INFORMATION TO USERS

This material 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.

5. PLEASE NOTE: Some pages may have indistinct print. Filmed as received.

Xerox University Microfilms
300 North Zeeb Road
Ann Arbor, Michigan 48106

PEER INTERACTION OF INFANTS UNDER TWO YEARS OF AGE WITH AND WITHOUT EARLY GROUP EXPERIENCE

by
Aurelia Chaney Mazyck

A Dissertation Submitted to the Faculty
of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Greensboro
1974

Approved by

Mary Wyatt Scott
Dissertation Adviser

APPROVAL SHEET

This dissertation has been approved by the following committee of the Faculty of the Graduate School at The University of North Carolina at Greensboro.

Dissertation Adviser _____

Committee Members _____

_____

_____

_____

October 28, 1974
Date of Examination

MAZYCK, AURELIA CHANEY. Peer Interaction of Infants Under Two Years of Age, With and Without Early Group Experience. (1974) Directed by: Dr. Mary Elizabeth Keister, Pp. 67

The advantages and disadvantages of group experience (day care) for infants and toddlers have been investigated in developmental areas such as motor, cognitive, and language development; yet some other areas have received relatively little attention. Sometimes cited as an advantage of group experience is that it promotes significant and competent social interaction among young children, yet this area has not been studied extensively, insofar as infants and toddlers are concerned.

The problem in this research was to examine one aspect of social development in an attempt to answer two questions concerning peer social interactions of children between 12 and 24 months of age. The questions were: (1) Do children who have had early group experience before one year of age move more promptly towards interaction with peers, engage in more interactions, and for longer periods of time than children who have had no early group experience? (2) Do children who have had early group experience before one year of age exhibit more positive social interactions in social situations?

The subjects of this study were 56 children (28 matched pairs) between 12 and 24 months of age. The subjects were matched by age (within two weeks); sex; race; socioeconomic level; and where possible, position in the family. Experimental subjects were 28 children who had been in group care before one year of age and control subjects were 28 children who had had no early group experience.

Sixteen behaviors were selected to be used for a time sampling observation of each matched pair of subjects in an experimental setting. Two observers were trained to observe and record the test behaviors, and to complete a checklist of positive and negative behaviors in a pre-experimental setting.

Each of the behaviors was to be analyzed in terms of three measures: (1) latency of interaction, (2) frequency of interaction, and (3) duration of interaction. The behaviors were: offer toy, accept toy, cooperative play, general play, imitation, vocalization or smiles to peer, touch peer, cry/whine, avoidance of peer, approach peer, approach toy, non-toy play, hit/push, struggle over toy, play with mother, no play but with-mother.

Statistical treatment of the data included the use of analysis of variance for matched pairs and chi square for correlated frequencies. Where statistical differences, significant at the .0[illegible] level, were found they were in favor of the control subjects; however, they were in behaviors that were not examples of social inte[illegible]

The results of this research have shown no essent[illegible]l dif[illegible]ces between the social interaction of children with group experience and children with no early group experience. Therefore, no ar[illegible] can be made for or against the social advantage of home rearing opposed to group care or vice versa.

More research on the social interaction of infants and toddlers is needed before drawing major conclusions. The research should seek answers to the same questions asked in the present study as well as additional questions. Future research should be conducted under both experimental and naturalistic conditions.

Acknowledgments

This observational study required the generous cooperative efforts of many individuals. The writer is especially indebted to Dr. Mary Elizabeth Keister, Excellence Fund Professor of Home Economics and of Education, advisor, and committee chairman, for her encouragement and wise counsel. Appreciation is expressed to other members of the committee: Dr. J. Allen Watson, Associate Professor and Chairman of the Child Development and Family Relations Department, School of Home Economics; Dr. Eunice Deemer, Associate Professor of Home Economics, Dr. Carl Cochrane, Lecturer, School of Home Economics; and Dr. Robert Eason, Excellence Fund Professor of Psychology.

The assistance and advice of Dr. Carl Cochrane was invaluable in the programming and statistical analysis of the data.

The writer acknowledges the assistance of the many private and community sponsored day care agencies, church nursery programs, and other individuals who provided lists of names for the selection of subjects for this study. Special appreciation is extended to all parents who were most cooperative in allowing their children to be subjects in this research.

A special appreciation is extended to Dr. Mary Elizabeth Keister who, for several years has been a true mentor to the researcher, helping her to become knowledgeable in infant development and to gain experience in the organization, operation, and implementation of day care programs.

Sincere appreciation is expressed for the valuable time and assistance of Miss Janet Tippett and Miss Kathy Willard in the collection of data.

The careful work of typing the many drafts of this research by Mrs. Jeanetta French made the study possible and allowed the researcher to complete the task.

The writer expresses deep appreciation to her family for their patience and support during the period of this investigation as it moved from its inception to conclusion.

TABLE OF CONTENTS

Page

ACKNOWLEDGMENTS iii

LIST OF TABLES v

CHAPTER

I. INTRODUCTION 1

Statement of the Problem 4
Hypotheses 5
Need for the Study 5
Clarification of Terms Used. 6
Assumptions. 7
Limitations. 7

II. REVIEW OF RELATED LITERATURE 9

Studies of Development of Infants in Day Care. 9
Studies of Social Behavior and Development 12
Summary. 21

III. PROCEDURE FOR THE STUDY. 23

The Experimental Setting 23
Selection of Subjects. 24
Selection of Behaviors to be Observed and
Development of the Record Form. 27
Training of Observers. 28
Procedure. 32

IV. ANALYSIS OF THE DATA 34

Criteria for the Measures Used 34
Method of Analyses 35
Non-Parametric Analyses. 37
Parametric Analyses. 39
Summary and Discussion 43

V. SUMMARY AND CONCLUSIONS. 49

Page

BIBLIOGRAPHY 55

APPENDIX A 58

Experimental Setting

APPENDIX B 60

The Record Form

APPENDIX C 62

Behaviors to be Observed and Definitions

APPENDIX D 64

Checklist for Introductory Observation Period
Pre-Experimental Setting

APPENDIX E 66

Instructions to Mothers

LIST OF TABLES

Table		Page
1	Number of Subjects Identified by Matching Variables	25
2	Age Distribution of Subject Pairs	25
3	Percent of Agreement Between Observers	30
4	Percent of Agreement Between Observers for Final Four Pairs of Training Subjects	30
5	Item Reliability for Four Pairs of Training Subjects	31
6	Number of Subjects Exhibiting Behaviors	36
7	Four Cell Table for Non-Parametric Comparisons	36
8	Frequency of Behaviors Seen by Either Observer and Tests of Significance	38
9	Frequency of Behaviors Seen by Both Observers and Tests of Significance	40
10	Means and Tests of Significance for Three Behaviors	41
11	Tests of Significance for Pre-Experimental Observation	43

CHAPTER I

INTRODUCTION

Individuals who have great interest in the healthy growth and development of children must be aware of all the situations in which children grow and learn and the influences of these situations on total development. For a large segment of today's children, most of their daytime hours are spent, not at home with mother and other family members, but in arrangements for care outside their own homes and with adults and children who are not family members. Day care, care outside the child's home, seems not only to be increasing in its availability to young children but also to be available for children of younger and younger ages.

The population of children under two years of age in group day care arrangements has increased rapidly since 1965. This increase reflects a change in attitude on the part of professionals in this country. This rapid increase in programs for children younger than two has created a definite need for studies of the effects of early group experiences on development.

The advantages and disadvantages of group experience (day care) for infants have been investigated in developmental areas such as motor, cognitive, and language development, yet certain areas are only now beginning to receive attention. Sometimes cited as an advantage of group experience is that it promotes significant

and competent social interaction among young children, yet this area has not been studied to a great degree.

Greatly influenced by the research of Goldfarb (1943, 1945) Spitz (1945), and Bowlby (1952), professionals in this country have strongly opposed the enrollment of infants in group care situations fearing irreparable damage to development. These writers, summarizing studies of babies in institutions, warned that there were strong possibilities for emotional problems to develop and suggested that infants in such settings run the risk of physical debilitation.

Based on the findings of studies of infant deprivation, Goldfarb (1943, 1945) warned of the resulting basic defects of total personality. Spitz (1945) concluded that there would be irreversible psychological consequences resulting from institutional placement and inadequate mothering during the first year of life. Bowlby's (1953) data supported the likelihood of serious personality disturbance evidenced by shallow interpersonal relationships, difficulties in impulse control; and lowered and limited intellectual development due to prolonged institutionalization.

Professionals in this country have strongly advocated that very young children should be in their own homes and cared for by their own mothers. The effects of maternal deprivation and the weakening of maternal bonds were feared results if infants were cared for by someone other than their own mothers and outside their own homes. From this viewpoint, care in groups was seen as "institutional care."

