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Orientation to the Social and Physical Environment: Possible Implications for the Intellectual Development of Preschool Children

By

Kay Donahue Jennings

A.B. (University of Michigan) 1964

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Orientation to the Social and Physical Environment: Possible Implications for the Intellectual Development of Preschool Children

Abstract

Kay Donahue Jennings

Children's preferences for interacting with specific aspects of their environment were related to two kinds of intellectual abilities. Children who showed greater relative interest in interacting with objects than people (i.e., higher object orientation) were expected to have developed intellectual abilities regarding understanding and organizing physical materials. In contrast, children who showed greater relative interest in interacting with people than objects (i.e., higher people orientation) were expected to have developed intellectual abilities regarding social knowledge. Hunt's concept of intrinsic motivation provided a description of the possible mechanisms involved in the development of these specific intellectual abilities. Children's environmental orientation was expected to be influenced by their parents' attitudes.

Thirty-eight white middle-class subjects (mean age = 4; 10) were observed during their nursery-school free-play period. Using a time-sampling method, the amount of time spent in interactions with people and objects was recorded; in addition, the occurrence of

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various kinds of social behaviors was noted. The children were then given six tests assessing aspects of social knowledge (e.g., knowledge of sex-role norms, role-taking ability, moral judgment) and four tests assessing ability to organize and classify physical materials. Scores for each type of test were summed to form two summary test scores. In addition, ratings were made of the general quality of social behavior (e.g., peer-leadership, forcefulness); and a sociometric index of peer-popularity was obtained. Finally, a questionnaire was administered to parents assessing expectations for autonomy and outgoing socialness and preferences for sociability over self-reliance.

Children who spent relatively more time in play with objects than people were found (as expected) to perform better on tests of ability to organize and classify physical materials. Children who spent relatively more time in play with people than objects, however, did not perform better on tests of social knowledge. Instead, higher scores on these social tests were related to higher ratings on the quality of social functioning and to greater popularity among peers. Thus, scores on the social tests related to quality, rather than quantity, of social interactions.

The social behavior of children differing in orientation was also examined. The most striking difference was that children who showed greater relative interest in objects engaged in considerably fewer interactions with peers (as would be expected) but more interactions

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with adults. Further analysis showed that the greater adult directedness of these children did not account for their interest in objects nor for their higher scores on tests of ability with physical materials.

No important sex-differences were found; however, birth-order effects were found for several variables. The most important was that first-born and only children showed greater relative interest in people compared to later-born children.

Only a chance number of relationships was found between parental attitudes and children's behavior.

A tentative conceptual model was presented to account for relationships among intellectual abilities, orientation, and other aspects of social behavior. According to this model, interest in the inanimate environment interacts with knowledge of physical objects in a dynamic manner, growth in one leading to growth in the other. That is, differentiated concepts of the physical world lead to interest in environmental events that deviate somewhat from these concepts; attention to these deviations leads in turn to still greater differention of concepts. In a similar manner, quality of social behavior may interact with extent of social knowledge. That is, well-developed concepts of the social world presumably assist children in forming satisfying relationships with others; conversely, more positive feedback from other people is likely to provide a more favorable climate for social learning.

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TABLE OF CONTENTS

	Page
I. Background	1
A. Interactions with the social vs. the physical environment	3
B. Some reasons to expect intellectual differences among children with different orientations	4
C. Concept of People vs. Object Orientation	7
D. The ontogeny of people and object orientation	10
E. Focus on the preschool age period	12
II. Review of the literature	14
A. Theoretical concepts	14
B. Empirical literature	16
1. Specific social characteristics	16
2. Social orientation	18
3. Parental influence	19
III. Predictions and exploratory questions	22
A. Predicted relationships	22
B. Exploratory questions	22
IV. Method	24
A. Subjects	24
B. Procedure	25
C. Observational measures	26
D. Tests of knowledge of the physical environment	31
E. Tests of knowledge of the social environment	33
F. Parental questionnaire	40
G. Other measures	43
1. Popularity among peers	43
2. Ratings	44

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	Page
V. Results	45
A. Reliability of observational variables	45
B. People vs. Object Orientation: Relationship between Focus and Context	47
C. Tests: Intercorrelations	48
D. Relationships among orientation, tests, and social interaction variables	54
1. Relationships between orientation and test scores	57
2. Relationships between orientation and social interaction variables	59
3. Relationships between test scores and social interaction variables	65
4. Summary of main findings	70
E. Sex differences and birth-order effects	70
1. Sex differences	70
2. Birth-order effects (and family size)	71
F. Parental attitudes and children's behavior	74
1. Parental reports of children's play activities outside nursery school	76
VI. Discussion	79
A. Predictions and exploratory questions	79
1. Predictions 1 and 2: Orientation and test scores	79
2. Prediction 3: Parental attitudes	80
3. Question 1: Concept of People vs. Object Orientation	80
4. Question 2: Relationship of social behavior to orientation	81
5. Question 3: Orientation as a predictor of intellectual abilities	84
B. Sex differences and birth-order effects	84
1. Sex differences	84
2. Birth-order effects	86
C. Revision and elaboration of the conceptual framework and some further theoretical speculations	87
D. Implications for future research and education	92
VII. References	96

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Page

VIII. Appendices 103

A. Observation manual 103
B. Sample recording sheet for observation ... 116
C. Variables derived from observational records and used in data analyses 118
D. List of observation variables dropped from data analysis because of low frequency 123
E. Scoring procedures for the Meyer's et al test of object classification, the It Scale for Children, Flavell's tasks of role-taking ability, and Devries penny test of role-taking ability..... 124
F. Adaptation of Bourke's Test of Interpersonal Perception 127
G. Adaptation of Irwin and Moore's moral judgment stories 130
H. Parental Questionnaire 133
1. Parental Questionnaire 133
2. Answer Sheet 141
3. List of items included in each scale of parental expectations 145
4. Scoring procedure for parental questionnaire 148
I. Rating scales 149
J. Relationships between parental attitudes and children's behavior -- boys and girls considered separately 154
K. Auxilliary tables of results 170

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LIST OF TABLES

		Page
1.	Means and standard deviations for individual tests and summary test scores (N = 38)	49
2.	Correlations between test scores and age (N = 38)	51
3.	Intercorrelations among test scores (N = 38)	52
4.	Means and standard deviations for orientation measures and social interaction variables (N = 38)	55
5.	Intercorrelations among tests and orientation measures (N = 38)	58
6.	Correlations between orientation measures and social interaction variables (N = 38)	60
7.	Correlations between tests and social interaction variables (N = 38)	66
8.	Significant t values for differences between birth-order groups and between family-size groups for orientation, tests, and social interaction variables	72
9.	Means and standard deviations for parental variables	75
10.	Correlations between mothers' reports and children's orientation and test scores	77
11.	Correlations between parental attitudes and daughters' orientation and test scores	155
12.	Correlations between parental attitudes and daughters' scores on social interaction variables .	156
13.	Correlations between parental attitudes and sons' orientation and test scores	162
14.	Correlations between parental attitudes and sons' scores on social interaction variables	163

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Page

A. Intercorrelations among social interaction variables (N = 38) 171

B. Intercorrelations among tests and orientation measures by sex 176

C. Correlations between orientation measures and social interaction variables by sex 177

D. Correlations between tests and social interaction variables by sex 179

E. Intercorrelations among parental variables 181

F. Correlations between parental attitudes and children's orientation and test scores 182

G. Correlations between parental attitudes and children's scores on social interaction variables 183

H. Correlations between individual tests and orientation measures (N = 38) 186

I. Correlations between individual tests and social interaction variables (N = 38) 187

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BACKGROUND

In recent years, many psychologists (e.g., Piaget, Hunt, Bruner) have stressed the active role played by young children in the development of their intellectual abilities. According to this point of view, children actively initiate interactions with their environment and then in turn are influenced by the results of these interactions. Through these environmental interactions, children develop and modify concepts about how the world works. This process of development and elaboration of concepts is viewed as the basis of intellectual development.

One implication of this view is that children's intellectual development is dependent upon the environment available to them. This implication has fostered considerable research about the effect of rather drastic differences in environment (e.g., research on culturally disadvantaged children, maternally deprived children).

Almost no attention, however, has been directed to a second implication of this view of intelligence; that is, even within quite similar environments, differences in interaction patterns should lead to differences in intellectual abilities. In other words, children who differ in their interaction patterns "create" functionally different environments for themselves by selectively attending to (and interacting with) particular aspects of their environment while ignoring (or paying considerably less attention to) other aspects.

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Many different aspects of the environment compete for young children's attention. Sometimes, children have little choice about which aspects receive their attention; their parents, for example, often limit and proscribe their activities. At other times, however, children are given considerable freedom to choose their own activities. If they show a general preference for interacting with one particular aspect of their environment (and have free access to it), they acquire considerable experience with this aspect. In the process of acquiring this experience, however, they necessarily limit their experience with other aspects of the environment.

The present study explored the relationship of young children's interaction patterns in nursery school free-play periods to two kinds of intellectual abilities. The interaction preferences shown by children in the nursery school environment were assumed to be characteristic of their past interaction preferences. These interactions were thought over time to enhance intellectual development in areas specifically related to these interactions. In turn, the development of these particular intellectual abilities was thought to strengthen the preferences for particular kinds of environmental interactions as these interactions became more likely to be successful. Thus, ability and preference for a specific activity were viewed as interactive; neither was assumed to be the primary determinant of the other.

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In the present study preferences for interacting with the social aspects as compared to the physical aspects of the enviroment were examined; for ease of discussion, these differences in preference are referred to as differences in orientation. Children's orientation styles were related to their scores on tests of social knowledge and tests of ability to understand and organize physical material. In addition, the relationships of more specific kinds of social behaviors (e.g., dependency, aggression) to orientation and intellectual abilities were also studied. Lastly, relevant parental attitudes were assessed in order to explore the etiology of orientation styles.

A pilot study with eight subjects demonstrated the feasibility of measuring orientation in the nursery-school environment. In addition, the results of this pilot study indicated some support for the conceptual notions outlined above. Greater orientation to physical objects was related to higher scores on tests of abilities with physical objects. Greater orientation to people, however, was not related to scores on tests of social knowledge.

Interactions with the Social vs. the Physical Environment

Differences in preferences for interacting with the social as compared to the physical aspects of the environment were chosen for study for several reasons. Intuitively, social and physical interactions appeared quite dissimilar from each other; consequently, intellectual differences associated with these types of interactions might well be more marked than those associated with less distinct interactions. In

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addition, a dimension of behavior with poles very similar to social and physical orientation had been found to be a prominent and stable source of individual differences during the preschool years (Emmerich, 1964). Furthermore, theoretical reasons for anticipating particular intellectual consequences of these two types of orientation seemed relatively clear (see below). Finally, some exploratory research (Jennings, 1968) and a post-hoc explanation of some other findings (Hertzig, Birch, Thomas & Mendes, 1968) already provided a bit of empirical evidence suggesting a relationship between social orientation and general intellectual functioning.

Some Reasons to Expect Intellectual Differences among Children with Different Orientations

Object- and people-oriented children were expected to show differences in intellectual abilities arising from differences in their cumulative experience of environmental interactions. Stated briefly, the child with high people orientation could be assumed to have acquired considerable experience interacting with people; he was expected, therefore, to be relatively advanced in social kinds of knowledge. In contrast, the child with high object orientation could be assumed to have acquired considerable experience manipulating physical objects; he was expected, therefore, to be relatively advanced in organizing and classifying physical objects. As these particular intellectual abilities developed, they were expected to

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help maintain the child's orientation style. That is, advancing social knowledge was expected to strengthen the preference for social interactions because of greater success in this area; similarly, advancing ability to organize and classify physical objects was expected to lead to more interactions with objects.

The processes by which intellectual differences might arise from these environmental interaction patterns can be described in more detail. During his interactions, the people-oriented child should experience many opportunities to learn both how others expect him to behave and also how to predict the behavior of others. Gradually, he should learn rules of social reciprocity and develop a sense of appropriate behavior for different situations (i.e., a rudimentary understanding of roles). In addition, he should develop the ability to take another person's point of view: for example, anticipating another person's reactions to his own behavior. In short, he is constructing an internal model of how people ought to behave and how, in fact, they do behave. This model of the social world may be developed and tested through such mechanisms as role-playing as well as through interactions with other people. The people-oriented child, thus, is expected to develop greater knowledge of general cultural norms, such as norms regarding sex-appropriate behavior and moral behavior. Furthermore, he is expected to demonstrate greater awareness of other people's points of view and to show greater understanding of the reasoning behind social conventions.

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Compared to the people-oriented child, the object-oriented child has spent more of his time in activities with inanimate objects. As part of his manipulations of physical objects, he has explored their properties and located them in space. Gradually he has developed a model of the physical world. Because the inanimate environment seems to provide much more consistent feedback than does the social environment (particularly when that environment is the young peer group), piecing together cause-effect relationships, constancies, and stable notions of what the world is like should be easier for the object-oriented child. For these reasons, the object-oriented child is expected to develop a fairly broad range of mental abilities. In particular, he is expected to develop abilities concerned with organizing and classify physical materials.

Before examining the concept of orientation more closely, an important point of contrast between interaction with the social and physical environments must be made. Children can hardly avoid extensive social experience, whereas extensive experience with objects is more a matter of choice. Thus, it is possible that the additional social experience of the people-oriented child may not be reflected in degree of social knowledge; all children may have sufficient opportunity to develop extensive models of the social world. In contrast, additional experience with objects may facilitate the development of notions about the physical world.

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Concept of People vs. Object Orientation

The concepts of people and object orientation are now discussed in more detail and applied to children's play behavior. These concepts are conceived as poles of a single dimension of individual differences (People vs. Object Orientation) and are specifically defined as follows:

People Orientation: When given a choice, the child who is high on this dimension chooses more often (compared to other children) activities which involve concentrated interaction with people.

Object Orientation: When given a choice, the child who is high on this dimension chooses more often (compared to other children) activities which involve concentrated interaction with inanimate objects.

The reader should note that these definitions are relative to other children. In other words, a child who is high in object orientation does not necessarily choose object-oriented activities most of the time; he does, however, choose such activities more often than most other children choose them.

One objective of the present study was to assess the adequacy of the concept of People vs. Object Orientation for describing children's play behavior. The question was whether this concept oversimplified children's behavior by precluding simultaneous orientation to people and objects. Accordingly, an observational coding system was devised

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that did not force the data into the preconceived conceptual dimension of orientation. Two separate components of orientation were distinguished and independently defined. The first of these components was called the Focus of play and was concerned with whether the child's attention was centered mainly on a person, or an object, or both.[1] The second of these components was called the interpersonal Context of play and was concerned with whether the child was engaged in solitary, parallel, associative, or cooperative play (cf. Parten & Newhall, 1943).[2] These terms and their relation to the main concept of orientation will become clearer if different kinds of children's play are examined.

One common type of play is group role-playing; for example, playing house. A child involved in such play clearly fits the concept of people orientation at that particular time. With regard to Context and Focus, this kind of play is classified as showing a people Focus and a social (i.e., associative or cooperative) Context. Examples of play activities that are similarly classified are horse-play, fights, and discussions about whose shoes are nicer.

Other kinds of play provide clear examples of object-oriented play. For instance, a child may be absorbed in putting together a puzzle, ignoring nearby children. This kind of play is classified as

[1]The both category indicated alternating attention to people and objects rather than simultaneous attention to people and objects.

[2]More complete definitions of these terms may be found in the Observation Manual in Appendix A.

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showing an object Focus and a non-social (i.e., solitary or parallel) Context.

Not all of children's play, however, fits the concept of People vs. Object Orientation so neatly. In particular, play involving group interaction while maintaining attention on an object is impossible to classify along this dimension because the child is simultaneously oriented to both people and objects. An example of such play is two children building a fort with blocks, carefully discussing their plans as they build. During such play, the social interaction does not seem to become an end in itself but remains relevant to the object (in this case, building a fort) and subordinate to the activity with the object. The usefulness of the subconcepts of Context and Focus becomes apparent for characterizing this kind of play because this activity can be classified as having an object Focus but a social (i.e., cooperative) Context.

One additional type of play is also difficult to classify according to the main concept of People vs. Object Orientation. In this type of play, the child is involved in acting out some social role alone by himself, perhaps using a physical object as a prop only; for example, feeding and talking to a doll. Classification of this play activity as either people- or object-oriented would also be arbitrary. In this instance, the child's activity is classified as having a people Focus, but a solitary Context.

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In looking at these various types of play activities, the usefulness of the subconcepts of Focus and Context becomes clear; they provide more complete description of the children's behavior and they permit the classification of activities that do not fit the more general concept of People vs. Object Orientation. These subconcepts (Focus and Context) were accordingly used in the coding of observations of children's play activities. The use of these subconcepts allowed for empirical testing of the adequacy of the more general concept of People vs. Object Orientation for describing children's play behavior.

The Ontogeny of People and Object Orientation

Although the relationship of orientation to intelligence was the main focus of this study, the ontogeny of these orientations was an important related issue. Erikson's theory of early development suggested some ideas about how differences among children in their degree of people and object orientation might arise.

For Erikson (1963), the first task of the child is to acquire "basic trust"; once this has been accomplished, the child can then develop "autonomy." It seems reasonable to assume that the child who is still struggling with the problem of basic trust would be primarily concerned with his social world; he would have little time or energy for exploring his physical world. Once basic trust had been achieved, however, the child would be free to develop autonomy, one aspect of

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which is exploring his non-social world.

Observations of exploratory behavior in the one-year-old (Ainsworth & Wittig, 1967) illustrate this interplay between the child's social needs and his growing autonomy. One-year-old children explored their physical environment considerably more when their mothers were present than when they were absent; presumably, the absence of the mother triggered the children's social needs and thereby inhibited autonomous behavior toward the physical environment.

Parents are expected to play a major role in the development of people and object orientation. First, their behavior is expected to greatly influence the ease with which the child achieves basic trust. In addition, parents are expected to influence the development of autonomy in many ways. For example, they might encourage and praise their child's efforts to explore his physical environment on his own; and they might also take care to provide an interesting physical environment for their child. On the other hand, parents might place little value on the child's exploration of his physical environment, stressing instead interpersonal relations. Their primary concern might be that the child learn to get along well with his peers, siblings, and parents.

An exploratory measure of parental attitudes was constructed to examine some of these developmental notions.[3] Parents'

[3]Parts of this questionnaire were adopted or adapted from Nakamura & Rogers (1969).

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expectations for assertive autonomy, practical autonomy, and outgoing socialness were assessed, as were their preferences for sociability as opposed to self-reliance. (No attempt was made to assess parental attitudes that might foster the development of basic trust because the task seemed too formidable for the amount of time available.)

Focus on the Preschool Age Period

The age specificity of the present conceptual framework must be emphasized. The preschool child was selected because he already had a sufficiently long history of interactions with people and objects to allow the emergence of the hypothesized relationships between orientation and intellectual abilities. The conceptual framework seems less appropriate, however, as the child grows older. First of all, the environmental interaction patterns of the child undoubtedly become more complex; that is, it becomes more difficult to classify interactions as specifically people-oriented or object-oriented as the child becomes more capable of orienting to both people and objects simultaneously.

In addition to the problem of applying this simple classification system to the behavior of the older child, there is also the possibility that the relationship between orientation and intelligence changes with age. For example, while the younger child (preschool age) may be confused by inconsistent feedback from the social environment, the older child may be better able to cope with such inconsistencies

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(because of his greater intellectual maturity). The older child who spends more time in interactions with people may then possibly increase his skills of inductive reasoning as compared with the child who spends more time with objects. Furthermore, Piaget (1950) suggests that peer interaction may be a major factor fostoring changes in cognitive structures after the age of seven. For these reasons, the rationale of the present study is limited to the pre-school age-period.

To summarize the conceptual framework of this study, young children's intellectual abilities are viewed as arising from their selective interactions with their environment. Children who show different preferences for interacting with specific aspects of their environment, therefore, are expected to be developing different intellectual abilities. Specifically, children who demonstrate greater interest in interacting with people (high people orientation) should be relatively advanced in social kinds of knowledge. Conversely, children who demonstrate greater interest in interacting with objects (high object orientation) should be relatively advanced in understanding and organizing physical materials. Speculations about the ontogeny of people and object orientation were suggested by Eriksonian theory; parents are seen as playing a major role in this development.

Before describing the study in detail, the relevant literature is reviewed in the following section.

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REVIEW OF THE LITERATURE

Hunt's theory of "intrinsic motivation" and Erikson's theory of socio-emotional development have been influential in shaping the conceptual framework of this study. Erikson's theory has already been discussed; therefore, only Hunt's theory is considered in this section. Following this discussion, three relevant types of empirical studies are reviewed: (a) studies linking intelligence to specific social characteristics of children, (b) studies using a global measure of social orientation, and (c) studies concerned with parental influences.

Theoretical Concepts

Hunt defines "intrinsic motivation" as "motivation inherent in information processing and action" (1965, p. 196). He introduces the concept in order to account for the child's interest in the physical environment. According to Hunt, the child develops preliminary concepts as to what the world is like through interactions with the physical environment. Events and objects which deviate somewhat from these concepts are then seen as interesting and invite further interactions. In this way the child develops more and more differentiated concepts in an ever expanding process. These concepts, i.e., relatively delineated expectations of the environment, are seen as the basis of intellectual development. This theory implies that the child will be most curious about things with which he already has some acquaintance. In other words, the child develops interests in

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certain aspects of his environment with which he has contact; these interests lead to increased commerce with these aspects, which in turn leads to contact and acquaintance with related aspects. Thus a developmental interest-knowledge spiral is established.

Hunt confined his discussion of intrinsic motivation to interest in the physical environment. The social environment was discussed only as a possible hindrance to the development of intrinsic motivation because of the intrusion of extrinsic motivation to meet the demands and expectations of other people. It seems likely, however, that interest in people may stem from internal sources as well as external. The child has a seemingly natural tendency to attend to and interact with other people. Much of this interest undoubtedly stems from the child's strong needs. Another source of this interest in people, however, might be called "intrinsic social motivation" -- the motivation presumably inherent in information processing about people and their behavior. Regardless of whether the child's interest in people is intrinsic or extrinsic, if this interest is very strong, the child will pay considerable attention to his social environment. Assuming that people are nearly always available to him, little attention will be paid to the physical environment; intrinsic motivation in the physical environment will accordingly be retarded. An interesting possibility suggested by this elaboration of Hunt's theory is that only intrinsically motivated interest in people may lead to increasingly differentiated concepts about the social world. Interest in people

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based on extrinsic motivation or strong emotional needs may not be conducive to rapid differentiation of social concepts.

Empirical Literature

Specific social characteristics. Studies linking social characteristics of children to their intellectual abilities are fairly few in number. Dependency is the social characteristic which has received the most attention.

The relationship between dependency and intelligence has been investigated in two short-term longitudinal studies. Sontag, Baker, and Nelson (1958) found that changes in I.Q. from ages six to ten were related to dependency. Children whose I.Q.'s significantly increased during these years were rated as more independent; conversely, children whose I.Q.'s significantly decreased were rated as more dependent. In addition, it was found that boys were over-represented in the population of children whose I.Q. increased, while girls were overrepresented among children whose I.Q. decreased.

