with a large round black mark, it is an indication that the photographer suspected that the copy may have moved during exposure and thus cause a blurred image. You will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., was part of the material being photographed the photographer followed a definite method in "sectioning" the material. It is customary to begin photoing at the upper left hand corner of a large sheet and to continue photoing from left to right in equal sections with a small overlap. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. The majority of users indicate that the textual content is of greatest value, however, a somewhat higher quality reproduction could be made from "photographs" if essential to the understanding of the dissertation. Silver prints of "photographs" may be ordered at additional charge by writing the Order Department, giving the catalog number, title, author and specific pages you wish reproduced.

University Microfilms
300 North Zeeb Road
Ann Arbor, Michigan 48106
A Xerox Education Company
Sharing behavior in middle childhood

by

Sedahlia Jasper Crase

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
DOCTOR OF PHILOSOPHY

Major: Child Development

Approved:

Signature was redacted for privacy.

In Charge of Major Work

Signature was redacted for privacy.

For the Major Department

Signature was redacted for privacy.

For the Graduate College

Iowa State University
Ames, Iowa

1972
PLEASE NOTE:

Some pages may have indistinct print.
Filmed as received.

University Microfilms, A Xerox Education Company
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Significance of the Problem</td>
<td>1</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>4</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>11</td>
</tr>
<tr>
<td>REVIEW OF LITERATURE</td>
<td>14</td>
</tr>
<tr>
<td>Sharing Behavior in Children</td>
<td>14</td>
</tr>
<tr>
<td>Age and Sex Effects on Peer Relations in Middle Childhood</td>
<td>30</td>
</tr>
<tr>
<td>METHODOLOGY</td>
<td>40</td>
</tr>
<tr>
<td>Subjects</td>
<td>40</td>
</tr>
<tr>
<td>Sharing Tasks</td>
<td>42</td>
</tr>
<tr>
<td>Pilot Study</td>
<td>46</td>
</tr>
<tr>
<td>Training of Scorekeepers</td>
<td>47</td>
</tr>
<tr>
<td>Experimental Design</td>
<td>49</td>
</tr>
<tr>
<td>Data Collection</td>
<td>49</td>
</tr>
<tr>
<td>Description of Statistical Analysis</td>
<td>52</td>
</tr>
<tr>
<td>RESULTS</td>
<td>54</td>
</tr>
<tr>
<td>Major Findings</td>
<td>54</td>
</tr>
<tr>
<td>Ancillary Findings</td>
<td>56</td>
</tr>
<tr>
<td>Summary of Findings</td>
<td>58</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>60</td>
</tr>
<tr>
<td>Age</td>
<td>60</td>
</tr>
<tr>
<td>Sex of Sharer</td>
<td>60</td>
</tr>
<tr>
<td>Sex of Sharee</td>
<td>63</td>
</tr>
<tr>
<td>Sharing Tasks</td>
<td>64</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Typology of Sharing Behavior</td>
<td>66</td>
</tr>
<tr>
<td>Implications of the Investigation</td>
<td>67</td>
</tr>
<tr>
<td>Implications for Society</td>
<td>68</td>
</tr>
<tr>
<td>Implications for Future Research</td>
<td>69</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>73</td>
</tr>
<tr>
<td>LITERATURE CITED</td>
<td>75</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>80</td>
</tr>
<tr>
<td>APPENDIX A. LETTER TO PARENTS</td>
<td>81</td>
</tr>
<tr>
<td>APPENDIX B. SCORE SHEETS FOR SHARING TASKS</td>
<td>84</td>
</tr>
<tr>
<td>APPENDIX C. TRAINING MANUAL FOR SCOREKEEPERS OF SHARING BEHAVIOR</td>
<td>87</td>
</tr>
<tr>
<td>APPENDIX D. SOURCE OF VARIATION AND F-VALUES FOR ANALYSES OF VARIANCE</td>
<td>94</td>
</tr>
</tbody>
</table>
INTRODUCTION

Significance of the Problem

In a society where written history is dominated by wars, where budgets of nations show predominate spending for "defense," where crime is on the increase, there is found in the literature on human development an increasing concern with aggression, stress, anxiety, and fear. Because so many social influences experienced by people appear negative, negative behavior has been studied, often at the expense of knowing little about the development of positive behavior.

Concurrent with the trends toward studying negative behaviors reported in the scientific literature, a confusing picture emerges of children's life experiences involving parents, teachers, and other adults. Adults give verbal heed to positive aspects of behavior. Children are vocally encouraged by adults to share, to help others, to be concerned about the state of affairs of the other. Recently a Sunday school teacher of preschoolers described the teachings of the Sunday school: "We try to teach them to share, and that sort of thing," she said. In contrast, the actions adults model for children often may not serve to reinforce the verbal teachings. Why the inconsistency between actions and teaching? Hoffman (1970) describes the situation well:

In contrast to the voluminous research on moral prohibitions, very little has been done on the development of altruism and consideration for others. This disinterest is perhaps a reflection of certain value orientations in Western society. Though the ethical norms of our traditional religions stress the importance of altruism and consideration, the striving individualism of the culture places obstacles in the way of such behavior (Hoffman, 1970, p. 319).
The concern with negative behavior is similarly reflected in news media, conversation, and fiction. There is a very low interest in reports on positive behaviors. And yet some persons (e.g., Doland & Adelberg, 1967; Fischer, 1963; Harris, 1970; Hoffman, 1970; Presbie & Coiteux, 1971; Staub & Sherk, 1970) are aware that the more positive aspects of human behavior need to be understood. It cannot be assumed that negative and positive behaviors are dichotomous.

Greater understanding of the characteristics of altruism and its development is needed. One interesting aspect of altruism is sharing behavior. As a subset of a rather neglected area, sharing is essentially ignored in research. In the subject index to Carmichael's Manual of Child Psychology (Mussen, 1970), no reference is made to "sharing" while "altruism" is indexed with five page references. One of the indexed pages represents a 6-page section on the subject. The Handbook of Socialization Theory and Research (Goslin, 1969) includes the word "altruism" in its subject index, followed by one reference to a 4-page section on the topic. "Sharing" is not indexed but is discussed within the four pages given for "altruism."

Of those sharing studies cited in the literature, most could be classified as dealing with the learning of sharing through models (Harris, 1970; Rosenhan & White, 1967), rehearsal (Rosenhan & White, 1967), and reinforcement (Doland & Adelberg, 1967; Fischer, 1963; Harris, 1970; Midlarsky & Bryan, 1967); sharing as reciprocity (Harris, 1970; Staub & Sherk, 1970); the effects of dependency relationships on sharing (Berkowitz & Daniels, 1963, 1964; Berkowitz, Klanderman, & Harris, 1964; Daniels & Berkowitz, 1963); and the relationship of sharing to need for approval
(Staub & Sherk, 1970), socio-economic status (Ugurel-Semin, 1952; Wasik, Senn, & Epanchin, 1969), and age, sex, and family size (Handlon & Gross, 1959; Ugurel-Semin, 1952). Thus it appears that there is a need for more research on the topic of sharing.

While children may be taught in home, church, and school to share, to what extent is the attribute of sharing assimilated? What effect, if any, does age have on sharing behavior? Is the ability to share altered by later teachings? What effect does indirect teaching have on the sharing behaviors learned from direct teaching?

Research has revealed that although children tend to play with either sex during the preschool years, by middle childhood they associate primarily with children of the same sex (Hartley, 1959). Perhaps the increasing social distance between the sexes from 7 to 11 years of age has some effect on the amount and type of sharing behavior. Although Handlon and Gross (1959) and Ugurel-Semin (1952) studied both the effects of age and of sex of the child on his sharing behavior, neither was concerned with the ways these variables interacted to affect sharing behavior nor the ways age and sex of the recipient of shared materials affected a child's sharing behavior.

In addition, the studies to date have investigated sharing behavior under conditions involving only one sharing situation or task. Because of this limitation, it is difficult to judge whether or not the findings were specific to the task used or were generalized sharing behaviors. In a study of sex-role behavior, Garrett (1971) found that the task used to stimulate the behavior contributed to much of the variance of the study.
Thus, the task used to provoke sharing or non-sharing behaviors may affect the degree of sharing present.

Theoretical Framework

In the theories of Western psychology, altruism is given brief attention. Psychoanalytic theorists, represented by Freud (1936), have viewed altruistic behaviors as the suppression and transformation of self-oriented motives and primitive impulses. The moral code of society is obeyed out of fear of the conscience. To do something contrary to the moral code of the society produces feelings of guilt in the person with a well-developed superego. Anna Freud (1937) said altruism arises from deprivation and inhibition, from reaction formation to aggression, or from the expiative dynamics of guilt.

The psychoanalytic approach is paralleled by the behavioristic approach which assumes that motives such as altruism are the result of basic biological drives (Baldwin, 1967). Because of its strong emphasis on egocentric tension, need reduction, or drive reduction, the behavioristic approach is limited as a basis for conceptualizing phenomena directed toward reducing the needs of others.

In addition to the psychoanalytic and behavioristic theories which are rather global and concerned with altruism and sharing behavior only incidentally, there are other theories or explanations of sharing behavior. One group of explanations of sharing is based on the concept of a norm or standard of behavior which theorists believe operates in society. These norms include: (1) the social responsibility norm (Berkowitz & Daniels, 1963, 1964), a standard which prescribes that one share with those who are
dependent upon him; (2) the norm of reciprocity (Gouldner, 1960), which sets down that repayments be made for benefits received; and (3) the norm of giving (Leeds, 1963) which prescribes that a person should give for no anticipated return.

Another explanation of sharing behavior, based on social learning theory and closely related to the social responsibility norm, is offered by Harris (1970) and Fischer (1963). According to Harris (1970), reward and punishment patterns are important in the learning of sharing behavior. Observation of sharing models will increase sharing behavior in the child through self-administered reinforcement and by making him more aware of the norms of social responsibility and/or reciprocity. Fischer's theory (Fischer, 1963) is closely allied, involving the difference between the reinforcement value of sharing and the reinforcement value of the object to be shared.

Approaches to explanation of sharing behavior offered by Hoffman (1970) and Staub and Sherk (1970) are related but are difficult to categorize. While Hoffman (1970) relates sharing standards to internalization of moral prohibitions, he also sees the sharing act as involving a conflict between personal desires and obligation to others. Staub and Sherk (1970) concur.

According to the theory involving the social responsibility norm (Berkowitz & Daniels, 1963, 1964), a person seeks to help other people because he perceives the others as dependent upon him. Upon perceiving a dependency relationship, feelings of responsibility are aroused, resulting in a heightened incitement to aid the dependent persons in achieving their goals. In addition, however, the individual's motivation to support the
social responsibility norm may vary with situational factors. For example, without some benefits in return, the individual may be less willing to help those dependent upon him if much effort is involved. A person will have less inclination to persist in helping dependent persons if he holds negative attitudes toward the dependent persons (Daniels & Berkowitz, 1963).

Another aspect of the social responsibility norm is concerned with the effects of past help on the response to the dependency relationship. Berkowitz and Daniels (1964) propose that persons will show greater conformity to the responsibility norm after having been helped by someone else. Further investigation (Goranson & Berkowitz, 1966; Berkowitz et al., 1964) substantiates the proposal. Simply stated, this theoretical point of view hypothesizes that a person is aware of a social responsibility norm and, on occasions, is motivated to conform to it "for the symbolic pat on the back that he will give himself for having behaved in a socially desirable manner" (Berkowitz et al., 1964, p. 328).

Altruistic research is related to both helping and sharing. Gouldner (1960) suggests that a norm of reciprocity exists in all or most societies. This norm or standard prescribe that one is obliged to help those who have helped him and to avoid hurting them. Processes of exchange are governed by this moral norm of reciprocity which states that a return must be given for any benefits received. This approach proposes, then, that altruism ultimately rests on reciprocity.

Leeds (1963) agrees with Gouldner (1960) that the moral norm of reciprocity governs processes of exchange but suggests that the norm is not totally ubiquitous, since some persons such as the very young, the very old, and the sick cannot reciprocate. Pointing to the fact that these
individuals are given care and attention, Leeds (1963) hypothesizes that another norm "the moral norm of giving" (p. 229) is operating. According to this norm, a person "should want to give not because of any anticipated returns, but for its own value" (p. 229). As an example of the norm of giving, Leeds cites the family situation where children are taught to share toys with others.

Leeds (1963) proposes three criteria for judging whether or not an action complies with the norm of giving. An action which meets these criteria also is called an altruistic act. The three criteria are:

1. The person who engages in giving, treats it as an end in itself. He anticipates no other satisfaction or gain than the pleasure of contributing to the welfare of others.
2. The person gives voluntarily. He is acting beyond the call of duty and not fulfilling stipulated role obligations.
3. On balance, the person "is doing good" as judged by the recipient and spectators to the action (Leeds, 1963, pp. 230-231).

Thus the norm of giving can only manifest itself in areas of human experiences where other norms and role obligations do not exist, where institutions cannot mobilize patterns of action with ease, but yet where a person is in need of help.

Harris (1970) classifies sharing behavior as an example of altruistic behavior but notes that not all sharing is altruistic (e.g., when a gift is given to one's boss in anticipation of a promotion). She considers sharing to be a behavior pattern "acquired under conditions in which external reward or threat of punishment is offered contingent upon the execution of these behaviors" (p. 314). However, once the behaviors are acquired, she questions how they are continued in the absence of external reinforcement. For example, what causes a child to increase his sharing behavior after
viewing a model who is generous but who is not reinforced, has no power to reward or punish the child, and who will not know whether or not the child shares? Her explanation involves (1) a general theory of self-administered reinforcement and (2) the possibility that observing the model makes the subject more aware of the social responsibility and/or reciprocity norms.