Bowlby's theoretical conclusions were subjected to a considerable amount of criticism. The prospect for healthy development was predicted to be so limited and damaging for infants and young children in instituional settings that this report represented a real blow to existing children's institutions. Yarrow (1961) made a thorough and detailed review and critique of the literature on maternal deprivation in which he questioned the methodological rigor of the direct studies and the wisdom of the conclusions drawn from the retrospective studies. The publication of the Yarrow critique caused researchers in child development and related fields to reassess the 1951 Bowlby report. The Yarrow review further caused researchers to be less hesitant about developing plans to provide group care settings for infants; yet it encouraged them to be ever mindful of the possible dangers related to their endeavors and to make every effort to avoid creating a depriving environment.

Bowlby gave full and complete endorsement to the Ainsworth (1962) report which represented a reassessment of the effects of deprivation. This monograph reported hopeful results for individual children upon relief from deprivation.

> "Progressive retardation of general development that occurs during severe deprivation may be arrested or reversed if relief is provided within the first two years of life, and perhaps especially within the first twelve months." (p. 133)

In general, there seemed to be more grounds for optimism about partial reversibility of damage than Spitz (1945) had suggested.

Another conclusion drawn from the early work of Bowlby (1952) was that any home setting was better than any institutional setting. Ainsworth (1962) cited studies which supported the fact that "home may not always be the most favorable environment for a child's development" (p. 14).

Statement of the Problem

The problem in this research was to examine, by way of the descriptive method, one area of development (social interaction). This study was an attempt to seek an answer to the question of the relationship of early group experience to the social development of children between 12 and 24 months of age. This researcher had had opportunity for informal observation of "day care" infants and toddlers in social situations outside their nurseries (or centers) and observed that these children often appeared to exhibit greater social confidence than infants and toddlers who had not been in group care situations. These observations prompted questions concerning various interactions that might be observed. This study attempted to answer two questions (1) Do children who have had group experience before one year of age move more promptly towards interaction with peers; engage in more interactions; and for longer periods of time than children with no early group experience before one year of age? (2) Do children who have had group experience before one year of age exhibit more positive social interactions in social situations than children with no early group experience?

Hypotheses

The hypotheses for this study were stated positively; however, the statistical treatment of the data tested the null hypothesis.

I. Infants and toddlers with early group experience have significantly shorter latency periods for entrance into social interaction than do infants and toddlers without early group experience.

II. Infants and toddlers with early group experience exhibit a greater frequency of social interactions than do infants and toddlers without early group experience.

III. Infants and toddlers with early group experience display significantly longer duration of social interaction than do infants and toddlers without early group experience.

Need for the Study

Hartup (1970, p. 364) maintained that "information is sparse concerning peer interaction among children between 18 and 30 months of age, but masses of data have been accumulated concerning the social behavior of children attending nursery schools."

The present study was designed to add to the information available concerning infant peer interaction, and to the literature on infancy and day care. Further, the present study presents a set of systematically observed data on selected qualities in infant peer interactions which have not been considered in earlier studies.

It is essential that researchers interested in day care give attention to all aspects of the early experiences of young children so that the field of day care may build on and accentuate its positive features.

Clarification of Terms Used

Social interaction was defined to include any physical or vocal contact with another infant, or contact with another infant's play material. Positive social interactions were those behaviors which were pleasant and appeared to be receptive to another child. Negative social interactions were those behaviors which were not pleasing and inviting to another child. Neutral behaviors were those behaviors which did not involve relating or interacting with another child.

The term day care refers to the daytime care of five or more children together in one group, outside their own homes, cared for by adults other than their own mothers for a period of more than four hours each day.

Early group experience, as used in this research, refers to the experience a child has while spending daytime hours of care away

from his own home in a small group of other children of about the same age. Experiences were considered "early" when daytime care away from home began before six months of age.

Institutional care refers to the care of a child (or adult) for 24 hour periods, in a residential setting, such as in a hospital, orphanage, or children's home.

Confidence in social situations was operationally defined in this study by the ease with which a child moved away from his/her mother/father, moved without hesitation about a room and/or among people present in a room with observable signs of comfort such as smiling, explorations, friendly chatter, and the absence of crying, whining, clinging to mother, or avoidance behaviors.

Assumptions

The basic assumption in this study was that children between 12 and 24 months of age do interact socially. It was also assumed that it was possible to define social interaction, to observe it and record it.

Limitations

This study was limited by the sparse amount of literature available on the topic. The main body of literature reviewed for the study covered the period 1965-1973. However, related literature was reviewed covering the period 1930 to the present.

Personal observations of infants and toddlers, a review of pertinent research, as well as personal conversations with Dr. Harriet Rheingold, University of North Carolina at Chapel Hill and Dr. Carol Eckerman, Duke University, Durham, North Carolina, provided the basic information for the selection of the behaviors observed in this study.

The subjects were selected on the basis of their availability in Greensboro, North Carolina and the willingness of their parents to participate in the study.

Generalizations derived from this research refer to the population used in the study.

CHAPTER II

REVIEW OF RELATED LITERATURE

Within the last eight years, the factor which appears to be most related to the increase in the need for day care for infants is that women have been entering the labor market in ever increasing numbers, and are returning to work when their babies are very young, well before they reach one year of age.

In a survey (Keister, 1965) of daytime care of children under three years of age in Guilford County, North Carolina it was found that of the mothers with infants and toddlers (516 families, 682 babies) at least 26 percent were gainfully employed. Approximately half of the infants and toddlers were placed in daytime care outside their own homes when the child was younger than six months of age.

Studies of Development of Infants in Day Care

Caldwell and Richmond (1968) and Fowler (1972) have reported developmental gains in infants who have been included in group care programs early in their lives. Caldwell and Richmond (1968) reported that the basic hypothesis of the Syracuse Children's Center was:

> . . . that an appropriate environment can be created which can offset any developmental detriment associated with maternal separation and possibly add a degree of environmental enrichment frequently not available in families of limited social, economic, and cultural resources (p. 327).

Early results of the Syracuse Study revealed that the children in the day care program showed significant mean gains in developmental quotients compared to the children not in the day care program. A total of 149 children served as subjects for the study.

Fowler (1972) had two main objectives in his study:

> (1) to probe the significance of early experience as a foundation period for developmental learning, through (2) establishing a quality program of group day care and education for infants ... (p. 146).

Thirty advantaged and nine disadvantaged infants who were between two and 30 months of age were subjects for the study. The advantaged infants were selected according to day care admission policies and the disadvantaged infants were selected from an inner city poverty district in Toronto, Ontario. Home-reared control subjects were selected to match the day care infants on the basis of age (within two months), sex, and scores on the Bayley Scales of Mental and Motor Development. Over a three year period the subjects were measured periodically in the areas of cognitive socioemotional, and motivational development. Fowler stated:

> Programs for infants in group care can be developed to a level of quality that insures adequate to high level development for all types of children in all areas - cognitive, motor, and socioemotional. With few exceptions, all forms of functioning assessed showed improvements or good adaptation (p. 166).

Caldwell and Fowler concerned themselves with what has come to be known as "cognitive intervention" as well as good care. Another program (Keister, 1970) aimed to demonstrate quality care and to observe and measure the growth and development of the infants and

toddlers in the program. Fifteen pairs of infants and toddlers (experimental: day care, control: home-reared) "were matched on sex, race, age on entering the project and somewhat less exactly on birth order and age and education of parents" (p. 41). At scheduled intervals, the subjects were measured in the areas of physical development and health, mental, motor and social development. Keister (1970) reported that for children between three months and three years of age, few significant differences on mental, motor, or social development were found between matched pairs of children who were in day care and children who did not attend day care.

The Syracuse Children's Center has continued with additional components and new administrative leadership (Lally, 1971). The program subsequently dealt with 108 low-income, multi-problemed families with comprehensive service to families extending to include service to unborn infants. The major component of the program continued to be the infant program for children ranging from six months to fifteen months of age; and the toddler program serving children from 15 months to 48 months of age. As an intervention program, the children who attended the Syracuse Children's Center scored higher "than matches from a low-education control group, but not as high as controls from a high-education contrast group" (p. 31). It was emphasized that this was a longitudinal study and "the main effects of the intervention cannot be truly judged until at least one, two, or three years after intervention ceases" (p. iii).

Studies of Social Behavior and Development

Early studies of infants have rarely been concerned with quality or quantity in peer interaction. Their aims were to describe development in various areas, to better understand the unfolding process of growth in a prescribed area. Buhler (1930) reported one of the earliest observational studies of children during the first year of life. The purpose of the study was to obtain a "characteristic inventory that would serve as a standard for average and normal development within this period." (p. 3). Sixty-nine children (40 percent were from private homes and 60 percent were institution children) were observed and behavior records were kept of each child over a 24 hour period, whether awake or sleeping. From the large amount of data collected, Buhler reported that five month old infants recognized another infant in a nearby crib.