A second short-term longitudinal study by Pederson and Wender (1968) found that dependency at age two-and-a-half was related to I.Q. at age six. Interestingly, early dependency was found to be negatively related to later Performance I.Q. scores but was found to be unrelated to later Verbal I.Q. scores. Thus a relationship was found to a measure of a somewhat specific aspect of intelligence (i.e., Performance I.Q.) rather than simply to an undifferentiated global

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measure. Taken together, these two studies indicate that dependency and intelligence may be related during the preschool and early school years.

Extensive research on the cognitive-style dimension of field dependence supports this conclusion and also suggests that parental attitudes and global social orientation may be important related factors. Witkin, Dyk, Faterson, Goodenough, and Karp (1962) found that more dependent and passive people had less differentiated perceptions of the environment (i.e., were more field dependent) and had lower I.Q.'s. They also found that field-dependent boys had more restrictive mothers, who granted them little autonomy. Thus parental attitudes seem to play some role in this personality-intelligence relationship. In addition, others have found that field-dependent adults and children are more attentive to social cues and have a better memory for faces (Fitzgibbons, Goldberger, & Eagle, 1965; Konstadt & Forman, 1965; Messick & Damarin, 1964; Ruble & Nakamura, 1972), suggesting that field dependence (and thus possibly lower intelligence) may be related to greater social orientation.

A simple relationship between sociability and intelligence seems unlikely. Rardin and Moan (1971) failed to find a relationship between social and cognitive development. Their measure of social development, however, was fairly cognitive in nature (based largely on reasons for and the stability of friendships). Using this measure, they found little relationship between social development and physical-concept development at each of four age levels in early

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elementary school. Rardin and Moan also examined the relationship of sociometric popularity with peers to their measures of social development and physical concept development. They found popularity to be closely related to social development but not to physical-concept development. In contrast, Goldschmid (1968), studying similar variables, found popularity to be significantly related to level of conversation.

In summary, dependency and intelligence are apparently related over a large age range. In addition, some research on field dependence suggests a possible negative relationship between global social orientation and intelligence. Preliminary evidence, however, argues against a simple relationship between these variables. Popularity among peers has been found to relate to a cognitive measure of social development, but the relationship of popularity to physical-concept development remains unclear because of conflicting findings.

Social orientation. Research on social orientation is only in the beginning stage. Emmerich (1964) found social orientation to be a prominent and stable aspect of children's nursery school behavior over a two-year period. In a factor analysis of this behavior, a dimension emerged which he labelled Interpersonal vs. Impersonal Orientation; this dimension is similar to the present concept of People vs. Object Orientation. Emmerich's dimension was empirically defined by children's factor scores, the original data consisting of frequencies of various kinds of social behavior, such as "seeks

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positive attention" and "seeks to be independent of approval." Thus Emmerich did not directly compare whether children preferred to interact with the physical or the social environment as was done in the present study. Although Emmerich did not assess intelligence, examination of relationships between dimensions of behavior led him to think that the impersonally-oriented child might be higher in achievement motivation and possibly more intelligent.

Some empirical support for a relationship between social orientation and intelligence is found in an exploratory study by Jennings (1968). Frequency of social play was found to be negatively related to Stanford-Binet intelligence. Children who engaged in more social play had lower I.Q scores, whereas, children who engaged in more solitary play had higher I.Q. scores. This relationship may reflect the fact the Stanford-Binet has few questions about social organization or structure.

This brief review of the research linking children's social characteristics to intelligence leads to several conclusions. First of all, empirical relationships can indeed be found between such characteristics and intelligence. Secondly, a dimension similar to People vs. Object Orientation has been found to be a stable and prominent aspect of young children's play behavior. Finally, there are preliminary indications of a possible relationship between this dimension and intelligence.

Parental influence. Only a few studies have been concerned with parental influence on social orientation and intelligence. Incidental

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observations during the course of a study of intelligence led Hertzig, Birch, Thomas, and Mendes (1968) to speculate that parental emphasis on social orientation, as opposed to task mastery, might influence the development of intelligence. One group of parents seemed to emphasize social interactions with their children; these children (of preschool age) had been found to have lower I.Q.'s. The other group of parents seemed to emphasize task mastery; their children had been found to have higher I.Q.'s. The necessary empirical work to validate these impressions has yet to be done.

In a study of fifth-grade children and their mothers, Bing (1963) concluded that high nonverbal I.Q. was related to maternal behavior fostering independence and interaction with the physical environment. In constrast, high verbal I.Q. was related to maternal behavior fostering dependency. Although the data from this study did not consistently support these conclusions, a relationship between mothers' behavior and children's intelligence and personality was indicated.

The importance of including fathers in studies concerned with parental influence has been demonstrated recently. Nakamura and Rogers (1969) related parental expectations of autonomous behavior to the level of autonomy actually shown by preschool children. Mothers' expectations, as compared to fathers', were found to be more closely associated with their children's behavior; however, analysis by sex of child showed an interesting interaction. The attitudes of mothers predicted sons' behavior better than daughers'

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and better than fathers predicted sons' behavior. In contrast, fathers' attitudes predicted daughters' behavior better than sons' and better than mothers predicted daughters' behavior. Thus, in the case of autonomy at least, the influence of parents may be greater on their opposite-sex preschool children. Clearly, fathers should be included in studies of parental influence in order to obtain a more complete picture of such influence upon children.

In summary, parental attitudes and behavior seem to influence children's personality and level of intelligence. Considerably more research is needed to delineate specific elements of parental attitudes and behavior which affect specific aspects of children's personality and intelligence. Both maternal and paternal influences on children should be examined in such research.

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PREDICTIONS AND EXPLORATORY QUESTIONS

The relationships predicted by the present conceptual model are summarized below. In addition to testing these predictions, the present study examined several exploratory questions. These are also outlined below.

Predicted relationships

1. Children who were high on object orientation (i.e., spent relatively more time in play with objects than people) were expected to show advanced intellectual development in classifying and organizing physical material.

2. Children who were high on people orientation (i.e., spent relatively more time in play with people than objects) were expected to show advanced intellectual development in areas of social knowledge, particularly in such areas as the development and understanding of sex-role norms and moral norms and the development of role-taking ability.

3. Parental attitudes were expected to relate to their children's orientation style. (Due to time limitations, only a limited attempt was made to assess parental attitudes in the present study.

Exploratory Questions

1. One question investigated was the adequacy of the general concept of People vs. Object Orientation for describing children's play behavior. The break down of the concept of orientation into the subconcepts of Focus and Context during data collection provided a means of empirically assessing the adequacy of the more general

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concept. The subconcepts (Focus and Context) were expected to show a strong positive relationship, indicating that nearly all of children's play could be categorized unambiguously along the dimension of People vs. Object Orientation. If instead these two subconcepts were found to be independent of each other, then it would be concluded that the more general concept of orientation over-simplified children's behavior by precluding simultaneous orientation to people and objects.

2. Another question concerned possible differences between people- and object-oriented children in their social behavior. The main objective was to obtain a detailed picture of the social interactions of each type of child. Measures of social behavior were (a) time spent in various play activities, (b) frequency counts of specific kinds of social behavior, (c) observer ratings, and (d) a sociometric index of popularity.

3. A final question that was explored concerned the importance of orientation as a predictor of intellectual abilities. The specific question was whether the global measure of orientation was more important than measures of specific kinds of social behavior in predicting test scores. Dependency, for example, is one kind of social behavior that has been found to relate to intelligence. The relative strengths of orientation and dependency as predictors of intellectual abilities, therefore, needed to be compared. In addition, it was necessary to determine whether any relationship found between orientation and intelligence might be mediated by a dependency-intelligence relationship.

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METHOD

Subjects

The subjects were 38 white, middle-class nursery-school children of above average intelligence and their participating parents. The mean age of the children at the time of testing was 4; 10 (range 4; 3 to 5; 4). There were 22 boys and 16 girls, including one set of opposite-sex twins. This sample of 38 children was obtained from a target sample of 40 children. One set of parents declined to have their child participate in the study, and another child was dropped from the study when she was unexpectedly found to be nearly blind during routine school eye-testing.

The children were members of three different suburban nursery-school classes. Two of these classes (with 14 and 15 children each) met at different times in the same room and had the same teacher. The other nine children went to a different school. Both schools had "traditional" nursery school programs that emphasized free play. Each class had been in session for about six months prior to the start of the study; each subject had been a member of his class for at least six weeks.

Thirty-five mothers (95%) and 30 fathers (86%) completed the parental questionnaire. Of the 38 children in the sample, two were being raised by only one parent (the mother). The parental questionnaire was completed by both of the single parents. In the 35 two-parent families (including one family with twins), 33 of the 35

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mothers completed the questionnaire and 30 of the 35 fathers did so. In two cases, neither of the parents completed the questionnaire. Thus questionnaire data were available from at least one parent for 36 of the 38 children.[4]

Procedure

The children were observed during their nursery-school free-play sessions. This setting was chosen because opportunities for both social play and object play were simultaneously available and the children were free to choose their own activity. In order to ensure unbiased observations, the trained observer was unfamilar with the general hypotheses of the study. In making observations, she followed the child about during his play, trying to stay inconspicuous but within hearing range. A time-sampling method of observation was used in which the child was observed for 20 seconds and his behavior recorded in the subsequent 40 second period. A single observation of a child generally lasted 15 minutes. At least three observations, spaced over several days, were collected for each child; the average total observation time per child was 50 minutes.

Following these observations, the children were tested individually by the author. The tests were administered in a fixed order in

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[4]In all analyses, parental data were included for the female twin only. The female twin, rather than the male twin, was chosen because of the relative shortage of females in the sample.

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two separate sessions.[5] These sessions were at least one week apart and usually three weeks apart.

A few days after the first test session, a copy of the Parental Questionnaire was mailed to each parent (both mother and father). An accompanying letter asked them not to discuss the questionnaire until both had completed it. Beginning four weeks later, follow-up telephone calls were made to all parents who had failed to return the questionnaire. Most parents were quite cooperative and apologetic about any delay in returning the questionnaire.

About two months after data collection was completed, a brief report of the general research findings was sent to the parents. (Test results for individual children were not discussed.)

Observational Measures

The observational record served two purposes: (a) to obtain a measure of People vs. Object Orientation through the indices of Focus and Context, and (b) to obtain information about the nature of the children's play activities and social behavior.

A complete listing of the observational categories is as follows:

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[5] The order of tests within each session was as follows. Session 1: It Scale for Children, Geometric Design (WPPSI), Comprehension (WPPSI), and Picture Completion (WPPSI). Session 2: Meyers's et al test of object classification, IPAT classification test, Irwin and Moore's moral judgment stories, Block Design (WPPSI), Flavell's Task III F (revised) (stick) and III C (revised) (cube), Borke's Test of Interpersonal Perception, Flavell's Task III B (gifts), and Devries's penny test of role-taking skill.

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I. Categories descriptive of the entire 20 second time unit
   A. Focus of play
      (People, both, object, other)
   B. Context of play
      (Cooperative, associative, parallel, solitary)
   C. Major activity
      (Prepare for activity, manipulate object, etc.)
   D. Persons interacted with during play
      (adult, female peer(s), male peer(s), group)
II. Kinds of social behavior
   A. Use of another as a resource
      1. Requests help when needed
      2. Requests cognitive information
   B. Dependency
      1. Seeks proximity or contact
      2. Seeks attention
   C. Other
      1. Offers cognitive information
      2. Expansion of play
      3. Initiates or maintains social contact
      4. Self-assertion
      5. Refuses to comply or declines
      6. Aggression

Complete definitions for each category and a sample recording sheet are provided in Appendices A and B.

Two different kinds of information were recorded by the observer. The first kind of information described the 20 second time unit as a whole. For the categories of Focus, Context, and Major Activity, a single rating was made (for each category) that best described the entire time unit. In addition, a list was made of the persons with whom the child interacted during the time unit. The second kind of information that was recorded was the occurrence of specified kinds of social behaviors. During a single time unit, zero, one, two or more kinds of social behavior could be recorded. In addition, the person to whom the behavior was directed was noted: peer, adult,

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or both. (Because of low frequencies of observation, not all categories were actually used in the data analysis; Appendix D contains a list of deleted categories.)

The most important variables derived from the observational records were indices of Focus and Context. For each of these indices, the child's score was simply the sum of his ratings for each time unit, divided by the number of ratings. These scores were thus the child's mean ratings for Focus and Context. Ratings were as follows:

Focus	Context
Object = 1	Solitary = 1
Both = 2	Parallel = 2
People = 3	Associative } 3
Other = No weight -- equivalent to missing data	Cooperative }

Note that high scores on Focus and Context indicated greater people orientation while low scores indicated greater object orientation. A single combined index of People vs. Object Orientation was then formed by summing the mean ratings on Focus and Context. The addition of the mean ratings for Focus and Context could only be justified if these scores measured a single underlying dimension; that is, there should be a strong positive correlation between Focus and Context.

An important feature of these measures (Focus, Context, and People vs. Object Orientation) was that they were relative rather than absolute measures of interactions with people and objects. Instead of

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a relative measure, two absolute scores might have been used: a) percentage of time spent in interactions with people, and b) percentage of time spent in interactions with objects. It was assumed, however, that these absolute scores would be highly redundant because generally when children were not interacting with objects, they would be interacting with people, and vice-versa. (The observational system, however, allowed the coding of other types of interactions, e.g., play with pets, idle watching.) This assumption of redundancy was checked following data-collection. Although the two absolute scores of time spent with people and objects were not as highly intercorrelated as expected ($r = -.69$, $df = 36$, $p < .001$), they were very highly related to the combined relative index, People vs. Object Orientation ($r = -.85$, $df = 36$, $p < .001$; $r = .89$, $df = 36$, $p < .001$).[6] Furthermore, the absolute scores showed virtually identical relationships to the other major variables of the study. For the sake of simplicity, the use of the single relative index, People vs. Object Orientation, is preferable to the use of the two separate absolute scores. Accordingly, only the results for the index of People vs. Object Orientation are reported.

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[6]The absolute scores were derived from the measure of Focus. Specifically, the measure of time spent in interactions with objects was calculated by summing the number of time units with an Object Focus with half of the number of time units with a Focus on both people and objects, and dividing this sum by the total number of time units. The measure of interactions with people was calculated in a parallel manner.

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For a list of the computational procedures used in deriving other variables from the observational records, the reader is referred to Appendix C.

Initially, 45 20-second observations were made on each child (45 minutes of observation time per child). These observations were spaced over three nonconsecutive days in 15 minute segments per child. It was then noticed that a number of children had a fairly large proportion of time units (one-quarter or more) that could not be used for assessing Focus of play (generally because the child had spent a lot of time playing with pets and/or being idle). Because Focus was a major variable in the present study, it was important that the assessment of this variable be based upon a reasonable-sized sample of each child's behavior. Consequently, it was decided to increase the number of time units of observation on these particular children.[7] The total number of observational time units collected for each child varied from 45 to 69; the mean number of time units was 50.4.

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[7] Records with less than 34 time units scorable for Focus (i.e., less than three-quarters of the 45 time units) were judged to be inadequate. Because only four days remained in the nursery school year when this problem was discovered, it was decided first to include as data all incomplete observation records on all children. (Previously records with less than 15 consecutive time units had not been included as data.) Then after combining complete and incomplete observational records, children who still had less than 34 time units scorable for Focus were selected for additional observation. Of these 10, it was possible to observe only 8 because of absences. Thus, the observational records of two children in the sample are somewhat shorter than desirable (for assessing Focus of play). All variables derived from the observational records took into account the varying number of time units for each child, generally by using a percentage score.

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Tests of Knowledge of the Physical Environment

Four tests were used to provide a combined measure of ability to classify and organize physical material: The Picture Completion, Block Design, and Geometric Design subtests from the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) (Wechsler, 1967), and the Meyers's et al test of object classification (Meyers, Dingman, Orpet, Sitkei, & Watts, 1964). For simplicity, these tests are referred to collectively as physical tests.

Prior to selecting the tests used in this study, an effort was made to examine as many preschool tests as possible. It was discovered that very few available tests measure specific intellectual abilities. Ideally, for this study one would want well-standardized, proven factor-pure tests of ability to classify and organize materials. There simply were no such tests available. (For a review of preschool mental tests, the reader is referred to Stott and Ball, 1965). Two attempts to create factor-pure tests have been made. One of these attempts was unsuccessful (Meyers et al, 1964); the other attempt was partially successful, but the tests used are no longer available (Lesser, Fifer, & Clark, 1965).

Given the lack of factor-pure tests, a sound approach for selecting tests for this study seemed to be to choose several tests of high face validity. The sum of these tests would then provide a somewhat heterogeneous measure that encompassed several facets of ability with physical materials. It was assumed that this combined measure

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would be a better assessment of this ability than any single test.

The complete list of criteria used in selecting physical tests were (a) face validity, (b) minimal or no requirement for a verbal response, (c) interest to children, (d) brevity, and (e) some standardization.

Three subtests of the WPPSI were selected: Picture Completion, Block Design, and Geometric Design. Besides satisfying the above criteria, there was another reason for selecting these particular subtests. In a factor-analytic study of the WPPSI, these three subtests (along with Mazes) had been found to load on a single factor (Dokecki, Frede, & Gautney, 1969).

In addition, a test of classifying ability was selected: the Meyers's et al test of object classification (1964). For each item of this test, the tester sorts four blocks into two piles and then asks the child to put the remaining four blocks "where they belong." If the child receives the maximum score, he is then given the IPAT Classification Test (six-year-old level) (Cattell, 1950). Two slight modifications were made in the test procedure as described by Meyers et al. First, the easiest item was not administered because it seemed to be far too simple for this group of children. (All children were given credit for passing this item.) Second, the IPAT Classification Test was administered to all children, regardless of their score on the Meyers's et al portion of the test. (The IPAT test was terminated when two consecutive items were failed.)

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The subscores on each portion of the test were summed to form a single score (according to the weighting procedure described in Meyers et al, 1964, and noted in Appendix E).

Thus four tests of ability to classify and organize physical materials were administered to each child. The scores on these four tests were combined into a single measure of ability with physical materials. In order to weigh each test equally, it was necessary to standardize the scores on each test before summing them.[8] The sum of these standardized test scores is referred to as the score on physical tests.

Tests of Knowledge of the Social Environment

Six tests were used to provide a combined measure of social knowledge: The It Scale for Children, the Comprehension subtest of the WPPSI, Flavell's tasks of role-taking ability, Devries's penny test of role-taking skill, Borke's Test of Interpersonal Perception, and Irwin and Moore's moral judgment stories. For simplicity, these tests are referred to collectively as social tests.

Until recently, the measurement of social knowledge has been a neglected area -- particularly for young children. Historically, interest has focused on social functioning, per se, rather than on cognitive abilities. The Vineland Scale of Social Maturity (Doll, 1953)

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[8] WPPSI raw scores were used rather than scaled scores (i.e., age-corrected scores), in order to insure comparability of scores across all ten tests. Raw scores were the only ones available for the remaining six tests.

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exemplifies this focus; in this scale, questions center around such abilities as whether the child is able to dress himself. In the past few years, however, there has been an upsurge of interest in cognitive aspects of children's social ability. Much of this interest has been stimulated by Piagetian theory.

Because of the recency of interest in measuring aspects of social knowledge, no well-standardized tests were available (with the exception of the Comprehension subscale of the WPPSI). Since test development in the area of social knowledge is only in the beginning stages, it was decided to include as many social tests as feasible in the present study in order to minimize the effect of any single test. For this reason, six social tests were included in the present battery as compared to only four physical tests (an area of test development that seemed to be at a higher level).

In selecting tests, face validity, brevity, and interest for children were important criteria. While minimal verbal response was desirable, it did not seem as important a criterion for social tests as for physical tests; four of the chosen tests required minimal or no verbal response, while two depended heavily on verbal ability. A final criterion was some evidence that scores on the test increase with age during the preschool years; scores should increase on a test measuring a developing intellectual ability.

The six tests selected for use are discussed individually below. Unless otherwise noted, administration of the tests followed the

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procedures outlined by the original authors. The It Scale is presented first because it was used in a somewhat unorthodox manner in the present study and hence requires more discussion than the other tests, which were used in ways more congruent with the purposes of the original authors.

1. The It Scale for Children (Brown, 1956) was originally designed as a test of sex-role preference. A large amount of research has been done using this test. After careful consideration, at least two groups of investigators have concluded that the It Scale is more appropriately used as a measure of sex-role knowledge than of sex-role preference (Schell & Silber, 1968; Sher & Lansky, 1968). Two different lines of evidence support this point of view. Generally, scores have been found to increase with age although findings conflict somewhat (Kohlberg & Zigler, 1967; Reed & Asbjornsen, 1968; Schell & Silber, 1968). In addition, bright children have been found to score higher than average children (Kohlberg & Zigler, 1967). There is thus some empirical support for the somewhat unorthodox use of the It Scale in the present study as a test of social knowledge.

Research on the It Scale also suggested a modification in the administration procedure. Rather than simply calling the stimulus figure It and leaving the sexual identity ambiguous, the figure was clearly identified as a "little girl" for the female subjects and as a "little boy" for the male subjects. With these instructions, boys and girls have been found to perform equally well (Reed & Asbjornsen,

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1968; Schell & Silber, 1968). (With the standard instructions, boys have tended to perform better than girls; i.e., boys have tended to give more masculine choices than girls give feminine choices.)

The use of the It Scale as a test of sex-role knowledge also necessitated a change in the scoring procedure. Scoring for boys was identical to that outlined by Brown (1956); higher scores indicated more masculine choices. Scoring for girls was reversed so that higher scores indicated more feminine choices, i.e., more sex-appropriate choices. (The scoring procedure is outline in Appendix E.)

2. The Comprehension subtest of the WPPSI was used to measure knowledge of moral norms and social conventions, and also to measure understanding of the reasons for these norms and conventions. While not specifically designed as a test of social knowledge, most items seemed appropriate for this purpose. Since this test is part of a standard intelligence test, it had been better standardized than the other measures of social knowledge. The test, however, is not devoid of problems (see Ruschival & Way, 1971).

3. Three of Flavell's (1968) tasks of role-taking ability for preschool children were used (Tasks III B, III C -- revised, and III F -- revised). The first of these tasks asks the child to select appropriate birthday presents for his mother, father, teacher, and a sibling. Flavell's procedure was modified slightly for the present study: the child was asked to select a gift for a friend rather than a sibling because of the difficulty of judging the appropriateness of the sibling

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gift choice without knowing the age of the sibling. In the procedure used in the present study, the child was first asked to name his best friend in his nursery-school class and then asked to select a present for him or her. In the second task the child was given a cube identical to one held by the examiner and then asked to rotate his cube until he was looking at the same picture as the examiner. In the third task, the child and the examiner held a stick between their outstretched palms. The end of the stick held by the child was padded with cotton while the end of the stick held by the examiner was sharply pointed. The child was then asked whether the stick felt soft in the examiner's hand also. For a complete description of these tasks, the reader is referred to Flavell (1968).

Each task was scored according to Flavell's procedure (as described in Appendix E) and then summed to give a single score (zero to six).

4. Devries (1970) has developed a simple penny-guessing game as a measure of role-taking ability. In this game, the examiner repeatedly hides a penny behind her back in one of her fists, and the child is asked to guess which hand the penny is in. After seven trials the child is asked to hide the penny for six trials. The child is scored on how well he plays the game. For a complete description of the administration procedure, the reader is referred to Devries (1970). The scoring procedures were identical to those used by Devries and are described in Appendix E.