Fischer (1963) views child rearing as a "series of training procedures utilized in an attempt to produce individuals who behave in accordance with the values of a particular culture or society" (p. 219). He proposes that when a child learns a sharing response, he is acquiring the basis for the development of generosity, a complex social value. Learning to share, he suggests, is governed by the personal reinforcement values of distributable objects possessed and by reinforcement training used by significant persons in the child's environment. Learning to share is a function of the reinforcement value of the consequences of sharing as compared to the reinforcement value of the object to be shared. Sharing is a unique learning situation involving the pitting of one reinforcement against another.

Hoffman (1970) views altruism and consideration for others as similar to moral prohibitions in that they both require some self-denial or self-sacrifice. To the extent that his viewpoint is true, altruism is a reflection of repression or way of making restitutions for past transgressions. Because self-denial is involved, the process of acquiring altruistic standards is somewhat like the internalization or moral prohibitions. However, the two differ in two respects. First, the self-denial of altruism and consideration for others is in the service of another person while that of prohibitions is not. Second, altruism and consideration for others refer primarily to extending oneself to help others when one is not responsible
for the situation of others. Moral prohibitions, on the other hand, refer primarily to orientation toward one's own transgressions. Thus, Hoffman (1970) views altruism and consideration for others within a broader framework involving how an individual handles the conflict between his own desires and his obligations to others. Hoffman does not consider altruism as synonymous with moral prohibitions. If a person has internalized the standards of altruism and consideration for others, his motivation to take into account the welfare of the other will be greater than if he has failed to internalize these standards. The way he resolves the moral conflict involves his control system, competing motives, and situational factors.

Somewhat related to Hoffman's view is that of Staub and Sherk (1970). They point out that although sharing behavior benefits others, the sharer must sacrifice material possessions. The assumption then is that all sharing is based on material possessions. In discussing the motivation for such behavior, the authors suggest that the theoretical factors motivating sharing behavior are:

- . . . learned standards or norms that prescribe sharing (Berkowitz & Daniels 1963; Gouldner 1960); positive effect associated with sharing as a consequence of past learning (Midlarsky & Bryan 1967); the feeling that rewards are deserved or not (Staub 1968). In the course of interaction with others, sharing may result from the desire to gain approval of others, or to avoid their disapproval. The development of the concept of reciprocity (Piaget 1932), or the learning of a norm of reciprocity (Gouldner 1960), may lead to the expectation that sharing would be reciprocated, either materially, or in the form of approval, or both (pp. 243-244).

Each of the theories of sharing described in this section (i.e., norms of social responsibility, reciprocity, giving; external reward or threat of punishment; reinforcement value; and moral conflict between personal desire and obligation to others) offers some insight into the development of shar-
ing. It appears that while there are several theories which may explain the sharing process, they are not mutually exclusive and each theory may, to some extent, contribute to the understanding of sharing behavior.

No theory of sharing behavior cited in the literature includes the concept of development or change in behavior over time. Particularly is this evident when studies of sharing behavior during middle childhood are considered. It seems logical that theories concerned with the general development of relationships in the middle childhood years might have relevance for sharing behavior. Factors of major importance in the social development of the school-age child are age and sex. Sex-role behaviors are increasingly important throughout the middle-childhood years. In our culture, preference for children of the same sex appears during the preschool years and becomes more pronounced with increasing age (Ausubel & Sullivan, 1970). Preschool children of both sexes show some preference for their own sex in choosing playmates, but some cross-sex friendships are present. However, during the middle-childhood years, there is marked increase in preference for like-sex companions (Reece, 1966).

Hartley (1959) proposes that males are often very anxious about sex-connected behaviors, resulting in "hostility toward anything even hinting at 'femininity,' including females themselves" (p. 458). Lynn (1964) supports Hartley's point concerning sex-role identification in males. He hypothesizes that males will tend to be more hostile toward females than females toward males. Because girl-like activities are discouraged and lead to punishment for boys in our society, dislike for the female-type activities often occurs. The dislike is generalized to representatives of the disliked activity. Consequently, females are disliked. There is not
total agreement on Lynn's hypothesis, however, since Reece (1966) maintains that elementary school boys seem more favorable toward girls than girls toward boys.

Hartley (1959) sees special difficulties with the male's sex role. The boy in our society is told what he should not do but he is not told what he should do. Such divergent feedback creates the perfect setting for inducing anxiety. In addition, the demands for the boy to conform to a male sex role come sooner and are more vigorous than the demands on the girl to develop feminine behaviors. Bowerman and Kinch (1959) agree with Hartley (1959) that demands for girls to exhibit proper sex-role behavior are more gradual and less discontinuous.

The way in which sex roles are learned by boys and girls and the resulting attitudes toward the opposite sex would seem to influence sharing behavior of children in like-sex and opposite-sex pairs at different ages. Theoretically, knowledge of sex-appropriate behavior is a foundation for the majority of peer interactions and individual behaviors in middle childhood. If sharing exists as a behavior pattern, as indicated in the theoretical writings on sharing, the configuration of sharing behavior, regardless of whatever changes might occur with like- and opposite-sex pairs at different ages, should remain relatively stable with different sharing tasks.

Statement of the Problem

The purpose of the present study is to investigate the sharing behavior of school-age children as a function of age, sex of sharer and sharee,
and sharing task. Primarily, the study is concerned with the quantity of sharing behavior, but type of sharing behavior also is of interest.

The dependent variable is sharing behavior while the independent variables are age, sex of sharer, sex of sharee, and task. Operational definitions for the study are:

**Sharer**
Child who is a potential giver

**Sharee**
Child who is a potential receiver

**Sharing behavior**
The giving of a commodity by the sharer to the sharee

**Quantity of sharing behavior**
The number of commodities given to the sharee by the sharer

**Type of sharing behavior**

1. **Pure sharing**
The decision about how the commodity will be used is made by the sharer

2. **Arbitrated sharing**
The decision about how the commodity will be used is made by both the sharer and the sharee

3. **Task specific sharing**
Any act of joint endeavor in which the decision does not appear to be made by either the sharer or sharee and the act is not possible with another task. This type may occur alone or as part of 1 or 2 above.

Evidence for the quantity and type of sharing comes from the behaviors and verbal transactions that take place between two children (a sharer and a sharee) in one of four sharing tasks. Children are grouped in both like-sex and opposite-sex pairs.

The specific null hypotheses tested are:

1. The sharing behavior of children is not a function of their age.
2. The sharing behavior of children is not a function of their sex.
3. The sharing behavior of children is not a function of the sex of the person to be shared with (sharee).

4. The sharing behavior of children is not a function of the commodity shared (task).

5. The independent variables (age, sex of sharer, sex of sharee, and task) do not interact to produce effects in sharing behavior.
REVIEW OF LITERATURE

The purpose of the review of research reported in the literature is to provide some background for the present research project. Therefore, the review will survey the following two areas: (1) sharing behavior in children and (2) age and sex effects on peer relations in middle childhood.

Sharing Behavior in Children

Research on sharing behavior in children is limited in number of studies reported but even more limited in number of years that the topic has been of interest to researchers. Ugurel-Semin's study reported in 1952 (Ugurel-Semin, 1952) is usually referred to as very early work in the area, although Wright's studies in 1942 (Wright, 1942a, 1942b) included sharing behavior. Following Ugurel-Semin, the next reported research occurred in the late 1950's (Handlon & Gross, 1959), with the bulk of the sharing research being done in the last ten years. The majority of the studies relate how sharing behavior is learned, using either reinforcement techniques or models. In addition, some research has been concerned with the correlates of sharing, such as age, sex, socio-economic status, and family size. Sharing as reciprocity also has been of interest to researchers.

Learning of Sharing Behavior

Studies dealing with the learning of sharing behavior have tended to be highly controlled and experimental in nature. While many questions remain unanswered, the question of how sharing is learned is still probably the most investigated aspect of sharing behavior. Of special interest to
researchers has been the effect on sharing behavior of reinforcement techniques and models.

Reinforcement techniques. Fischer (1963) was interested in the effects of various reinforcement conditions on the acquisition of sharing behavior. Using 24 preschool boys and girls, 42 to 57 months of age, he studied the effects of: (a) type of reinforcement (verbal versus material), (b) the number of objects (two versus six marbles) given to the subject to be shared, and (c) the total number of objects possessed by the child prior to a particular trial. The criteria for acquisition of sharing behavior were 10 consecutive sharing trials during which a subject shared at least 1 marble with a child whose picture was placed above the sharing box. It was hypothesized that subjects receiving six marbles per trial would (a) reach acquisition faster, (b) share more marbles per trial, (c) share a larger proportion of those received, and (d) show greater resistance to extinction than subjects receiving two marbles per trial. It also was hypothesized that as a subject accumulated marbles over trials, he would share more marbles per trial and a greater proportion of his marbles per trial.

After the subject was given his marbles (two or six) for one trial, he was told that he could keep them. Then he was shown a magazine picture of a child and told that if he wished he could give marbles to this child who had no marbles. If he shared at least one marble, he was reinforced (either materially with bubble gum or verbally), and if he did not share, he received no reinforcement. In either case, the marbles he had left were his to keep.
A split-plot analysis of variance showed that learning to share was primarily a function of type of reinforcement used (F = 16.7, df = 1, p<.001), with material (bubble gum) being significantly more effective than verbal reinforcement when a chi-square comparison was made (X^2 = 13.67, p<.02). The intrinsic reinforcement value of the number of marbles given per trial was reflected in an accumulation effect. After a subject learned to share, if he were receiving six marbles per trial, he tended to share more as the number which he possessed increased (F = 19.6, df = 4, p<.001). This behavior applied only to accumulation of marbles for the five trials in a session and was not related to number of marbles accumulated at home. The same effect did not occur, however, if the child received only two marbles per trial.

Fischer (1963) explained his results through use of a "drive-reduction reinforcement hypothesis." Assuming that the marbles had reinforcement value, then the faster the child obtained them, the faster his drive to obtain them was reduced, and the more he gave away.

Doland and Adelberg (1967) also were interested in the way a child learns to share and why for some children it is more difficult. The authors studied sharing from a social-learning point of view, hypothesizing that sharing is an aspect of the child's behavior that is learned through social reinforcement.

A group of white children (n = 20) in a middle-class nursery school and a group of predominately Negro children (n = 16) at a child welfare center were studied, using a "game" devised to involve a subject and a confederate of the experimenter. In a pretraining session, children received animal cutouts to be arranged on manila paper, with the confederate receiv-
ing pictures of one kind (e.g., birds) and the subject receiving picture of one kind but unlike those of the confederate except for two pictures which were like those of the confederate. Each child was instructed to glue only one kind of picture onto a large piece of manila paper, and the subject was reminded that he might want to give his odd pictures to the confederate. Children not sharing in the pretraining were given as many as three learning trials, with each subsequent trial having increased amounts of reinforcement included. The first learning trial included verbal reinforcement, the second added a model who received verbal reinforcement, and the third was similar to the first.

A chi-square analysis revealed that a significantly larger proportion ($X^2 = 4.06, df = 1, p < .05$) of nursery school than welfare-center children shared in the pretraining session, and of those in both groups who did not originally share, a larger proportion (Fisher Exact Probability Test, $p < .05$) of nursery school than welfare-center children learned to share in subsequent conditions of social reinforcement. Both of these findings had been predicted. The authors propose the presentation of the argument that welfare-center children are handicapped in both degree of social responsiveness and in previous exposure to appropriate situations.

In a study by Midlarsky and Bryan (1967), 160 girls in grades 1 to 4 were given 1 of 10 training programs to test the variations in altruism in 2 donation situations. In the first situation, the analysis of variance showed that children having had a warm relationship with a female experimenter sacrificed the obtaining of candies when the experimenter also made explicit her pleasure at such sacrifice ($F = 14.56, df = 4, p < .01$). However, neither of the two (warm relationship nor statements of joy) alone
was more effective than no training in eliciting the charitable behaviors. In the second situation, the child was given the opportunity to donate candies which he had received at the end of the first situation. There was a significant correlation ($r = .67, p < .05$) between sacrificing the obtaining of candies in the first situation and donation of candies in the second situation. The authors suggest that positive interpersonal relations plus explicit statements of pleasure by a socializing agent can provide the basis for the internalization of the norm of self-sacrifice.

The three studies included above illustrate how sharing behavior can be learned through use of reinforcement techniques, whether they be material, verbal, physical warmth, or a combination of reinforcements.

Modeling. While there is a rather large body of research on the effects of models on children's behavior, much of it deals with modeling of non-altruistic behaviors. There is, however, a growing interest in the effects of models on prosocial behavior.

Hartup and Coates' study (Hartup & Coates, 1967) investigating the influences of peer models on the socialization process was secondarily concerned with the effects of models on sharing behavior. The authors were particularly concerned with the relationship between the child's frequency of reinforcement from peers and his reaction to a rewarding or non-rewarding peer model. Forty-eight subjects were observed in their nursery school peer groups in order to determine the degree of peer reinforcement each child was receiving and to choose the child who was most rewarding (or most non-rewarding) to the subject.

In the modeling situation, the model could give to another child or to himself and also could decide in which order the sharing would occur. In
addition, "incidental behaviors" also were measured for modeling effects. Because the two scores of altruism, "giving to other" and "latency of giving to self," were highly correlated ($r = .92, p<.01$), "giving to other" was used as the sharing index for the data analysis. The analysis of variance revealed that the altruistic model condition was more effective in eliciting altruistic behaviors than a no-model condition in the first block of five trials after observing the model ($F = 7.49, df = 4/51, p<.005$) as well as in the second block of five trials ($F = 3.39, df = 4/51, p<.02$).