One investigation (Berne, 1930) which may be considered as having a concern with peer interaction was planned for the purpose of measuring social behavior of preschool children by means of ratings, experiments, and observations. Berne defined social behavior as "behavior involving other persons" (p. 17).

> Social behavior consisted of (1) response to the presence and behavior of other persons, and (2) response to rules of behavior which directly involved other persons as objects of activity or as partners in cooperation (p. 18).

One hundred thirty-two preschool children, between one and five years of age were used in this study. Eighty-two children were rated on 30 behavior traits, 59 children were involved in experiments on four traits, and the behavior of 12 children was observed and recorded.

> A rating scale of thirty paired traits devised for measuring the social behavior in young children was based on records of daily observations in preschool groups . . . Ten experimental situations, similar to situations frequently found in the preschools, were arranged for measuring the traits of obedience, interest in the group, cooperation, and respect for others' property rights in children . . . a record for observations, based on the classification of social behavior in the rating scale, was devised for recording occurrence of each behavior pattern (p. 85).

Results of this investigation revealed a large number of patterns that were found in the social behavior of children from two to five years of age. Berne concluded:

> Certain traits change from one age group to another. In other traits, individual differences are of more significance than age differences. Mental age is related to a large number of traits (p. 88).

Bridges (1933) observed 62 infants, between three weeks and two years of age for a period of three months. All of the subjects were patients at the Montreal Foundling and Baby Hospital. The purpose of this study "was not so much concerned in finding norms of behavior as in discovering trends of development" (p. 37). Bridges did not report the details of observation, recording, and statistical treatment. It was reported that an infant showed awareness of another baby at two months of age, and active interest in another child appeared at about four or five months of age.

These early works of Buhler (1930) and Bridges (1933) have been recognized as important contributions to the understanding of social behavior, but were soon criticized in relation to the reliability of the data and the need for quantitative verification of hypotheses (Murphy and Murphy, 1935).

Shirley (1933) conducted a longitudinal study of 25 babies over a period of two years. The purposes of the study were:

> (1) to trace the course of development of mental and motor processes over a two year period in a group of twenty-five babies; (2) to discover whether personality traits and habits are transitory or constant during the first two years; (3) to attempt to get an integrated picture of the development and of the behavior traits of each child; and (4) to have such physical, anthropometric, and psychological data on each baby that each might be used to supplement and explain the results of the other (Vol. I, p. 9).

All babies were observed in their own homes except for the study of social development where it was necessary to bring together two babies who were strangers to each other. (The subjects, except for one set of twins, had no other contact with children of their own age.) Two babies of the same age were observed, and records kept at 15 second intervals, in a series of one minute tests. In summary, Shirley reported:

> 1. Three types of social contacts were noted: first, contacts by sight; secondly, contact by touch with the hands; and thirdly, contact by vocalization.
>
> 2. Two stages of social timidity were shown: timidity proper, which developed in the 5th and 6th months; and shyness, perhaps tinged with self-consciousness, which appeared late in the second year.
>
> 3. Social development appears to follow a definite sequence, which is partly due to the limitations of the motor sequence (p. 90).

An early study concerned with peer interaction (social relations between children) was reported by Maudry and Nekula (1939). The purpose of the study was to investigate individual differences

and to give special attention to "whether the social attitude of a given child was consistent or changing from situation to situation" (p. 193). Each of 24 children was observed in 12 play situations with a different child (total number of subjects 92). All subjects (6-25 months of age) were of "low social status" (p. 195) and were in temporary institutional care. Two children were placed together in a play-pen and observations were made from behind an observation screen outside their nursery room. The experimenter entered the experimental setting (room containing the play-pen) only to present or change the play material. One often quoted finding of the study revealed fights to be the most frequent form of interaction, especially between nine and thirteen months of age. Other relevant findings were: (1) that between 9 and 13 months of age the child responds first to the play material; (2) between 19 and 24 months of age the child integrates his social interest with his interest in play material; and (3) from 14 to 18 months of age there is a shift of interest from the play material to the play partner.

Haas and Harms (1963) set out to replicate and extend the work of Shirley (1933) and Maudry and Nekula (1939) and found that they could not replicate those investigations. Haas and Harms encountered major methodological difficulties because:

> First, behavior which had not been described by previous investigators was observed in the test situation, and behavior which had been seen by other investigators was not observed. Second, reliability could not be obtained (p. 83).

The purpose of the Haas and Harms study was to develop "a reliable method for describing the patterns of behavior between infants in a social situation" (p. 83). The study included 56 infants ranging in age from five months through 15 months who participated in 65 test sessions. Observation forms were developed including specific categories, and abbreviations and symbols for recording observations. The method for determining observer reliability was presented. With the use of the method presented the researchers stated that "data of early investigations can be extended through a more thorough and less subjective approach" (p. 97).

Bayley (1965) examined the "relation between intelligence test scores and various socioeconomic, demographic, and ethnic variables" (p. 379) for children ranging in age from one to fifteen months. The subjects for the study were 1,409 infants, in 12 cities, who were given the revised forms of the Bayley Infant Scales of Mental and Motor Development. By sex, there were 680 boys and 729 girls; 55 percent of the sample infants were white, 42 percent were black, and 2.3 percent were classified as other races. Subjects were obtained, predominantly, from hospital obstetrical clinics, with only a few non-clinic infants. It was found that during the first 15 months of life the forms of mental abilities included in the Bayley Scales were unrelated to sex, race, birth order, geographic location, or parental ability. The one difference found was that motor development for black infants tended to be more advanced than whites during the first 12 months.

Collard (1968) measured responses to a stranger and to a novel toy in 24 pairs of first-born and later-born (with siblings six years and older) infants; and six pairs of first-born infants and less widely spaced later-born infants (with siblings under five years of age). All subjects ranged in age from 38-56 weeks. All subjects were white, from upper-middle-class families, and matched in age, sex and socio-economic status of the parents. It was reported that "first-born and widely-spaced infants tended to make fewer exploratory and play responses to a novel toy and to respond more slowly to the strange person and toy" (p. 332).

Cox and Campbell (1968) reported a study of the effects of the presence or absence of mothers on the behavior of young children in a new situation. There were 20 subjects between 13 and 15 months of age, all from middle-class families. In this two part experiment, subjects were randomly assigned to experimental and control groups. Presence and absence of the mothers in the experimental setting varied according to the child's assignment to experimental or control group. Generalizations from this study were contingent on the age of the child. A main generality was that "when young children play in a strange situation their behavior is affected by the presence or absence of their mother," mother absence often produced a "decrease in talking, movement and playing with toys" (p. 129).

A study by Goldberg and Lewis (1969) made use of a "free play situation to observe sex differences in children's behavior toward mother, toys, and a frustration situation at 13 months of age" (p. 22).

The subjects were two samples of 16 girls and 16 boys each. This study reported observations in a free play situation at 13 months of age and presented information only on sex differences.

> Observations . . . indicated that girls were more dependent, showed less exploratory behavior, and their play behavior reflected a more quiet style. Boys were independent, showed more exploratory behavior, played with toys requiring gross motor activity, were more vigorous and tended to run and bang in their play (pp. 29-30).

With reference to parents in the study, Goldberg and Lewis concluded that "parents can be active promulgators of sex-role behavior through reinforcement of sex-role-appropriate responses within the first year of life" (p. 30). This study suggested important methodological implications for infant research.

> The findings emphasize the importance of checking sex differences before pooling data and , most important, of considering sex as a variable in any infant study (p. 31).

In a study of exploratory behavior, both locomotor and investigatory, Rheingold and Eckerman (1969) studied 24 infants whose ages averaged 10 months (9.6 - 10.5 months). The study was composed of two experiments:

> (1) tested the effect of a toy in (an) open field, compared with no toy, on the infant's behavior in leaving his mother (and) experiment (2) was designed to . . . test the effect of previous experience with a toy or no toy in experiment one, and . . . to test the effect of number of toys in the open field (one toy versus three toys) (p. 275).

Ten month old infants left their mothers with no distress whether the new environment was empty or contained a toy. No sex differences were reported in this study of 10 month olds.

Social class and sex differences received special attention in a study by Messer and Lewis (1972). The purpose of the study was to examine whether "sex differences in infants from lower-class backgrounds parallel those discovered in . . . studies of infants of middle-class parents" (p. 296). Door-to-door solicitation produced a subject pool of 16 girl infants and 17 boy infants, each 13 months of age. Observations of infants were made in a free play situation. With regard to class differences, it was found that "lower class infants vocalized considerably less in the playroom than did middle-class infants" (p. 302); and there were "fewer sex differences among lower-class infants . . . and the differences obtained were smaller" (p. 303).