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The usefulness of this measure as a test of role-taking ability has been confirmed by Selman (1971).

5. Borke (1971, 1972) has developed a Test of Interpersonal Perception, a measure of young children's ability to recognize the emotions of others. She kindly supplied the pictures that accompanied a modified version of the 1971 test. As it was not possible to administer the entire test, seven items were selected on the basis of data supplied by Borke (personal communication). The items selected seemed unambiguous and difficult enough to provide differentiation in the age range of the present sample.

Each item described a situation in which another child could easily be perceived as feeling happy, sad, angry, or afraid (e.g., eating a favorite food, being alone in the dark). The child was asked to complete a picture of the described situation by selecting a face that best indicated how the other child felt in this situation. For a complete description of the test and scoring, the reader is referred to Appendix F.

6. Irwin and Moore (1971) have developed a set of stories to measure preschool children's understanding of social justice. They kindly supplied a revised set of eight stories and the accompanying pictures. Since it was not possible to administer all eight stories, four were selected on the basis of simplicity and diversity, being careful to balance for sex of protagonists and for position of the "naughty" character in the story (i.e., mentioned first or second).

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In two of the stories, one character commits a transgression accidentally whereas the other transgresses intentionally. The other two stories were based on Piaget's moral-realism themes in which one character has done a little damage in the course of committing a misdeed whereas another has done a lot of damage while attempting to carry out a legitimate task.

The child was told each of these stories and then asked to point to the character that was the naughtiest and explain the reason for his choice. He was then asked to choose an appropriate punishment for this character; two possible punishments were given, one involving restitution and the other retribution.

Because of the forced-choice nature of this test, children who could not comprehend the task could be expected to get half the items right by chance, answering randomly. In contrast, children who gave consistent answers based on immature moral principles (e.g., "the one who does the most damage is the most naughty") would get none of the items right. It was therefore necessary to take into account children's reasons for their choices in assigning scores. Accordingly, if the child gave nonsensical reasons or insisted that both characters were naughty, he was judged to be answering the questions in a random fashion and was assigned a score of zero.[9] On the other hand, if the child gave a meaningful reason for at least

[9] Almost 30% of the subjects were judged to be answering the questions in a random fashion and were therefore assigned scores of zero.

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one story, he was assigned a score greater than zero depending upon the number of correct answers. For a complete description of the test and scoring, the reader is referred to Appendix G.

In summary, six tests were used to provide an overall measure of social knowledge. Several different aspects of social knowledge were assessed: knowledge of sex-role norms, understanding of reasons for social conventions, role-taking ability, perception of another's emotions, and moral judgment. The scores on each of these tests were standardized and then summed; this sum is referred to as the score on social tests.

Parental Questionnaire

A questionnaire was developed to measure parental attitudes that might influence the development of People vs. Object Orientation. Because of time limitations and the inherent complexity of attitude assessment, the present attempt at assessment was limited and should be regarded as exploratory.

The questionnaire was based, in part, upon an adaptation of Nakamura and Roger's Parent's Expectation Inventory (1969). This inventory supplied two scales for the present questionnaire: expectations for assertive autonomy and expectations for practical autonomy. These scales were modified very slightly for use in the

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present study.[10] A study by Nakamura and Rogers (1969) has provided some evidence for the validity of these scales. Parental expectations for assertive autonomy were found to successfully predict children's level of autonomy during the first few days of nursery school, while expectations for practical autonomy were found to be unrelated (as predicted).

In the present study, parental expectations for assertive autonomy were expected to relate to lower scores on Peoples vs. Object Orientation (i.e., scores closer to the object pole) while expectations for practical autonomy were expected to be unrelated to orientation.

A parallel scale of parental expectations for outgoing socialness was specially constructed for this study. (Several of the items on this scale were adopted or adapted from the Nakamura and Roger's inventory.) It was expected that this scale would relate to higher scores on People vs. Object Orientation (i.e., scores closer to the people pole).

These three scales of parental expectations were intermixed and

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[10] Because the aim of the present study was to predict People vs. Object Orientation, some modification of the scales was necessary. Of the ten items in the Assertive Autonomy Scale, two (nos. 13 and 32) were deleted because they concerned expectations for outgoing social behavior. One item (no. 1) was deleted from the Practical Autonomy Scale for the same reason. (These three items were included in the Outgoing Socialness Scale specially constructed for this study.) One additional item (no. 37) was deleted from the Practical Autonomy Scale in order to equalize the number of items in each scale.

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administered in Part I of the Parental Questionnaire. Each item described a child's behavior in some specific situation. Parents were asked to indicate how typical (or common) they thought the behavior was for children of that age. By asking parents for their expectations for children in general (rather than for their own particular children), assessed expectations should be less influenced by parents' perceptions of their own children's actual behavior.

This method of assessment of expectations allowed parents to have relatively high expectations for both assertive autonomy and outgoing socialness or, conversely, relatively low expectations for both. This method had certain advantages in that the degree of relationship between a particular type of expectation and orientation could be determined separately. Thus, it was possible to determine empirically, for example, that only assertive autonomy expectations, or only social expectations, were related to orientation.

In addition, however, it was desirable to have a single measure of parental attitudes that directly compared parents' preferences for sociability against their preferences for self-reliance and object involvement. Accordingly, a forced-choice measure of preferences was administered in Part II of the Parental Questionnaire. Each item consisted of a pair of descriptive statements (e.g., (a) Likes to work alone, (b) Likes to work with others). Parents were asked to select the statement that they most preferred for their own child and

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then to indicate the strength of their preference (i.e., strong, moderate, or weak). Parents who preferred sociability were expected to have children who scored closer to the people pole on Orientation while parents who preferred self-reliance were expected to have children who scored closer to the object pole.

The last part of the questionnaire asked parents to indicate how their child usually spent his free play time outside of nursery school; the main concern was the sociability of the child's play. This question was included to determine whether the child's behavior as observed in nursery school was typical of his general play behavior as perceived by his parents.

A copy of the parental questionnaire and answer sheet, a list of items included in each scale, and a description of the scoring procedure are included in Appendix H.

Other Measures

Two measures were included in order to obtain information about the general quality of each child's social functioning. These were a measure of popularity among peers and a series of ratings by the observer.

Popularity among peers. The measure of popularity was administered as part of Flavell's tasks of role-taking ability. One of these tasks required the child to select a birthday present for various people, including his best friend in school; the child was asked to

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name this friend. The number of times each child was chosen by others as best friend was his score on this popularity measure. Scores ranged from zero to four.

Ratings. After completion of the observations on all children, the naive observer rated each child on several aspects of the general quality of his social functioning: a) peer leader, b) engages in hostile or disruptive behavior, c) dependency, d) forcefully goes after what he wants, e) self-starting and self-propelled, f) lacks ability to get along with other children, and g) other children seek his company. As anchor points for each rating, detailed descriptions were given of two hypothetical children, one who would be rated high on the particular trait and another who would be rated low. This rating scale was adapted from Baumrind (1968).

Two of these ratings (i.e., dependency and engages in hostile or disruptive behavior) allowed the comparison of frequencies of these behaviors in the observational records with the observer's general impressions of these traits. The other ratings tapped qualities of children's behavior that were not possible to assess in minute-by-minute recordings of behavior.

The complete rating scale is given in Appendix I.

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RESULTS

Reliability of Observational Variables

The degree of observer reliability was assessed by simultaneous 15-minute observations by two observers on 13 children. Since two types of observational data were collected, two somewhat different methods of determining observer reliability were necessary.

1. For the categories of Focus, Context, and Major activity, a single rating was coded for each time unit. The percentage of agreement over all time units in the 13 records was computed as follows:

$$\text{Percent agreement} = \frac{\text{Number of agreed ratings}}{\text{Number of time units}}$$

The percentage of agreement for Focus was 82.6%; for Context, 93.0%; and for Major activity, 73.9%.

In addition, the mean ratings for each observer for each child were correlated for Focus and Context. This method of assessing reliability was perhaps more appropriate because analyses of the data used the mean ratings for each child rather than the unit by unit ratings. The reliability coefficient for Focus was .99 ($df = 11$, $p < .001$) (Pearson r); and for Context, .99 ($df = 11$, $p < .001$).

2. Determining observer reliability was more complex for the remaining two categories: Persons interacted with during play and Kinds of social behavior. For each of these categories, zero, one, or more entries could be made during each time unit.

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Reliability for the category of Persons interacted with during play was calculated in the following manner:

$$\text{Percent agreement} = \frac{\text{Number of agreed entries}}{\text{Total number of entries recorded by either or both observers}}$$

The percentage of agreement was 76.7%.

Reliability for the category of Kinds of social behavior was calculated in a similar manner. Assessment of reliability for this category was complicated by the fact that the person toward whom each behavior was directed was recorded: adult, peer, or both.

The most conservative estimate of observer reliability for the category of Kind of social behavior was computed as follows:

$$\text{Percent agreement} = \frac{\text{Number of complete agreements (on both type of behavior and person directed towards)}}{\text{Number of behaviors recorded by either or both observers}}$$

The percentage of agreement was 58.3%.

The major cause of unreliability was the noisy conditions of observation during free-play periods and the fact that the classification relied heavily on verbalization. Indeed 25.0% of the behaviors recorded by either or both observers were recorded by only one observer; that is, only one observer heard the particular verbal behavior.

If only those behaviors that were heard and thus recorded by both observers were considered, the percentage of agreement (on both type of behavior and person directed towards) was increased

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to 78.3%. When only agreement on type of behavior was considered, there was 85.1% agreement; and when only agreement on person towards whom the behavior was directed, there was 91.2% agreement.

While agreement was somewhat lower than desirable, many of the disagreements were caused by hearing slightly different verbalizations so that the behavior was interpreted differently. During assessments of reliability, it was necessary for the two observers to stand at a distance from the child in order to remain unobtrusive. During actual data collection, however, the (single) observer approached considerably closer to the child under study; thus instances of mishearing were presumably less frequent. The reliability figures obtained should thus be regarded as a conservative estimate.

People vs. Object Orientation: Relationship between Focus and Context

The observational categories of Focus and Context were found to be highly related. Two different methods were used to assess the degree of relationship.

In the first method, the correlation between children's mean ratings on Focus and Context was computed. A correlation of .75 was found ($df = 36$, $p < .001$).

In the second method, the percentage of time units concordant for Focus and Context was computed for each child individually and for all the children as a group (i.e., over all time units regardless of child). Only time units in which the Focus of attention was rated as

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people or object were included in this analysis; that is, time units in which the Focus was rated as both or other (46% of time units) were dropped from the analysis (because of the impossibility of defining concordance and disconcordance for these ratings).[11] The following combinations of ratings were considered to be concordant and disconcordant:

Concordant		Disconcordant	
Focus	Context	Focus	Context
Object	Solitary	Object	Associative
Object	Parallel	Object	Cooperative
People	Associative	People	Solitary
People	Cooperative	People	Parallel

The median percentage of concordant time units for the 38 individual children was 92.5% (range, 100% -- 56%). When all time units were pooled over all children, the percentage of concordant time units was 88.1%.

These two types of analyses led to the same conclusion: Focus and Context were highly related. The summing of these two measures to form a single index of People vs. Object Orientation, therefore, was judged to be appropriate. (In presenting the findings, emphasis is placed upon this combined index; results for Focus and Context are cited only when they are dissimilar.)

Tests: Intercorrelations

Means and standard deviations for the 10 individual tests and the two summary test scores are present in Table 1.

[11] A rating of both for Focus indicated alternating attention to people and objects within a time unit; the analysis of concordance was concerned with simultaneous orientation to people and objects.

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TABLE 1

Means and Standard Deviations for Individual Tests and Summary Test Scores (N = 38)

Tests	Mean	S.D.
Physical tests		
Picture completion (WPPSI)	12.1	3.2
Block design (WPPSI)	11.6	3.9
Geometric design (WPPSI)	8.2	4.0
Classification	7.4	1.0
Social tests		
Comprehension (WPPSI)	14.1	4.6
It scale	71.7	11.7
Role-taking ability (Flavell)	5.0	1.1
Penny test	8.1	0.9
Interpersonal perception	6.2	1.0
Moral judgement	4.2	3.3
Summary test scores		
Physical tests	0.0	2.7
Social tests	0.0	3.5

Note: The means for the summary test scores are zero because they are the sums of standardized scores.

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Correlations between test scores and age are given in Table 2. None of these correlations was significant. The median correlation with age for the individual test scores was .18. Correlations between age and the two summary test scores were also low and non-significant (physical tests, r = .17; social tests, r = .26). It was concluded, therefore, that age-correction of the test scores was not necessary.[12]

Intercorrelations among the ten individual tests and the two summary tests scores (i.e., physical tests scores and social tests scores) are given in Table 3. Intercorrelations among the individual tests were generally low, indicating that the tests assessed several different aspects of social and physical knowledge. The median correlation among physical tests was .30 (three of the six coefficients were significant). Among social tests, the median correlation was .22 (two of the 15 coefficients were significant). Between the two different kinds of tests, the median correlation was .16 (six of the 24 coefficients were significant).

Thus, empirically, the tests showed only a very minor tendency to cluster themselves into two groups of physical tests and social tests. These findings, however, did not invalidate the present grouping of tests, which was based on a priori conceptual grounds.

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[12] As a check on this conclusion, during data analysis partial correlations (with age partialled out) were computed for the most important relationships. As expected, changes in the magnitude of relationships were found to be quite minor and are therefore not reported.

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TABLE 2

Correlations between Test Scores and Age (N = 38)

Tests	Age
Physical tests	
Picture completion (WPPSI)	.27
Block design (WPPSI)	-.07
Geometric design (WPPSI)	.07
Classification	.19
Social tests	
Comprehension (WPPSI)	.26
It scale	-.08
Role-taking ability (Flavell)	.10
Penny test	.17
Interpersonal perception	.18
Moral judgment	.28
Summary test scores	
Physical tests score (summary)	.17
Social tests score (summary)	.26

Note: None of the correlations reached the .05 level necessary for significance.

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TABLE 3

Intercorrelations among Test Scores (N = 38)

Tests	Tests										
	1	2	3	4	5	6	7	8	9	10	11
Physical tests:											
1 Picture completion											
2 Block design	.44*										
3 Geometric design	.38*	.33*									
4 Classification	.28	.04	.22								
Social tests:											
5 Comprehension	.39*	.33*	.30	.17							
6 It scale	.16	-.05	.35*	.03	.17						
7 Role-taking ability	.30	-.07	.37*	.19	.10	.52*					
8 Penny test	.16	.03	.33*	.07	.29	.08	.26				
9 Interpersonal perc.	.19	.07	.10	.07	.08	.30	.46*	-.05			
10 Moral judgment	.57*	.08	.29	.05	.25	.12	.30	.22	.07		
Summary test scores:											
11 Physical tests score	.77*	.67*	.71*	.57*	.44*	.18	.29	.22	.13	.37*	
12 Social tests score	.49*	.11	.50*	.17	.53*	.63*	.75*	.51*	.53*	.56*	.47*

*$p < .05$

Rather, these findings indicated that neither group of tests constituted a single ability-factor. This conclusion was substantiated by a factor-analysis of the individual tests.[13] Instead, both the group of physical tests and the group of social tests presumably measured several different facets within each kind of ability.

Further examination of these correlations indicated some empirical differentiation between the two summary scores of physical and social knowledge. Correlations between the summary test scores and the individual component test scores were all significant and greater than .50; whereas, correlations between the summary test scores and the individual non-component test scores were all .50 or below. On the other hand, the summary social test score correlated significantly with two of the four individual physical tests, and the summary physical test score correlated significantly with two of the six individual social tests. Taken together, these relationships indicated some differentiation between social and physical intellectual abilities but not complete independence. This impression was strengthened by a moderate correlation of .47 ($p < .01$) between the two summary test scores. For the remaining analyses, data are

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[13] A Varimax rotated factor analysis showed three factors with eigen values greater than one. Tests with factor loadings over .40 are rank ordered for each factor as follows: Factor 1 (a general factor): Picture completion (.700), Moral judgment (.637), Geometric design (.484), Comprehension (.440), and Penny test (.409); Factor 2 (a social factor): Flavell's role-taking tasks (.834), It scale (.567), and Interpersonal perception (.543); Factor 3 (a specific factor): Block design (.908).

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reported for only the two summary test scores (i.e., physical test scores and social test scores). Results for the 10 individual test scores were congruent with those for the two summary test scores. (Correlations between the 10 individual test scores and the other major variables of the study may be found in Tables H and I in Appendix K.)

In summary, test scores were not found to be significantly related to age. Intercorrelations among individual test scores showed little tendency for the tests to cluster into two groups of physical tests and social tests. Thus, each summary test score presumably combined several different facets of physical and social knowledge. These two summary test scores showed a moderate amount of empirical differentiation.

Relationships among Orientation, Tests, and Social Interaction Variables

The main part of the data analysis was concerned with the relationships among orientation, test scores, and social interaction variables (i.e., play activities, observed social behaviors, ratings, and popularity). Sex differences and birth-order effects are considered separately in the next section.

Means and standard deviations for the orientation measures and the social interaction variables are presented in Table 4. Relationships among these variables are discussed in three parts: (a) relationships between orientation and test scores, (b) relationships

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TABLE 4

Means and Standard Deviations for Orientation Measures and Social Interaction Variables (N= 38)

Variables	Mean	S.D.
Orientation measures		
1. People vs. object orientation	4.63	0.54
2. Focus	2.02	0.33
3. Context	2.61	0.25
Play activities (percent of time units)		
4. Prepare, clean up*	0.04	0.04
5. Manipulate object	0.24	0.16
6. Contruct a product	0.14	0.15
7. Gross-motor activity	0.15	0.16
8. Looking, listening activity*	0.04	0.06
9. Pets	0.05	0.08
10. Game*	0.01	0.03
11. Role-playing	0.09	0.10
12. Conversation*	0.01	0.02
13. Social interaction	0.14	0.08
14. Idle, passive watching	0.07	0.07
15. Manipulate or construct (sum of 5 and 6)	0.38	0.20
16. Social activity (sum of 10, 11, 12, and 13)	0.25	0.15

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TABLE 4, cont'd

Variables	Mean	S.D.
Observed social behaviors (17-24 are % of time units)		
17. Use of another as resource (peer or adult)	0.02	0.04
18. Seeks attention of peer	0.02	0.02
19. Seeks attention of adult	0.03	0.03
20. Expansion of play with peer	0.22	0.12
21. Expansion of play with adult	0.02	0.03
22. Social contact with peer	0.25	0.11
23. Social contact with adult	0.03	0.03
24. Self-assertion to peer	0.03	0.03
25. Number of social behaviors to peers	23.67	9.14
26. Number of social behaviors to adults	5.04	4.00
27. Peer directedness: Ratio peer to adult	0.81	0.16
28. Percent time with adult (including in group)	0.33	0.19
29. Percent time with adult only (no peer)	0.02	0.04
30. Associative play w/same-sex peer(s)	0.37	0.23
31. Associative play with only one peer	0.22	0.14
Other		
32. Popularity among peers	0.97	1.05

* These variables were deleted from subsequent data analyses because of the rareness of their occurrence (i.e., less than 5% of time units).

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between orientation and the social interaction variables, and (c) relationships between test scores and the social interaction variables.

Relationships between orientation and test scores. The central part of the data analysis was the examination of the relationships between People vs. Object Orientation and the summary test scores of physical and social knowledge. Intercorrelations among these variables are presented in Table 5.

The expected relationship was found between orientation and physical knowledge; but no relationship was found between orientation and social knowledge. Specifically, children who received lower scores on People vs. Object Orientation (i.e., spent relatively more time in play with objects than people) performed better on tests of physical knowledge ($r = -.41$, $p < .01$); whereas the orientation score did not relate to tests of social knowledge ($r = -.07$).

In addition to analyzing the two individual summary test scores, a difference score was computed for each child as an indication of the relative strength of his social and physical abilities.[14] A high positive score indicated that a child performed relatively better on the social tests than on the physical tests (in comparison to other children); whereas a high negative score indicated relatively better performance

[14] To form this difference score, the two summary test scores were first standardized; the standard score for the physical tests was then subtracted from the standard score for the social tests.

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TABLE 5

Intercorrelations among Tests and Orientation Measures (N = 38)

Variables	Variables				
	1	2	3	4	5
Tests					
1. Physical score (summary)					
2. Social score (summary)	.47*				
3. Difference score (2 minus 1)	-.52*	.52*			
Orientation measures					
4. People vs. object orientation	-.41*	-.07	.34*		
5. Focus	-.44*	-.06	.36*	.95*	
6. Context	-.32*	-.06	.25	.92*	.75*

* $p < .05$

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on the physical tests. Difference scores near zero indicated approximately equal performance on the two kinds of tests (both might be high or both low).

The difference score was found to correlate positively with the orientation score ($r = .34$, $p < .05$). This correlation of .34 was less than the correlation of -.41 between orientation and the physical tests; it was concluded, therefore, that the difference score was simply reflecting the component variance contributed by the physical test score (as well as the lower reliability of difference scores). That is, there appeared to be no added psychological significance obtained in the difference score that was not already available in the simple component scores. It was concluded, therefore, that relative knowledge in the physical and social spheres was not an especially meaningful variable.

Relationships between orientation and social interaction variables. To provide a more detailed picture of children with differing orientation, relationships were examined between orientation and (a) play activities, (b) observed social behaviors, (c) ratings, and (d) popularity. Correlations between the orientation measures and these social interaction variables are presented in Table 6. In examining these correlations, it is important to remember that high scores on the orientation measures indicated greater relative interest in people and lesser relative interest in objects.

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TABLE 6

Correlations between Orientation Measures and Social Interaction Variables (N = 38)

Social interaction variables	Orientation Measures		
	People vs. object orientation	Focus	Context
Play activities			
Manipulate object	-.26	-.36*	-.08
Construct product	-.46*	-.53*	-.31
Gross-motor activity	.09	.18	-.05
Pets	-.02	-.02	-.02
Role-playing	.59*	.65*	.42*
Social interaction	.63*	.65*	.50*
Idle, passive watching	-.13	.01	-.29
Manip. or construct (summary)	-.54*	-.68*	-.29
Social activity (summary)	.75*	.80*	.57*
Observed social behaviors			
Use of another as resource (peer or adult)	-.13	-.15	-.08
Seeks attention of peer	.33*	.43*	.15
Seeks attention of adult	-.23	-.22	-.22
Expansion of play with peer	.67*	.59*	.68*
Expansion of play with adult	-.29	-.33*	-.20
Social contact with peer	.52*	.46*	.51*
Social contact with adult	-.38*	-.41*	-.28

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TABLE 6, cont'd.