Rosenhan and White (1967) studied the effects of observation of a model and rehearsal on the internalization of the altruistic norm of giving. Using 65 boys and 65 girls from the fourth and fifth grades of two middle-class public schools, they found that exposure to a model would elicit substantially more altruistic behavior than would occur under similar circumstances with no model (Fisher's exact-probability two-tailed test, $p = .0046$). However, exposure to a model did not seem to be sufficient, since it was primarily those who donated in the model's presence who did so in his absence ($\chi^2 = 29.84, p<.001$), suggesting that both observation and rehearsal may be necessary for the internalization of the altruistic norm of giving.

The two studies described above are somewhat typical of the research on learning to share through use of models. They present evidence that observation of a sharing model increases sharing behavior in the observer. There is also some evidence that power and nurturance of the model affect sharing behavior (Grusec, 1971); that the model's actions but not his words affect sharing behavior (Bryan, Redfield, & Mader, 1971; Bryan & Walbek, 1970a, 1970b); that degree of sharing by the model affects degree of shar-
ing in the observer (Presbie & Coiteux, 1971); that self-praise by the model and praise of the model by the experimenter affect sharing (Elliott & Vasta, 1970; Harris, 1970; Presbie & Coiteux, 1971); that verbalization by the model of what he is doing affects sharing (Elliott & Vasta, 1970); and that role playing of sharing affects sharing behavior (Staub, 1971).

In addition, Rosenhan and White (1967) and Staub (1971) have found that rehearsal and role playing are effective means through which sharing behavior is learned.

**Correlates of Sharing**

Although few researchers have been concerned primarily with correlates of sharing behavior, many have included variables such as age, sex, socio-economic level, and family size in their experimental studies of sharing.

**Age.** One of the earliest researchers to correlate sharing behavior of children with characteristics of the sharer was Ugurel-Semin (1952) in a morality study focusing on generosity in 4- to 16-year-old children in Istanbul, Turkey. Using Piaget's work on moral development as her theoretical framework for looking at generosity, she employed a sharing situation to study the relationship between the development of generosity and age, sex, socio-economic group, and family size.

The experimenter took a pair of subjects into a room, seated them opposite her at a table, placed an unequal number (5 to 15) of nuts in front of $S_1$ and told him that he was to share with $S_2$. Before $S_1$ could speak, $S_2$ was asked to leave the room and wait outside until called. $S_1$ was then asked how he was going to share with $S_2$ upon his return. Then $S_2$ was called in, and $S_1$ was required to share with $S_2$. 
Percentage tables, chi-square analyses, and correlations were used to illustrate and analyze the data. The author found that selfishness decreased with age, reaching its zenith (67 percent selfish; 33 percent generous) at 4 to 6 years of age. Generosity peaked at 7 to 8 years of age (63 percent generous; 16 percent selfish; 21 percent equalitarian) and equal sharing dominated by 11 to 12 years of age. While sex was not a significant factor, socio-economic level was related to generosity. Poorer subjects were as generous, more equalitarian, and less selfish than the richer subjects ($X^2 = 20.5, df = 4, p<.01$). Furthermore, children from larger families were more generous than only children, shared equally more often, and were less selfish ($X^2 = 11.89, df = 4, p<.02$).

Handlon and Gross (1959) also studied age, sex, and family size effects on sharing behavior in children, using Ugurel-Semin's study (Ugurel-Semin, 1952) as a basic model. Subjects were 18 preschool children and 25 children from grades 4, 5, and 6. A cooperative task, in which two children could obtain an unevenly divisible number of pennies or seals, was used. Every child in a given grade was paired with every other child of the same sex in that grade in the experiment, with pairs introduced to the experimental situation in a random order. The sharing act was carried out in the absence of the partner, however, with only the adult present. One partner was asked to leave the room, at which time the remaining partner was asked to indicate how he was going to share the pennies or seals. Then he was sent out and the other partner was asked to indicate how he was going to share. The amount to be shared was presented equally to each partner.
A Kruskal-Wallis one-way analysis of variance by ranks was used to assess the between-grades variance. The authors found increased sharing with age ($H = 22.82$, df = 4, $p < .001$, $H$ interpreted as $X^2$ with df = 4). Age differences in sharing were most marked between preschool and elementary grades (t test, $p < .001$). The transition between keeping more or less of the unevenly divisible number of pennies or seals came between grades 4 and 5. There were no significant sex differences and no differences between only and other-than-only children.

Findings concerning effects of age on sharing behavior are consistent. Both Ugurel-Semin (1952) and Handlon and Gross (1959) in the two studies reported in this review found increased sharing with age, with marked differences occurring at about elementary school age. Ugurel-Semin's findings concur with Wright's findings (Wright, 1942a) in her early study of generosity and equity versus fairness. Newer studies (Elliott & Vasta, 1970; Midlarsky & Bryan, 1967) substantiate the results of the older studies.

**Sex.** Findings concerning effects of sex on sharing behavior are inconsistent. Ugurel-Semin (1952) and Handlon and Gross (1959) found no sex differences nor did Wasik et al. (1969) in their study of culturally deprived Negro and white kindergartners or Elliott and Vasta (1970) in their modeling study. Doland and Adelberg (1967) found that while only a slightly lower percentage of boys share initially (32 percent versus 35 percent), a much lower percentage learned to share in the first learning trial (23 percent versus 82 percent). The sex difference was found for both the middle-class and welfare-center children in the study. No significance levels were stated.
In a study described in a previous section, Rosenhan and White (1967) found that the effects of a prior relationship between the subject and model tended to be moderated by the presence or absence of the model with girls but not with boys. While these sex differences were not significant, trends were cited. In a 5-minute session prior to testing, the model gave either positive or negative reinforcement or had no relationship with the child. With the model present, more girls with prior relationship donated than those without prior relationship ($X^2 = 2.97, .10<\text{p}<.05$) (sic) ($X^2 = 2.97, .05<\text{p}<.10$). With the model absent, girls who had not had a relationship gave more than girls who had a relationship ($X^2 = 3.97, .10<\text{p}<.05$) (sic) ($X^2 = 3.97, .05<\text{p}<.10$). With model present, a greater number of girls (72 percent) contributed than did boys (60 percent); with model absent, fewer girls (35 percent) than boys contributed (52 percent). Sex of model was not controlled for since the model was male. In an earlier study, White and Rosenhan (1966) found that boys had a greater tendency to donate when a prior relationship with a model was negative than when it was positive. Levels of significance were not stated.

Staub and Sherk (1970), in a study on need approval, reciprocity, and sharing, found that boys shared more candy than girls ($t = 2.27, \text{df} = 43, p<.02$) and had slightly less need for approval ($t = 1.92, \text{df} = 43, p<.10$). This is supported by the findings by Staub (1971) that boys shared slightly more overall ($F = 3.78, \text{df} = 1/63, p<.10$).

Thus the research data, in general, show no sex differences. However, there appears to be a tendency, though not significant, for boys to share more than girls. The latter has not been found consistently, however. In addition, there appears to be outside influences on sex, such as those
found by Rosenhan and White (1967). Further clarification appears to be needed.

Socio-economic level. Though the culturally deprived have become a popular research target, their sharing behavior has not been extensively studied. Wasik et al. (1969) did a study, similar to that of Handlon and Gross (1959), of like-sex dyads of 12 culturally deprived Negro and white kindergarten children. In a cooperative task, the two children were told they would receive a marble if each pressed a button simultaneously so that the two presses caused the same color of light to come on. The sharing act was carried out in the partner's absence in a separate room. Each member of the dyad was taken to the room where he was asked to decide how many marbles to keep for himself and for the other dyad member.

Sharing behavior was quantified in two ways. First, the percentage of the items kept by the subject was counted. Males kept 55.19 percent and females 54.70 percent of the marbles, with no sex differences. Second, the authors counted the percentage of trials that the subject kept more items than he gave to the other child. Males retained more for themselves on a significantly greater number of trials than did females (96.67 percent versus 76.67 percent, $z = 2.22, p < .05$).

In a study of social reinforcement by Doland and Adelberg (1967), previously reviewed in this section, a larger proportion ($X^2 = 4.06, p < .05$) of middle-class children than welfare-center children shared in a pretraining session and in subsequent conditions of social reinforcement (Fischer Exact Probability Test, $p < .05$). In contrast, Ugurel-Semin (1952) found poorer subjects more likely to share than the richer subjects ($X^2 = 20.5, p < .01$).
Again, as with other variables, the results are inconsistent. One of the three studies noted in this section found middle-class children more sharing, one found poorer children more sharing, and one found no differences in sharing behavior between children in the lower and middle socioeconomic levels.

**Family size.** Studies by Ugurel-Semin (1952) and Handlon and Gross (1959), both already reviewed, present evidence on the effects of family size on sharing, and their findings are contradictory. Ugurel-Semin (1952) found that children from larger families are more sharing \( X^2 = 11.89, p < .02 \) while Handlon and Gross (1959) found no difference in sharing of children who were only and other-than-only children. Staub (1971) concurs with Handlon and Gross (1959). He studied 75 kindergarten boys and girls in an attempt to investigate the effects of role playing and induction on children's learning of sharing and helping behaviors.

Each child was a member of a pair participating in one of four experimental conditions: role playing, induction, role playing with induction, and control. Upon experiencing one of the experimental conditions, a child received an immediate posttest, either specific to the experimental condition (i.e., the same situation) or generalized (i.e., similar but varied). A delayed posttest consisted of the behavior not participated in for the immediate posttest (specific or generalized).

Relevant to the present topic is the finding concerning family size. A correlation of family size with sharing behavior indicated no relation for either sex.

**Other variables.** Although the correlates of sharing just reviewed have been of greatest interest to researchers, other variables have been
studied. Usually such variables are included in only one investigation and have not been of general interest. However, clues to further research are frequently found among such ancillary variables.

Staub (1968) looked at the effects of success and failure on the sharing behavior of 109 fourth graders and 87 fifth graders. He found support for a hypothesis stating a developmental trend of increased sharing following success relative to sharing following failure. In a bowling game with predetermined results for each child, the child experienced either success or failure. A comparison of the means showed that fourth-grade children having experienced failure shared significantly more than those having experienced success ($t = 2.42$, $df = 156$, $p < .02$). In contrast, fifth graders shared slightly more following success than failure ($t = 1.65$, $df = 156$, $p < .10$). The author also asked each child how much he liked the bowling game and how much he thought other children would like it. Performance on the game had a significant effect ($F = 6.57$, $df = 2/156$, $p < .01$) on liking for the game. Children in the failure group liked the game significantly less than children in the success group ($t = 3.17$, $df = 156$, $p < .01$).

An additional correlational analysis tested the relationship between sharing and perception of control as a function of success or failure. A positive correlation ($r = .279$, $df = 65$, $p < .05$) was found between perception of control and sharing for children in the success group and negative ($r = -.285$, $df = 43$, $p < .10$) for the failure group, although the latter is not significant.

In a study similar to the above, Staub and Sherk (1970) studied the relationship of sharing behavior to need for approval. They found a nega-
tive correlation between need for approval and sharing behavior ($r = -.34$, $p < .05$).

Presbie and Kanareff (1970) studied sharing as a function of number of sharees. The results of two experiments were contradictory. In the first experiment, with 40 5- to 7-year-old children, the analysis of variance showed no significant effects for number of sharees; in the second experiment, the effect was significant (Duncan range test, $p < .05$).

**Sharing as Reciprocity**

This section deals with reciprocity and its role in children's sharing behavior. The authors cited have attempted to assess whether or not reciprocity is a necessary determinant of sharing behavior.

In a study designed to examine the alternative hypotheses of a social responsibility norm or a reciprocity norm as a basis for determining altruistic behavior, Harris (1970) gave fourth- and fifth-grade children ($n = 168$) the opportunity to share tokens with some poor children who did not have many toys (charity) or with a model after the subjects had previously been either the recipient or observer of charitable behavior or had no exposure to altruism. She also studied the effects of praising the model's generosity.

A mechanical switchboard dispensed tokens to the model and the subject. The model received more tokens than the subject and subsequently (1) shared with the child; (2) shared with charity; (3) refused to share; or (4) had no chance to share.

Although recipients of tokens from the model shared more chips with the model ($F = 16.29$, $p < .001$), the author interpreted the sharing as non-
reciprocal since the child also shared more chips with charity when the model shared with charity ($F = 18.07$, $p < .001$). A chi-square analysis testing whether children observing a model share with charity would subsequently share more with charity than children receiving chips from the model was significant ($X^2 = 35.77$, $p < .001$). This relationship suggests a straightforward modeling effect rather than reciprocity as the determinant of occurrence, amount, and duration of sharing behavior. In addition, the child observing no sharing tended not to share (Mann-Whitney U test, $p < .0005$).

As a part of a larger study, the effects of reciprocity on sharing behavior were examined by Presbie and Kanareff (1970). Using a factorial design, 40 children, 3 to 5 years of age, were randomly assigned to 1 of 4 experimental conditions. The first three conditions varied by whether reciprocation was high, low, or non-existent for the sharer. One sharee was used in all three conditions. In the fourth condition, the child had three sharees and the three conditions used for the one-sharee conditions above were presented. Each subject was taken to a booth and told that he could share a bag of marbles with the child(ren) whose picture(s) hung on the wall. The sharee(s) attended another school and were not known to the sharer. After the child shared, the experimenter took the marbles shared and told the child she would deliver them to the sharee. Upon returning to the booth, she delivered a statement (and an object in the low and high reciprocity conditions), supposedly from the sharee, which was designed to be low, high, or without reciprocity value.