Escalona (1973) reported the beginnings of a longitudinal study of development dealing with the first two years of life. The objective of the study was "to investigate the effects of early experience upon the course and outcome of development during the first two years of life" (p. 206) by close observation of the behavior of two infants during all of their waking time. Two highly trained observers spent at least two hours weekly with each subject from birth until age two years. This molar approach to the study of social interaction was designed to result in a "behavioral ecology of infant life guided by a developmental and psychological orientation" (p. 205).

It was reported that the researcher

> . . . would not be so impressed with the regularities that were observed if the same scheme of data collection and of data analysis had not also yielded highly meaningful and consistent differences are in good accord with the fact that by the time these children were two years old, . . . subjects one and two were totally different and distinct little personalities (p. 232).

Dragsten and Lee (1973) investigated whether "type of setting and familiarity of partner, i.e. naturalistic (day care) and experimental, effected the social behavior of infants" (p. 65) 6-18 months of age. The subjects were 22 day care infants ranging in age from 6 to 18 months; and 11 infants, of the same age, but not enrolled in day care. Twelve, ten-minute daily observations were made of each day care child from behind a one-way screen. In the experimental setting each day care infant was paired with an unfamiliar non-day-care infant for three 15 minute observations weekly. It was found that differences in the effect of setting on behavior was age-related with significantly greater social behavior in the experimental setting for the youngest (total group divided into thirds by age) infants but not for the middle and oldest infants. Middle and oldest infants displayed a significantly greater proportion of watching behavior in the experimental setting; but this was not true for the youngest infants.

Lee (1973) was interested in closely examining the strategies used by infants in social encounters and whether there were "systematic changes with age in the way children utilize interpersonal strategies." (p. 244). This report was of two individual infants (eight and nine

months of age, most preferred and the least preferred) from a total group of five infants. A code was developed for analyzing the data which was taken from narrative protocols. The findings indicated that the "two infants' social strategies were markedly different, and that these social strategies appear to be important in determining the social structure of the group" (p. 243).

Summary

As observed by Hartup (1970), there appears to be relatively little information concerning peer interaction among children under three years of age. In studies where peer interaction might have been included as a research variable few of the investigators used "peer social interaction" in the sense in which it is used in the present study.

Data from studies of infants and toddlers in day care have found both significant differences and no differences in areas of development when day care children have been compared with home-reared children. However, each of the studies reviewed was investigating specific developmental areas and none of these included peer interaction as it is defined in the present study.

Early studies of social development were mainly concerned with describing development or charting the unfolding of this one area rather than looking at social development as it occurs in different situations. Of course, it was not until the 1960's that there were groups of infants and toddlers available for study other than in institutional settings.

The question of which variables are to be considered (e.g. age, sex, race, social class, etc.) when planning infant research appears still to be unsettled.

CHAPTER III

PROCEDURE FOR THE STUDY

The present study was a descriptive observational study designed to obtain an answer to the question of the relationship of early group experience to the social development of infants and toddlers in group day care arrangements and in homes. The procedure involved the devising of an experimental situation in which social interaction could be observed, the selection of subjects, the selection of behaviors to be observed, the development of a record form, and the training of observers.

The Experimental Situation

The observation setting was a room, 12 feet by 23 feet (see Appendix A), which was unencumbered with equipment. Across one wall of the room (12 feet width) there was a one-way vision window through which the observers viewed the subject pairs (and their mothers and/or fathers). Three windows on one side and one doorway on the other side were the only openings on the length of the room. Venetian blinds at the windows screened out the outside distractions. There were two chairs for the mothers midway the room. Tape was used to mark on the floor three feet, front and back, distances from the mothers' chairs in order to define the area for "with mother" behavior. Attractive toys (two each: a school bus with seven pegs as passengers; a popper pull toy; set of five 3-inch cubes) were placed in the center of the

floor for the children. White walls, yellow indoor-outdoor carpet and fluorescent lighting made for a bright setting and ease of observation.

Social interaction was observed and recorded using a time sampling technique (Arrington, 1943) with fifteen seconds of observation followed by fifteen seconds for recording. The total observation session time was fifteen minutes, resulting in thirty observations of each subject.

The observation sessions were carried out during that period of the day which was most comfortable for the children and most convenient for the parents.

Selection of Subjects

The subjects of this study were 56 children between 12 months and 24 months of age. Half of the subjects (28) were selected because of their having had early group experience. Another 28 subjects, without early group experience, were selected to match the early group experience subjects on other variables. Matching was done by age (within two weeks); sex; race; socioeconomic level; and where possible, position in the family (see Tables 1 and 2). The 28 subjects with early group experience were infants and toddlers who, before ten months of age, had spent at least four months in group care. Time spent in group care before ten months of age meant that each subject would have entered the group prior to the age reported when babies exhibit "fear of strangers," so that accommodating to the group might be assumed to

Table 1

Number of Subjects Identified
by Matching Variables

Matching Variable	Number of Subjects
Male	30
Female	26
Economic level - middle	42
Economic level - low	14
Black	22
White	34

Table 2

Age Distribution of Subject Pairs

Age in Months	Number of Pairs
12	1
13	1
14	
15	
16	1
17	3
18	4
19	5
20	3
21	2
22	2
23	2
24	4
Total Number of Pairs	28

have taken place easily. The 28 subjects with no early group experience had spent their entire lives either in their own homes, or in the home of a caregiver where they were the only child cared for.

Socioeconomic level was rated according to whether parents were paying a full day care fee or whether day care fees were paid by the Department of Social Services. (Day care fees are paid by the Department of Social Services for families, based on economic eligibility). In selecting matching non-group-experience subjects, with the assistance of day care center directors, effort was made to determine whether a family might be eligible for Department of Social Services child care assistance if the mother of the family were to go to work or to school. Only those children of families judged to be likely to receive Department of Social Services assistance were used as matching control subjects.

In matching, care was taken that subjects were not paired with friends, neighbors, or occasional playmates.

The sources of early-group-experience subjects were four day care centers enrolling infants in Greensboro, North Carolina: Avalon Center (non-profit), Demonstration Nursery Center (university based, federally funded), Gingerbread House (private, for profit), and Happy Day Nursery (private, for profit). These centers were chosen not only because they enrolled infants but also because in selecting infants from these particular centers it was possible to classify socioeconomic level.

Non-group-experience subjects were selected from a large pool of infants and toddlers. Ten churches were contacted which supplied the researcher with rosters of their Sunday infant-toddler nursery enrollments. Three teachers of private Prepared Childbirth classes were also cooperative in giving a list of their class members who delivered babies within specified birth dates needed for this study.

Selection of Behaviors to be Observed and the Development of the Record Form

A sample of social behaviors was selected based on observations by the researcher of infants and toddlers in group play; and on a review of the literature related to this study.

During the period when observers were trained, final selection was made of the behaviors to be observed and the final format of the record form was prepared (see Appendix B).

The main requirement for the final selection of a behavior was ease of observation through a devised one-way vision window.

The behaviors chosen were:

1. offer toy
2. accept toy
3. cooperative play
4. general play
5. imitation
6. vocalization or smiles to peer
7. touch peer

8. cry, whine
9. avoidance of peer
10. approach peer
11. approach toy
12. non-toy play
13. hit, push
14. struggle over toy
15. with mother (play)
16. with mother (no play)

Training of Observers

Two observers, working independently, observed and recorded the behavior of each pair of subjects. The observers were "neutral" persons (two undergraduate students) who did not know which subjects had had early group experience and which had not.

Eight weeks were required for training the two observers to observe two subjects simultaneously and to check the occurrence of behaviors correctly and at an acceptable level of reliability (at least 65 percent agreement on items scored). Twenty-one pairs of children (of the appropriate age, although not always precisely matched) served as subjects for the training sessions.

The eight weeks required for the training of observers proceeded in the following manner. There was first a short period of learning the behaviors and their definitions (see Appendix C). While

learning the definitions of behaviors the observers also memorized the location of each behavior on the record form in order to be able to record quickly and accurately.

After learning the definitions of behaviors and their location on the record form, appropriately aged children with their mothers were observed and video-tapes of the first eight pairs of training subjects were made. The use of video-tapes made it possible for the researcher to replay scenes which were illustrative of certain behaviors for clarity. Video-tapes were further used for practice in recording. At the time that the tapes were made "observe/record time" (15 seconds each) was not put on the sound track. Therefore in using a tape for practice in recording scores, it was not expected that the same time segment for observe/record periods would be used in each practice run of the tape.

Live observations of 13 pairs of subjects, not used in the experiment, followed the use of video-tapes for training, and on these children observer reliability was established.