Social interaction variables	Orientation Measures		
	People vs. object orientation	Focus	Context
Self-assertion to peer	.25	.22	.25
Number of social behaviors to peers	.76*	.69*	.74*
Number of social behaviors to adults	-.36*	-.39*	-.27
Peer-directedness: Ratio peer to adult	.56*	.54*	.49*
Percent time with adult (incl. group)	-.23	-.37*	-.02
Percent time with adult only (no peer)	-.36*	-.34*	-.32*
Associative play with same-sex peer(s)	.41*	.47*	.26
Associative play with only one peer	.03	.00	.06
Ratings			
Peer leader	.28	.19	.34*
Engages in hostile behavior	-.06	-.01	-.11
Dependency	.05	.08	-.00
Forcefully goes after what wants	-.02	-.02	-.01
Self-starting and self-propelled	-.03	-.08	.03
Lacks ability to get along with others	-.32*	-.23	-.39*
Other children seek his company	.36*	.27	.42*
Other			
Popularity among peers	.23	.21	.23

*$p < .05$

Looking first at play activities, children who obtained higher orientation scores engaged in significantly more role-playing ($r = .59$, $p < .001$) and more social interaction ($r = .63$, $p < .001$). Conversely, they engaged in significantly less play involving constructing a product ($r = -.46$, $p < .01$). No significant correlations were found between orientation and the proportion of time spent in other play activities, including manipulating objects, play with pets, gross motor play, or idly watching others.

In looking at the frequency of specific kinds of discrete social behaviors, the following relationships were found. Children who spent relatively more time in play with people than objects (i.e., obtained higher orientation scores) more often sought the attention of a peer ($r = .33$, $p < .05$), more often engaged in communications designed to expand their play with peers ($r = .67$, $p < .001$), and more often engaged in communications designed to initiate or maintain social contact with peers ($r = .52$, $p < .05$). Conversely, they less often engaged in communications designed to initiate or maintain contact with an adult ($r = -.38$, $p < .05$). No significant correlations were found between orientation and using another as a resource, overall dependency, seeking attention of an adult, self-assertion to a peer, or expanding play with an adult.

Most of these correlations were as expected since the activities would have directly affected the Context and Focus components of the orientation score; the particular pattern of relationships

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suggested, however, that children with greater relative interest in people than objects (i.e., higher orientation scores) might have engaged in more peer interactions but fewer adult interactions than other children (with lower orientation scores). To assess this possibility, the total number of social behaviors (regardless of type) directed towards peers and the total number directed towards adults were calculated and then related to orientation. As expected, the number of social behaviors directed to peers correlated positively with orientation ($r = .76$, $p < .001$); whereas the number of social behaviors directed to adults correlated negatively with orientation ($r = -.36$, $p < .05$). In addition, the ratio of number of social behaviors directed to peers over the total number of social behaviors was computed for each child; this measure controlled for differences in the total number of social behaviors. The correlation between this ratio score of peer-directedness and orientation was .56 ($p < .001$). Thus, children who were relatively more peer-directed tended to spend relatively more time in play with people (than objects); whereas children who were relatively more adult-directed tended to spend relatively more time in play with objects.

A similar picture was indicated by the observational category of Persons interacted with during play. Children who showed greater relative interest in objects (than people) were found to spend more time in dyadic interactions with an adult ($r = -.36$, $p < .05$). This

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relationship raised the question of whether these children (with lower orientation scores) also preferred dyadic interactions with peers over group interactions. No relationship was found, however, between orientation and frequency of play with only one peer as compared to a group of peers.

Regarding sex of chosen playmates, it was found that the orientation score correlated with frequency of play with same-sex peers ($r = .41$, $p < .05$); it should be noted, however, that this relationship was found among boys ($r = .58$, $p < .001$) but not among girls ($r = -.01$).

Turning next to the rating of quality of social behavior, two ratings (of seven) showed significant relationships. Children who spent relatively more time in play with people (than objects) were more often rated as being sought after by other children ($r = .36$, $p < .05$) and less often rated as lacking ability to get along with others ($r = -.32$, $p < .05$). No significant relationships were found between orientation and ratings of peer leadership, hostility, dependency, forcefulness, or self-starting.

Finally, the sociometric measure of popularity among peers was found to be unrelated to orientation. The relative amount of time spent in play with people and objects did not correlate with the frequency of being chosen as best friend by the other children.

In summary, children who showed greater relative interest in people than objects (i.e., higher orientation scores) tended to en-

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gage in more role-playing and more play characterized by social interaction; however, they tended to engage in less play involving the construction of products. In addition, these children engaged in considerably more interactions with peers and fewer interactions with adults. Thus, children with greater relative interest in people (than objects) could be described as peer-directed; whereas children with relatively greater interest in objects could be described as adult-directed. No relationship was found between orientation and the tendency to engage in play with groups of peers as opposed to a single peer; however, boys who showed relatively more interest in people (than objects) were more likely to play with same-sex peers. Children who showed more interest in people were also more often rated as being sought after by other children although they were no more often selected as best friend by the other children.

Relationships between test scores and social interaction variables. Correlations between test scores and the social interaction variables are presented in Table 7. This third part of the analysis had two purposes. The first purpose was to determine whether the scores on the tests of social knowledge related to any aspect of children's social behavior; this was of interest particularly because social knowledge had been found to be unrelated to orientation. As a comparison, the relationship of physical test scores to these same social behaviors was also of interest. The second purpose of this part of the analysis was to determine whether specific kinds of social

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TABLE 7

Correlations between Tests and Social Interaction Variables (N = 38)

Social interaction variables	Tests		
	Physical score	Social score	Difference score
Play activities			
Manipulate object	-.01	-.18	-.16
Construct product	.53*	.32*	-.20
Gross-motor activity	-.15	.13	.27
Pets	.13	-.09	-.21
Role-playing	-.24	.03	.26
Social interaction	-.28	-.04	.23
Idle, passive watching	-.22	-.25	-.03
Manip. or construct (summary)	.37*	.08	-.28
Social activity (summary)	-.40*	-.01	.38*
Observed social behaviors			
Use of another as resource (peer or adult)	-.16	-.22	-.06
Seeks attention of peer	-.02	.06	.08
Seeks attention of adult	-.06	-.10	-.05
Expansion of play with peer	-.34*	-.00	.32*
Expansion of play with adult	.11	.07	-.04
Social contact with peer	-.10	.23	.32*
Social contact with adult	.12	.07	-.05

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TABLE 7, cont'd.

Social interaction variables	Tests		
	Physical score	Social score	Difference score
Self-assertion to peer	-.04	.00	.04
Number of social behaviors to peers	-.26	.13	.38*
Number of social behaviors to adults	-.04	-.08	-.04
Peer-directedness: Ratio peer to adult	-.06	.10	.16
Percent time with adult (incl. group)	.30	.09	-.20
Percent time with adult only (no peer)	.10	.03	-.07
Associative play with same-sex peer(s)	-.12	.21	.32*
Associative play with only one peer	-.01	.11	.12
Ratings			
Peer leader	.13	.44*	.30
Engages in hostile behavior	.07	.07	-.01
Dependency	-.23	-.17	.07
Forcefully goes after what wants	.11	.34*	.22
Self-starting and self-propelled	.22	.40*	.17
Lacks ability to get along with others	-.16	-.34*	-.18
Other children seek his company	.07	.31	.22
Other			
Popularity among peers	.29	.47*	.18

* $p < .05$

behavior were more important than the global measure of orientation in predicting intellectual abilities.

First, relationships between tests of social knowledge and the social interaction variables were examined. Children who did well on these tests were more popular among their peers ($r = .47$, $p < .01$). Furthermore, they were more often rated high in peer leadership ($r = .44$, $p < .01$), high in forcefulness in going after what they wanted ($r = .34$, $p < .05$), high in being self-starting and self-propelled ($r = .40$, $p < .05$), and low in lacking ability to get along with other children ($r = -.34$, $p < .05$). In addition, the correlation between social test scores and the rating on being sought by other children was found to be marginally significant ($r = .31$, $p < .06$). In view of these relationships found between social test scores and ratings of social behavior, it was surprising that none of the observed categories of social behavior related significantly to social test scores; nor did the observation category of Persons associated with during play show any relationship to these test scores. Regarding play activities, children who did well on the social tests spent more time constructing products than other children ($r = .32$, $p < .05$). There were no other significant relationships to play activities.

Next, relationships between tests of physical knowledge and these same social variables were examined. In contrast to the social

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tests, popularity was not quite significantly related to scores on the physical tests ($r = .29$, $p < .08$). Furthermore, none of the ratings of quality of social behavior showed a significant relationship to physical tests scores. Only one significant relationship was found to any of the observed categories of social behavior: children who did well on physical tests engaged less often in communications designed to expand their play with peers ($r = -.34$, $p < .05$). With regard to choice of play activities, children who performed well on the physical tests more often engaged in play involving constructing a product ($r = .53$, $p < .001$). Furthermore they more often engaged in play involving either manipulating an object or constructing a product (summary measure) ($r = .37$, $p < .05$) and they less often engaged in social activities (summary measure) ($r = -.40$, $p < .05$).

To summarize, scores on the social tests were found to be more related to children's social behavior than were scores on the physical tests. In particular, only the social test scores related significantly to popularity among peers and ratings of peer leadership, forcefulness, self-starting, and ability to get along with others. In contrast, physical test scores showed stronger relationships to choice of play activity. Time spent constructing a product related to both kinds of tests; however, it related more strongly to physical test scores.

Returning to the outlined purposes of this part of the analysis, one can conclude that the social test scores were meaningfully related to children's social behavior. In considering the relative

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effectiveness of the orientation measure and the specific social behaviors in predicting test scores, orientation was clearly a better predictor for the physical tests only. Ratings on the quality of social behavior and a measure of popularity among peers were clearly better predictors of the social test scores.

Summary of main findings. The central findings of the present study were that degree of Orientation to People vs. Objects predicted ability with physical objects but did not predict social knowledge. Instead, social knowledge was predicted by the quality of social behavior. More specifically, children who spent relatively more time in play with objects than people performed better on the physical tests; better performance on the social tests was related to being rated higher on general social competence and to being chosen as best friend more frequently by other children.

Sex Differences and Birth-order Effects

Sex differences. There were no significant sex differences in orientation, test scores, time spent in most play activities, and almost all other aspects of social behavior. Significant sex differences were found on only four variables (out of 42). Girls played more often with pets ($t = 2.31$, $p < .05$) and were less likely to be rated as hostile ($t = 2.41$, $p < .05$). In addition, girls spent more time with an adult, when both dyadic and group interactions were included ($t = 3.93$, $p < .001$); and they more often made use of another as a resource ($t = 2.56$, $p < .05$). Although girls spent

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considerably more time with adults when group interactions were included, girls spent no more time than boys in dyadic interactions with an adult. These findings seem to indicate that girls showed a stronger preference than boys for group craft projects involving adult supervision. Since there were no significant differences in time spent constructing a product, boys apparently more often chose their own construction project (perhaps with blocks) instead of becoming involved in the "project of the day."

Although very few sex differences were found in the distribution of scores for each variable, it was still possible that relationships between variables could show quite different patterns for boys and for girls. Accordingly, separate correlation matrices were calculated for each sex group. (See Tables B, C, and D in Appendix K.) Close examination of these matrices revealed quite similar patterns of correlations for the two sex groups for all important relationships. Only one of the many significant relationships previously discussed was demonstrated by one sex group only (the correlation between orientation and amount of play with same-sex peers).

In conclusion, no important sex differences were found.

Birth-order effects (and family size). In contrast to sex, birth-order and family-size effects were found for several variables. Significant *t* values for the orientation measures, test scores, and social interaction variables are presented in Table 8. A similar but not identical pattern of results was found for both birth order and family

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TABLE 8

Significant t Values for Differences between Birth-Order Groups and between Family-size Groups for Orientation, Tests, and Social Interaction Variables

Variables	Birth-order t values[a]	Family-size t values[b]
Orientation measures		
People vs. object orientation	-2.03	-3.56
Focus	-2.16	-3.27
Context		-3.26
Play activities		
Manipulate object	2.35	2.66
Role-play		-2.22
Manipulate or construct (summary)		2.04
Social activity (summary)		-2.24
Observed social behaviors		
Expansion of play with peer		-2.51
Expansion of play with adult	2.58	
Number of social behaviors to peers		-3.13
Ratings		
Lacks ability to get along with others	2.12	

[a] First-born and only children (N=16) were compared to later-born children (N=22). Positive t values indicated that later-born children had a significantly higher mean on the variable ($p < .05$).

[b] Children from families with three or more children (N=12) were compared to families with one or two children (N=24). Positive t values indicated that children from large families had a significantly higher mean on the variable. (The total N was only 36 for this analysis because two sets of parents failed to return the parental questionnaire.)

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size. A similar pattern of results was to be expected because these variables were somewhat confounded: only children necessarily came from smaller families. (There were four only children in the sample.) The correlation of .61 ($p < .001$) between these variables, however, indicated that they were sufficiently independent for both to be of interest.

The most important effects were on the measure of People vs. Object Orientation. First-born and only children were found to show greater relative interest in people (than objects), while later-born children were found to show greater relative interest in objects. The effect of family size was similar but even greater: children from smaller families (one or two children) showed greater relative interest in people (than objects) than children from larger families.

Birth order affected a few other variables as well. Later-born children were more often rated as lacking the ability to get along with peers. In addition, they spent more time manipulating objects and more often engaged in communications with adults designed to expand their play.

Family size showed somewhat similar effects. Children from larger families spent more time manipulating objects and less time role-playing. Furthermore, differences were found on the summary measures of play activities. Children from larger families spent more time manipulating and constructing products and less time in general social activities. In addition, they less often engaged in

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communications with peers and, more specifically, they less often engaged in communications designed to expand their play with peers.

In summary, birth-order and family-size effects were found for several variables, the most important of which was People vs. Object Orientation. First-born and only children and children from smaller families were found to spend relatively more time in play with people than objects.

Parental Attitudes and Children's Behavior

Means and standard deviations for all parental variables are presented in Table 9. Correlations between parental variables and children's behaviors are presented in Tables F and G in Appendix K.

When the children were considered as a single group, very few significant relationships were found between parental attitudes and children's behavior. With two exceptions, these few significant relationships are probably best attributed to chance fluctuations. The exceptions are that both maternal and paternal preferences for sociability over self-reliance were related to children's ability to get along with others ($r = .36$, $p < .05$; $r = .43$, $p < .05$).

When each sex group was considered separately, considerably more significant relationships emerged. However, since the proportion of correlations reaching the .05 level of confidence was only one in 20 on the average, the whole set must be considered attributable to chance. In the interest of preserving exploratory data, the results of this analysis are presented in Appendix J.

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TABLE 9

Means and Standard Deviations for Parental Variables

Parental variables	Mean	S.D.
Maternal attitudes		
Expectations for assertive autonomy[a]	31.3	6.2
Expectations for practical autonomy[a]	24.2	6.1
Expectations for outgoing socialness[a]	29.2	5.0
Preferences for sociability over self-reliance[b]	31.8	4.4
Paternal attitudes		
Expectations for assertive autonomy[c]	29.8	5.0
Expectations for practical autonomy[c]	26.7	4.7
Expectations for outgoing socialness[c]	28.7	4.1
Preferences for sociability over self-reliance[d]	29.5	5.9
Maternal reports		
Frequency of solitary play[b]	2.2	0.6
Frequency of play with other children[a]	3.8	0.8

[a] N = 35

[b] N = 34

[c] N = 30

[d] N = 29

Note. - The number of subjects varies slightly because two mothers and two fathers filled out parts of the questionnaire incorrectly or incompletely.

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Parental reports of children's play activities outside nursery school. Parents' reports of children's play activities outside school were collected in order to determine whether children's behavior as observed in the nursery school was typical of their general play behavior. Only mothers' reports were used for this purpose because mothers had more opportunity to observe their children's play and hence seemed more likely to give accurate reports. Mothers were asked to indicate the proportion of free-play time spent in solitary play and in social play with other children.[15] Correlations between mothers' reports and children's orientation and test scores are presented in Table 10.

For girls, no relationship was found between the observed orientation inside school and the reported amounts of solitary and social play outside school. For boys, however, a nonsignificant tendency was found for boys who were observed in school to spend relatively more time in play with people than objects to be reported as spending more time outside school in solitary play ($r = .42$, $df = 18$, $p < .07$) and less time in social play ($r = -.36$, $df = 18$, $p < .15$).

In conclusion, there was no indication of any consistency of

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[15] Two other kinds of activities (play with parents and watching television) were also included on the questionnaire in order to complete the possibilities of what children might do in their free-play time. In hindsight, it seems clear that the inclusion of these two activities was unnecessary and perhaps undesirable.

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TABLE 10

Correlations between Mothers' Reports and Children's Orientation and Test Scores

Children's orientation and test scores	Maternal reports	
	Freq. solitary play[a]	Freq. play w/children[b]
Females		
Orientation measures		
People vs. object orientation	-.26	-.13
Focus	-.19	-.36
Context	-.29	.26
Tests		
Physical score (summary)	.14	.10
Social score (summary	.13	.05
Difference score (soc. minus phys.)	.00	-.04
Males		
Orientation measures		
People vs. object orientation	.42	-.36
Focus	.42	-.32
Context	.39	-.39
Tests		
Physical score (summary)	-.19	.08
Social score (summary)	-.06	-.03
Difference score (soc. minus phys.)	.13	-.10

* $p < .05$

[a] N = 14 for females, N = 20 for males

[b] N = 15 for females, N = 20 for males

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orientation during play inside school and outside school. Some consistency had been expected although differences in opportunities for social and object play in different home environments had been expected to lessen this consistency. The assessment of orientation outside school, however, was extremely limited in scope. In retrospect, the assessment technique was far too crude to obtain an accurate measure of children's orientation during play at home. The requested discriminations and generalizations were difficult to make and necessarily vaguely defined. Indeed it is doubtful whether any instrument utilizing the parents as observers could yield a practical and accurate measure of orientation; minute-by-minute accounts of children's play behavior are probably necessary rather than global impressions. The question of consistency in orientation between play at nursery school and play at home should probably best be left open for future study.

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DISCUSSION

Discussion of the results is divided into several sections. First, the results are related to the specific predictions and exploratory questions formulated at the start of the study; in addition, sex differences and birth-order effects are discussed. Next, the conceptual framework of the study is evaluated and modified. Finally, suggestions for future research are made, and possible educational implications are considered.

Predictions and Exploratory Questions

Predictions 1 and 2: Orientation and test scores. The first prediction was that lower scores on People vs. Object Orientation (i.e., scores closer to the object pole) would be associated with more advanced intellectual development in classifying and organizing physical material. Conversely, the second prediction was that higher scores on People vs. Object Orientation (i.e., scores closer to the people pole) would be associated with more advanced intellectual development in social knowledge.

Only the first of these predictions was borne out; that is, orientation was found to relate to physical test scores but not to social test scores. More concretely, children who spent more of their free-play time in nursery school playing with objects (compared to other children) performed better on the physical tests. Children who spent more time in social play, however, performed no better on the social tests.

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Prediction 3: Parental attitudes. The third prediction was that parents' attitudes would relate to children's orientation: higher parental expectations for assertive autonomy were expected to relate to lower orientation scores (i.e., scores closer to the object pole); whereas higher expectations for outgoing socialness were expected to relate to higher orientation scores (i.e., scores closer to the people pole). In addition, greater parental preferences for sociability over self-reliance were expected to relate to higher orientation scores.

Unfortunately, the measures employed uncovered no more than a chance number of significant relationships. These results raise the possibility that parental attitudes are unrelated to children's orientation. An equally likely possibility, however, is that these predictions were not adequately tested since the exploratory measures of parental attitudes were perhaps quite insensitive. Further research with better developed measures of parental attitudes would be desirable.

Question 1: Concept of People vs. Object Orientation. A major question explored in this study concerned the adequacy of the concept of People vs. Object Orientation for describing children's play behavior. The central issue was whether this concept tended to oversimplify behavior by precluding simultaneous orientation to people and objects.

A coding system was devised that did not force the observational

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data into the preconceived conceptual dimension of orientation; this system utilized the subconcepts of Focus and Context. As expected, these subconcepts were found to be highly related. It was concluded, therefore, that the concept of People vs. Object Orientation did indeed meaningfully describe children's behavior.

Question 2: Relationship of social behavior to orientation. This question was concerned with describing possible differences in the social behavior of children with differing People vs. Object Orientation.

The only important difference was that children who showed greater relative interest in people than objects were more peer-directed; that is, they engaged in more interactions with peers but fewer interactions with adults. Conversely, children who showed greater relative interest in objects (than people) were more adult-directed. The association of higher orientation scores (i.e., scores closer to the people pole) with peer-directedness was due to the higher frequency of all types of interactions with peers, except self-assertive interactions; that is, children with higher orientation scores more often sought attention, initiated or maintained social contact, and expanded their play through interactions with peers. On the other hand, children with lower orientation scores (i.e., scores closer to the object pole) more often engaged in specific interactions with adults only in one area -- initiating or maintaining social contact; there was no significant relationship between orientation and seeking

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attention, using another as a resource, or expanding play through interactions with adults.

The greater adult-directedness of children with greater relative interest in objects (than people) had not been anticipated; two serious questions of interpretation were raised by this finding. First, perhaps the greater relative interest in objects of these children could be accounted for by an immature dependence on adults, accompanied by general timidity with peers. In order to gain adult approval, such children might participate heavily in construction projects supervised by the teacher, resulting in a large amount of play with objects; they might also simultaneously avoid interactions with peers.

The data argue against this interpretation. Lower scores on orientation (i.e., scores closer to the object pole) were not found to be associated with greater dependence on adults nor with greater dependence generally; nor was there any suggestion of greater timidity in interactions with peers (i.e., there was no association between orientation and frequency of self-assertive interactions nor with ratings of forcefulness). Thus, children who spent relatively more time in play with objects (than people) were apparently less interested generally in interacting with people even though they showed more interest in interacting with adults. This relative lack of interest in people seemed most readily accounted for by their

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competing interest in objects; this interest in objects did not appear to be socially motivated (e.g., to gain the approval of the teacher).

A second question raised by the greater adult-directedness of children with greater relative interest in objects was whether the relationship between orientation and physical test scores could be accounted for by this adult-directedness. In other words, perhaps the higher frequency of interactions with adults, rather than the higher frequency of interactions with objects, led to these children performing better on the physical tests.

The data, however, do not support this interpretation. No relationship was found between frequency of interactions with an adult and physical test scores.

In summary, the only important difference in social behavior shown by children of differing orientation was in the number of interactions with peers and adults. Children who showed greater relative interest in people (than objects) engaged in more interactions with peers; whereas children who showed greater relative interest in objects engaged in more interactions with adults. Further analysis showed that the greater adult-directedness of children with lower orientation scores did not account for their greater interest in interacting with objects nor for their better performance on physical tests.

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Question 3: Orientation as a predictor of intellectual abilities. The final question was whether specific kinds of social behavior were more important than the global measure of orientation in predicting intellectual abilities. This question had to be considered separately for the two kinds of intellectual ability.

Children's orientation was found to successfully predict physical test scores. In contrast, none of the specific kinds of social behavior (e.g., degree of dependency) were related to these scores.

Although orientation was the best predictor of physical test scores, it did not predict social test scores. Instead, these social test scores were predicted by certain features of behavior that might be termed competence of social behavior. That is, more popular children performed better on these social tests, as did children who were rated as possessing desirable social characteristics (i.e., being peer leaders, forceful, and self-starting and having the ability to get along with others).

In conclusion, orientation was found to be clearly the best predictor of physical test scores, but it showed no relationship to social test scores. Instead, general competence of social behavior was found to relate to these social test scores.

Sex Differences and Birth-order Effects

Sex differences. Remarkably few sex differences were found in

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the present study. In particular, no differences were found in orientation or test scores. Important relationships between variables were also quite similar for boys and girls.