The Duncan range test of the mean number of marbles shared showed that degree of reciprocation did not affect sharing behavior when the number of
sharees was held constant. However, the three-sharee condition had significantly greater sharing than the one-sharee condition (Duncan range test, p<.05).

The authors explained the results in two ways. First, perhaps 3- to 5-year-old children do not desire to initiate and maintain friendly relations with their peers or are unable to see a connection between their behavior and the quality of the interpersonal relationship. Second, the objects chosen for low reciprocation value possibly were of greater value to the child than anticipated.

Staub and Sherk (1970) found results contrasting those of Harris (1970) and Presbie and Kanareff (1970). The authors studied 90 fourth-grade boys (n = 44) and girls (n = 46). Since need for approval also was a concern, the subjects were administered Crowne and Marlowe's social desirability scale (Crowne & Marlowe, 1960) which was adapted for children by Crandall, Crandall, and Patkovsky (1965). A sociometric measure was used to evaluate friendship choices.

Following the above assessments, a child (giver) was placed in an interaction situation with a child (receiver) whom he had selected as a preferred friend on the sociogram. The giver was given candy which he could share during the period of interaction. Immediately following this session, the receiver was given a crayon in a situation where only the one crayon was available for the two children to use to perform a coloring task.

The length of time a child (receiver) shared the crayon was positively related to the number of candies he had received from the other child (giver) in the prior interaction situation (r = .31, df = 40, p<.05). In addition, sharing of the crayon by the receiver was negatively correlated
with the difference between the number of candies eaten by the giver and the number given to the receiver ($r = -0.37, df = 40, p < 0.02$), suggesting that the receiver's sharing behavior was influenced by his perception of the fairness or generosity of the giver's behavior. Furthermore, a negative correlation was found between need for approval and sharing of candy by the giver ($r = -0.34, p < 0.05$) and between need for approval and amount of candy the giver ate in the presence of the receiver ($r = -0.44, p < 0.01$). The length of time the crayon was shared was unrelated to the receiver's need for approval. No sex differences were found.

Age and Sex Effects on Peer Relations in Middle Childhood

In contrast to the trend of the research on sharing behavior, much of the research on patterns of peer interactions in middle childhood seems to have occurred prior to the last decade. In a review of peer interaction, Hartup (1970) points out that the recent literature is more complete in documenting changes in peer interactions in early childhood than at other times such as middle childhood. Although there is a rather large body of research on peer interactions in middle childhood, the focus of this section of the review is on the effects of age and sex on peer relations, since all three variables are relevant to the present investigation.

Sex-of-Peer Preference

In a study of recreational club groups at the Merrill-Palmer School, Campbell (1939) found an undifferentiated social relationship with the opposite sex for both sexes to age 8 years, followed by a rising preference for same-sex children until puberty, at which time heterosexual preference
began to develop. She attempted to define, describe, and measure the social-sex aspect of child development, defining social-sex development as a child's social relations with opposite-sex peers, leading to heterosexual adjustment in adolescence. While using anthropological data to support her contention that the patterns of social-sex development are partially, at least, socially determined, she also advocated some degree of biological determination.

The data were gathered in free playing settings, using 53 girls and 59 boys 5 to 17 years of age. The observations were made, then turned into short descriptive statements representing aspects of social-sex behavior. Paired observers checked the descriptive statements for each child. Observation criteria were established and observers checked periodically to insure maintenance of the criteria. The same procedure was used in three successive yearly checks. The statements were scaled after the third year.

Campbell's findings are in agreement with those Furfey (1930) reports in his earlier study based on case findings. Furfey found both sexes to be oriented to their own sex, with rejection of the opposite sex.

Meyer (1959) also found preference for same-sex peers. This study was based on the assumption that a person is attracted to persons who are perceived as being able to meet his social-psychological need strivings. The author investigated the degree to which boys and girls perceive same-sex and opposite-sex classmates as being able to satisfy the social-psychological needs of playmirth and succorance. Because previous research has shown that sex differences exist in need strength as well as in the behavior necessary for need reduction, the author predicted that members of each sex would perceive other same-sex members as being better able to satisfy the social need strivings.
The Syracuse Scales of Social Relations were administered to 212 girls and 175 boys, grades 5 to 12, in rural New York. Using a t test for matched pairs to determine statistical significance, it was found that same-sex ratings were generally significantly higher for the succorance-need situation and the playmirth situation, although the latter was significant to a lesser degree. For the succorance-need situation, 13 of 16 t scores were significant, 3 at p<.05 and 10 at p<.01. In the latter 16 t scores, 3 were significant at p<.05 and 7 at p<.01. On the playmirth need, girls' ratings of boys moved to a positive direction after grade 7, but the shift was not evident for boys nor for either sex on the succorance-need situation. The authors explained that early sex-typed behaviors are maintained because opposite-sex members' attitudes and behaviors are not reinforcing, while expectancies concerning experiences with same-sex peers are reinforced and maintain themselves.

In an experimental study designed to evaluate the modifiability of peer preference in 54 male and 52 female first-grade children, Haskett (1971) used six treatment conditions: opposite- or same-sex social pairings, with cooperative, spatially contiguous, or normal classroom peer interaction. Peer-preference change was obtained through a pre-experimental and post-experimental peer ranking from each subject and was analyzed by analysis of variance. The author was interested in explaining the development of peer preferences through studying changes in preferences.

In the pre-experiment peer rankings, 95 percent chose a same-sex child as best friend, while 82 percent chose same-sex children as their four best friends, agreeing with Meyer (1959) that young children prefer peers of the same sex as friends.
The only significant increase in peer preference was in opposite-sex cooperation \((q = 4.79, \ df = 46, \ p < .01, \ Tukey's \ HSD \ test)\), with no significant sex differences. There was no increase in like-sex pairs nor in the spatial contiguity group.

The author presented three hypotheses to account for the findings. The first hypothesis is based on predictability. As a result of sex, children are reared differently. Because there is more to learn about the opposite sex, they gather more information about and come to know, understand, and predict the opposite sex in greater increments than the same sex when interaction increases.

The second hypothesis involves the reinforcement properties of peers. Since children interact with same-sex peers, opposite-sex peers will have greater reinforcement value resulting in increased ratings, because of novelty or contrast.

The third hypothesis refers to discriminative properties of opposite-sex peers. The cooperation task may have increased interaction and thus opposite-sex choices since it made boys appear less aggressive to the girls.

In review, Furfey (1930), Campbell (1939), Meyer (1959), and Haskett (1971) found that children in middle childhood prefer peers of the same sex. Their findings are supported by those of Koch (1944), Harris and Tseng (1957), Lewis (1958), and Koslin, Koslin, Paragament, and Bird (1971). The most predominate and general finding on peer interactions in middle childhood is that children prefer same-sex peers.
Patterns of Opposite-Sex Acceptance

Lynn (1964), in a paper designed to integrate research on sex-role identification into a theoretical framework, hypothesizes that because males receive divergent feedback and punishment to induce sex-role learning, achievement of sex-role identification is more difficult for males than females. Consequently, males have greater anxiety concerning their sex-role identification than do females and thus will feel greater hostility toward females than do females toward males. Lynn cites research findings to support his hypothesis.

Hartley (1959) reported a study of 41 males, 8 and 11 years of age, who were interviewed extensively concerning sex-roles and socialization. Hartley's research supports Lynn's hypothesis (Lynn, 1964). Hartley found that boys are anxious about sex-role behaviors because the desirable behaviors are not defined while the undesirable behaviors are negatively indicated. In addition, she found that the boys were very hostile toward females or anything which appeared to be feminine. Similar results were obtained by Smith (1939) and Broderick (1966).

Not all research results have agreed with the hypothesis that boys choose girls less than girls choose boys. Bonney (1954) conducted a study to determine sex choices of 2,370 Texas males and females in grades 4 to 7 on a sociometric-type measurement, "How I Feel Toward Others." The scale was composed of two degrees each of acceptance and rejection and one "Don't Know" category. Each subject ranked every member of his class, using numbers corresponding to the degrees on the scale. Total scores were expressed in terms of percentage of the maximum possible points if all members of the opposite sex had been chosen. While no significant differences
in number of opposite-sex choices were found for boys and girls, there was a tendency, non-significant, for boys in grades 3, 4, and 6 to choose the girls more than for girls to choose the boys. The tendency was most pronounced in grade 6 but was reversed in grade 7, however. There were equal numbers of choices of the opposite sex by both males and females in grades 5 and 8.

In addition to the between-sex choices, within-sex choices were computed. Within each sex group, about twice as many within- as between-sex choices were made.

Harris and Tseng (1957) obtained results supporting the findings of Bonney (1954) that boys are more favorable to girls than girls are to boys in middle childhood. The findings of Kuhlen and Houlihan (1965) also lend support to the findings of Bonney (1954) and Harris and Tseng (1957).

Reece (1962) studied fifth-grade children (36 girls and 48 boys) using a rate sociometric scale. The means of the ratings given by the same and opposite sex served as measures of acceptance. On the basis of same-sex acceptance, subjects were divided into three groups: least accepted, moderately accepted, and highly accepted. An analysis of variance showed an increase in acceptance of boys by girls associated with an increase in acceptance of boys by other boys. However, least accepted girls were accepted less by boys than moderately and high accepted girls, who were not significantly different from each other. Of the least and moderately accepted groups, boys were accepted significantly less by girls than the girls were by boys but with no sex differences for highly accepted groups.

Thus, boys' acceptance by boys was related to girls' unacceptance of boys, but girls' acceptance by girls was not linearly related to boys'
unacceptance of girls, since boys of the same group as girls were accepted less by girls than the girls were by boys.

In an extension of the 1962 study, Reece (1966) studied 177 boys and 141 girls from fifth to eighth grade using the same scale and statistical analysis as in the earlier study (Reece, 1962). Subjects were again divided into least, moderately, and highly accepted by same-sex peers. Sex differences for fifth-grade subjects were opposite that of the other grades ($F = 12.68$, $df = 2/294$, $p<.001$) while in the higher grades, boys accepted girls significantly more than girls accepted boys ($F = 4.94$, $df = 1/225$, $p<.05$). For both sexes in all grades, same-sex acceptance was positively related to opposite-sex acceptance.

The results for the fifth graders disagreed with earlier work with fifth graders (Reece, 1962). The subjects in the later study (Reece, 1966) were tested in November while those in the earlier study (Reece, 1962) were tested in March. The possibility that difference in time of testing in the academic year accounted for the discrepancy was investigated, using fifth graders (42 boys, 54 girls) and testing in May. An analysis of variance of opposite-sex acceptance indicated no sex difference, but significant results for month of testing ($F = 26.84$, $df = 2/263$, $p<.001$) and sex-by-month interaction ($F = 20.37$, $df = 2/263$, $p<.001$) were found. While in November girls were more favorable toward the opposite sex than were boys, in March, boys were more favorable toward the opposite sex than were girls. The same was true in May ($F = 15.53$, $df = 1/90$, $p<.001$). In all three studies, a positive correlation (level not stated) was found between acceptancy by same and opposite sex.
Because the Reece data were cross-sectional, a third part of the study was carried out, using 48 boys and 54 girls. The same children received the sociometric rating scale three times. Level of acceptance by the same sex \( (F = 16.23, \text{df} = 2/96, p<.005) \) and sex-by-month interaction \( (F = 5.38, \text{df} = 2/92, p<.005) \) were significant variables. The relation between same- and opposite-sex acceptance was the same as in the previous parts of the study. This, then, indicated that early in the academic year, boys accept girls less than girls accept boys; later in the year, however, the trend is reversed. Because the specific schools tested regroup between fourth and fifth grades, the author felt that early in the year, the children (possibly just boys) react in a stereotyped manner toward the opposite sex whereas later they react to the other sex as persons. However, the relation between own-sex and opposite-sex acceptance suggests something other than stereotyping and implies that patterns more complicated than those presented in previous research studies are involved.

**Historical Trends in Peer Interaction Norms**

One of the problems in looking at research results related to peer relations involves the possibility of changes over time in the norms which govern peer interactions at different ages and with same or opposite sex. Broderick and Fowler (1961) have attempted to document the changes, if any have occurred. They attempted to make comparisons among studies, in a review-of-literature style, contrasting earlier studies with later studies. They cite Furfey (1930) and Campbell (1939) as some of the earlier studies (see earlier references to these articles in this review) and Lewis (1958) plus their own research as more recent data. The two early studies
(Campbell, 1939; Furfey, 1930) found preadolescents avoiding the opposite sex, while both Lewis (1958) and Broderick and Fowler (1961) found more togetherness being desired as early as fourth grade.

Using 264 fifth- to seventh-grade children in an urban southern community, Broderick and Fowler (1961) studied cross-sex interaction patterns of children. Each child was asked to rank as first, second, and third choice the desirability of a companion of the same sex, opposite sex, or no-companion for three activities (eating, walking, attending a movie). A majority of sixth and seventh graders preferred an opposite-sexed companion for the two latter activities.

When asked who were their four best friends, of all the children they knew, 19.7 percent of the fifth-grade children and 14.6 percent of the seventh-grade children chose across sex lines in all choices. Choosing at least one friend of the opposite sex were 51.9 percent of the fifth-grade children and 37.7 percent of the seventh-grade children. Thus while they prefer same-sex children, there was some cross-over occurring and in greater proportions than in the earlier studies.