At the end of the video-tapes training sessions the overall observer reliability was 46 percent. Observer reliability was calculated using percent of agreement in periods scored. Periodic checks of agreement for the remaining 13 pairs of training subjects revealed progressive improvement from 62 percent to 72 percent (see Table 3).

Table 3

Percent of Agreement Between Observers

End of Video Taping	After Pair #7	After Pair #13
46	62	72

Continued improvement in observer reliability is shown in Table 4. This was obtained when overall agreement was checked for the last four pairs of training subjects. Table 5 shows adequate to high agreement on the scoring of various behaviors to be observed. Certain low percentages of agreement were the result of very low frequencies of that behavior, such as a frequency of two for "approach peer" in the case of Pair #1.

Table 4

Percent of Agreement Between Observers
for Final 4 Pairs of Training Subjects

Pair 1	Pair 2	Pair 3	Pair 4
68	89	72	86

Table 5

Item Reliability for Four Pairs of Training Subjects

	Subject			
	Pair #1	Pair #2	Pair #3	Pair #4
offer toy		100		
accept toy		100		
cooperative play	66			100
general play	93	93	93	100
imitation				50
vocalization/smiles	86	86	100	75
touch peer				100
cry, whine		66	85	85
avoidance of peer	66	50	66	100
approach peer	33	83		80
approach toy	40	87		83
non-toy play	66	76	82	87
hit, push				100
struggle for toy	100			100
with mother (play)		90	83	75
with mother (no play)		50	91	75

Procedure

Each infant, accompanied by his/her mother or father, arrived at an appointed time. In the reception area there were chairs for parents and children as well as two "non-test" toys (a dump truck and a set of snap together hexagons). When the two mothers (fathers) and their babies had arrived, a miniature real life situation observation began. The two observers were present, but unobtrusive and recorded (using a check mark) positive, negative and neutral behaviors of the children during this brief session (see Appendix D). Approximately five to ten minutes was spent in this introductory session which was conducted by the researcher who sat either in a chair or on the floor talking with children and parents in such a manner that the children would see this as a friendly place. During the introductory session all parties in the observation were introduced and instructions were given to the mothers by the researcher (see Appendix E).

Observers were required only to make a check mark on the pre-experimental setting checklist if a behavior listed on the form was exhibited.

At the end of the introductory period, each mother (father) with her/his child was shown into the experimental observation room. When the second mother was seated the timed observations began.

Compulsory scoring of the experimental setting record form (Appendix B) required a check mark in the appropriate space if a behavior occurred during the observation time. The observer was to

continue with a check mark if a behavior continued over several observation periods. No mark was made if the behaviors on the record form were not observed.

Mothers were not observed in this study, but their presence was required in order to minimize any possible discomfort on the part of the children in a strange situation.

CHAPTER IV

ANALYSIS OF THE DATA

The analysis of the data for this study was completed with the assistance of Dr. Carl Cochran who designed the computer programs. The programs were done on the Olivette Programma 101 Desk Computer.

Criteria for the Measures Used

In this research the scoring by the observers was summarized for each measure according to the following criteria:

Latency (first seen): when the behavior was first checked for each subject by either observer

Latency (agreement): when the behavior was first checked by both observers

Frequency (agreement): the total number of occurrences of a behavior on which the observers agreed

Frequency (total): the total number of occurrences of a behavior including those on which observers agreed and those on which they did not agree

Duration: the longest period the subject was engaged in a behavior, averaged for the two observers, recorded in seconds (15 seconds for each observation period)

Method of Analyses

The frequency of occurrence was very low for many of the behaviors which were observed. The low frequencies made scores inappropriate for parametric statistical analysis since the distribution of measures would be very skewed when most subjects received zeros (no behavior seen). It was decided that non-parametric analysis would be used on any behavior which was not shown by at least 80 percent of the subjects (see Table 6). For behaviors seen for less than 80 percent of the subjects, chi square for correlated frequencies was used since the subjects were paired. This measure essentially asked if the proportion of pairs in which only the experimental subjects showed the behavior differed from the proportion of pairs with only the control subjects showing the behavior. Considering each pair, a four cell table was constructed (see Table 7). The four cells were labeled A to D: Cell A contained the number of pairs in which neither the experimental nor the control subject showed the behavior; Cell B contained the number of pairs in which the experimental subject showed the behavior but the control subject did not; Cell C contained the number of pairs in which the control subject showed the behavior but the experimental subject did not; and Cell D contained the number of pairs in which both the experimental and control subject showed the behavior. The chi square for correlated frequencies tested whether Cells B and C differed.

Table 6

Number of Subjects Exhibiting Behaviors

Behavior Number	Behaviors	Number of Subjects Exhibiting Behavior
1	offer toy	14
2	accept toy	12
3	cooperative play	30
4*	general play	52
5	imitation	22
6	vocalization or smiles to peer	41
7	touch peer	10
8	cry, whine	23
9	avoidance of peer	20
10	approach peer	33
11*	approach toy	46
12	non-toy play	35
13	hit, push	6
14	struggle over toy	20
15	with mother (play)	35
16	with mother (no play)	32

*Behaviors which met 80 percent criterion

Table 7

Four Cell Table for Non-Parametric Comparisons

		Experimental Ss	
		No	Yes
Control Ss	No	A	B
	Yes	C	D

For the behaviors which were shown by at least 80 percent of the subjects, analysis was made using the analysis of variance for matched pairs.

Latency measures tend typically to be badly skewed, and inspection revealed that they would be so in these data. In order to obtain a more normal distribution for those latencies analyzed with analysis of variance, a reciprocal transformation was performed. Each score was divided into 1.00 and this result was multiplied by 1000 to yield whole numbers for easier computation. The resulting measure, reciprocal of latency, thus became a measure of the speed of response.

Non-Parametric Analyses

For one set of non-parametric analyses, a behavior was counted as present if either observer recorded it. Even though some variables were to be analyzed using analysis of variance, these same behaviors were also used in the non-parametric analyses as a means of gaining further information about the data.

Only two behaviors showed significant differences between experimental and control subjects (see Table 8). "Approach peer" (#10) was shown more by control subjects than by experimental subjects, and "non-toy play" (#12) was shown more by control subjects than by experimental subjects. Chi squares for these two behaviors were 4.5 and 4.6, respectively, both significant at the .05 level. The results for these two behaviors were based on relatively small numbers of subjects in both behaviors: 11 pairs for "approach peer" and 14 pairs for "non-toy play."

Table 8

Frequency of Behaviors Seen by Either Observer
and Tests of Significance

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Experimental Does Control No	4	4	0	1	2	4	4	10	4	2	2	3	6	3	1	7
Experimental Does Control Does	3	2	15	24	9	15	3	5	5	12	21	12	1	8	16	13
Experimental No Control No	15	18	13	0	13	1	15	7	10	5	1	2	19	16	5	7
Experimental No Control Does	6	4	0	3	4	8	6	6	9	9	4	11	2	1	6	1
X^{2a}	.4	.1		.2	.2	1.3	.4	1.0	1.9	4.5*	.2	4.6*	1.1	.2	2.3	3.1

[a] All chi squares have one degree of freedom
*p = < .05

Note: Chi square comparison is between the top row and the bottom row (experimental S does/control S no; experimental S no/control S does).

Analyses were also done demanding that instead of either observer seeing the behavior, both observers must see the behavior at the same time (see Table 9). In this case, only one significant result ($X^2 = 3.8$, $p < .05$) was obtained, "non-toy play," and this was in the same direction as reported above. Thus, with a more stringent method of measure no more significant results were obtained than were expected by chance alone. These results add further evidence as to the lack of difference between the two groups.

Parametric Analyses

Table 10 shows the means and results of F tests for each behavior on which an analysis of variance was performed. Latency measures are referred to as "speed" because of the reciprocal transformations. Because of a later-corrected error in counting behavior frequencies and because of obtaining significant chi squares in both sets of non-parametric tests, behavior #12 (non-toy play) was also analyzed with the analysis of variance for matched pairs. Although "non-toy play" did not meet the original 80 percent criterion, it was one of the behaviors with a frequency closest to the criterion. The results of the analyses of variance add further confidence to the findings with the chi square analyses.