These findings of no sex differences contradict popular notions about the nature of girls and boys. A strong cultural stereotype exists that girls are more interested in people and are better at social tasks from an early age whereas boys are more interested in physical objects and are better at nonverbal tasks with physical materials. This stereotype has sometimes found its way into the scientific literature (e.g., Moore, 1967). In a quite lengthy review of research on sex differences, Garai and Scheinfeld (1968) concluded that it was "reasonably well established... (that) from earliest infancy on, males exhibit a greater interest in objects and their manipulation whereas females show a greater interest in people and a greater capacity for the establishment of interpersonal relationships (p. 270)." This "well established" conclusion was apparently based upon a single empirical study in the first five years of life. Goodenough (1957) found that preschool girls more frequently drew people in spontaneous drawings and more frequently mentioned people in spontaneous conversation with a female tester. She concluded that girls show more interest in people. While her findings cannot be dismissed, the present study seems to be a more direct test of the hypothesis that preschool girls are more interested in people than preschool boys.

The results of the present study are consonant with the conclusions

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of Maccoby (1967, 1971) regarding early sex differences. She contended that aggression is the only personality trait for which sex differences in the early years of life have been conclusively demonstrated. Despite a considerabe amount of research done on dependency, no consistent sex differences have been demonstrated. Because of the scanty evidence available, however, Maccoby, left open the question of whether girls show more affiliative and social behavior than boys. The results of the present study (and an earlier study by Clark, Wyon, and Richards, 1969) suggest, however, that nursery-school girls and boys are indistinguishable in global social orientation.

Birth-order effects. In contrast to sex, birth order and family size were found to influence children's orientation. First-born and only children had higher People vs. Object Orientation scores (i.e., scores closer to the people pole) than later-born children. Similarly, children from smaller families had higher orientation scores than children from larger families.

Three recent studies have also examined the relationship of birth order to sociability within the play of nursery-school children. The variability of findings is quite striking. Clark, Wyon, and Richards (1969) found first borns to spend more time in solitary play. McGurk and Lewis (1972), on the other hand, found second borns to spend more time in "individual" activity compared to first or later borns. Finally, Laosa and Brophy (1970, 1972) found a sex X birth-order interaction: first-born and only boys spent more time in solitary

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play compared to later-born boys whereas the reverse was found for girls. The results of the present study are most congruent with those of McGurk and Lewis.

The lack of replication across these quite similar studies is disturbing. Studies specifically focused on analyzing the relationship between birth order and sociability within play are needed. Such studies would need to take into account such factors as, sex and age composition of siblings, and the specific nature of relationships with parents and siblings.

In summary, the present study adds to the diversity of findings regarding the effect of birth order upon sociability within play. Studies specifically designed to analyze this relationship are needed.

This discussion of results has paved the way for revision and elaboration of the conceptual framework upon which the present study was based.

Revision and Elaboration of the Conceptual Framework and Some Further Theoretical Speculations

The present conceptual framework seems to provide an adequate account of the relationship between orientation to the physical environment and knowledge of the physical environment. Children who interact more with their physical environment develop better-differentiated ideas of this environment and thus have greater ability to organize and classify physical objects. Apparently fairly early in life, a mutually-stimulating interactive system is formed between

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interest in and knowledge of the physical environment. In this system, interest and knowledge reciprocally interact in a dynamic manner, growth in one leading to growth in the other.

Hunt's concept of intrinsic motivation provides a description of the possible mechanisms involved in such a system. Through interactions with their environments, infants and young children gradually develop concepts of the world. Once some rudimentary concepts have been formed, events in the environment that deviate from these concepts are seen as interesting and invite further interaction. Children are thus attracted to those aspects of the environment with which they are somewhat acquainted. The more interactions they have with these aspects, the more detailed and differentiated the concepts they develop about them. Thus, the more likely they are to attend to subtle differences in these aspects of their environment in the future. In this manner, interest and increased cognitive differentiation become joined in a spiraling interactive system.

Several factors probably combine to facilitate or impede the development of this system. Genetic factors, for example, quite likely play a role. Certain personality traits, such as introversion-extroversion, have been found to have a large genetic component (Scarr, 1969); these traits may well predispose a child to certain kinds of environmental interactions. In addition to genetic factors, environmental factors probably also play a role. Variety and

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responsivity in the physical environment, for example, have been found to facilitate infants' exploratory behavior with novel physical objects (Yarrow, Rubenstein, & Pedersen, 1972). Parents may also play a role in the development of interest in the inanimate environment (aside from being largely responsible for the quality of the early inanimate environment).

As originally conceptualized, orientation to people and knowledge of the social environment were also expected to form an interactive system. It was thought that the development of the previously discussed interactive system with the physical environment would impede the development of the parallel system with the social environment (and vice versa). This mutually inhibitory relationship between systems would be necessitated by time constraints: the more time children spend in interactions with objects, for example, the less time they have available for interacting with people. Thus it was expected that object-oriented children would develop intellectual abilities related to objects while people-oriented children would develop abilities related to people.

The findings of the present study, however, give no support to the notion of an interactive system between people orientation and the development of social knowledge. Instead the present findings indicate a link between social competence and social knowledge: the higher the quality of children's social behavior, the more likely they are to do well on tests of social knowledge. A reciprocally interactive

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system between knowledge and competence can easily be conceived. Well-developed concepts of the social world would presumably assist children in forming satisfying relationships with others. Conversely, more positive feedback from other people seems likely to provide a more favorable climate for learning social roles, expectations, etc. Apparently, normal variations in amount of experience with people (i.e., variations in orientation socre) do not of themselves lead to meaningful differences in social knowledge; perhaps this is because interactions with people play so prominent a role in all children's lives.

The development of an interactive system between social competence and social knowledge is probably influenced by several factors. One factor hindering the development of this system may be the presence of strong emotional needs and conflicts. The social interactions of children with strong needs are likely to be focused around fulfilling these needs, thereby interfering with the amount of general social learning. (The strength of emotional needs and conflicts was not assessed in the present study.)

Healthy emotional development, on the other hand, may well foster the development of a system between social competence and social knowledge. In the emotional development of young children, the achievement of Erikson's basic trust may well be the first and most crucial step. If children are able to develop a strong sense of the benevolence of their general environment, they have a firm foundation for learning to interact effectively and freely with other

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people and for learning the basic structure of the social world.

Genetic factors may play some role in the development of an interactive system between social competence and knowledge; however, children's relationships and early experiences with their parents would seem to be of primary importance (even though such a relationship was not demonstrated by the present study). Optimal conditions for the development of social competence are probably provided by parents who are able to form close, warm relationships with their children, in which a balance is maintained between respect for the child's desires and consistent demands to meet parental expectations. Baumrind (1967a, 1967b) has found that this kind of parent, whom she described as authoritative, has more competent children than either authoritarian or permissive parents.

To recapitulate, a mutually-stimulating interactive system between interest in the inanimate environment and knowledge of physical objects is apparently established fairly early in childhood. One factor that may be important in the establishment of this system is parental concern with stimulating interest in the physical environment. A similar interactive system between interest in the social environment and social knowledge had been conceptualized but was not supported by the findings of the present study. Instead, an interactive system seemed to be formed between quality of social interactions and extent of social knowledge.

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Implications for Future Research and Education

The findings of the present study raise many questions for future research.

One important question concerns the causal role of People vs. Object Orientation in the relationship between orientation and knowledge of the physical world. According to the present conceptual framework, orientation and knowledge interact, mutually influencing each other; thus, both are assumed to play a causal role in the relationship. The correlational methodology of the present study, however, makes it impossible to infer causality. Conceivably, ability to manipulate and classify physical materials (perhaps determined by genetic endowment) could be the sole or most important causal agent in this relationship. High innate ability could produce high object orientation through reinforcement since interactions with objects are likely to be successful. Intervention studies are necessary to determine whether orientation also plays a causal role in this relationship. Such studies would attempt to increase children's interest in manipulating and constructing objects, perhaps using an approach similar to that of Biank and Solomon (1969), in which children had brief individual play sessions with a teacher as part of their nursery-school program. Improvement in physical test scores would be the expected result.

A similar question must be asked of the relationship between social competence and social knowledge. Intervention programs

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designed to improve social competence are necessary to determine whether social competence plays a causal role in this relationship. Increased social knowledge would be expected to follow improvement in social competence.

Another area for research encompasses the factors influencing the relationship between social competence and social knowledge. The presence of strong emotional needs and conflicts would seem to be a likely factor interfering with the development of both competence and knowledge. Studies using clinical assessments of children's personality functioning are necessary to examine this possibility.

Another major task is the clarification of the role of parents in the development of orientation, social competence, and intellectual abilities. The lack of significant findings in the present study illustrate the limitations of the questionnaire method. While a better developed questionnaire might yield more fruitful data, a better research approach would probably involve a combined observation-interview technique (cf. Baumrind, 1967a, 1967b).

An additional area that needs to be explored concerns the early manifestations of the interactive systems between orientation and physical knowledge and between social competence and knowledge. These systems may well be present by the end of the first year of life and perhaps even sooner. It would be of interest to determine both when these systems emerge and how stable they are through the preschool years and beyond. Although some stability in these

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systems would be expected, new environmental factors might either impede or facilitate the development of these systems as the child grew older.

A final question for future research is the consistency of orientation style across situations. The present data indicate no relationship between orientation style at school and at home. While this question needed more careful study than was possible in the present research, the lack of consistency may be a valid finding. If this conclusion were substantiated by further research, considerable revision would be required in the present conceptual model.

Because of the many questions remaining for future research, it is premature to make definitive suggestions for changes in educational programs for preschool children. It seems appropriate, however, to point out some possible implications of the present findings in order to illustrate the potential social value of further research in this area. Accordingly, nursery schools might actively encourage children to become involved in manipulating, exploring, and constructing a variety of physical objects; simultaneously, they might emphasize the development of social skills. Modification of the traditional nursery school program, emphasizing free play, might be a possible approach to developing this type of program. In the traditional program, the development of social skills has always been a primary goal. Teachers, however, have tended to stay in the background and to view themselves as facilitators rather than

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as modifiers of children's behavior. The present research findings would suggest that teachers should assume an active role and develop specific techniques for promoting children's social skills, perhaps including techniques based on behavior-modification principles. The teacher should also take an active role in guiding children's play with objects. Part of the free play period might be replaced by a structured period in which children are given a limited choice of projects as a means of encouraging more attention to physical objects. The Montessori method might serve as a possible model in this regard. Thus, an optimal nursery school program might combine a free-play period under the active guidance of the teacher (for the development of social skills) and a semi-structured period with a limited selection of manipulation and construction projects (for the development of interest in physical objects).

In conclusion, the present study has answered some questions concerning orientation and intellectual abilities. Many other questions, however, have been generated in the course of this study; these questions are left for future research.

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APPENDIX A

OBSERVATION MANUAL

General description of procedure:

A time sampling method of observation is used in which the target child is observed for a 20 second period and his behavior recorded in the following 40 second period. Each child is observed for a total of 45 time units over three nonconsecutive days (15 time units per day) during the free-play period. Two different kinds of information are recorded. The first kind recorded is the Focus, Context, and Major Activity of the child's play for the entire 20 second time unit (i.e., for each category only a single recording is made -- the one that best describes the entire time unit). The second kind of information recorded is the occurrence of each specific kind of social behavior emitted by the child during any part of the 20 second time unit (i.e., zero, one, two, or more kinds of social behavior may be recorded).

The intent of this observational schedule is to obtain a record of the child's choice of play activities when a variety of activities are available to him. Hence the observations are made during the free-play period. If the conditions of the observation suddenly deviate markedly from free-play conditions, the observation of that child is terminated. (A minute or two may be allowed for the child to resume playing.) Premature termination (prior to 15 time units) may be necessitated by such events as the teacher announcing clean-up time, or the child badly hurting himself, or the teacher interfering in his play for several minutes for disciplinary purposes.

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Many items in the observation manual were adapted from manuals already in use (Emmerich, 1964; Parten & Newhall, 1943; White, 1969; and Yarrow et al, 1971).

I. Categories descriptive of the entire time unit.

A. Focus of play

This category describes the child's focus of attention -- which is defined mainly by where the child's eyes are directed. The central concern is whether the child's attention is focused upon an object or upon a person (including a highly social activity, such as role playing). In order to avoid forced and arbitrary classifications, other coding possibilities are included. If during a single time unit the child abruptly changes his play activity, then the Focus of play is coded for the activity that occupied the greater part of the time unit.

Coding possibilities:

1. Object (inanimate)

The child is primarily attending to an object. For example, he may be examining or manipulating toys or equipment, such as paints, chairs, or swings, or intently playing a game of Lotto. Includes climbing on things and putting things away. Includes trying out skills with objects, especially playground equipment.

The child may be alone or with others. If the child is with others, any social interaction must further the activity with the play materials rather than draw attention away from them. Thus

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the social interaction must be relevant to the object; furthermore, the social interaction must remain subordinate to the activity with the object. (The child may look passively at another person that is not involved with his own activity.)

2. Both

The child's attention is focused intermittently upon a person and an object. For example, the child may be putting together a puzzle but intermittently carry on a conversation with another child on matters not relevant, or only tangentially relevant, to his play materials. Or the child may be playing with a magnet and then laughingly bring it up to another child's nose, saying, "I'm gonna take your nose!". In these instances the social interaction draws attention away from the object or activity.

In order for a time unit to be coded Both, the child must show attention to an object qua object -- not as a vehicle of social interaction; in addition, attention to a person as a social being must be indicated.

3. People

The child is primarily attending to a person or people. Or he is engaged in acting out a social role or putting on a costume. Or he is engaged in fantasy play using miniature people, animals, or something else as people. For example, he may be talking with someone about his new baby sister, or trying to get help in finding something, or rough-housing. He may be using an object

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but the object is secondary to the social activity. For example, a child may be banging cups with others during water play amid much laughter, or racing with others to catch a ball, or throwing blocks in a way calculated to get the teacher's attention.

The child may be with others or alone (as in solitary role-playing).

4. Other

The child's attention is focused upon an activity that cannot be adequately classified as concern with either a person or an object. (If the child's attention is focused upon both a person and "other," then the time unit is classified as Other.)

Included under this designation are:

a) Play with no object, e.g., dancing, listening to records

b) More-or-less formal lessons by the teacher or story telling (Since observation is done during free-play, this type of teacher behavior should be minimal.)

c) Play with pets

5. Not clear

The child has such a vague or unfocused look that it is very difficult to tell where his attention is directed.

B. Context of play

This category describes the interpersonal context of the child's activity. If during a single time unit the child's activity takes place within two different social contexts, the context of play which occupies the greater part of the time unit is coded.

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Coding possibilities:

1. Solitary

The child plays alone. The child may be near other children that are engaged in a different activity if he pays no attention to them. (A very brief interaction is permitted.)

2. Parallel

The child plays independently, but in physical and psychological proximity to other children. He plays with toys which are similar to those which the children around him are using; but he plays with the toys as he sees fit and does not try to influence the activity of the other children. Thus he plays beside rather than with other children. The child must play with a similar toy as the others or show psychological proximity by glances. (A brief interaction is permitted.)

3. Associative

The child is involved in a group activity where there is overt recognition by the group members of their common activity, interests and personal associations. There may be borrowing and lending of play materials or mild attempts to control which children may or may not play in the group. There is no division of labor and little organization of activity.

Other criteria are that the child is playing with the same

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object as another, or he spends most of the time unit looking at the people he is playing with, or he spends most of his time trying to get someone's attention, help, etc.

4. Cooperative*

The child plays in a group that is organized for the purpose of making some material product, of striving to obtain some goal, of dramatizing situations of adult life, or of playing competitive formal games. The goal as well as the method of attaining it necessitates a division of labor, the taking of different roles by the various group members and the organization of activity with rules so that the efforts of one child are supplemented by those of another. The child must take an active role in organizing the group. If he simply follows the directives of another, the Context of his play is coded Associative.

5. Not clear

It is not clear which Context occupied the greater part of the time unit.

C. Major activity

The purpose of this category is to provide a more complete description of the child's play behavior as an aid in interpreting relationships among the main variables of the study.

*This definition of cooperative play was maintained very strictly; hence, very few instances of this behavior were recorded.

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The Major activity is simply whatever the child seems to be trying to do -- his main goal orientation. It is possible that during the time unit only minimal attention will be given to this activity; e.g., a child's main activity may be painting a picture but he may spend most of his time staring into space.

The coding of Major activity is done from a list of such activities. If two or more activities occur in the same time unit but are continuous with each other (i.e., part of the same goal), then the most general is coded. For example, if a child paints, then cleans up during a single time period, the entire time unit is coded "construct a product." If two discontinuous Major activities occur in the same time unit, the one that occupied more than half of the time unit is coded.

Coding possibilities:

1. Prepare for an activity, clean up, or procure an object
2. Manipulate an object (e.g., blocks, puzzles, trucks, sand)
3. Construct a product (e.g., drawing a picture, making cookies, modeling clay, or making a permanent product)
4. Gross motor activity (e.g., climbing, dancing, walking a plank)
5. Looking or listening activity (active participation is indicated; e.g., listening to a record, watching forms on a screen, looking at a bulletin board)
6. Pet play

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7. Game (some 'rule' must be evident even if it is simply that the child copies the behavior of another child designated leader; e.g., Lotto, bouncing ball in circle)
8. Role-playing (to pretend to be someone or something else, to create a make-believe situation, or to put on a costume; this category takes precedence over other categories)
9. Conversation (must be coherent and the target child must talk at least twice or talk most of the time)
10. Social interaction (e.g., rough-housing, seeking help or attention)
11. Maintainence (e.g., toilet, putting on a smock)
12. a) Idle, wandering, withdrawn or fragmented behavior
    b) Passive watching of people or an activity
    c) Looking for something to do
    d) Idle waiting for turn
13. Split (This is a null category indicating that the child engaged in two quite distinct activities during the time unit and that neither activity definitely occupied more than half of the time unit. If the child looks for something to do during the first half of the time unit and then begins doing something, the activity of the latter half of the time unit is coded.)

Note: If the Major activity of the time unit is coded as 11, 12, or 13, then Focus, Context, and Persons associated with are

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not coded; the occurrence of specific social behaviors, however, is still coded.

D. Persons interacted with during play

This category consists of a list of the persons with whom a child interacts in associative (or cooperative) play during a time unit. (Only when the Context of play has been coded associative or cooperative is a listing made. Persons involved in very brief social interactions are not listed.)

Coding possibilities:

Only one of the following 5 possibilities may be coded in a single time unit:

1. Female peer
2. Female peer plus (more than one female peer)
3. Male peer
4. Male peer plus (more than one male peer)
5. Group (mixed-sex group of children)

In addition to one of the above, the following coding possibility may also be listed in a single time unit:

6. Adult

II. Specific social behaviors

These categories are not descriptive of the time unit as a whole, but instead refer to specific, fairly discrete behaviors. Each such behavior emitted by the child is recorded. (The occurrence of any specific kind of behavior is only recorded

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once in a single time unit, however, in order to avoid the problem of having to decide how many instances of a given type of behavior occurred in a sequence of interaction.)

In addition to recording the kind of behavior, the observer notes whether the behavior was directed towards a peer(s) or adult(s) or both.

A. Use of another as a resource

1. Requests help when needed

Child asks for help in a situation where help seems needed (if not needed, the behavior is coded seeks attention). The kind of help requested may vary considerably, e.g., help in locating an object, help in carrying an object, or help in preventing a group of children from wrecking a fort. Includes appropriate permission seeking.

2. Requests cognitive information

Child asks for information of a cognitive nature about an object, event, or person. Included are questions about the identity and the use of specific objects. Questions about where an object is located (such as a pair of scissors) are coded requests help when needed.

B. Dependency

1. Seeks proximity or contact

Child follows a person or stands near him with the apparent sole intention of maintaining proximity. No social interaction occurs.

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Or child initiates (or requests) physical contact with someone; the intention of the child is to attain physical contact. Thus climbing onto the teacher's lap is included, while poking her arm in order to get her attention or leading her by the hand to somewhere definite is not included. Wandering hand-in-hand with another child is included but rough-housing is not (code Initiate or maintain social contact).

2. Seeks attention

Child seeks to gain the attention of another. The child may seek attention in a wide variety of ways. For example, he may simply say "Look at me," or call attention to what he is doing ("See what I'm painting"), or engage in loud, conspicuous behavior (accompanied by frequent glances at those whose attention he is trying to get). (The seeking negative attention, i.e., engaging in disruptive behavior in order to get attention, is coded below under aggressive behaviors.) (Calling someone's name is not included if followed by behavior classified elsewhere.)

C. Other

1. Offers cognitive information

Child spontaneously offers cognitive information; e.g., "I can count to ten in Spanish" or explanations about the habits of gerbils. (This category takes precedence over

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Seeks attention. Cognitive information offered in response to a request -- especially by the teacher -- are coded as either Expansion of play or Initiate or maintain social contact.)

2. Expansion of play

Child engages in social interactions which further develop his ongoing activity. Such expansion is especially common during fantasy play. It may, however, occur in other sorts of play, for example, developing rules, stating boundaries, or deciding on a procedure for a joint undertaking. All communications which are relevant to the activity in which the child is engaged (the task which he has set for himself) are included.

3. Initiate or maintain social contact

Child engages in interactions (including prolonged laughter) in which the main aim seems to be simply to initiate or maintain social contact; i.e., the interaction does not serve to further develop the child's ongoing activity. Included are responding to another person and obvious non-verbal communications, such as rough-housing. Also included are communications not distinctly heard by the observer. (If the communication is midway between Expansion of play and Initiate or maintain social contact, it is coded Initiate or maintain social contact.)

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4. Self assertion

Child resists unjustified (from his point of view) interference by others in his activities; e.g., he protests when another child takes something from him, destroys what he is making, moves in on his "territory," or aggresses against him. (If the interference by another person is justified, as for example when a child's activities are disturbing others and the child seems to be aware of this, then the child's resistance to interference is coded as refusing to comply.) (In cases where it is not clear whether a particular behavior is aggressive or self-assertive, it is coded Self assertion.)

5. Refuses to comply or declines

Child refuses to comply with a legitimate request or he declines an offer or invitation. For example, he answers "No" when asked if he would like to go outside to play or continues fighting when asked to stop by the teacher.

6. Aggression

Child behaves aggressively to another person in any of a variety of ways; the intent of the child is to harm, scare, annoy, hurt, exclude, or humiliate another. Or the child engages in negative attention-seeking. Both verbal and non-verbal behaviors are included; e.g., fighting, "I don't like you" and "You can't play with us."

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APPENDIX B

SAMPLE RECORDING SHEET FOR OBSERVATION

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1 Prepare, clean up 2 Manip. obj. 3 Const. prod. 4 Gross-motor 5 Looking, listening activ. 6 Pets 11 Maintain.* 7 Game 12 Watching, 8 Role-playing fragmented* 9 Conversation 13 Split* 10 Social interaction	Object Both People Other Not clear	Solitary Parallel Associative Cooperative Not clear	FP FP+ MP MP+ Group Adult	1 Requests help when needed 2 Requests cognitive info P = peer A = adult	1 Seeks proximity or contact 2 Seeks attention	1 Offers cognitive info. 2 Expansion of play 3 Social contact 4 Self assertion 5 Refuses to comply or declines 6 Aggression
Major Activity	Focus of Play	Context of Play	Persons Inter. With	Use of Other as Resourse	Dependency	Other
3	Ob	P	A FP+			
3	B	P	A G			
3	Ob	P	A G			
11					2 A	
1	Ob	P	FP			
3	Ob	P	FP			
6	OTA	A	A G			2 PA
13						
3	Ob	P	FP			
5	B	A	A G	1 A		3A
3	Ob	A	A G			3P 4P
10	P	A	G			3P

* Focus, Context, and Persons interacted with during play are not coded.