The authors, in discussing the trends for cross-sex peer interactions, speculated that the new behaviors and relationships are developing due to a greater understanding and sharing of value orientations. Males and females share more responsibilities, with less compartmentalization, resulting in less cross-sex hostility. No longer can one so fully reject the values of another, if those values are similar to one’s own. Brown (1958), Rosenberg and Sutton-Smith (1960), and Kuhlen and Houlihan (1965) present supporting evidence.
Summary

To summarize the findings on the effects of age and sex on peer interactions in middle childhood brings gross generalizations. During middle childhood, both boys and girls prefer same-sex peers. By late middle childhood, there is some indication of other-sex choices. The age at which the latter occurs appears to be lower than several decades ago. Findings concerning the greater preference of boys for girls versus girls for boys are inconsistent, with the former being the more predominant. Much of the peer interaction research is old and few very recent studies were found.
METHODOLOGY

The purpose of the present study is to investigate sharing behavior of children as a function of age, sex of sharer and sharee, and sharing task. Quantity of sharing behavior is analyzed as the primary dependent variable while type of sharing is a secondary dependent variable. Independent variables are age, sex of sharer and sharee, and sharing task. In order to study sharing behavior, a repeated measures design was employed.

Subjects

The 48 subjects for the study are children who had been enrolled in the Older Children's Laboratory, Department of Child Development, Iowa State University, during the 1971-72 academic year. The Older Children's Laboratory consists of recreational groups organized to serve as the observation and participation laboratory accompanying a child development course in growth and development in middle childhood. Children 5 to 12 years of age attend the laboratory which meets daily from 3:30 to 5:00 p.m. Each child attends a recreational group one day per week with a different age group meeting every day. In addition, on some days two recreational groups of the same age meet in the laboratory facilities. Due to the sharing of toys, supplies, certain indoor spaces, and all outdoor spaces, groups meeting on the same day tend to be homogenous in terms of acquaintanceship.

The children in the Older Children's Laboratory are predominately from middle-class homes in a university community.

Criteria for selection of children to be included in the study were:

1. That he (she) be a member of the Older Children's Laboratory during the 1971-72 academic year;
2. That he (she) be in one of the following age groups:
   a. 5.5-7.0 years (Group A)
   b. 7.5-9.0 years (Group B)
   c. 9.5-11.5 years (Group C);

3. That a subject within one age group have equal opportunity for acquaintanceship with all other subjects within the same age group. Operationally this is defined as being in attendance on the same day (but not necessarily in the same recreational group) as all other members of that age group.

The last criterion was originally defined as a subject having membership in one recreational group. However, upon examination of the groups, the number of subjects necessary for the design was not available from any one group. Consultation with the head teacher and graduate assistants in the Older Children's Laboratory revealed that children attending the recreational groups on the same day with few exceptions were known to each other and to some degree interacted with each other. Therefore, it was decided that children of the same age group from two recreational groups meeting concurrently could be considered homogeneous in acquaintance.

For each of the 3 age groups in the research design, children from 2 recreational groups meeting concurrently were used. Although 98 children in the 6 recreational groups met the age group criterion, only 81 were included in the group of potential subjects. The 17 children not included as potential subjects were judged by the head teacher of the Older Children's Laboratory as not having equal opportunity for acquaintanceship with the other children within the age group.

From the group of 81 potential subjects, 48 children (8 boys and 8 girls from each of the 3 age groups) were selected using the table of random numbers. Subjects in Group A ranged in age from 5 years, 6 months to
6 years, 11 months, with a mean age of 6 years, 3 months. Subjects in Group B ranged in age from 7 years, 8 months to 9 years, 0 months, with a mean age of 8 years, 4 months. The age range for subjects in Group C was 9 years, 8 months to 11 years, 6 months, with a mean age of 10 years, 6 months.

Prior to initiating data collection, a letter was sent to parents of all children in the population sampled. The purpose of the study was explained and parents were asked to cooperate by allowing their children to participate in the study (Appendix A).

Sharing Tasks

Criteria for Tasks

In order to study quantity and type of sharing behavior, four sharing tasks were designed. The following criteria were used in the selection of sharing tasks:

1. The task should be intrinsically interesting and fun for children in middle childhood;
2. The task should be one the child would rather do than let others do;
3. The task should be one that only one child could do or use at one time;
4. The task should be challenging, yet appropriate for the ability of the age span of middle childhood;
5. The task should be as free of sex bias as possible;
6. The task should be as non-competitive in nature as possible;
7. The task should be of short duration.

Description of Tasks

Task I (darts) and Task II (balls). Task I consists of a balloon board (36 x 48-inch piece of plasterboard covered with inflated balloons)
at which darts are thrown. The balloon board is placed on a low table directly in front of a mirror. The mirror consists of three panels (36 x 60 inches each) hinged together so the two side panels flank the center panel at a 135-degree angle. Approximately 5 feet from the low table is a low chest which serves as a barrier for children who may try to reach the balloon board. Nine heavy, metal-tipped darts, used to burst the balloons pinned on the balloon board, are placed in a 6\(\frac{1}{2}\) x 7\(\frac{1}{2}\)-inch styrofoam block and placed on the chest. A small bell is placed on the chest to be used as a signal when the pair of children finish throwing the darts.

Task II consists of 9 polyglass bottles, each containing 24 colored marbles for auditory and visual effects, at which 9 tennis balls are thrown. The setup for Task II uses the same low table, mirrors, low chest, and bell as Task I. The nine bottles are placed on the low table directly in front of the mirrors. The nine balls, arranged in a small box so that none are stacked, are placed on the low chest with the bell.

Two children are taken to a task together. A game of chance is played upon entering the room, so that the sharer appears to be chosen at that time. However, the determination of sharer and sharee is made in advance so the game of chance is rigged. The experimenter puts two color disks on the chest and asks each child to select a color. The predetermined sharer is announced as the winner, and the experimenter shows that she is holding the color chosen by the child designated as the winner. However, unknown to the subjects, she is holding both colors and simply matches the color selected by the child who has been predetermined as the sharer.

The following verbal instructions, appropriate for both Task I and Task II, are given by the experimenter to the two children:
I have a guessing game for the two of you to play. The one who wins the game will get to decide how the darts (balls) will be used. OK, each of you choose one of these colors, and the one who chooses the same one as I have here will be the winner. The winner is (sharer's name)! Because you won the guessing game, you get to decide how the darts (balls) will be used. There are nine darts (balls) and each dart (ball) can be used only once. A dart (ball) may not be used a second time, after it has been used once from this box. You may not cross the barrier to retrieve a dart (ball) nor may you use it if it bounces back to this side. When all of the darts (balls) have been used, please ring this bell (demonstrate) so someone will come to pick up the two of you. Remember, each dart (ball) can be used only once, ring the bell when all are used, and you (sharer's name), get to make the decisions as to how the toy will be used. I am going to leave now.

Scoring of Tasks I and II consists of counting the total number of darts (balls) given by the sharer to the sharee and the total number the sharer keeps for himself and recording these numbers on the score sheet. There is a score sheet for each pair of children at every task, and the score sheets for Tasks I and II are alike (Appendix B).

In addition to recording the numbers, a typology of the sharing behavior is made and recorded on the score sheet. The three types designated are: (1) pure sharing, in which the decision about how the commodity will be used is made by the sharer; (2) arbitrated sharing, in which the decision about how the commodity will be used is made by both the sharer and the sharee; and (3) task specific sharing, which is any act of joint endeavor in which the decision does not appear to be made by either the sharer or sharee and the act is not possible with another task. This type may occur alone or as part of 1 or 2 above. More elaborate definitions of the types can be found in the scorekeeper's manual (Appendix C).

Task III (ergometer) and Task IV (cars). Task III consists of an ergometer which the children ride. Each pair of children are given 3 min-
utes to use the ergometer. A 9 x 9-inch electric timer, equipped with a buzzer to alert children, scorekeepers, and workers when the time is up, is used to time the task. The timer is placed on a table so it is visible from the total task area.

Task IV is an Aurora racing set with only one control attached and only one car on the tracks. The children may play with the racing set for 3 minutes for the task. The electric timer used for Task III also is used for Task IV.

Two children are taken to a task together, and the game of chance is played as in Tasks I and II. The following instructions are given by the experimenter to the two children in the room for Tasks III or IV:

I have a guessing game for the two of you to play. The one who wins the game will get to decide how the ergometer (car) will be used. OK, each of you choose one of these colors, and the one who chooses the same one as I have here will be the winner. The winner is (sharer's name)! Because you won the guessing game, you get to decide how the ergometer (car) will be used. You will get to stay in the room and play with the toy for 3 minutes. I will set this clock for 3 minutes, and when the hand gets to the top, the buzzer will buzz very loudly and someone will come to pick up the two of you. Remember, the toy may be used for 3 minutes till the hand gets to here and you, (sharer's name), get to make the decisions as to how the toy will be used. I am going to set the clock and then I will leave.

Scoring of Tasks III and IV consists of timing the pair of children for the total amount of time the ergometer (car) is given by the sharer to the sharee and the total amount of time the sharer keeps the toy for himself. A stopwatch is used, and all time segments are recorded on the score sheet. There is a score sheet for each pair of children at every task, and the score sheets for Tasks III and IV are alike (Appendix B). The same typology of sharing behavior is used to score Tasks III and IV as is used
for Tasks I and II and is recorded in the same way. A more elaborate explanation of the scoring technique is found in Appendix C.

Pilot Study

Two pilot studies were conducted to gain greater insight into as many facets of the research problem as possible. The first pilot study was made to determine the appropriateness of the dart task and involved two five-year-old children (one boy, one girl) and two nine-year-old children (one boy, one girl) not attending the Older Children's Laboratory. Observation of the sharing behavior revealed that the children did share in the dart task and that some shared more than others. Although sharing differences were found, it remained unclear as to whether they were differences in sharing behavior or the result of a particular child's interaction with the particular task (darts). Thus the question arose as to whether the degree of task specificity might be an important factor in determining sharing behavior. Consequently, Tasks II, III, and IV were added to the design and another pilot study was conducted.

For the second pilot study, four more boys and girls between 6 and 11 years of age, not enrolled in the Older Children's Laboratory, were administered the four sharing tasks. It was thought that the sharer would recognize priority rights to the decision-making in the sharing task if he earned the right to make the decision. To test the feasibility of the idea, four work areas were established. Each work area was designed to precede a specific task for sharers who had to work to earn the right to go to a task and control the use of the toy. Sharees on a task did not go to a work area but waited in a separate area.
During the conduct of the pilot study, it became evident that the children failed to perceive the work areas as related to activities experienced in the task situations. When all children had had an opportunity to participate in one work group, the work group technique was abandoned and a game of chance substituted. The game of chance created an atmosphere of excitement and was conducted in the room where the tasks were performed so feedback on results was immediate. A child made a selection, knew immediately who was the decision-maker about the use of the toy, and the task was performed.

The pilot studies illustrated that the sharing behavior was not as simple or direct as had been anticipated. The winner (sharer) did not always make the decision about the use of the toy, and when he did, the decision was sometimes arbitrated with the sharee. In addition, random use of the toys, such as investigation of a part of the toy while the other used it, occurred. A search of the research literature failed to reveal an existing typology of sharing behavior. Subsequently, three types were described and included as part of the qualitative score on a task. Due to the inclusion of the typology in the scoring, plus the observation that the children were more creative in their use of the toys than had been anticipated, the decision was made to use two scorekeepers rather than one for the scoring of each test.

Training of Scorekeepers

Four scorekeepers were selected and trained to record the behavior which took place in the four sharing tasks. Two of the scorekeepers recorded for Tasks I and II and two for Tasks III and IV. The scorekeepers
were graduate students in the Child Development Department, Iowa State University. Two training sessions were held.

All information necessary for coding was included on two score sheets, one for Tasks I and II and one for Tasks III and IV (Appendix B). The appropriate task-related score sheet was used by each of two scorekeepers for each pair of children in the study.

Preceding the first training session, the Training Manual for Scorekeepers consisting of a description of the types of sharing and illustrations of behavior in sharing situations was prepared (Appendix C). The manual was distributed to the four scorekeepers so they could become acquainted with it prior to the first training session.

At the first session, the definitions and techniques discussed in the manual were reviewed and questions were answered. Following the discussion of the questions, the two scorekeepers assigned to Tasks I and II scored sharing situations of Tasks I and II which were role played by the other two scorekeepers. The same procedure was used to train scorekeepers for Tasks III and IV. After each scoring session, the four scorekeepers and the experimenter discussed the scoring techniques and problems which arose.

Written descriptions of situations (Training Situations) illustrating behavior in the sharing tasks were presented to scorekeepers for scoring practice (Appendix C). Discrepancies in scoring were discussed and arbitrated.

As a result of the discussion of the first training session, Supplementary Training Notes, consisting of further clarification of the scoring technique, were compiled and distributed to each scorekeeper (Appendix C). At the second session, the notes were reviewed and questions resolved. To
provide a realistic scoring situation for the scorekeepers, two children were asked to participate in the four sharing tasks. Their behavior was scored, and when the scorekeepers were able to agree on both quantity and type of sharing behavior observed, training was terminated.

Experimental Design

Sixteen children, 8 boys and 8 girls, from each of the 3 age groups (A, B, C) were randomly selected from the 81 children from the Older Children's Laboratory who qualified to participate in the study. Boys were identified as a, b,...,h and girls were identified as a', b',...,h', with letters assigned to both sexes in the same order that the children were randomly selected from the population. Each child was paired with 8 children and went to every task twice, once as a sharer and once as a sharee. In none of the pairings were two children sharers with a common partner on the same task, since every child was the sharer and the sharee on every task once, for a total of eight turns.

In a child's four turns as the sharer, two of his turns at the four tasks were his first exposure to the task and two were his second exposure to the task. Equal numbers of males and females were exposed to the task for the first time in the role of sharer. Figure 1 contains a matrix illustrating subject assignment to pairs, tasks, and sequence of trials.