To be consistent, two other behaviors showing frequencies as high as "non-toy play" were also analyzed "vocalization or smiles to peer"(#6) and "with mother-play" (#15). Just as the significant chi square results were upheld for "non-toy play," these analyses

Table 9

Frequency of Behaviors Seen by Both Observers
and Tests of Significance

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Experimental Does Control No	3	5	0	1	2	4	3	10	5	3	2	3	5	3	3	7
Experimental Does Control Does	3	2	15	24	9	15	2	4	4	11	20	11	0	8	14	10
Experimental No Control No	17	18	13	0	15	2	20	9	12	6	2	4	22	16	7	7
Experimental No Control Does	5	3	0	3	2	7	3	5	7	8	4	10	1	1	4	4
χ^{2a}	.1	.1		.1	.1	.8	.2	1.7	.3	2.3	.2	3.8*	1.5	.2	.0	.8

[a]All chi squares have one degree of freedom
*p = $<.05$

Note: Chi square comparison is between the top row and the bottom row (experimental S does/control S no; experimental S no/control S does).

Table 10

Means and Tests of Significance for Three Behaviors

	General Play			Approach Toy		
	Means			Means		
	Experimental	Control	F	Experimental	Control	F[a]
Speed (first seen)	45.50	54.14	2.4	32.68	36.86	.6
Speed (agreement)	44.32	52.96	2.6	30.32	34.61	.6
Frequency (agreement)	16.04	21.04	4.3*	3.00	4.18	3.4
Frequency (total)	17.75	22.43	3.2	3.51	4.82	3.1
Duration (in seconds)	177.36	181.96	.02	20.36	26.54	3.0

	Non-Toy Play		
	Means		
	Experimental	Control	F[a]
Speed (first seen)	5.96	10.14	1.3
Speed (agreement)	5.36	9.29	1.2
Frequency (agreement)	1.86	3.04	3.9
Frequency (total)	2.46	4.54	5.3*
Duration (in seconds)	13.96	30.86	7.6*

	Vocalization or Smiles to Peer		
	Means		
	Experimental	Control	F[a]
Speed (first seen)	16.62	16.66	.0
Speed (agreement)	4.18	4.18	.0
Frequency (agreement)	16.55	13.93	.3
Frequency (total)	5.32	6.18	.3
Duration (in seconds)	28.86	25.75	.3

	With-Mother Play		
	Means		
	Experimental	Control	F[a]
Speed (first seen)	11.07	7.96	.6
Speed (agreement)	10.36	7.64	.4
Frequency (agreement)	3.79	2.32	2.3
Frequency (total)	4.39	2.71	2.7
Duration (in seconds)	35.14	26.00	.8

[a]All F's in these tables have 1 and 27 degrees of freedom
*p = .05

were also consistent with the non-significant chi square results. No measure with either behavior (#6 or #15) showed an F approaching significance. In ten analyses, eight F's were less than 1.0 and the other two were less than 3.0 where 4.2 was needed for significance (see Table 10).

In general, controls had higher means on latency measures. For the behavior "general play," one significant difference was found showing greater frequency of this behavior for control subjects when the frequency (agreement type) measurement was used. The F of 4.3, at the .05 level of significance, shows higher means for control subjects, but no significant differences were found between the pairs of means for the behavior "approach toy." Control subjects had generally higher means on "non-toy play," with two of the measures showing significant differences. Frequency (total) had an F of 5.3 and duration had an F of 7.6, both being significant at the .05 level. Control subjects were significantly higher on total frequency and duration of "non-toy play." The frequency measure based on agreement tended to support the finding based on total frequency; the F, though not significant, did reach better than the ten percent level of significance.

In scoring the checklist of the pre-experimental observation session a frequency total for each observer was used for each behavior classification (positive and negative) and the difference between these two frequencies was obtained. When results of the pre-experimental miniature real life situation were tested, using analysis of variance

for matched pairs, no significant differences were found between the experimental and control subjects (see Table 11).

Table 11

Tests of Significance for Pre-Experimental Observation

Behavior Classification	Means		F
	Experimental	Control	
Positive	3.36	2.82	1.8
Negative	1.36	1.43	.05
Differences	2.57	2.11	.7

Summary and Discussion

The purpose of this study was to investigate whether there were significant differences in social interaction, in terms of latency, frequency, and duration, for infants and toddlers who had had early group experience (experimental) and infants and toddlers who had no early group experience (control).

Sixteen behaviors were used for observation of social interaction between experimental and control subjects. Chi square for correlated frequencies and analysis of variance for matched pairs were the statistical tests of significance used to determine the differences between experimental and control subjects. Chi square tests were performed on the scores for all sixteen behaviors. The criterion for testing behavior scores by means of analysis of variance was that the behavior must have been shown by at least 80 percent of the subjects.

The measures studied were latency of interaction, frequency of interaction, and duration of interaction.

No differences were found between the groups on the latency measure using analysis of variance as the test of significance. That is, it could not be distinguished that either experimental or control subjects initiated interaction faster.

Chi square analyses for correlated frequencies showed significant differences between experimental and control subjects at $p < .05$. These differences were found between experimental and control subjects on frequency of observation of "approach peer" (when peer was not engaged with a toy) and between experimental and control subjects on "non-toy play" (use of any object or person in the environment while the child appears comfortable, and not unhappy). The differences found in these behaviors were in favor of the control subjects (no early group experience). That is, the controls in the pairs showed the behavior more often.

Two behaviors ("general play" and "approach toy") met the criterion for testing significance using analysis of variance for matched pairs. Significant differences ($p < .05$) were found for the frequency (agreement) measure of "general play" (independent, self-directed play with a toy); where the mean was in favor of control subjects. No significant differences were found between the pairs of means for the behavior "approach toy." Although "non-toy play" did not meet the original criterion, significance was tested using the analysis of variance for matched pairs. Significant differences were found for "non-toy play" on the frequency (total) and duration

measures. Control subjects had higher means for this behavior in both measures. That is, the control subjects showed the behavior "non-toy play" more frequently and engaged in the behavior for longer periods of time.

The strength of the significant findings should be interpreted conservatively since in 57 analyses (chi squares and analyses of variance) the probability of a few significant differences occurring by chance was great.

"Non-toy play" was defined as the use of any object (hardware, walls, tape on floor, etc.) or person in the environment while the child appeared comfortable, and not unhappy. A significant difference was found between experimental and control subjects in the measures of duration and frequency. This behavior showed a significant difference in favor of the control subjects in both the analysis of variance and the chi square tests. There is, then, reason to conclude that in this behavior there may be a true difference between experimental and control subjects. The control subjects more often showed this behavior when their experimental partner did not, had higher frequencies, and spent longer periods of time engaged in "non-toy play," although they were not quicker to start the behavior.

When results of the pre-experimental miniature real life situation were tested, using analysis of variance, no significant differences were found between the experimental and control subjects.

In the experimental environment provided in this study, few significant differences were found between experimental subjects and

control subjects. The single findings of significant differences in "approach toy" (when peer was not engaged with a toy) and "general play" (independent and self-directed) may be considered as chance phenonema. From another point of view, these two single differences may be dismissed since neither represents social interaction (relations with another person).

"Non-toy play" (play with any object in the environment, not a toy) showed a significant difference between the groups in two analyses, and it might, therefore, be accepted, at least tentatively, that control subjects in this situation showed greater tendencies toward more of this behavior.

The findings in this study raise some questions for the researcher. What is the significance of the higher frequency and longer duration of "non-toy play" by children with no early group experience? Since these children have spent their days at home, predominantly with mother, do they engage in any activity that will allow them to remain in the presence of the mother? Could this finding be interpreted as an indication of less encouragement to play with toys or a willingness on the part of adults to allow freedom of choice in play material - toy or non-toy?

The data did not reveal that the experimental subjects (early group experience) engaged in more toy play than control subjects. Yet, the researcher questioned the influence of the style of daily life in group care on play with toys, since in their day care settings (nurseries or centers) experimental subjects may be expected to and

may be directed to play with toys and with other children. Children in day care spend most of their waking hours, and possibly playing time, away from their mothers. Therefore, another question: Is the influence of the presence of the mother the same on the play of day care children as on non-day care children?

No strong relationships were revealed between having had early group experience and involvement in social interactions with a peer.

The warnings of dire results from group life in infancy were hardly substantiated. Infants and toddlers who were enrolled in group care arrangements did not appear to be different from home reared controls.

In conclusion, the findings for each hypothesis were:

Hypothesis I: Infants and toddlers with early group experience have significantly shorter latency periods for entrance into social interaction than do infants and toddlers without early group experience. No differences were found between infants and toddlers with early group experience and infants and toddlers without early group experience in latency of social interaction.

Hypothesis II: Infants and toddlers with early group experience exhibit a greater frequency of social interactions than do infants and toddlers without early group experience. Infants and toddlers without early group experience showed significantly greater frequency of "general play" and "non-toy play" behavior than infants and toddlers with early group experience. When counting whether the children showed "non-toy play" behavior at all, the infants and

toddlers without early group experience showed the behavior more often than infants and toddlers with early group experience. However, the two behaviors found to have a significant difference in favor of control subjects do not represent social interaction. Therefore, the hypothesis was not upheld.