APPENDIX C

VARIABLES DERIVED FROM OBSERVATIONAL RECORDS AND USED IN DATA ANALYSIS

A. List of all variables that were derived from the observational records and subsequently used in data analysis.

1. Focus
2. Context
3. People vs. object orientation
4. Prepare, clean up*
5. Manipulate object
6. Construct a product
7. Gross-motor activity
8. Looking, listening activity*
9. Pets
10. Game*
11. Role-playing
12. Conversation*
13. Social interaction
14. Idle, passive watching
15. Manipulate or construct (sum of 5 and 6)
16. Social activity (sum of 10, 11, 12, and 13)
17. Use of another as a resource (peer or adult)**

---

*These variables were included only in the analysis for means and standard deviations.

**Because of low frequencies of observation, four observational categories were combined into a single variable (see Appendix D).

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18. Seeks attention of peer

19. Seeks attention of adult

20. Expansion of play with peer

21. Expansion of play with adult

22. Social contact with peer

23. Social contact with adult

24. Self-assertion to peer

25. Number of social behaviors to peers

26. Number of social behaviors to adults

27. Peer directedness: Ratio peer to adult

28. Percent time with adult (including in group)

29. Percent time with adult only (no peer)

30. Associative play with same-sex peer(s)

31. Associative play with only one peer

B. Computational procedures used to derive each of the above variables.

1. Focus: Based only on time units in which the Focus of play was rated people, both, or object.

Sum of weighted ratings divided by the total number of ratings.

$$\frac{3P + 2B + O}{P + B + O}$$

P = no. of time units with people Focus
O = no. of time units with object Focus
B = no. of time units with Focus on both

2. Context: Based only on time units in which Context of play was rated cooperative, associate, parallel, or solitary.

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Sum of weighted ratings divided by the total number of ratings.

$$\frac{3C + 3A + 2P + S}{C + A + P + S}$$

C = no. of time units in cooperative Context
A = no. of time units in associative Context
P = no. of time units in parallel Context
S = no. of time units in solitary Context

3. People vs. object orientation

Sum of scores on Focus and Context.

Focus + Context

4- 14. Play activities (percent of time units).

Number of time units spent in each specific type of play activity divided by the total number of time units.

$$\frac{\text{Prepare, clean up}}{T}, \frac{\text{Manipulate object}}{T}, \ldots, \frac{\text{Idle, passive watching}}{T}$$

T = Total no. of time units

15. Manipulate or construct (summary measure).

Number of time units spent in manipulating objects or constructing products divided by the total number of time units.

$$\frac{\text{Manip. obj.} + \text{Constr. prod.}}{T}$$

16. Social activity (summary measure).

Number of time units spent in games, role-playing, conversation, or social interaction divided by the total number of time units.

$$\frac{\text{Game} + \text{Role-playing} + \text{Conversation} + \text{Soc. interaction}}{T}$$

17-24. Specific types of social behaviors (i.e., use of another as a resource (peer or adult), seeks attention of peer, etc.)

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Number of time units in which the specific type of behavior was recorded divided by the total number of time units.

$$\frac{\text{Use of another as resource (peer) + Use of another (adult)}}{T}$$

$$\frac{\text{Seeks attention of peer}}{T}, \ldots, \frac{\text{Self-assertion to peer}}{T}$$

25-26. A) Number of social behaviors to peers (prorated to 45 time units) and

B) Number of social behaviors to adults (prorated to 45 time units): Based on the observation category of Kinds of social behavior and not on Persons interacted with during play.

Total number of social behaviors directed (A) to peers and (B) to adults, divided by the total number of time units, multiplied by 45

(A) $\frac{\text{Social behaviors to peers}}{T} \times 45$

(B) $\frac{\text{Social behaviors to adults}}{T} \times 45$

27. Peer directedness: Ratio peer to adult

Total number of social behaviors directed to peers divided by the sum of social behaviors directed to peers and social behaviors directed to adults.

$$\frac{\text{Social behaviors to peers}}{\text{Social behaviors to peers + Social behaviors to adults}}$$

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28. Percent time with adult (including in group): Based on the observational category of Persons interacted with during play. Number of time units in which an adult was listed as a person interacted with during play divided by the total number of time units.

$$\frac{\text{Adult time units}}{T}$$

29. Percent time with adult only (no peer)

Number of time units in which an adult was listed as the only person interacted with during play divided by the total number of time units.

$$\frac{\text{Adult only time units}}{T}$$

30. Proportion of associative play with same-sex peer(s)

Number of time units in associative (or cooperative) play in which same-sex peer(s) were listed as the persons interacted with during play divided by the total number of time units in associative (or cooperative) play.

$$\frac{\text{Same-sex peer associative time units}}{\text{Total associative units}}$$

31. Proportion of associative play with only one peer:

Number of time units in associative (or cooperative) play in which a single peer was listed as the person interacted with during play divided by the total number of time units in associative (or cooperative) play.

$$\frac{\text{Only one peer associative time units}}{\text{Total associative units}}$$

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APPENDIX D

LIST OF OBSERVATION VARIABLES DROPPED FROM DATA ANALYSIS BECAUSE OF LOW FREQUENCY

A. Play Activities

1. Prepare, clean up
2. Looking, listening activity
3. Game
4. Conversation

B. Kinds of Social Behavior

1. Requests help when needed to peer*
2. Requests help when needed to adult*
3. Requests cognitive information from peer*
4. Requests cognitive information from adult*
5. Seeks proximity or contact with peer
6. Seeks proximity or contact with adult
7. Offers cognitive information to peer
8. Offers cognitive information to adult
9. Self-assertion to adult
10. Refuses to comply or declines to peer
11. Refuses to comply or declines to adult
12. Aggression to peer
13. Aggression to adult

---

*These categories were combined to form a single category: Use of another as a resource (peer or adult).

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APPENDIX E

SCORING PROCEDURES FOR THE MEYERS'S ET AL TEST OF OBJECT CLASSIFICATION, THE IT SCALE FOR CHILDREN, FLAVELL'S TASKS OF ROLE-TAKING ABILITY, AND DEVRIES'S PENNY TEST OF ROLE-TAKING ABILITY

I. Meyers's et al test of object classification.

For the Meyers et al portion of the test, one point was given for each item in which the child sorted all the test blocks correctly. The maximum score was seven points. (All children were given credit for passing the first item even though it was not administered.) For the IPAT portion of the test, the following credit was given: 0 for IPAT score of 0-2, 1 for 3-5, 2 for 6-8, 3 for 9-11, etc. Scores for the Meyers's et al portion of the test and the IPAT portion were then summed to form a single score.

II. The It Scale for Children:

For the male subjects, masculine choices were given a weighted score, the weight varying with the section of the test. For the female subjects, feminine choices were given a weighted score. Total scores could range from zero (exclusively sex-inappropriate choices) to 84 (exclusively sex-appropriate choices).

III. Flavell's tasks of role-taking ability.

Task IIIB (birthday presents): A score of zero was assigned

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if the child selected a truck for his mother or a doll for his father (or both). A score of one point was assigned if the child passed the above criterion but selected a truck for his father or a doll for his mother (or both) or selected a tie for his mother or nylons for his father (or both). A score of two points was assigned if the child passed all the above criteria but selected an adult gift for a child or a child gift for his teacher. A score of three points was given if the child passed all the above criteria; that is, if all of his gifts were clearly appropriate to the age and sex of recipient.

Task IIIC -- revised (cube): Two points were given for correct placement of the cube and a correct answer to the question of what picture was E looking at. One point was given for correct placement of cube but wrong verbal answer or no verbal answer. Zero points were given for wrong placement of cube or refusal to participate.

Task IIIF -- revised (stick): One point was given for a correct answer and zero points for an incorrect answer.

Summary score: Scores on each of the three tasks were summed.

IV. Devries's penny test of role-taking ability.

Subjects were scored pass-fail on the following items: (1) Attempts to play when asked to hide; (2) does not always hide in same hand; (3) changes penny hand more than once during

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hiding; (4) hides correctly on at least one trial, that is, imitates mechanics of procedure; (5) does not always guess the same hand; (6) changes hand guessed more than once during guessing; (7) almost always hides correctly; (8) has competitive attitude in hiding; (9) uses shifting strategy in hiding; (10) uses shifting strategy in guessing.

Since these items were assumed to form a Guttman scale of role-taking ability, the child was assigned a score equal to the number of the highest item passed.

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APPENDIX F

ADAPTATION OF BOURKE'S TEST OF INTERPERSONAL PERCEPTION

Instructions: Examiner places pictures showing face of child of same sex as subject in following order: Happy, Sad, Afraid, and Angry. These are pictures of Nancy (Johnny). Can you tell me how Nancy (Johnny) feels in each picture? How does Nancy (Johnny) feel in this picture: Examiner points to first picture. Examiner tells subject the names of any feelings child is unable to identify. Examiner circles faces child names correctly:

Happy Sad Afraid Mad None

Examiner shuffles pictures before each story and circles the child's response. Each story is accompanied by a picture that shows a faceless child in the described situation.

1. Examiner shuffles the faces, making sure the "happy" face is not on top. Examiner lays out the faces in the new order and then places the picture for the first story in front of the subject. Show me how Nancy (Johnny) would feel if she were eating the food she liked best. Would she feel (examiner names the emotions according to the new sequence of faces). Pick up the face you think and put it on the picture. Examiner circles the face selected by the subject.

   Happy Sad Afraid Mad None

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2. Show me how Nancy (Johnny) would feel if she dreamed that a tiger was chasing her. Would she feel (examiner names emotions according to sequence). Pick up the face you think and put it on the picture. H S A M

3. Show me how Nancy (Johnny) would feel if she fell and hurt herself. Would she feel (examiner names emotions according to sequence). Pick up the face you think and put it on the picture. H S A M

4. Show me how Nancy (Johnny) would feel if her sister or brother took her toys away from her. Would she feel (examiner names emotions according to sequence). Pick up the face you think and put it on the picture. H S A M

5. Show me how Nancy (Johnny) would feel if she were alone in the dark. Would she feel (examiner names emotions according to sequence). Pick up the face you think and put it on the picture. H S A M

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6. Show me how Nancy (Johnny) would feel <u>if someone she liked very much had to go away</u>. Would she feel (examiner names emotions according to sequence). Pick up the face you think and put it on the picture. H S A M

7. Show me how Nancy (Johnny) would feel <u>if she got a new toy as a gift</u>. Would she feel (examiner names emotions according to sequence). Pick up the face you think and put it on the picture. H S A M

<u>SCORING</u>: One point is given for each story for which the correct face is selected. These points are summed to form a single summary score.

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APPENDIX G

ADAPTATION OF IRWIN AND MOORE'S MORAL JUDGMENT STORIES

1. Sue was making clay animals. Mary was carrying a heavy box of toys and didn't see the clay animals on the table and set the box on the table accidently smashing ten of Sue's animals. Later Sally and Sue were playing with clay. Sally wanted the clay from the animal that Sue was making, so when she wasn't looking Sally grabbed Sue's clay animal and smashed it.
   1. Point to the girl that Sue should be most angry at for smashing the clay.
   2. Why do you think Sue should be most angry at her?
   3. What do you think should be done to _____ for smashing the clay?
      --Give her a spanking
      --Make her give the clay back to Sue
2. Sam and Michael were bringing groceries home on their bicycles. Sam was riding his bicycle with no hands, which his mother had told him not to do. Suddenly, Sam lost his balance and a carton of milk fell out of the bag, splashing in the street. Michael was riding along when his pedal came off his bicycle and the bicycle fell over toppling the bag of groceries into a mud puddle in the street, ruining all the groceries.

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1. Point to the boy that is naughtiest for spilling the groceries from his bicycle.
2. Why do you think he is the naughtiest?
3. What do you think should be done to _____ for spilling the groceries?

   --Sending him back to the store for another carton of milk

   --Sending him to bed without any supper

3. Jane and Carol were helping their mother bake a cake. Their mother had cut them each a piece of cake. Jane thought her piece was too small and wanted the other piece. So she pushed her plate away but it accidentally fell to the floor. Later Carol was putting the left over cake away and accidentally tripped on the rug spilling the rest of the cake on the floor.
   1. Point to the girl that is naughtiest for spilling the cake on the floor.
   2. Why do you think she is the naughtiest?
   3. What do you think should be done to _____ for spilling the cake?

      --Not letting her watch TV for a month

      --Telling her to clean up the cake that fell on the floor
4. Joe built a tall tower with blocks. Dave was sitting on the floor playing with a truck and accidentally pushed his truck into the tower making the whole tower come crashing down. Later Joe and another boy, named Peter, were building block towers.

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Soon Joe's tower was much taller than Peter's tower. Peter got mad and knocked off three blocks from the top of Joe's tower.

1. Point to the boy that Joe should be most angry at for hitting his block tower.
2. Why do you think Joe should be the most angry at him?
3. What do you think should be done to _____for hitting the block tower?

   --Telling him to put Joe's tower back together again

   --Shaking him hard and shouting at him

SCORING:

1) Children who insisted both characters were naughty or gave nonsensical answers (e.g., simply echoing, "she smashed it") were assigned a score of zero.

2) Children who gave at least one clearly meaningful reason for their choices (e.g., "because she smashed more," "because he did it on purpose," "because he was mad") were scored as follows:

   a) They received two points for giving at least one meaningful reason for their choices. (Only two points were given regardless of the number of meaningful reasons given.)

   b) In addition, they received one point for each "naughty" character correctly identified (according to conventional moral reasoning).

   c) In addition, they received one point for each choice of restitutive punishment.

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APPENDIX H

PARENTAL QUESTIONNAIRE

Instructions:

This questionnaire is made up of two parts. Please mark your answers to the questions on the answer sheet.

Part 1: Read each statement and draw an X through the number 1, 2, 3, 4, 5 or 6 on the answer sheet according to whether you think the behavior or situation described is:

1. Very common-----occurs in 90-100% of children of the mentioned age.
2. Quite common----occurs in 70-90% of children of the mentioned age.
3. Common---------occurs in 50-70% of children of the mentioned age.
4. Uncommon-------occurs in 30-50% of children of the mentioned age.
5. Quite uncommon-occurs in 10-30% of children of the mentioned age.
6. Very uncommon--occurs in 0-10% of children of the mentioned age.

Some of these statements will ask you about children a year or so younger than your child. Other statements will ask you about children a year or so older. There are no right or wrong answers. People vary in what they expect children to do and we are interested

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in these expectations. The following are two examples of the type of statement and how they might be answered.

Statement on questionnaire	Example of answer sheet
1. Ann is two years old. She can walk only by holding on to someone's hand, a chair or something else to steady herself.	1. 1 2 3 4 5 X

(You would cross out the 6 on the answer sheet to indicate that this is uncommon if, for example, you should think that only a very few (10% or less) girls at age two would still have to hold on to something in order to walk.)

2. Johnny is a 3 year old. He is able to feed himself at the table with very little help from his mother. 2. 1 X 3 4 5 6

(You would cross out the 2 on the answer sheet if, for example, you should think that 70-90% of boys could do this by the age of three years.)

In deciding upon your answer to each statement, think in terms of what you consider to be an "average" child of the age indicated rather than with respect to your own child. In other words, in the example just given: "Johnny is 3. He is able to feed himself at the table with very little help from his mother;" you would answer in terms of whether you think that this would be very common, quite common, etc. for the "average" 3 year old boy and not what your own child may have done.

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Part I

1. Johnny is two years old. He refuses to eat at meal times unless he can feed himself.
2. Johnny is two. He calls through the fence to the child next door to come play with him.
3. Ann is two. Whenever her parents have company she insists on sitting on her mother's lap.
4. Ann is two. She can turn the water faucets in the kitchen on and off by herself when she needs a drink.
5. Ann is two. She enjoys babysitters (even new ones) as long as she is left in her own room.
6. Johnny is two. In walking down the five steps at the back door his mother wants to hold his hand. He pulls away and goes down alone.
7. Johnny is three. He can climb to the top of the monkey bars in the park and sometimes tries to hang by his hands.
8. Ann is three. She has spent her first day at the nursery school. When her mother comes for her after the 3-hour period in school, Ann is reluctant to leave the other children and go home with her mother.
9. Johnny is three. He can ride a tricycle following a figure 8 path drawn on the driveway.
10. Ann is three. She refuses to let her mother help her put on her socks as an expression of independence.

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11. Ann is three. She can pour milk from a small pitcher into her cup without spilling.
12. Ann is three. With a sharp stick she pierces beetles, spiders and other bugs she finds in the yard and watches them wiggle with interest, but with no noticeable emotional reaction.
13. Johnny is three. He can zip-up his jacket by himself.
14. Ann is three. She uses the toilet when she needs to without asking for help.
15. Johnny is three. He loves to play with other children in the neighborhood or at nursery school. In the house he usually plays with one of his siblings. If no one else is available, he asks one of his parents to play as he does not like to play alone.
16. Ann is four. Whenever her daddy goes into the bathroom, she runs after him and watches.
17. Ann is four. She climbs up steps to the washbowl and brushes her teeth without adult help.
18. Johnny is four. He goes shopping with his mother. He wants to take the dog along. Mother says "no". He sulks and refuses to talk with his mother for the next hour.
19. Johnny is four. He can put on his shoes and tie the laces.
20. Ann is four. She gets along well with all the neighborhood children, often acting as leader in their group activities.
21. Johnny is five. He reads traffic signs, some TV commericals and product names on cereal boxes.

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22. Johnny is five. The Good Humor man goes by. He wants some icecream but his mother says "no." He shrugs his shoulders and returns to his play.

23. Ann is five. She is very involved in building an elaborate farm with blocks. Two neighbor children come to ask her to come outside and play with them. She immediately runs out to join them leaving the farm not quite finished.

24. Johnny is five. He still, at times, wets the bed at night.

25. Johnny is five. It is his first day in kindergarten. All have brought their lunches. During lunch period Johnny sits at the edge of the group looking on but does not participate socially.

26. Johnny is six. When he has finished playing with his toys, he puts them away without having to be told.

27. Ann is six. She does not want to wear the dress her mother has laid out because it has a spot on it.

28. Ann is six. The night-lite in her room does not work. She is afraid of the dark and refuses to go to bed until the light is fixed.

29. Johnny is six. He is playing with his blocks and has almost completed a sky-scraper. His mother asks him for the third time to put them away and get ready for dinner. He calmly continues to play without paying attention to her repeated commands.

30. Johnny is six. A new family with a child his age has moved next door. Johnny has no one else to play with but he cannot bring himself to go over and meet the other child although his mother encourages him to do so.

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INSTRUCTIONS -- PART II

Read each pair of statements and decide which one you would prefer your own child to be like. Please indicate how strongly you perfer this statement by checking the appropriate box on the answer sheet. The following is an example of the type of question and how it might be answered.

Statement on questionnaire	Example of answer sheet			
	Prefer A		Prefer B	
1. A) Be attractive	Strong preference	☐	Strong preference	☐
B) Be bright	Moderate pref.	☐	Moderate pref.	☐
	Weak preference	☐	Weak preference	☐

If you feel that it is more important to you that your child be attractive than bright, you would put an X in one of the three boxes under "Prefer A", depending upon how strong your feelings are. (You might, of course, decide instead that it is more important to you that your child be bright, then you would put an X in the appropriate box under "Prefer B.")

Most of the questions will ask you to choose between two desirable characteristics, as in the example above. A few of the questions, however, will ask you to choose between two undesirable characteristics; in this case you will pick the characteristic that you prefer -- in other words, pick the characteristic that would disturb you less.

As in Part I, there are no right or wrong answers. Parents differ in what characteristics they consider most important for their child.

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PART II

1. A) Makes friends easily with children his own age

   B) Entertains himself for a sustained period

2. A) Likes to work alone

   B) Likes to work with others

3. A) Sticks up for his rights

   B) Considerate of other peoples's feelings

4. A) Able to sustain interest in an activity of his own

   B) Able to play in groups

5. A) Convinces others of his ideas

   B) Sticks to a project of his own until he's finished

6. A) Able to describe events so that you can really understand what happened

   B) Able to keep track of his own belongings, like mittens and toys

7. A) Has a good sense of humor

   B) Understands how things work

8. A) Usually avoids other children in order to pursue own interests

   B) Usually stays interested in a toy or story only as long as someone else is with him

9. A) Easily hurt because he is overly sensitive

   B) Easily angered because he over-reacts to frustration

10. A) Cannot work well by himself

    B) Cannot cooperate with others

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11. A) Self-reliant

    B) Sociable

12. A) When in elemetary school, will be very interested in a hobby

    B) Will be very popular in his class

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ANSWER SHEET

Your name: _____ Number of children: _____

Their ages: _____ Name of child in nursery school: _____

Child's birthdate: _____

Part I:

Read each statement, then draw an X through the number 1, 2, 3, 4, 5 or 6 to indicate how common you consider the described behavior or situation to be for the "average" child:

1. Very common (90-100%)
2. Quite common (70-90%)
3. Common (50-70%)
4. Uncommon (30-50%)
5. Quite uncommon (10-30%)
6. Very uncommon (0-10%)

1. 1 2 3 4 5 6	11. 1 2 3 4 5 6	21. 1 2 3 4 5 6
2. 1 2 3 4 5 6	12. 1 2 3 4 5 6	22. 1 2 3 4 5 6
3. 1 2 3 4 5 6	13. 1 2 3 4 5 6	23. 1 2 3 4 5 6
4. 1 2 3 4 5 6	14. 1 2 3 4 5 6	24. 1 2 3 4 5 6
5. 1 2 3 4 5 6	15. 1 2 3 4 5 6	25. 1 2 3 4 5 6
6. 1 2 3 4 5 6	16. 1 2 3 4 5 6	26. 1 2 3 4 5 6
7. 1 2 3 4 5 6	17. 1 2 3 4 5 6	27. 1 2 3 4 5 6
8. 1 2 3 4 5 6	18. 1 2 3 4 5 6	28. 1 2 3 4 5 6
9. 1 2 3 4 5 6	19. 1 2 3 4 5 6	29. 1 2 3 4 5 6
10. 1 2 3 4 5 6	20. 1 2 3 4 5 6	30. 1 2 3 4 5 6

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Part II:

Read each pair of statements and decide which you would prefer for your child. Put an X in the box that best describes how strong your feelings are.