Data Collection

For the present investigation, Tasks I and II took place in the same room, with the parts not needed in one task removed when the other task was in progress and vice versa. Tasks III and IV were set up in one room with a partition placed between the tasks so that one was not visible from the
Subject Pairs:
Shaded Square: Subject in column is the sharer
White Square: Subject in row is the sharer

Tasks (I - IV in squares):
I = darts, II = balls, III = ergometer, IV = car

Trials (1-8 in squares):
1 = first trial, 2 = second trial, ..., 8 = eighth trial

Figure 1. Subject assignment to pairs, tasks, and sequence of trials
other. However, these two tasks did not take place simultaneously. Both task rooms were equipped with two-way mirrors, behind which the scorekeepers sat and recorded the scores.

Testing was done in three half-day periods. All 16 children in one age group arrived at the specified hour, received name- and letter-tags, and were shown to a playroom which was set up as a holding area. The playroom was necessary since with the physical limitations of space, only 4 children could be tested at a time.

Before any pair was tested, the group of 16 subjects for an age group was given a tour of the four tasks. At each task, a child development student demonstrated the way the toy was operated.

A student in child development was employed to supervise the playroom. Two other child development students were assigned to supervise children as they came from the playroom to the waiting area adjacent to the task area. The waiting area was equipped with benches on which the children sat until it was their turn to participate in the tasks. When the bell (Tasks I and II) or buzzer (Tasks III and IV) sounded, these students went to the task rooms and accompanied the children back to the playroom.

From the waiting area, the experimenter took the pair of children to the appointed task. Upon entering the task room, the experimenter closed the door, initiated the game of chance, gave the task instructions, and left the room. The experimenter did not return to the room for that pair of children since the student assigned to that room was to help escort the children to the playroom when the signal sounded.

In addition to the student helpers discussed above, another student was assigned the responsibility of converting one task room from the setup
for Task I to that for Task II. She kept a supply of balloons inflated so that the tasks could proceed without interruption or undue waiting.

Approximately halfway through the series of tasks, the experiment was stopped so the children, student helpers, and scorekeepers could have a short snack break. The total testing time for one age group was approximately 2 hours and 45 minutes, including the time for the break.

**Description of Statistical Analysis**

Code sheets were prepared and the data coded. Each of the 48 subjects had two scores for each task, one set of scores from each of two scorekeepers.

To analyze the data, an analysis of variance using a regression computational procedure was planned. However, upon inspection of the data, it was found that scores from Tasks I and II did not show enough variability to justify an analysis of variance. Consequently, Tasks III and IV were analyzed with two separate analyses of variance. The scores for the two scorekeepers for each of the two tasks (Tasks III and IV) were averaged since the scorekeepers' scores were in close agreement. Thus only one score for each task for each subject entered the analysis.

Having omitted Tasks I and II from the analysis of variance, the configuration of the sex of sharee for each subject was altered. For the purpose of the analysis, each child now had experienced two partners instead of four. For each sex in the three age groups, two kinds of configurations relative to sex of partner existed. Although each child in an age group

---

1Dr. Leroy Wolins of the Iowa State University Statistical Laboratory served as statistical consultant for the present investigation.
had two partners, 6 of the 8 children of one sex had partners of one sex only while 2 of the 8 children of one sex had partners of both sexes. In the latter situation, sex of partner was confounded with task in that one member of each of the six age-sex groups had a male partner in the first task and the second member in each group had a female partner in the first task. Thus the two kinds of sex-of-partner configurations were analyzed separately with two analyses of variance. That is, subjects whose partners were of one sex were included in the first analysis, and subjects who had partners of both sexes were included in a second analysis. Data from a total of 36 children were analyzed and considered the major analysis of variance while the analysis of data from 12 children was considered the minor analysis of variance.

Results from Tasks I and II were inspected, using graphs and comparisons, and trends were observed. The typology of sharing behavior also was inspected but not subjected to analysis of variance.
RESULTS

Major Findings

In this exploratory study, the major concern was to investigate sharing behavior of children as a function of age, sex of sharer and sharee, and sharing task. Quantity of sharing behavior was analyzed as the primary dependent variable; type of sharing was a secondary dependent variable. Independent variables were age, sex of sharer and sharee, and sharing tasks. The following null hypotheses were proposed for the study:

1. The sharing behavior of children is not a function of their age.
2. The sharing behavior of children is not a function of their sex.
3. The sharing behavior of children is not a function of the sex of the person to be shared with (sharee).
4. The sharing behavior of children is not a function of commodity shared (task).
5. The independent variables (age, sex of sharer, sex of sharee, and task) do not interact to produce effects in sharing behavior.

The results of the analyses of variance (major and minor) are presented in Table 1 and Table 4 in Appendix D.

A statistically significant difference was found for age (F = 8.55, df = 2/24, p<.005) in the major analysis. Children 9.5-11.5 years of age shared more than children 7.5-9 years of age, and children 7.5-9 years of age shared more than children 5.5-7 years of age. Upon closer examination of the mean sharing time in seconds for each of the three age groups, it appears that there is more difference between age Groups B and C than between age Groups A and B. The minor analysis also shows a statistically significant difference for age (F = 3.46, df = 2/24, p<.05) but in the opposite direction from that of the major analysis. Since the major analysis represents three times as many observations as the minor analysis, greater credence can be given to the results of the major analysis. Thus
## TABLE 1
Sources of Significant Mean Sharing Time from the Analyses of Variance (Major and Minor)

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>Mean in seconds (major analysis)</th>
<th>F-value</th>
<th>Mean in seconds (minor analysis)</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>2/24</td>
<td>8.55</td>
<td>3.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A</td>
<td></td>
<td>55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B</td>
<td></td>
<td>58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group C</td>
<td></td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>1/24</td>
<td>3.72</td>
<td>3.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age by Sex</td>
<td>2/24</td>
<td>1.04</td>
<td>3.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-Male</td>
<td></td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-Female</td>
<td></td>
<td>62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-Male</td>
<td></td>
<td>46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-Female</td>
<td></td>
<td>71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-Male</td>
<td></td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-Female</td>
<td></td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significance levels: $p(F_{1,24} > 4.26) < .05$; $p(F_{2,24} > 3.40) < .05$; $p(F_{2,24} > 5.61) < .01$; $p(F_{2,24} > 6.66) < .005$.

The null hypothesis that the sharing behavior of children is not a function of their age is rejected.

A second variable of statistical significance is sex of sharer. Although the difference in sharing behavior between the sexes is not great enough to be statistically significant for either analysis alone ($F = 3.72$, $df = 1/24$, $p = < .070$ for major analysis; $F = 3.43$, $df = 1/24$, $p = < .078$ for minor analysis), the sharing behavior of girls is significantly greater than that of boys when the two analyses are combined ($X^2 = 10.34$, $df = 4$, $p < .005$).
p<.05) (Winer, 1962). Consequently the null hypothesis that the sharing behavior of children is not a function of their sex is rejected.

Results for sex of sharee failed to reach significance (Appendix D). Therefore, the null hypothesis that sharing behavior of children is not a function of the sex of the person to be shared with cannot be rejected. Likewise, the hypothesis that the sharing behavior of children is not a function of commodity shared also fails to be rejected since there was no significant difference for sharing behavior in the two tasks analyzed with the two analyses of variance.

The null hypothesis that the independent variables (age, sex of sharer, sex of sharee, and tasks) do not interact to produce effects in sharing behavior cannot be rejected. There were no consistently significant results for interactions. In the minor analysis, the age-by-sex interaction is significant (F = 3.78, df = 2/24, p<.05). The direction, however, is opposite that of the trends in the major analysis (Table 1).

Ancillary Findings

Tasks I and II did not show enough variability to justify an analysis of variance. A frequency distribution of the data from Tasks I and II (Figure 2) illustrates the degree of variance. Most of the children shared either 4 or 5 objects. Statistically 4 is not different from 5. Furthermore, there were not enough subjects for a chi-square computation. On the other hand, 4 may be different from 5 since 4 is less than half of the total of 9 items and 5 is greater than half. Although the majority of the children shared 4 items (31 on Task I and 26 on Task II), some shared 5 (13 on Task I and 14 on Task II). A further count and categorization showed
Figure 2. Frequency distribution of scores for Tasks I and II
that girls shared more than half more often than did boys and that the num-
ber in both sexes who shared more than half increased with age (Table 2).
The behavior showed some reliability in that 60 percent of those who shared
in one task shared in the other. Although these findings are not statisti-
cally analyzed, they represent the same trend found in the analyses of
variance.

A typology of sharing behavior was analyzed through a frequency count
(Table 3). Two trends are present. First, task specific sharing was
absent more often than it was present and was present more often for Tasks
III and IV than for Tasks I and II. It was present 42 times, 2 of which
were with Tasks I and II. Second, children in age Group C showed greater
use of pure sharing than arbitrated sharing, while age Groups A and B used
arbitrated sharing more than pure sharing in all tasks. There did not
appear to be any trends along sex lines.

Summary of Findings

The results of this study indicate that sharing behavior increases
significantly with age and that sex is significantly related to sharing
behavior with girls exhibiting greater amounts of sharing behavior than
boys. Although for the two tasks analyzed no task differences were found,
the other two tasks did not produce enough variance in sharing behavior to
merit an analysis of variance. Those tasks not analyzed statistically
showed a trend toward reliability in the behaviors elicited.

Although no significant interactions existed, some trends in the
direction of the main effects were noted. A typology of the sharing behav-
ior indicated (1) a near absence of task specific sharing in Tasks I and II
TABLE 2
Categorization of Responses from Tasks I and II

<table>
<thead>
<tr>
<th>Age group</th>
<th>Sex</th>
<th>Number who shared more than half (5 or more)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Task I</td>
</tr>
<tr>
<td>A</td>
<td>Male</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>Male</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>Male</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>4</td>
</tr>
</tbody>
</table>

TABLE 3
Number of Sharing Responses by Typology of Sharing Behavior

<table>
<thead>
<tr>
<th>Type of sharing behavior</th>
<th>Age group</th>
<th>Sex</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Pure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>43</td>
<td>37</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arbitrated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>II</td>
</tr>
<tr>
<td></td>
<td>43</td>
<td>40</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>51</td>
<td>56</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Specific</td>
<td></td>
<td></td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>IV</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td></td>
<td>25</td>
</tr>
</tbody>
</table>

and (2) an increase in pure sharing and decrease in arbitrated sharing in age group C.
DISCUSSION

Sharing behavior as a function of age, sex of sharer and sharee, and sharing task will be discussed in this section. Findings, limitations, and implications for society and future research will be of interest.

Age

Children were found to share significantly more with increasing age \( (F = 8.55, \ df = 2/24, p < .005) \). This finding, not unexpected, is well supported (Wright, 1942a; Ugurel-Semin, 1952; Handlon & Gross, 1959; Midlarsky & Bryan, 1967; Elliott & Vasta, 1970). The greatest increase in sharing, however, occurred between Group B (7.5 to 9.0 years) and Group C (9.5 to 11.5 years).

Ugurel-Semin (1952) found that the greatest amount of selfishness occurred at 4 to 6 years of age and that generosity peaked at 7 to 8 years of age. Handlon and Gross (1959) found that while the most marked increase in sharing occurred between preschool and elementary grades, the transition from keeping more than half to keeping less than half came at grades 4 to 5. While both of these studies indicate that sharing behavior increases with age, they also found that generosity, or sharing more than half, was predominate by age 7 to 10 years of age. Although the present study found the greatest increase in sharing at about this same time, generosity was never predominant in the ages studied.

Sex of Sharer

Differences in sharing behavior were found between boys and girls. Girls shared significantly more than boys. While this finding lacks sub-
stantial support from data from other research, Doland and Adelberg (1967) obtained results indicating that boys shared less than girls at preschool age. Some explanations as to why girls might share more than boys can be substantiated through research of others. Rosenhan and White (1967) present evidence that girls are more highly affected by a model's presence or absence and by a former relationship with a model than are boys. Greater sharing occurred with girls when a prior relationship with the model was paired with absence of the model. Although no models were used in the present investigation, contacts were made with workers and the experimenter while the children sat briefly in the waiting area just prior to their trials at the tasks. The potential for a relationship was present more than once, since the workers and experimenter interacted with the child at each of the child's eight trials. Aronfreed (1961) parallels the significance of sex role with the significance of social class membership. He views the female role as equivalent in many ways to the lower social class role. He hypothesizes that social status (sex role as well as class) has an impact on a child's moral orientation, with girls being more externally oriented and sensitive to norms and boys more internally oriented. Doland and Adelberg (1967) speculate likewise.

A simple and straightforward explanation for greater sharing by girls is that the tasks may have been less attractive to girls than to boys. Although one of the criteria for the tasks was that they be as free of sex bias as possible, it is extremely difficult to develop tasks equally suitable for both sexes. Rosenberg and Sutton-Smith (1960) asked 187 boys and girls in fourth, fifth, and sixth grades to rate a list of 181 games as to whether the child had played each of them and whether he also had liked the
games. Items differentiating boys and girls in the fourth, fifth, and sixth grades ($p<.05$) included cars and darts. These were male activities. Although an ergometer and balls were not listed for boys or girls, throwing snowballs, shooting, and football were listed as male activities. In another article by the same authors (Sutton-Smith, Rosenberg, & Morgan, 1963), bowling (similar to Task II) differentiated in favor of boys at grade 3. Using a method similar to Rosenberg and Sutton-Smith (1960), DeLucia (1963) found that racing cars received a very masculine rating. Rosenberg and Sutton-Smith (1960) conclude, however, that one should not rely on play data accrued many years ago as a basis for present prediction, due to the marked shifts occurring in masculine and feminine preferences.