Hypothesis III: Infants and toddlers with early group experience display significantly longer duration of social interaction than do infants and toddlers without early group experience. Infants and toddlers without early group experience engaged in "non-toy play" for longer periods than did infants and toddlers with early group experience. Infants and toddlers without early group experience also showed the behavior "approach peer" more often than did those infants and toddlers with early group experience paired with them. However, infants and toddlers without early group experience did not approach the peer faster, more frequently, or for longer periods than infants and toddlers with early group experience. Thus, the findings do not support this hypothesis.

The findings have been summarized in terms of the hypothesis to which they relate; however, none of the hypotheses were upheld by the findings.

An additional question was asked which the data, collected in the pre-experimental observation, answered: There were no differences in the display of positive and negative behaviors between infants and toddlers with early group experience and those without early group experience.

CHAPTER V

SUMMARY AND CONCLUSIONS

The problem in this research was to examine one aspect of social development in an attempt to answer two questions concerning peer social interactions of infants and toddlers between 12 and 24 months. The questions were: (1) Do children who have had group experience before one year of age move more promptly towards interaction with peers, engage in more interactions, and for longer periods of time than children who have had no early group experience? (2) Do children who have had group experience before one year of age exhibit more positive social interactions in social situations?

Review of the literature revealed that data from studies of infants and toddlers in day care have found both significant differences and no differences in some areas of development when day care children have been compared with home reared children. Each of the studies reviewed was investigating specific developmental areas and none of these included peer interaction as it was defined in the present study.

Early studies of social development were mainly concerned with describing development or charting the unfolding of this one area rather than looking at social behavior as it occurs in a control situation. Not until the 1960's, however, were there groups of infants and toddlers available for study other than in institutional settings. Where peer interaction might have been included as a

research variable in early studies of social development, few of the investigators used "peer social interaction" in the sense in which it was used in the present study.

The subjects used in this study were 56 children (28 matched pairs) between 12 and 24 months of age. The subjects were matched by age (within two weeks); sex; race; socioeconomic level; and where possible, position in the family. Experimental subjects were 28 children who had been in group care before one year of age and the control subjects were 28 children, selected to match the experimental subjects, who had had no early group experience.

Sixteen behaviors were selected to be used for a time sampling observation of each matched pair of subjects in an experimental setting. Two observers were trained to observe and record the test behaviors; and to complete a checklist of positive, negative, and neutral behaviors in a pre-experimental setting.

The test behaviors observed in the experimental setting were:

1. offer toy
2. accept toy
3. cooperative play
4. general play
5. imitation
6. vocalization or smiles to peer
7. touch peer
8. cry, whine
9. avoidance of peer

10. approach peer
11. approach toy
12. non-toy play
13. hit, push
14. struggle over toy
15. with mother (play)
16. with mother (no play)

Each of the behaviors was to be analyzed in terms of three measures: (1) latency of interaction, (2) frequency of interaction, (3) duration of interaction. Because of the low frequency of behaviors it was necessary to establish a criterion for subjecting the behavior scores to statistical analyses. The criterion established for testing behavior scores, by means of analysis of variance for matched pairs, was that a behavior must have been shown by at least 80 percent of the subjects. Two behaviors met this criterion for parametric analysis: "general play," and "approach toy." Three additional behaviors were tested using analysis of variance for matched pairs because of frequencies close to the criterion and because one behavior showed significant differences when tested by chi square for correlated frequencies. Non-parametric analysis, chi square for correlated frequencies, was performed on scores for all 16 behaviors.

Analysis of variance for matched pairs was used to test for differences between experimental subjects and control subjects on latency, frequency, and duration of interation. No differences were

found between experimental and control subjects in terms of latency of social interaction. For the behaviors analyzed in terms of the frequency measure, significant differences ($p < .05$) were found. These differences favored the control subjects for "general play" and "non-toy play." Analysis of the duration measure revealed a significant difference ($p < .05$) in favor of control subjects for "non-toy play."

As a result of analyses by chi square for correlated frequencies, two behaviors showed significant differences ($p < .05$) between experimental and control subjects. The differences obtained were in favor of control subjects in "approach peer" and "non-toy play." These differences, though significant, were based on relatively small numbers of subjects in both behaviors.

No significant differences were found between experimental and control subjects in the analysis of the pre-experimental introductory session in terms of one group exhibiting more positive, negative, or neutral behaviors than the other.

Conclusions

The results of this research have shown no essential differences between the social interaction of children with group experience and children with no early group experience. Therefore no argument can be made for or against the social advantage of home rearing as opposed to group care or vice versa.

A point that was strongly emphasized by a review of the literature and the research results was that very little is known

about social interaction between infants. Professionals who have devoted so much time, knowledge, and skill toward designing group care facilities for infants and toddlers need, and seek, more information about the effects of group care on all developmental areas. Parents, too, are eager for information which will give them more insight for the decisions they make regarding child care.

Caution should be taken in making broad generalizations based on this study. More research is needed in the area of social interaction which would seek answers to the same and additional questions and which would be conducted under various experimental conditions. Large samples of matched pairs may tend to show fewer significant differences as compared with small samples of matched pairs. In the future, researchers may need to consider larger numbers of matched pairs as a means of strengthening their findings. The matched pair research design in many of the studies reviewed used fewer than twenty pairs, thus a smaller sample was studied. Such small samples may have shown significant results;whereas had the samples been larger, significant results could have been considerably less or not present at all.

Some possible questions which could be considered in research on social interaction in the future might include:

1. Would investigation of the same research questions used in the present study produce different results if observations were done in naturalistic settings?

2. Based on the findings of the present study, would certain physical measures, such as pulse rate and respiration, show significant changes in the case of the subjects who so frequently engaged in "non-toy play?"
3. What differences would be found if the presence and absence of the mother were varied?
4. Would varying the conditions of familiar and strange partners produce different results?

Considerably more information is needed about the effects of group care on the development of young children. When one realizes the extent to which so many young children, well below one year of age, are enrolled in group care, it becomes imperative that researchers give attention to studying the effects of group care on development. Good interpersonal relationships become more and more important in a highly populated, highly mobile society. Infants who begin so early in life to experience so much "togetherness" should be sufficient stimulus to raise questions concerning the quality of the group experience and the ways in which the group members interact. Early peer interaction is but one small area for concern if desirable outcomes are to be achieved in group care, and this area needs further study.

BIBLIOGRAPHY

Ainsworth, M. D. The effects of maternal deprivation: A review of findings and controversy in the context of research strategy. In Deprivation of maternal care. A reassessment of its effects. Geneva: World Health Organization, Public Health Papers No. 14, 1962, 97-165.

Arrington, R. E. Time sampling in studies of social behavior: A critical review of techniques and results with research suggestions. Psychological Bulletin, 1943, 40, 81-124.

Arsenian, J. M. Young children in an insecure situation. Journal of Abnormal and Social Psychology, 1943, 38, 225-249.

Bayley, N. Comparisons of mental and motor test scores for age 1-15 months by sex, birth order, race, geographical location, and education of parents. Child Development, 1965, 36, 379-411.

Berne, E. An experimental investigation of social behavior patterns in young children. University of Iowa Studies in Child Welfare, Iowa City, Iowa: University of Iowa, 1930, Vol. 4, No. 3.

Bowlby, J. Maternal care and mental health. Geneva: World Health Organization, Monograph No. 2, 1951.

Bridges, K. M. A study of social development in early infancy. Child Development, 1933, 4, 36-49.

Buhler, C. The first year of life. New York: John Day, 1930.

Caldwell, B. M. and Richmond, J. B. The children's center in Syracuse, New York. In L. L. Dittman (Ed.), Early child care. The new perspectives. New York: Atherton Press, 1968.

Collard, R. R. Social and play responses of first-born and later-born infants in an unfamiliar situation. Child Development, 1968, 39, 325-334.

Cox, F. N. and Campbell, D. Young children in a new situation with and without their mothers. Child Development, 1968, 39, 124-131.

Dragsten, S. S. and Lee, L. C. Infants' social behavior in a naturalistic versus experimental setting. Proceedings, 81st Annual convention, American Psychological Association, 1973, 8, 65-66.

Escalona, S. K. Basic modes of social interaction: Their emergence and patterning during the first two years of life. Merrill-Palmer Quarterly, 1973, 19, 205-232.

Fowler, W. A developmental learning approach to infant care in a group setting. Merrill-Palmer Quarterly, 1972, 18, 145-175.

Goldberg, S. and Lewis, M. Play behavior in the year old infant: Early sex differences. Child Development, 1969, 40, 21-31.

Goldfarb, W. Infant rearing and problem behavior. American Journal of Orthopsychiatry, 1943, 13, 249.