	Prefer A		Prefer B	
1.	Strong preference	☐	Strong preference	☐
	Moderate preference	☐	Moderate preference	☐
	Weak preference	☐	Weak preference	☐
2.	Strong preference	☐	Strong preference	☐
	Moderate preference	☐	Moderate preference	☐
	Weak preference	☐	Weak preference	☐
3.	Strong preference	☐	Strong preference	☐
	Moderate preference	☐	Moderate preference	☐
	Weak preference	☐	Weak preference	☐
4.	Strong preference	☐	Strong preference	☐
	Moderate preference	☐	Moderate preference	☐
	Weak preference	☐	Weak preference	☐
5.	Strong preference	☐	Strong preference	☐
	Moderate preference	☐	Moderate preference	☐
	Weak preference	☐	Weak preference	☐
6.	Strong preference	☐	Strong preference	☐
	Moderate preference	☐	Moderate preference	☐
	Weak preference	☐	Weak preference	☐

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7.	Strong preference	Strong preference
	Moderate preference	Moderate preference
	Weak preference	Weak preference
8.	Strong preference	Strong preference
	Moderate preference	Moderate preference
	Weak preference	Weak preference
9.	Strong preference	Strong preference
	Moderate preference	Moderate preference
	Weak preference	Weak preference
10.	Strong preference	Strong preference
	Moderate preference	Moderate preference
	Weak preference	Weak preference
11.	Strong preference	Strong preference
	Moderate preference	Moderate preference
	Weak preference	Weak preference
12.	Strong preference	Strong preference
	Moderate preference	Moderate preference
	Weak preference	Weak preference

Finally, please indicate how your child usually spends his free play time outside of nursery school? (Put an X in the appropriate box for each type of activity.)

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	Almost all of time	Most of time	About half of time	Little time	Almost no time
1. Plays alone					
2. Plays with other children (incl. siblings)					
3. Plays with parents (or other adults)					
4. Watches T.V.					

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LIST OF ITEMS INCLUDED IN EACH SCALE OF PARENTAL EXPECTATIONS*

Assertive Autonomy Scale

1. Johnny is two years old. He refuses to eat at meal time unless he can feed himself.
2. Johnny is two. In walking down the five steps at the back door his mother wants to hold his hand. He pulls away and goes down alone.
3. Johnny is three. He can climb to the top of the monkey bars in the park and sometimes tries to hang by his hands.
4. Ann is three. She refuses to let her mother help her put on her socks as an expression of independence.
5. Ann is three. With a sharp stick she pierces beetles, spiders, and other bugs she finds in the yard and watches them wiggle with interest, but with no noticeable emotional reactions.
6. Ann is four. Whenever her daddy goes into the bathroom before her, she runs after him and watches.
7. Johnny is six. He is playing with his blocks and has almost completed a sky-scraper. His mother asks him for the third time to put them away and get ready for dinner. He calmly continues to play without paying attention to her repeated commands.

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* Most items in these scales were adopted or adapted from Nakamura and Rogers (1969).

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8. Ann is six She does not want to wear the dress her mother has laid out because it has a spot on it.

Practical Autonomy Scale

1. Ann is two. She can turn the water faucets in the kitchen on and off by herself when she needs a drink.
2. Ann is three. She can pour milk from a small pitcher into her cup without spilling.
3. Ann is three. She uses the toilet when she needs to without asking for help.
4. Johnny is three. He can zip-up his jacket by himself.
5. Ann is four. She climbs up steps to the washbowl and brushes her teeth without adult help.
6. Johnny is four. He can put on his shoes and tie the laces.
7. Johnny is five. The Good Humor man goes by. He wants some ice cream but his mother says "no." He shrugs his shoulders and goes back to playing.
8. Johnny is six. When he has finished playing with his toys, he puts them away without having to be told.

Outgoing Socialness Scale

1. Johnny is two. He enjoys babysitters (even new ones) as long as he is left in his own home.

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2. Johnny is two. He calls through the fence to the child next door to come play with him.

3. Ann is three. She has spent her first day at the nursery school. When her mother comes for her after the 3-hour period in school, she is reluctant to leave the other children and go home with her mother.

4. Johnny is three. He loves to play with other children in the neighborhood or at nursery school. In the house he usually plays with one of his siblings. If no one else is available, he asks his mother to play as he does not like to play alone.

5. Ann is four. She gets along well with all the neighborhood children, often acting as leader in their group activities.

6. Ann is five. She is very involved building an elaborate farm with blocks. Two neighbor children come to ask her to come outside and play with them. She immediately runs out to join them, leaving the farm not quite finished.

7.* Johnny is five. It is his first day in kindergarten. All have brought their lunches. During lunch period Johnny sits at the edge of the group looking on but does not participate socially.

8.* Johnny is six. A new family with a child his age has moved next door. Johnny has no one else to play with but he cannot bring himself to go over and meet the other child although his mother encourages him to do so.

---

* These items are scored in the reversed direction.

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SCORING PROCEDURE FOR PARENTAL QUESTIONNAIRE

Part 1. The specific numbers (1 to 6) checked for each item were summed across all items in a given scale. In order for high scores to indicate high expectations, this total was then subtracted from 48 (the highest possible score on a scale). (The scores used by Nakamura and Rogers (1969) were not reversed in this manner.)

Part 2. Each item was scored in the following way: 6 points for a strong preference for sociability, 5 points for a moderate preference, 4 points for a weak preference, 3 points for a weak preference for self-reliance, 2 points for a moderate preference, and 1 point for a strong preference. These points were summed across all items. A high score thus indicated a relatively strong preference for sociability.

Part 3. A separate score was determined for each type of play activity, yielding four scores (i.e., plays alone, plays with other children, plays with parents, watches television). A score of 1 was given if the parent indicated the child spent "almost no time" in the activity, a score of 2 for "little time," and so on up to a score of 5 for "almost all of time." (Only scores for "plays alone" and "plays with other children" were included in the data analysis.)

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APPENDIX I

RATING SCALES

Instructions:

Lump together the children's names from all three classes and sort into five piles on each of the traits below. As much as possible, sort them so that the five piles (from High to Low) have the following number of children in them: 5-8-12-8-5. Then on a separate sheet of paper, write down each child's score on each of these traits. (High = 5)

1. Peer Leader

High: The child is sought after as a playmate by other children who willingly follow his directions or suggestions. He frequently gives directions and metes out reward and punishment to those who play with him, usually by giving or withdrawing his attention or including or excluding others from his next project.

Low: A child rated low characteristically puts himself more or less at the service of a friendly, direct leader or simply goes along with whatever the group decides to do without contributing anything to the decision making process. There is at least one peer to whom he frequently defers.

2. Engages in hostile or disruptive behavior

High: The child frequently shows hostility in his interactions with others. He may be destructive of other children's activities by forcing himself into an ongoing activity or by refusing to get out

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of the way when asked or by destroying another's creation. He may be insulting to others and hit aggressively. He may also test limits with the teacher. His intent is to hurt others rather than simple over-eagerness in carrying out his own activities.

Low: The child never engages in hostile or disruptive behaviors. His interactions are always positive although he may stick up for his rights if another aggresses against him. Even in this case, he is often able to settle the dispute in a non-agressive manner, helping the other to rechannel or "turn-off" his aggression.

3. Dependency*

High: The child frequently seeks the attention of the teacher or other children. He needs reassurance before trying new things or even before trying routine things that are difficult for him, such as joining a game. He may show excessive dependency on either adults or children. For example, he may usually seek to play with others because of a need for supportive companionship.

Low: The child never seeks attention directly. He pursues his own activities regardless of whether they are of interest to others. Also he shows independence of the opinions of others.

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* For the rating of dependency, the children were divided into only three groups (high, medium, and low) because the observer-rater felt that further differentiation was impossible.

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4. Forcefully goes after what he wants

High: The child characteristically knows what he wants in terms of the resources available and does not hesitate to pursue his goal using whatever appropriate techniques are required to obtain it. The emphasis is on the amount of commitment the child gives to his own desires and his willingness to confront obstacles, by obtaining the help of teachers and the cooperation of other children. An example of a child who is rated high is one who when encountering opposition from another child uses reason and persuasion to change the other's mind, expending time and energy in so doing, or uses the same approach on a teacher in order to have her intercede on his behalf. Some use of muscle instead of reason might also be rated high if such behavior typically is successful and not self-defeating.

Low: The child makes only feeble attempts at obtaining what he wants. He accepts the prepotency of another's need if it conflicts with his own and will not push a teacher beyond her initial "no" to obtain a goal. He is apt to be hesitant about expressing desires or evasive when asked what he wants.

5. Self-starting and self-propelled

High: The child typically becomes caught up immediately in activity upon entering the nursery school and quickly becomes involved in a new activity (group or solitary) once an ongoing activity is terminated. He does not need help in getting started each morning nor does he need to be remotivated during the day. He brings to

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nursery school a set of expectations and plans which are easily met and carried out.

Low: The child often engages in aimless activity or wanders about looking for something to do. He may also simply follow along with the activities of other children, seeming to have no purpose or plan of his own. Or he may find it hard to become involved in nursery school activity unless he is approached and encouraged by a teacher or peer.

6. Lacks ability to get along with other children

High: The child is not able to sustain a long period of play with other children without some difficulty arising. There may be an attempt to exclude him because the others anticipate that he will disrupt the ongoing activity through his ineptness. This disruption is not necessarily caused by his hostility or aggression but rather because of his lack of social skills. It is as though what he hopes to gain from the play situation diverges from the common interests of the others. This divergence is not over the formal aspects of the situation but is a difference in understanding the implicit specifications for appropriate behavior. He is not easily accepted by the other children.

Low: The child is accepted by other children in their play. He is likely to be greeted when he comes near, and his presence in a structured activity is not likely to interfere with the other children. He enters into group play situations easily. His presence is not

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likely to cut short the ongoing enterprise. Other children are not afraid of or intimidated by him.

7. Other children seek his company

High: The child is sought after as a playmate. He is asked to join groups of children who are playing. His name is brought up when other children are planning things to do.

Low: The child is seldom sought by other children as a companion. Unless he initiates contact with other children, he is likely to be left alone.

This rating scale was adapted from Baumrind's Preschool Behavior Q-sort (1968).

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APPENDIX J

RELATIONSHIPS BETWEEN PARENTAL ATTITUDES AND CHILDREN'S BEHAVIOR -- BOYS AND GIRLS CONSIDERED SEPARATELY

As indicated in the main body of the paper, very few relationships were found between parental attitudes and children's behavior when the children were considered as a single group. When each sex group was considered separately, however, considerably more relationships emerged. Nonetheless, the proportion of significant ($p < .05$) correlations was only 1 in 20 on the average; therefore, the most prudent course was to attribute these relationships to chance. The pattern of relationships was interesting, however, and fairly similar for both sex groups. For the purpose of preserving these exploratory data, the results of this analysis are presented here.

In presenting these results, emphasis is placed upon relationships between parental attitudes and children's orientation as this was the primary purpose of assessing parental attitudes.

Relationships for girls. Correlations between parental attitudes and daughters' behavior are presented in Tables 11 and 12.

Considering orientation first, mothers with higher expectations for outgoing socialness were found to have daughters who showed greater relative interest in objects than people (i.e., lower People vs. Object Orientation). This relationship was significant, however, only for Focus ($r = -.52$, $df = .13$, $p < .05$) and not for the combined

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TABLE 11

Correlations between Parental Attitudes and Daughters' Orientation and Test Scores

Orientation and test scores	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy (N=15)	Expect prac. autonomy (N=15)	Expect social-ness (N=15)	Prefer socia-bility (N=14)	Expect assert. autonomy (N=13)	Expect prac. autonomy (N=13)	Expect social-ness (N=13)	Prefer socia-bility (N=12)
Orientation measures								
People vs. object orientation	-.27	-.09	-.50	.15	-.68*	-.15	-.01	.07
Focus	-.31	-.15	-.52*	.05	-.56*	-.05	-.01	.06
Context	-.14	.02	-.32	.26	-.63*	-.26	-.00	.05
Tests								
Physical score (summary)	.22	.18	.30	.32	.32	.06	.56*	-.10
Social score (summary)	-.22	-.13	.11	.59*	.18	.04	.22	-.14
Difference score (soc. minus phys.)	-.52*	-.37	-.19	.41	-.11	-.02	-.33	-.07

* $p < .05$

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TABLE 12

Correlations between Parental Attitudes and Daughters' Scores on Social Interaction Variables

Social interaction variables	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy (N=15)	Expect prac. autonomy (N=15)	Expect social-ness (N=15)	Prefer socia-bility (N=14)	Expect assert. autonomy (N=13)	Expect prac. autonomy (N=13)	Expect social-ness (N=13)	Prefer socia-bility (N=12)
Play activities								
Manipulate object	-.07	-.12	-.02	-.21	-.00	-.12	-.17	-.44
Construct product	.09	.16	.41	.32	.58*	-.17	-.05	-.25
Gross-motor activity	-.08	-.14	-.26	-.04	-.12	.58*	-.04	.27
Pets	-.22	.02	-.01	-.08	.02	.43	.09	.20
Role-playing	-.38	-.34	-.56*	-.06	-.57*	.10	.00	-.12
Social interaction	.56*	.24	-.26	.10	-.33	-.26	-.05	-.02
Idle, passive watching	-.16	-.15	.04	-.15	-.07	.21	.06	.62*
Manip. or construct (summary)	.02	.02	.28	.07	.40	-.20	-.16	-.48
Social activity (summary)	.11	-.10	-.56*	.04	-.63*	-.10	-.06	-.08
Observed social behaviors								
Use of another as resource (p. or a.)	-.48	-.37	-.14	-.61*	-.27	-.08	-.13	-.09

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TABLE 12, cont'd

Social interaction variables	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility
Seeks attention of peer	-.06	.15	.22	.02	.10	-.01	.20	.15
Seeks attention of adult	-.41	-.00	.06	-.54*	.39	-.16	.00	-.56
Expansion of play with peer	-.26	.08	-.33	.19	-.36	-.20	-.28	-.38
Expansion of play with adult	.30	.32	.53*	.45	.34	-.23	-.28	.02
Social contact with peer	-.09	-.11	-.23	.20	-.11	.08	.17	-.19
Social contact with adult	.11	-.32	-.00	.06	-.16	.05	.07	.42
Self-assertion to peer	.10	.27	-.15	.49	-.18	-.37	.03	-.20
Number of social behaviors to peers	-.22	.03	-.37	.34	-.30	-.14	-.04	-.41
Number of social behaviors to adults	-.28	-.22	.20	-.36	-.02	-.08	-.12	-.01
Peer-directedness: Ratio peer to adult	.05	.13	-.34	.37	-.09	.03	.10	-.19
Percent time with adult (incl. group)	.11	.12	.54*	-.34	.32	-.01	-.26	-.21
Percent time with adult only (no peer)	.24	-.11	.30	.12	.04	-.32	.21	.25
Associative play with same-sex peer(s)	-.32	-.23	-.08	-.13	.19	-.19	.32	-.30
Associative play with only one peer	-.03	-.15	-.08	-.38	.38	-.29	.39	-.22

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TABLE 12, cont'd

Social interaction variables	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility
Ratings								
Peer leader	.22	.04	.00	.64*	-.16	-.35	.02	-.05
Engages in hostile behavior	-.02	.13	.20	-.06	-.10	-.18	-.19	-.25
Dependency	-.25	.12	.13	-.38	.21	.24	.17	.02
Forcefully goes after what wants	-.10	-.00	-.09	.56*	-.17	-.42	-.20	-.17
Self-starting and self-propelled	.15	-.09	-.17	.48	-.21	-.19	-.17	.05
Lacks ability to get along with others	-.10	-.15	-.22	-.59*	-.04	.12	-.68*	-.33
Other children seek his company	.16	.03	.00	.66*	-.06	-.48	-.00	.14
Other								
Popularity among peers	-.04	.21	.34	.47	.46	-.15	.24	-.42

* $p < .05$

measure of orientation ($r = -.50$, $df = 13$, $p < .06$). In addition, fathers with higher expectations for assertive autonomy had daughters with greater relative interest in objects than people ($r = -.68$, $df = 11$, $p < .01$). No relationships were found between parental preferences for sociability and orientation.

Many other relationships were found between parents' attitudes and daughters' behavior. Since most of these relationships were between mothers and daughters, maternal attitudes are considered first. In addition to orientation, higher maternal expectations for outgoing socialness were related to less time spent in role-playing ($r = -.56$, $df = 13$, $p < .05$), less time spent generally in social activities (a summary measure) ($r = -.56$, $df = 13$, $p < .05$), more time spent with an adult ($r = .54$, $df = 13$, $p < .05$) and a higher frequency of communications with adults designed to expand play ($r = .53$, $df = 13$, $p < .05$).

Maternal preferences for sociability over self-reliance were also related to several aspects of their daughters' behavior. Four (of seven) ratings of quality of social behavior were related to higher maternal preferences for sociability: peer leadership ($r = .64$, $df = 12$, $p < .05$), forcefulness ($r = .56$, $df = 12$, $p < .05$), being sought by other children ($r = .66$, $df = 12$, $p < .01$), and having the ability to get along with other children ($r = .59$, $df = 12$, $p < .05$). Higher maternal preferences for sociability were also related to higher scores on the social tests ($r = .59$, $df = 12$, $p < .05$), less use of others as a

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resource (r = -.61, df = 12, p < .05), and less seeking attention from adults (r = -.54, df = 12, p < .05).

In contrast to maternal expectations for socialness and preferences for sociability, maternal expectations for autonomy showed only one significant relationship. Daughters of mothers who had higher expectations for assertive autonomy were found to spend more time in social interactions (r = .56, df = 13, p < .05). No significant relationships were found for expectations for practical autonomy.

Considering next fathers' expectations and preferences for their daughters' behavior, somewhat fewer relationships were found. Higher paternal expectations for socialness were related to higher scores on the physical tests (r = .56, df = 11, p < .05) and to having the ability to get along with other children (r = .68, df = 11, p < .01). Higher preferences for sociability related only to spending more time being idle or passively watching others (r = .62, df = 10, p < .05).

Somewhat more relationships were found for expectations for autonomous behavior. As stated above, fathers who had higher expectations for assertive autonomy had daughters who showed relatively greater interest in objects than people (r = -.68, df = 11, p < .01). Thus they spent more time constructing products (r = .58, df = 11, p < .05), less time in role-playing activities (r = -.57, df = 11, p < .05), and less time generally in social activities (a summary measure) (r = -.63, df = 11, p < .05). Expectations for practical autonomy were related only to more time spent in

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gross-motor activities (r = .58, df = 11, p < .05).

These findings are summarized below, together with the findings for boys.

Relationships for boys. Correlations between parental attitudes and sons' behavior are presented in Tables 13 and 14.

Contrasting the overall results for boys and girls, fewer relationships were found between parental attitudes and boys' behavior than were found between these attitudes and girls' behavior. In addition, for boys more relationships were found with paternal attitudes than with maternal attitudes, in contrast to girls.

Considering orientation first, no significant relationships were found with parental attitudes. There was a trend, however, for fathers with higher expectations for socialness to have sons with greater relative interest in objects than people (i.e., lower People vs. Object Orientation (r = .41, df = .15, p < .10).

Turning to relationships with other aspects of boys' behavior, there was only a single significant relationship with any maternal attitude. Mothers with higher expectations for practical autonomy were found to have sons who were rated lower on hostility (r = -.47, df = 18, p < .05).

Fathers' attitudes bore more relationship to their sons' behavior. Higher expectations for socialness were found to relate to lower popularity with peers (r = -.67, df = 15, p < .01), more seeking attention from adults (r = .50, df = 15, p < .05) more general communications to adults (r = .53, df = 15, p < .05), and a lower proportion of communications directed to peers (r = -.52, df = 15, p < .05).

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TABLE 13

Correlations between Parental Attitudes and Sons' Orientation and Test Scores

Orientation and test scores	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy (N=20)	Expect prac. autonomy (N=20)	Expect social-ness (N=20)	Prefer socia-bility (N=20)	Expect assert. autonomy (N=17)	Expect pract autonomy (N=17)	Expect social-ness (N=17)	Prefer socia-bility (N=17)
Orientation measures								
People vs. orientation	-.08	.08	.07	-.02	.03	-.11	-.41	-.09
Focus	-.05	.11	.09	-.10	.02	-.13	-.43	-.12
Context	-.12	.03	.03	.08	.04	-.09	-.37	-.04
Tests								
Physical score (summary)	-.27	-.32	-.24	.05	-.19	-.42	-.27	.25
Social score (summary)	.20	-.34	-.23	-.12	-.49*	-.15	-.41	.28
Difference score (soc. minus phys.)	.41	.03	.05	-.14	-.26	.32	-.10	-.02

* $p < .05$

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TABLE 14

Correlations between Parental Attitudes and Sons'

Scores on Social Interaction Variables

Social interaction variables	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy (N=20)	Expect prac. autonomy (N=20)	Expect social-ness (N=20)	Prefer socia-bility (N=20)	Expect assert. autonomy (N=17)	Expect prac. autonomy (N=17)	Expect social-ness (N=17)	Prefer socia-bility (N=17)
Play activities								
Manipulate object	-.01	-.19	-.38	.19	.40	.22	.37	.01
Construct object	-.09	.12	.17	.07	.12	-.01	.20	.11
Gross-motor activity	.13	-.26	.12	.01	-.57*	-.21	-.27	.24
Pets	-.28	.09	.11	.24	.02	.05	.18	-.01
Role-playing	.02	.30	.12	-.11	.13	-.11	-.35	-.02
Social interaction	.08	.05	-.10	-.28	-.12	.01	-.36	-.10
Idle, passive watching	-.01	.28	.17	-.09	.41	.30	.41	-.38
Manip. or construct (summary)	-.08	-.06	-.18	.19	.33	.12	.37	.09
Social activity (summary)	.10	.19	-.01	-.19	.10	-.08	-.40	-.14
Observed social behaviors								
Use of another as resource (p. or a.)	-.06	.13	-.03	-.12	.18	-.04	.29	-.16

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TABLE 14, cont'd

Social interaction variables	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility
Seeks attention of peer	.19	.05	.08	-.13	.05	-.03	-.40	-.31
Seeks attention of adult	.17	.34	.08	-.13	.01	.08	.50*	.10
Expansion of play with peer	-.01	.05	.03	.04	.04	-.10	-.42	.11
Expansion of play with adult	-.20	-.12	-.23	.16	-.08	.05	.33	.11
Social contact with peer	-.01	-.08	.06	.15	-.16	-.02	-.12	.25
Social contact with adult	-.01	.28	.02	-.14	.12	.23	.46	-.16
Self-assertion to peer	-.26	-.34	-.18	-.09	-.50*	-.33	-.40	.32
Number of social behaviors to peers	-.02	-.06	.03	.05	-.14	-.14	-.43	.19
Number of social behaviors to adults	-.03	.27	-.01	-.07	.06	.16	.53*	-.03
Peer-directedness: Radio peer to adult	-.04	-.26	-.02	.09	-.06	-.14	-.52*	.03
Percent time with adult (incl. group)	.06	.10	.16	.07	.02	-.10	.34	.19
Percent time with adult (no peer)	.04	.05	-.17	-.13	-.17	.06	.21	-.06
Associative play with same-sex peer(s)	-.11	-.22	-.40	-.26	-.22	-.09	-.33	-.33
Associative play with only one peer	-.09	-.08	-.21	.09	-.06	-.03	-.06	-.12

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TABLE 14, cont'd

Social interaction variables	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility
Ratings								
Peer leader	.04	-.24	-.26	.16	-.31	-.22	-.13	.65*
Engages in hostile behavior	-.07	-.47*	-.32	-.21	-.64*	-.43	-.37	.22
Dependency	.02	-.18	-.14	-.27	-.06	.07	-.13	-.53
Forcefully goes after what wants	.39	-.27	-.29	-.05	-.33	-.32	-.05	.45
Self-starting and self-propelled	.11	-.20	-.37	-.14	-.32	-.06	.02	.29
Lacks ability to get along with others	-.27	.00	-.19	-.30	-.03	.14	.07	-.46
Other children seek his company	-.12	-.17	-.18	-.10	-.10	-.14	-.32	.23
Other								
Popularity among peers	-.20	-.13	-.16	-.26	-.16	-.18	-.67*	-.10

* $p < .05$

Fathers' preferences for sociability showed quite different correlates. Fathers who had higher preferences for sociability over self-reliance had sons who were rated higher on peer-leadership ($r = .65$, $df = 15$, $p < .05$) and lower on dependency ($r = -.53$, $df = 15$, $p < .05$).