Although the age-by-sex interaction is not statistically significant, some interesting trends are apparent upon closer examination. Sex differences in the direction of the main effect sex differences are present in age Groups A and B, with the greater sex difference found in age Group B. However, no statistically significant sex differences exist in age Group C. The most obvious between-group differences in the age-by-sex interaction are between age Groups B and C, with the greatest difference for boys in age Groups B and C. This is consistent with the main effect age differences. Boys in age Group A are not different in sharing behavior from boys in age Group B. Girls show increased sharing from the youngest to the oldest age group, but greater increase is found from age Group B to age Group C.

All persons actively involved in the testing situation were female. The effects of this sexual configuration upon sharing behavior are not known.
Sex of Sharee

No differences were found for sex of the sharee. This was unexpected, since research on the effects of age and sex on interaction of children in middle childhood has found that peers of the same sex are more desirable as partners (Furfey, 1930; Campbell, 1939; Koch, 1944; Harris & Tseng, 1957; Lewis, 1958; Meyer, 1959; Haskett, 1971; Koslin et al., 1971). However, since no research directly related to sharing behavior has been concerned with the sex of the partner, it is somewhat questionable to imply that the peer research has meaning in a sharing situation. Somewhat relevant are findings by Wright (1942a) that children are more generous toward strangers than toward friends and by Staub and Sherk (1970) that friends do not reciprocate as much as non-friends in an experimental sharing setting.

In the sex-of-sharer by sex-of-sharee interaction, the trend of the main effect sex difference is seen (i.e., girls shared more with both girls and boys than did boys). Within each sex, there is a trend toward greater sharing by both sexes with a member of the opposite sex. The mean sharing by males with females was greater than with males and the mean sharing by females with males was greater than with females, though none of these differences reached significance. When age is added to the sex-of-sharer by sex-of-sharee interaction, no trends are apparent.

The present investigation is exploratory in this area and conclusions are impossible to make, except that more information relative to the effects of the sex of the sharee on sharing behavior is needed.
Sharing Tasks

The analysis of variance showed no difference between the two sharing tasks (Tasks III and IV) used for the study. Because there was not enough variance in the scores from Tasks I and II to justify an analysis of variance, the data from Tasks I and II were inspected but did not enter into any of the statistically analyzed results.

Tasks I and II

These tasks were similar in design and use and, therefore, are combined for discussion purposes. The possible score for these counting tasks ranged from 0 to 9. A frequency distribution showed that of 48 children, 31 shared 4 of 9 darts, 13 shared 5 darts, and 4 shared 3, 2, or 0 darts. Twenty-six children shared 4 of 9 balls, 14 shared 5 balls, 2 shared 6 balls, and 6 shared 3, 1, or 0 balls. Of those who shared more than half, there were more females and more from age Group C.

Ugurel-Semin (1952) used an unequal amount to be shared and found an increase in generosity after 5 to 6 years of age, with greatest generosity at 7 to 8 years of age. Beyond these ages, equalitarian decisions were predominate. However, in the present investigation, only one child (in age Group C) in the total sample indicated equal sharing.

Tasks I and II might have been more competitive in nature than Tasks III and IV, since it was possible to succeed or fail in the throwing situations. The effects of competition, if it exists, are not known, since degree of success or failure in the task was not analyzed.
Tasks III and IV

Tasks III and IV were similar in nature and in scoring method. Therefore, they were combined for discussion purposes. There was a wide range of possible scores (0-180 seconds) for these timed tasks. The analysis of variance showed no task differences for these two tasks. However, unlike Tasks I and II, they produced variance in sharing behavior for age and sex.

The only other study using a timed sharing task was by Staub and Sherk (1970) who correlated the sharing of candy (counting) by one child with the reciprocated sharing of a crayon (timed) by a second child. There was significant correlation between the two types of sharing. Elliott and Vasta (1970) employed bags of 25 pennies and 25 candies as materials to be shared and concluded that the two could be considered as alternate forms since the two had moderate reliability (r = .65, df = 46, p<.001). They provided a greater possible range in score than Tasks I and II in the present study. However, another sharing situation, the Self-Other test, where the child chose a toy for himself and a toy for another child from two toys, did not generalize to sharing of the pennies and candy. One toy was bigger and better, but the two were alike in color and basic design. Only 2 of 48 subjects shared the more attractive toy. The authors speculated that if there had been a larger number of such toys, more sharing would have occurred. Presbie and Kanareff (1970), having used both marbles and paper clips in their study, speculated that the value of the object shared may determine the degree of sharing for each child.
Typology of Sharing Behavior

A typology of sharing behavior was developed in order to attempt to identify differences in quality of sharing behavior. No other research has attempted to analyze sharing behavior in this way. Types identified were pure (decision about how the commodity will be used is made by the sharer); arbitrated (decision about how the commodity will be used is made by both the sharer and the sharee); and task specific (any act of joint endeavor in which the decision does not appear to be made by either the sharer or the sharee and the act is not possible with another task). The latter could occur alone or as part of the other two types. Task specific sharing was absent more often than it was present and was present for Tasks III and IV more than for Tasks I and II. This may be due to the nature of Tasks III and IV compared to Tasks I and II. The former involved more complicated equipment so that increased random use of the task could occur. While one child rode the ergometer, the other sometimes played with the wheels, handlebars, or other parts. During use of the car by one child, the second child sometimes played with the tracks.

Children in age Group C used pure sharing more than arbitrated sharing, with the reverse true in age Groups A and B. It is possible that the older children were more attentive to the instructions, which gave the sharer the control of the situation or that the older children simply respected the sharer's right to decide who would use the toy since he won the game of chance.
Implications of the Investigation

From the findings of this investigation, it may be concluded that sharing differences do exist in a controlled setting as a function of chronological age. In addition, girls share more than boys, especially at the younger age levels included in this study.

The present study was exploratory in several areas. Sex of sharee has not previously been studied. This is one of many situational variables which may affect sharing behavior. Although the present investigation suggests that the variable is not effective, more research on the influence of this variable is needed.

The use of four sharing tasks with one group of children has not been reported in the literature. The task chosen might possibly be a large determining factor in research results, since two of the four tasks used in this study did not differentiate sharing while the other two showed significant sharing differences for two variables, age and sex. Furthermore, the types of tasks used here were not previously used. Items, rather than turns at a game or toy, have heretofore been used. Candy and marbles have been most popular. The four tasks used in the current investigation were realistic and enjoyable for the children.

An investigation concerning types of sharing behavior is limited to the present study. More research will determine whether such differences do in fact exist.

Generalizations that might be made from this research are limited by several factors. The subjects were chosen from a middle-class population in a university community. The children were together in a sharing task in pairs, with no other children to influence them. The experimental design
balanced the pairs by sex and by trial number. However, one cannot assume that a specific sexual configuration, such as female sharer and male sharee, would occur naturally. If boys and girls do not frequently interact, the chances to share with a member of the opposite sex would be few. Although all the children had some social experience with each other in the recreational clubs, the degree cannot be accurately determined, except through a sociometric technique.

Implications for Society

Because sharing is a part of a larger group of behaviors called altruism and because altruism is often considered part of moral development, sharing behavior would seem to be of social interest. Findings from sharing research should be useful in helping parents, teachers, and others who interact with children to know what to expect, when to expect it, and how to provide the optimum environment for change.

The restricted amount of research directed toward understanding of children's sharing behavior has resulted in limited knowledge in this area. The findings of the present investigation indicate that such behavior is indeed a function of both the age and sex of the child. Older children can be expected to share more and girls more than boys. That children are being taught to share was apparent from some of their comments during the study, such as "I think we're supposed to share," or "Do I have to share some?" What is not clear is how child rearing variables, and many other aspects of socialization, affect the sharing behavior and how the latter is woven into the fiber of the child's personality.
Implications for Future Research

During the course of the study, some suggestions for future research became apparent. A larger range of possible scores than the 0-9 of Tasks I and II seems to be necessary to provide an opportunity for sharing differences to emerge. If objects such as balls and darts are to be used, a larger number might need to be made available to the subject to share. However, the problem arises as to whether 5- to 6-year-old children can deal cognitively with larger numbers.

Sharing tasks are basic to the establishment of validity and reliability of sharing behavior. In order to determine whether sharing exists as a behavioral index, it is extremely pertinent that sharing be established as general and not task specific. Tasks III and IV were not different in sharing differences produced, thus pointing to the possibility that sharing is testable and not specific to each task. Replication of this finding, using these and other tasks, is needed.

A design employing fewer encounters with the tasks would seem highly advisable. Eight trials may have been too many for the half-day period in which each group was tested in this study. Not only might it be tiring to the child, but it might be monotonous, also. If a child were always the sharer, with a sharee who is a confederate to the experimenter, the number of encounters would be cut in half, since each subject would always enter a task to be the sharer.

Great care is necessary in the choice of sharing tasks due to the sex-role connotation. It is possible that the tasks used in the present study were more masculine than feminine or neutral. It is indeed difficult to
find a task with a neutral sex-role label which also is interesting and fun for 5.5- to 11.5-year-old boys and girls.

When possible, it seems advisable that children be taken from their regular play or class groups to participate in research. Because the children in the present investigation came to the research laboratory on days other than their recreational club days, they might have focused more attention than usual on the research when they returned to the special play area.

Adult presence in the sharing tasks in future studies with this design might help to eliminate a problem of attempted cheating. Since no adult was present in the sharing task after the experimenter gave the instructions and left the room, some children attempted to cheat in the sharing tasks. In Tasks I and II, some attempts were made to retrieve some of the balls or darts and throw them again. In Tasks III and IV, two pairs of children extended the time by resetting the timer. In these situations, the scorekeepers alerted the student helper who immediately entered the task room without waiting for the bell (buzzer) to sound. With an adult present, the attempted cheating could not occur; however, adult presence may affect sharing behavior and thus is not a very acceptable solution to this problem.

In the future, mixed age groups included in the sharing situations would help to determine the effects of age-of-sharer and age-of-sharee interaction. In addition, research on the effects of the presence of a third child in the sharing task is needed. Variables such as age and sex of the third person would be of interest.

A further question related to this research is the effects of the sharing instructions in the sharing situation. It is possible that through
instructions and structuring, sharing is forced in varying degrees, and
children of different age and sex combinations may have varying degrees of
susceptibility. Indirect social sanctions may be conveyed in the instruc-
tions. Research in a free play setting would eliminate this problem, since
there would be no instructions and no structuring. However, the researcher
inherits all the problems of research in a natural setting when a free play
setting is employed.

The question of how the objects to be shared are obtained (as through
cooperation, competition, no effort, or chance) has not been answered. The
game of chance was convincing in the present investigation, but its effects
on the sharing behavior of boys and girls at different ages are not known.

A point of interest in the present research problem concerns the
effects of success or failure in the sharing task on the subsequent sharing.
With both the darts and balls, it was possible to miss the target (balloons
or bottles) and to have failed. Data concerning the degree of success or
failure was not obtained but would be valuable for future research in shar-
ing.

The present study tested a unique population. Perhaps lower socio-
economic groups, both white and black, would react differently to the shar-
ing tasks used, as well as in degree of sharing. There is great potential
for such research, since the sharing research is generally with middle-
income children. Testing younger children could yield results related to
degree and nature of sharing as well as to use of the tasks with younger
groups.

While no intelligence measures were administered in this research
study, the relationship between intelligence and sharing would be of inter-
est. It is possible that sharing is partially determined by cognitive development. Moral development has been studied in this framework, but it is impossible to generalize to sharing until sharing is shown to definitely be a part of the larger framework of moral development.

As the research findings concerning sharing behavior are clarified through further research, and as unexplored aspects of it are studied, better implementation of the learning and practice of sharing and related behaviors in society will occur.
SUMMARY

The present exploratory study was designed to investigate the sharing behavior of school-age children as a function of age, sex of sharer and sharee, and sharing tasks. The following null hypotheses were tested:

1. The sharing behavior of children is not a function of their age.
2. The sharing behavior of children is not a function of their sex.
3. The sharing behavior of children is not a function of the sex of the person to be shared with (sharee).
4. The sharing behavior of children is not a function of the commodity shared (task).
5. The independent variables (age, sex of sharer, sex of sharee, and task) do not interact to produce effects in sharing behavior.

Of primary interest was quantity of sharing behavior, but type of sharing behavior also was a concern of the study. Four sharing tasks (darts, balls, ergometer, cars) were designed. A scoring method was devised, and a typology consisting of three types of sharing behavior (pure, arbitrated, task specific) was developed. Four scorekeepers, two for each set of tasks, were trained in determining and recording scores.

Subjects for the study attended the Older Children's Laboratory recreational groups, Department of Child Development, Iowa State University, and ranged in age from approximately 5.5 to 11.5 years of age. This range was broken into three age groups. Each child was one of 8 children (4 boys and 4 girls) paired to participate in every task twice during which he was a sharer once and a sharee once.

The data were analyzed with two separate analyses of variance. Because an inspection of the data showed that scores from Tasks I and II did not vary enough to justify an analysis of variance, only the scores
from Tasks III and IV were analyzed in relation to source of variance. Two separate analyses were used since confounding occurred due to the exclusion of Tasks I and II from the original data pool.

Results from Tasks I and II, while not analyzed statistically, were inspected, using graphs and comparisons, and trends were observed. The typology of sharing behavior for all four tasks also was not statistically analyzed. The findings for the typology were inspected and summarized in a table.

Significant differences in sharing behavior were found with age and sex differences for Tasks III and IV. Older children shared more than younger ones and girls shared more than boys. Thus, the null hypotheses stating that the sharing behavior of children is not a function of their age or sex are rejected. No differences were found for sex of sharee and sharing tasks. Furthermore, there were no significant interactions. Thus, the null hypotheses stating that the sharing behavior of children is not a function of the sex of the sharee or the task fail to be rejected. In addition, the null hypothesis stating that the independent variables of age, sex of sharer, sex of sharee, and task do not interact to produce effects in sharing behavior also fails to be rejected.