Goldfarb, W. Psychological privation in infancy and subsequent adjustment. American Journal of Orthopsychiatry, 1945, 15, 247-255.

Haas, M. B. and Harms, I. E. Social interaction between infants. Child Development, 1963, 34, 79-97.

Hartup, W. W. Peer interaction and social organization. In P. H. Mussen (Ed.), Carmichael's manual of child psychology, Vol. II, New York: John Wiley and Sons, Inc. 1970.

Keister, M. E. Patterns of daytime care of infants under three years of age. Greensboro, North Carolina: University of North Carolina at Greensboro, 1965.

Keister, M. E. Final report: A demonstration project group care of infants. Greensboro, North Carolina: University of North Carolina at Greensboro, 1970.

Lally, J. R. Syracuse University Children's Center: A day care center for young children. Progress report submitted to the Office of Child Development, U. S. Department of Health, Education and Welfare, February, 1971.

Lee, L. C. Social encounters of infants: The social strategies of two individual infants. Cornell Journal of Social Relations, 1973, 8, 243-255.

Maudry, M. and Nekula, M. Social relations between children of the same age during the first two years of life. Journal of Genetic Psychology, 1939, 54, 193-315.

Messer, S. B. and Lewis, M. Social class and sex differences in the attachment and play behavior of the year old infant. Merrill-Palmer Quarterly, 1972, 18, 295-306.

Murphy, L. B. and Murphy, G. The influence of social situations upon the behavior of children. In C. Murchison (Ed.) A handbook of social psychology. Worcester, Mass.: Clark University Press, 1935, 1036-1096.

Rheingold, H. L. and Eckerman, C. O. The infant's free entry into a new environment. Journal of Experimental Child Psychology, 1969, 8, 271-283.

Shirley, M. M. The first two years, a study of twenty-five babies, Vol. I Postural and locomotor development, Minneapolis, Minn.: University of Minnesota Press, 1931.

Shirley, M. C. The first two years, a study of twenty-five babies, Vol. II Intellectual development. Minneapolis, Minn.: University of Minnesota Press, 1933.

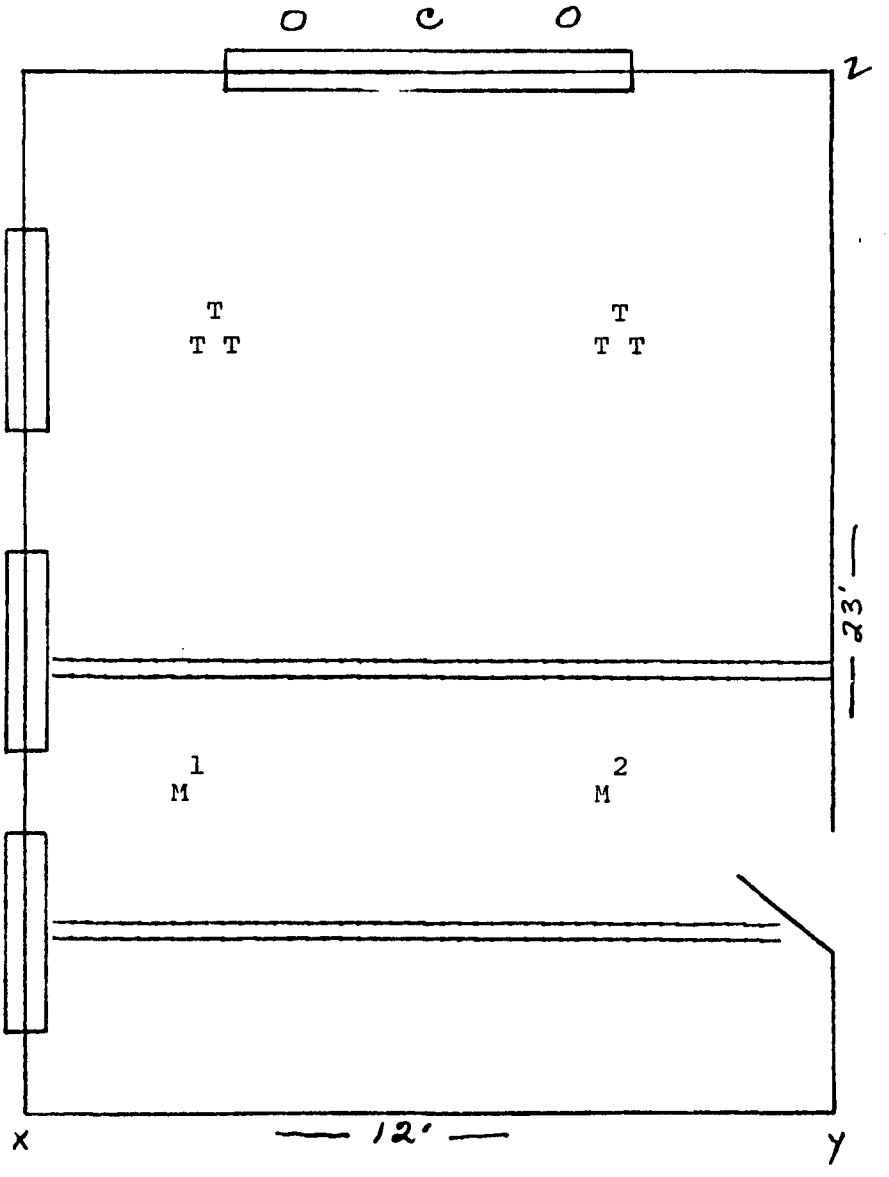
Spitz, R. Hospitalism: An inquiry into the genesis of psychiatric conditions in early childhood. Psychoanalytic Study of Children, 1945, 1, 53-74.

Yarrow, L. J. Maternal deprivation: Toward an empirical and conceptual re-evaluation, Psychological Bulletin, 1961, 58, 459-490.

APPENDIX A

Experimental Setting

Experimental Setting



O = observer
c = camera (use in training only)

M^1, M^2= mother's chairs
T = toy

xy = 8 1/2 feet partition walls
yz

———— = tape on floor

APPENDIX B

The Record Form

Record Form

Subject #1

Name _____

Sex _____

DOB _____

Subject #2

Name _____

Sex _____

DOB _____

Observation Period	1		2		3		4		5		6		7			24		25		26		27		28		29		30	
Subject	1	2	1	2	1	2	1	2	1	2	1	2	1	2		1	2	1	2	1	2	1	2	1	2	1	2	1	2
offer toy																													
accept toy																													
cooperative play																													
general play																													
imitation																													
vocalization or smiles																													
touch peer																													
cry, whine																													
avoidance of peer																													
approach peer																													
approach toy																													
non-toy play																													
hit, push peer																													
struggle over toy																													
with mother (play)																													
with mother (no play)																													

APPENDIX C

Behaviors to be Observed and Definitions

Behaviors to be Observed and Definitions

1. offer toy to peer

2. accept toy from peer

3. cooperative play --- cooperation in the performance of a common task

4. general play --- simultaneously engaged in the same activity with identical toy, but cannot say that activity is imitation

   --- actively engaged with different toy (self-directed and unlike what peer may be doing)

5. imitation --- simultaneously engaged in the same activity while watching and exact duplication of activity takes place

6. vocalization or smiles to peer

7. touch peer

8. cry, whine

9. avoidance of peer --- move away from, turn away body, head, or eyes

10. approach peer --- when peer is not holding or playing with toy

11. approach toy --- when toy is not in use, or in possession by peer

12. non-toy play --- use of any object in the environment while child appears comfortable, and not unhappy (ex. hardware, walls, tape on floor, etc.)

13. hit, push peer

14. struggle over toy --- when both Ss attempt to possess one and the same toy

15. with mother (play) --- play with mother

16. with mother (no play) --- in the "with mother" area but no interaction is going on either with mother or with peer; non-participation

APPENDIX D

Checklist for Introductory Observation Period Pre-Experimental Setting

Checklist for Introductory Observation Period

Pre-Experimental Setting

S^1	S^2		
____	____	look at peer	positive behaviors
____	____	touch peer	
____	____	speak to peer	
____	____	smile to peer	
____	____	turn away from peer	negative behaviors
____	____	look away from peer	
____	____	cling to mother	
____	____	cry	
____	____	play alone	neutral behaviors
____	____	sit quietly	
____	____	no overt social response	

APPENDIX E

Instructions to Mothers

Instructions to Mothers

1. This session will last 30 minutes. Someone will come to the door to tell you the session is ended. If, at the end of this session, either (one or both) of the children is involved in play, invite the children to come outside for juice.
2. Do not initiate interaction (talk) with either your child or the other child, or with the other mother; but you should respond briefly, and in a friendly manner, if a child initiates interaction with you.
3. Take your child to the center of the room where the toys are and then you may be seated.