In addition to assumptions about sharing behavior of children, this study contributes to the body of evidence concerning sex-role patterns and socialization processes of boys and girls and adds to the body of age-related knowledge of children.
LITERATURE CITED


Berkowitz, L., Klanderman, S. B., & Harris, R. Effects of experimenter awareness and sex of subject and experimenter on reactions to dependency relationships. *Sociometry*, 1964, 27, 327-337.


Wright, B. A. Altruism in children and the perceived conduct of others. *Journal of Abnormal and Social Psychology*, 1942, 37, 218-233. (a)

Wright, B. A. The development of the ideology of altruism and fairness in children. *Psychological Bulletin*, 1942, 39, 485-486. (b)
ACKNOWLEDGMENTS

Although the writer is responsible for this work, she is grateful to the many people who have contributed to its evolution. Special gratitude is expressed to Dr. Damaris Pease for the assistance and guidance she provided while working closely with the writer throughout the graduate program.

To Dr. Leroy Wolins, sincere thanks are extended for his help in planning the research design and in analyzing the statistics. His candid, easy-going manner is appreciated.

The support of Dr. Samual Clark, Dr. Edwin Lewis, and Dr. Marguerite Scruggs as committee members is gratefully acknowledged.

Acknowledgment is expressed to the children of the Older Children's Laboratory and their parents; to graduate students Beth Butler, Linda Carson, Patty Johnson, Nancy Smith, and Crickett Ward; to undergraduates Alison Cocks, Stephanie Grier, Kathy Hyink, and Cathy Long, all for their participation and help on busy Saturdays; and to Lynn Graham, Older Children's Laboratory head teacher, for her assistance in obtaining information on subjects.

To my family is due infinite gratitude -- to my husband, Ike, for his concerned support, patience, cooperation, and help throughout and to my parents and sister for their concern.

Recognition is expressed to the Home Economics Research Institute for financial support which made possible materials and personnel needed to do this research.
APPENDIX A. LETTER TO PARENTS
March 16, 1972

Dear Parents,

One of the functions of the Older Children's Laboratory is to provide interesting activities and recreation for children after school. In addition, it gives university students a chance to interact with children and observe them in a free play setting. Older Children's Laboratory also provides the opportunity for an in-dept study of the growth and development of children.

As a doctoral student, I am interested in studying the social behavior of pairs of children in a play situation as related to age and sex of child. Participation should be interesting and fun for the children. The results of the study will be used to complete requirements for my doctoral dissertation and no child will be identified as an individual in the study.

Rather than use the children's time in the afternoons during lab time, I would like to have them come for an extra session on a Saturday. Each child will be a member of a group of sixteen children and will participate in one Saturday session. The group of sixteen children will come at one time, for approximately two and one-half hours. Each child will be directly involved for 25-30 minutes in a structured social situation with another child. The remainder of the time will be spent in small group situations.

Time and logistics do not permit the inclusion of all children attending our Older Children's Laboratories. A random selection will be made during this week and you may be contacted to see if your child can participate in the study. If your child is selected and you are willing to have him participate, he will participate on Saturday. It would be very helpful if parents can bring their children; however, if this is not possible, I will arrange for transportation.

If you have any questions as the study progresses, please call me at my office (294-8650) or home (292-2036). I will be happy to answer any questions you might have. If your child is selected, it will be very helpful to me if he can attend this extra session so as not to disrupt the continuity of the study.
We enjoy having your children as members of this recreational club and appreciate your willingness to bring them here. Thank you for your cooperation.

Sincerely,

Sedahlia J. Crase
Instructor

Dr. Damaris Pease
Distinguished Professor
Coordinator, Graduate Study and Research

Julia F. Anderson
Acting Head
APPENDIX B. SCORE SHEETS FOR SHARING TASKS
Score Sheet for Tasks I and II

Date: 3-25-72, 9:00 ____
     4-8-72, 9:00 ____
     4-8-72, 1:30 ____

Age: 5½-7 ____
     7½-9 ____
     9½-11½ ____

Task: Darts ____
     Balls ____

Trial #: 1 2 3 4 5 6 7 8

Name of Sharer _______________________; No. ____

Sex: M F

Total no. darts/balls given by sharer to sharee:
   0 1 2 3 4 5 6 7 8 9

Total no. darts/balls kept by sharer for self:
   0 1 2 3 4 5 6 7 8 9

Type of sharing:
   I. Pure sharing ______________________

   II. Arbitrated sharing __________________

   III. Task specific sharing _____________
       Describe (e.g., no. of times; length of time;
       description of the action):

Name of Sharee _______________________; No. ____

Sex: M F

Comments:

Scorer ______________________
Score Sheet for Tasks III and IV

Date: 3-25-72, 9:00
4-8-72, 9:00
4-8-72, 1:30

Age: 5½-7
7½-9
9½-11½

Task: Ergometer
Car

Trial #: 1 2 3 4 5 6 7 8

Name of Sharer _______________________________; No. ___

Sex: M F

Total amt. time ergometer/car given by sharer to sharee:

Total amt. time ergometer/car kept by sharer for self:

Type of sharing:
I. Pure sharing ____________________________

II. Arbitrated sharing ______________________

III. Task specific sharing ____________________
    Describe (e.g., no. of times; length of time;
    description of the action):

Name of Sharee ______________________________; No. ___

Sex: M F

Comments:

Scorer ____________________________
APPENDIX C. TRAINING MANUAL FOR SCOREKEEPERS OF SHARING BEHAVIOR
Training Manual for Scorekeepers

by Sedahlia J. Crase
Scorers of the darts/balls situation will be concerned with counting the number of darts/balls shared by the sharer and the number kept for himself. Scorers of the ergometer/car situation will be concerned with counting the time (minutes and seconds) the sharer shares the ergometer/car and the time he keeps it for himself. Both groups of scorers will also classify the sharing behavior into one of the following three types:

I. Pure sharing: The sharer will be told that he has gained the right to decide how the toy will be used as a result of winning the guessing game. If he makes that decision and tells it to the sharee, the sharing is typed as "pure." If sharee suggests and sharer does not abide by that suggestion but goes with his own ideas, that is "pure."

II. Arbitrated sharing: The sharer will be told that he has gained the right to decide how the toy will be used as a result of winning the guessing game. However, he may not make that decision on his own. Following are possible arbitrated decisions:
A. Sharer suggests, sharee offers second suggestion, and sharer agrees to sharee's suggestion.
B. Sharer suggests, sharee offers second suggestion, and sharer offers compromise suggestion to which the two agree or which is used whether or not sharee agrees.
C. Sharee suggests and sharer agrees.

III. Task specific sharing: Behaviors in this category are any acts of joint endeavor which would not be possible with another task.
This type of sharing may appear as a subset of either of the two types above; that is, while the total situation may be classified as "pure sharing" because the sharer made the decision of what would be done with no heed to the sharee's suggestion (if a suggestion is made), task specific sharing may occur within that "pure sharing" situation. However, it may also occur as a classification standing alone. Examples of task specific sharing are:

A. Ergometer: Both children play with body of ergometer, examine it, etc. In this example, the total time that this joint activity occurred would be listed as task specific sharing. For the purpose of stating how long the sharer shared with the sharee, this joint activity in which neither is in control would be timed for the total but divided in half when deciding how much time should be recorded for each child. Thus, if this examination of the ergometer took place the total three minutes for that task, the sharer would be said to have shared 1\% minutes with the sharee and kept the toy 1\% minutes for himself. In this example, the task specific sharing would not be a subset of type I or II, unless (1) the sharer had decided in advance that they would play with the ergometer simultaneously or (2) the two had arbitrated that the two would play with the ergometer simultaneously. An example of the recording is: "55 sec. -- jointly messed with spokes." The sharer and sharee would each be recorded as spending 27\% seconds at the task on the section entitled "Total amt. time . . . to sharee" and "Total amt. time . . . for self."
B. Ergometer: Each child puts one foot on a pedal of the ergometer, and the two of them use it simultaneously. As in example IIIA above, this would stand alone as a type unless it met the two criteria for a subset as given in IIIA above. Scoring would be handled for this example as in IIIA above (e.g., 26 sec. -- joint pedaling). Each child would be recorded in his time section as using the toy 13 seconds.

C. Racing cars: One child is controlling the car, but the car jumps the track and the child not controlling the car puts the car back on the track. This would be a subset of either type I or II above, depending on how the decision was reached as to who would control the car and for how long. The scorer would simply state how many times this type of task specific sharing occurred and record that number along with a description of the event (e.g., 1 -- child b' put car on track when it left track).

D. Racing cars: Child who is not running the car works on the track or railing while second child is controlling the car. This would be handled as in IIIC above, as a subset of type I or II, except that amount of time played could be recorded (e.g., 7 sec. -- child b' handled track).
Training Situations

Please judge the following sharing situations as type I, II, or III. If needed, include the type and a subset type. If type III, describe.

1. Sharer: What do you want to do? Sharee: You take half the time and I'll take the other time. Sharer: OK, but I want to go first. (Sharer is running car, and sharee runs his hand over the cord leading to the car control for 9 seconds.)

2. Sharer: I'll take 6 balls and you can have 3. Sharee: I would like 4. (Sharer hands the sharee 4 balls.)

3. Sharer: I'll take 6 balls and you can have 3. Sharee: I would like 4. (Sharer hands the sharee 3 balls.)

4. (Experimenter leaves room. Sharee takes 4 darts and leaves 5 for the sharer.)

5. (Experimenter leaves room. Sharer takes 6 darts and leaves 3 for the sharee.)

6. (Experimenter leaves room. The sharer and sharee stand beside the track and play with the joints in the track for 21 seconds.) Sharer: I want to play with the car. (He plays with the car 25 seconds.) The sharer walks to his side, saying: It is my turn now. (Sharer does not return the car to the sharee for the remaining 2 minutes, 4 seconds.)

7. (Sharer gets on ergometer and starts to ride. After 1 minute, 40 seconds, sharee shoves him off and gets on himself for 1 minute, 20 seconds. During this time, the sharer examines the speedometer for 20 seconds.)

8. Sharer: Let's each ride half of the time. (He gets on and rides, gives sharee his turn, and experimenter returns.)

9. Sharee: I would like to play with the car first and for half of the time. Sharer: You may play first, but I want to play more than half of the time, because I won the game. (Sharee controls the car; car leaves track and sharer recovers it. Sharer then plays with the fencing around the track.)

10. (Sharer takes car control for 1 minute, 30 seconds. He hands it to sharee.)
1. Try not to get confused about the use of the word "control" in the dis­cussion in determining whether the decision was arbitrated. The shar­ing is arbitrated sharing if the sharee has some word in the decision. If he says things and the sharer ignores these suggestions, the sharing is pure. If the sharee steals from the sharer, that is arbitration, unless the sharer takes it back before he uses it, because the sharee got his say in some small way.

2. On timing, start each 3-minute session by giving time to the sharer. During an exchange on cars or ergometer, give time to the user until he has both feet on the floor, then start timing for the next user.

3. Task specific sharing will be present if in balls or darts the sharee holds the box with the total number in it or if he holds the darts or balls already counted out and designated as belonging to the other child. If he is holding his own darts or balls, only, this is not sharing. On ergometer or car, the sharing will be task specific shar­ing if the sharee (or sharer) holds onto track, railing, handle bars of ergometer, etc.
APPENDIX D. SOURCES OF VARIATION AND F-VALUES FOR ANALYSES OF VARIANCE
TABLE 4
Sources of Variation and F-Values for the Analyses of Variance (Major and Minor)

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>F-value (major anal.)</th>
<th>F-value (minor anal.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>2/24</td>
<td>8.55</td>
<td>3.46</td>
</tr>
<tr>
<td>Sex of Sharer</td>
<td>1/24</td>
<td>3.72</td>
<td>3.43</td>
</tr>
<tr>
<td>Sex of Sharee</td>
<td>1/24</td>
<td>--^a</td>
<td>1.59^b</td>
</tr>
<tr>
<td>Age by Sex of Sharer</td>
<td>2/24</td>
<td>1.04</td>
<td>3.78</td>
</tr>
<tr>
<td>Age by Sex of Sharee</td>
<td>2/24</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Sex of Sharer by Sex of Sharee</td>
<td>1/24</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Age by Sex of Sharer by Sex of Sharee</td>
<td>2/24</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Tasks</td>
<td>1/23</td>
<td>--</td>
<td>1.59^b</td>
</tr>
<tr>
<td>Age by Tasks</td>
<td>2/23</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Sex of Sharer by Tasks</td>
<td>1/23</td>
<td>--</td>
<td>1.55</td>
</tr>
<tr>
<td>Sex of Sharee by Tasks</td>
<td>1/23</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Age by Sex of Sharer by Tasks</td>
<td>2/23</td>
<td>--</td>
<td>1.41</td>
</tr>
<tr>
<td>Age by Sex of Sharee by Tasks</td>
<td>2/23</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Sex of Sharer by Sex of Sharee by Tasks</td>
<td>1/23</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Age by Sex of Sharer by Sex of Sharee by Tasks</td>
<td>2/23</td>
<td>1.28</td>
<td></td>
</tr>
</tbody>
</table>

Significance levels: p(F1,24>4.26)<.05; p(F2,24>3.40)<.05;
p(F2,24>5.61)<.01; p(F2,24>6.66)<.005; p(F1,23>4.28)<.05; p(F2,23>3.42)<.05.

^a Less than 1.0 not reported.

^b Tasks are confounded with sex of sharee.