Finally, considering expectations for autonomy, it was found that higher expectations for assertive autonomy related to lower scores on the social tests ($r = -.49$, $df = 15$, $p < .05$), less time spent in gross-motor activity ($r = -.57$, $df = 15$, $p < .05$), lower ratings on hostility ($r = -.64$, $df = 15$, $p < .01$), and less self-assertive behavior to peers ($r = -.50$, $df = 15$, $p < .05$). No relationships were found for expectations for practical autonomy.

Summary. Summarizing these findings is difficult; however, some generalizations can be made. First, parental attitudes were found to relate more to girls' behavior than to boys' behavior. This finding corroborates other studies in which girls' behavior, compared to boys', has been found to be more closely related to their current social environment (cf. Bayley & Schaefer, 1964; Bing, 1963; Ogilvie, 1969). Secondly, more relationships were found for the same-sex parent-child pairs than for the cross-sex parent-child pairs; i.e., more relationships were found between mothers and daughters and between fathers and sons than between mothers and sons and between fathers and daughters. This finding contrasts with that of Nakamura and Rogers (1969), who found cross-sex parental influences using a very similar measure of parental attitudes.

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Specific interest in this study was centered on the expected relationships between parental attitudes and children's orientation. Higher parental expectations for assertive autonomy had been expected to relate to greater relative interest in objects than people (i.e., lower People vs. Object Orientation); whereas higher expectations for outgoing socialness had been expected to relate to greater relative interest in people. In addition, higher parental preferences for sociability over self-reliance had been expected to relate to greater relative interest in people than objects (i.e., higher People vs. Object Orientation).

Only one of these three attitude scales showed the expected relationships and then only between fathers and daughters. Specifically, fathers with higher expectations for assertive autonomy had daughters who showed greater relative interest in objects than people. A quite troublesome finding was the near-significant relationship between higher parental expectations for socialness and greater relative interest in objects than people. No satisfactory post-hoc interpretation of this finding can be offered.

Turning next to the overall findings for each scale, the findings with regard to parental expectations for outgoing socialness were generally the opposite of those anticipated. (Unless otherwise noted, the relationships discussed below were found for both boys and girls with the same-sex parent.) Higher expectations for socialness were found to relate to greater relative interest in objects than

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people (although this relationship was significant for girls only, and then only for the measure of Focus, and not the combined measure of orientation).* Expectations for socialness were also related to greater adult-directedness, including dependency upon adults (fathers and sons only), to lower peer popularity (fathers and sons only), and to higher scores on the physical tests (fathers and daughters only).

The findings for preferences for sociability over self-reliance were more congruent with anticipated findings. Parents who had higher preferences for sociability had children who were rated as more socially competent (especially in peer leadership), were less dependent (especially less dependent upon an adult), and performed better on the social tests (mothers and daughters only).

The findings for expectations for autonomy were partly as anticipated. As stated above, expectations for assertive autonomy were found to relate to greater relative interest in objects than people

* The scale for assessing parental expectations for outgoing socialness was examined in detail in an attempt to find a post-hoc explanation for these results. Inspection revealed that two somewhat different types of items had been combined in this scale. Six of the eight items appeared to assess clearly expectations for assertive outgoing socialness. In contrast, the remaining two items seemed to assess expectations for people-oriented rather than object-oriented play (items number 15 and 23). Analysis of the data, however, showed essentially the same correlations for both types of items. Thus children who spent relatively more time in play with objects than people had parents who tended to expect more assertive socialniess and to expect more people-oriented rather than object-oriented behavior.

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(i.e., lower People vs. Object Orientation), but only for fathers and daughters. Other relationships to children's behavior did not form any consistent pattern. Lastly, as expected, almost no relationships were found for expectations for practical autonomy.

Thus, each of the specific scales of the Parental Questionnaire showed quite different patterns of relationships to children's social behavior. The two scales assessing parental expectations for autonomy showed little association to children's behavior. In contrast, the two scales assessing attitudes towards socialness showed greater association. Unfortunately, the pattern of relationships for these latter two scales was confusing and difficult to interpret. In general, children's behavior showed some concordance with their parents' social preferences, but disconcordance with their social expectations. The discrepent findings of these two ostensibly similar scales were disconcerting; further research with better developed measures of parental attitudes might be helpful to clarify these relationships.

In summary, only quite minimal support was found for the prediction of associations between parental attitudes and children's orientation. Relationships between parents' attitudes and other aspects of children's behavior were found but they were often confusing and difficult to interpret.

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APPENDIX K

AUXILLIARY TABLES OF RESULTS

Table A Intercorrelations among social interaction variables (N=38)

Table B Intercorrelations among tests and orientation measures by sex

Table C Correlations between orientation measures and social interaction variables by sex

Table D Correlations between tests and social interaction variables by sex

Table E Intercorrelations among parental variables

Table F Correlations between parental attitudes and children's orientation and test scores

Table G Correlations between parental attitudes and children's scores on social interaction variables

Table H Correlations between individual tests and orientation measures (N=38)

Table I Correlations between individual tests and social interaction variables (N=38)

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TABLE A

Intercorrelations among Social Interaction Variables (N=38)

Variables	Variables							
	1	2	3	4	5	6	7	8
Play activities								
1 Manipulate object								
2 Construct product	-.16							
3 Gross-motor activity	-.43*	-.41*						
4 Pets	-.30	.15	-.05					
5 Role-playing	.03	-.44*	-.10	-.21				
6 Social interaction	-.26	-.38*	.21	-.33*	.22			
7 Idle, passive watching	-.24	-.10	-.07	.11	-.11	-.16		
8 Manip. or construct (summary)	.70*	.59*	-.65*	-.14	-.29	-.49*	-.27	
9 Social activity (summary)	-.08	-.54*	.05	-.38*	.79*	.73*	-.17	-.46*
Observed social behaviors								
10 Use another resource (p. or a.)	.09	-.01	-.17	.15	.04	-.47*	.09	.06
11 Seek attention - peer	-.36*	-.30	.33*	-.04	.16	.36*	.19	-.51*
12 Seek attention - adult	.11	.21	-.16	.20	-.12	-.25	-.15	.24
13 Expansion of play - peer	.18	-.31	-.07	-.28	.61*	.37*	-.40*	-.08
14 Expansion of play - adult	.17	.13	-.10	.25	-.27	-.32*	-.19	.23
15 Social contact - peer	-.29	-.12	.35*	-.01	-.02	.56*	-.32*	-.33*
16 Social contact - adult	-.06	.32*	-.27	.25	-.16	-.29	.09	.18
17 Self assertion - peer	.02	-.11	.15	-.23	.22	.24	-.31	-.06
18 No. social behaviors - peers	-.09	-.30	.21	-.22	.41*	.61*	-.45*	-.29

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TABLE A, cont'd

Variables	Variables							
	1	2	3	4	5	6	7	8
19 No. social behaviors - adults	.14	.21	-.25	.30	-.16	-.49*	-.05	.26
20 Peer-directedness	-.14	-.25	.28	-.28	.21	.56*	-.09	-.29
21 Percent time with adult	.13	.42*	-.19	.20	-.25	-.42*	-.28	.41*
22 Percent time with adult only	.10	.04	-.14	.17	-.07	-.24	.05	.11
23 Play - same-sex peer(s)	-.10	-.18	.10	-.08	.16	.43*	-.15	-.21
24 Play - only 1 peer	-.02	.10	-.13	.14	.08	-.13	-.18	.06
Ratings								
25 Peer leader	.09	-.07	.01	-.19	.11	.43*	-.54*	.02
26 Engages in hostile behavior	-.11	-.16	.25	-.07	-.09	.12	-.05	-.20
27 Dependency	-.04	-.09	.03	-.08	-.01	-.17	.37*	-.09
28 Forcefully goes after	.06	.07	-.02	-.27	.13	.15	-.38*	.09
29 Self-starting	.01	.09	.03	-.13	-.02	.23	-.49*	.07
30 Lacks ability to get along	.15	-.11	-.08	.20	-.13	-.21	.32*	.04
31 Children seek his company	.00	-.04	-.03	-.25	.09	.41*	-.42*	-.03
Other								
32 Popularity among peers	.10	.09	-.06	-.35*	.32*	.17	-.32*	.15

* $p < .05$

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TABLE A, cont'd

Variables	Variables											
	9	10	11	12	13	14	15	16	17	18	19	20
Play activities												
1 Manipulate object												
2 Construct product												
3 Gross-motor activity												
4 Pets												
5 Role-playing												
6 Social interaction												
7 Idle, passive watching												
8 Manip. or construct (sum.)												
9 Social activity (summary)												
Observed social behaviors												
10 Use another res. (p. or a.)	-.23											
11 Seek attention - peer	.31	-.27										
12 Seek attention - adult	-.21	.32*	-.05									
13 Expansion of play - peer	.64*	-.14	.09	-.18								
14 Expansion of play - adult	-.35*	.39*	-.13	.19	-.22							
15 Social contact - peer	.29	-.39*	.21	-.14	.21	-.28						
16 Social contact - adult	-.23	.21	-.26	.28	-.44*	.25	-.32*					
17 Self assertion - peer	.26	-.24	-.05	-.22	.55*	-.15	.09	-.26				
18 No. social behaviors - peers	.62*	-.36*	.28	-.22	.82*	-.33*	.70*	-.50*	.55*			
19 No. social behaviors - adults	-.35*	.68*	-.27	.66*	-.34*	.66*	-.42*	.66*	-.30	-.51*		

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TABLE A, cont'd

Variables	Variables											
	9	10	11	12	13	14	15	16	17	18	19	20
20 Peer-directedness	.44*	-.61*	.28	-.57*	.50*	-.64*	.58*	-.70*	.33*	.70*	-.94*	
21 Percent time with adult	-.42*	.29	-.20	.35*	-.25	.55*	-.16	.34*	-.18	-.29	.57*	-.50*
22 Percent time with adult only	-.17	.09	.02	.46*	-.33*	.30	-.36*	.74*	-.14	-.41*	.61*	-.68*
23 Play - same-sex peer(s)	.40*	-.19	.22	.04	.15	-.20	.38*	-.24	-.10	.31	-.21	.32*
24 Play - only 1 peer	.01	.25	-.30	.06	-.07	-.00	.08	.14	-.13	-.07	.14	-.11
Ratings												
25 Peer leader	.35*	-.36*	.01	-.07	.31	.10	.41*	.10	.18	.45*	-.08	.16
26 Engages in hostile behavior	.02	-.02	.46*	.03	-.01	.14	.09	-.03	.32*	.17	-.01	-.02
27 Dependency	-.10	.26	.12	.04	-.06	-.14	-.10	-.43*	-.08	-.10	-.09	.12
28 Forcefully goes after	.23	-.18	.10	.24	.25	.03	-.06	.20	.34*	.23	.11	-.10
29 Self-starting	.14	-.25	-.03	.06	.11	.11	.19	.37*	.21	.22	.10	-.09
30 Lacks ability to get along	-.19	.17	.06	.05	-.24	.07	-.36*	.12	-.06	-.34*	.11	-.23
31 Children seek his company	.33*	-.24	-.05	-.20	.32*	.05	.42*	-.06	.15	.44*	-.18	.27
Other												
32 Popularity among peers	.31	-.34*	.19	-.07	.31	-.19	.17	-.27	.00	.30	-.31	.40*

* $p < .05$

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TABLE A, cont'd

Variables	Variables											
	21	22	23	24	25	26	27	28	29	30	31	32
20 Peer-directedness												
21 Percent time with adult												
22 Percent time with adult only	.25											
23 Play - same-sex peer(s)	-.33*	-.21										
24 Play - only 1 peer	-.14	-.00	.32*									
Ratings												
25 Peer leader	.07	.13	.30	-.06								
26 Engages in hostile behavior	-.08	.21	-.01	-.30	.15							
27 Dependency	-.11	-.36*	.12	.07	-.69*	-.10						
28 Forcefully goes after	.08	.36*	.05	-.21	.63*	.37*	-.51*					
29 Self-starting	.08	.40*	.08	-.03	.75*	.23	-.71*	.80*				
30 Lacks ability to get along	-.21	.19	-.16	-.04	-.47*	.40*	.20	-.26	-.24			
31 Children seek his company	.01	-.12	.41*	-.01	.80*	.04	-.47*	.45*	.57*	-.53*		
Other												
32 Popularity among peers	-.08	-.16	.45*	.01	.26	.00	.06	.06	.04	-.22	.33*	

* $p < .05$

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TABLE B

Intercorrelations among Tests and Orientation Measures by Sex

Variables	Variables									
	1		2		3		4		5	
	Males (N=22)	Females (N=16)	Males (N=22)	Females (N=16)	Males (N=22)	Females (N=16)	Males (N=22)	Females (N=16)	Males (N=22)	Females (N=16)
Tests										
1 Physical score (summary)										
2 Social score (summary)	.33	.64*								
3 Difference score	-.64*	-.28	.51*	.57*						
Orientation measures										
4 People vs. obj. orientation	-.46*	-.41	-.06	-.08	.37	.34				
5 Focus	-.43	-.47	-.05	-.09	.35	.39	.97*	.92*		
6 Context	-.46*	-.19	-.08	-.04	.36	.15	.95*	.80*	.86*	.49

* $p < .05$

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TABLE C

Correlations between Orientation Measures and Social Interaction Variables by Sex

Social interaction variables	Orientation measures					
	People vs. object orientation		Focus		Context	
	Males (N=22)	Females (N=16)	Males (N=22)	Females (N=16)	Males (N=22)	Females (N=16)
Play activities						
Manipulate object	-.21	-.40	-.34	-.47	-.03	-.16
Construct product	-.54*	-.48	-.51*	-.61*	-.52*	-.13
Gross-motor activity	.08	.24	.09	.50*	.06	-.24
Pets	-.08	.00	-.08	.14	-.07	-.20
Role-playing	.65*	.49	.70*	.56*	.53*	.22
Social interaction	.81*	.41	.84*	.29	.70*	.45
Idle, passive watching	-.22	.11	-.10	.22	-.37	-.09
Manip. or construct (summary)	-.56*	-.65*	-.65*	-.80*	-.40	-.22
Social activity (summary)	.84*	.64*	.87*	.63*	.72*	.46
Observed social behaviors						
Use of another as resource (peer or adult)	-.49*	.10	-.51*	.16	-.42*	.04
Seeks attention of peer	.38	.28	.46*	.31	.25	.15
Seeks attention of adult	-.26	-.23	-.20	-.27	-.31	-.09
Expansion of play with peer	.70*	.65*	.60*	.55*	.77*	.59*
Expansion of play with adult	-.43*	-.28	-.50*	-.22	-.32	-.27
Social contact with peer	.66*	.26	.59*	.22	.70*	.24

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TABLE C, cont'd

Social interaction variables	Orientation measures					
	People vs. object orientation		Focus		Context	
	Males	Females	Males	Females	Male	Females
Social contact with adult	-.47*	-.19	-.44*	-.33	-.46*	.10
Self-assertion to peer	.23	.38	.21	.22	.24	.48
No. of social behaviors to peers	.81*	.69*	.72*	.57*	.85*	.63*
No. of social behaviors to adults	-.46*	-.24	-.46*	-.27	-.43*	-.13
Peer-directedness: Ratio peer to adult	.64*	.41	.61*	.37	.64*	.33
Percent time with adult (incl.group)	-.25	-.54*	-.27	-.66*	-.20	-.19
Percent time with adult only (no peer)	-.40	-.13	-.37	-.29	-.41	.16
Associative play with same-sex peer(s)	.58*	-.01	.58*	.17	.55*	-.28
Associative play with only one peer	.14	-.26	.06	-.06	.23	-.48
Ratings						
Peer leader	.34	.22	.26	.04	.42*	.41
Engages in hostile behavior	-.11	.18	-.08	.07	-.14	.29
Dependency	.11	-.11	.17	-.02	.02	-.21
Forcefully goes after what wants	-.14	.42	-.14	.22	-.13	.59*
Self-starting and self-propelled	-.14	.27	-.20	.10	-.05	.43
Lacks ability to get along with others	-.40	-.12	-.35	-.01	-.43*	-.25
Other children seek his company	.40	.33	.30	.20	.49*	.42
Other						
Popularity among peers	.38	-.14	.38	-.27	.35	.09

* $p < .05$

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TABLE D

Correlations between Tests and Social Interaction Variables by Sex

Social interaction variables	Tests					
	Physical score (summary)		Social score (summary)		Difference score	
	Males (N=22)	Females (N=16)	Males (N=22)	Female (N=16)	Males (N=22)	Females (N=16)
Play activities						
Manipulate object	.06	-.09	-.26	-.11	-.27	-.04
Construct product	.41	.65*	.15	.52*	-.25	-.04
Gross-motor activity	-.11	-.14	.23	-.01	.28	.14
Pets	.02	.14	-.33	.07	-.28	-.05
Role-playing	-.14	-.40	.06	.01	.17	.43
Social interaction	-.45*	.05	.09	-.20	.48*	-.30
Idle, passive watching	-.08	-.40	-.16	-.36	-.06	-.02
Manip. or construct (summary)	.35	.38	-.11	.28	-.40	-.06
Social activity (summary)	-.42*	-.30	.06	-.10	.43*	.20
Observed social behaviors						
Use of another as resource (peer or adult)	.21	-.58*	.06	-.41	-.14	.11
Seeks attention of peer	.03	.01	.14	-.08	.08	-.11
Seeks attention of adult	-.05	-.07	-.15	-.07	-.07	-.01
Expansion of play with peer	-.32	-.34	-.03	.03	.27	.41
Expansion of play with adult	.31	-.11	.11	.04	-.19	.17

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TABLE D, cont'd

Social interaction variables	Tests					
	Physical score (summary)		Social score (summary)		Difference score	
	Males	Females	Males	Females	Males	Females
Social contact with peer	-.43*	.39	-.03	.51*	.37	.22
Social contact with adult	-.03	.33	-.04	.21	-.01	-.09
Self-assertion to peer	-.06	.07	-.04	.08	.02	.03
No. of soc. behaviors to peers	-.40	.08	-.02	.39	.35	.41
No. of soc. behaviors to adults	.03	-.25	-.05	-.12	-.07	.12
Peer-directedness: Ratio peer/adult	-.17	.24	.03	.22	.19	.01
Percent time with adult (incl. group)	.24	.27	-.13	.25	-.33	.02
Percent time with adult (no peer)	.13	.12	-.01	.13	-.13	.04
Associative play w/same-sex peer(s)	-.25	.27	.12	.39	.33	.20
Associative play with only one peer	-.27	.22	.10	.12	.33	-.09
Ratings						
Peer leader	-.00	.41	.35	.57*	.28	.27
Engages in hostile behavior	.31	-.11	.27	-.18	-.06	-.09
Dependency	-.22	-.36	.01	-.34	.20	-.03
Forcefully goes after what wants	.22	.09	.37	.36	.10	.35
Self-starting and self-propelled	.26	.31	.36	.47	.06	.26
Lacks ability to get along with others	.09	-.47	-.22	-.50*	-.26	-.11
Other children seek his company	.07	.16	.15	.51*	.07	.46
Other						
Popularity among peers	.29	.41	.40	.63*	.05	.35

* $p < .05$

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TABLE E

Intercorrelations among Parental Variables

Parental variables	Parental variables										
	1	2	3	4	5	6	7	8	9	10	11
Maternal attitudes											
1. Expect assertive autonomy[a]											
2. Expect practical autonomy[a]	.39*										
3. Expect outgoing socialness[a]	.47*	.65*									
4. Prefer sociability[b]	.09	-.05	.18								
Paternal attitudes											
5. Expect assertive autonomy[c]	.26	.62*	.59*	.10							
6. Expect practical autonomy[c]	-.07	.23	.07	-.24	.13						
7. Expect outgoing socialness[c]	.01	.36*	.14	.16	.18	.23					
8. Prefer sociability[d]	.03	-.20	.03	.47*	-.38*	-.10	.18				
Maternal reports											
9. Freq. of solitary play[b]	-.14	.04	.14	-.04	.18	.19	-.18	.01			
10. Freq. play with children[a]	.13	.00	.19	.19	-.12	-.23	.14	.26	-.49*		
Paternal reports											
11. Freq. of solitary play[d]	-.09	-.07	-.01	.02	-.04	.19	-.03	.37*	.48*	-.42*	
12. Freq. play with children[c]	.29	.21	.03	.08	.13	.31	.37*	-.24	-.34	.31	-.42*

* $p < .05$

[a] N = 35

[b] N = 34

[c] N = 30

[d] N = 29

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TABLE F

Correlations between Parental Attitudes and Children's Orientation and Test Scores

Orientation and test scores	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy (N=35)	Expect prac. autonomy (N=35)	Expect social-ness (N=35)	Prefer socia-bility (N=34)	Expect assert. autonomy (N=30)	Expect prac. autonomy (N=30)	Expect social-ness (N=30)	Prefer socia-bility (N=29)
Orientation measures								
People vs. object orientation	-.14	-.03	-.13	.01	-.18	-.12	-.24	-.03
Focus	-.13	.02	-.14	-.07	-.15	-.10	-.29	-.07
Context	-.14	.04	-.10	.11	-.20	-.13	-.14	.03
Tests								
Physical score (summary)	-.05	-.09	.02	.11	.00	-.20	-.15	.12
Social score (summary)	-.03	-.24	-.03	.11	-.12	-.05	-.08	.07
Difference score (soc. minus phys.)	.02	-.14	-.04	-.01	-.14	.17	-.26	-.06

* $p < .05$

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TABLE G

Correlations between Parental Attitudes and Children's Scores on Social Interaction Variables

Social interaction variables	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy N=35)	Expect prac. autonomy (N=35)	Expect social-ness (N=35)	Prefer socia-bility (N=34)	Expect assert. autonomy (N=30)	Expect prac. autonomy (N=30)	Expect social-ness (N=30)	Prefer socia-bility (N=29)
Play activities								
Manipulate object	-.02	-.17	-.18	.08	.21	.05	.06	-.21
Construct object	-.03	.15	.26	.12	.22	-.08	.18	.02
Gross-motor activity	.08	-.23	-.00	.01	-.33	-.02	-.29	.17
Pets	-.27	.08	.00	.11	-.08	.21	.26	.14
Role-playing	-.12	.05	-.16	-.10	-.06	-.03	-.28	-.08
Social interaction	.32	.10	-.15	-.17	-.14	-.10	-.28	-.11
Idle, passive watching	.07	.09	.11	-.10	.22	.26	.21	-.01
Manip. or construct(summary)	-.04	-.02	.05	.15	.30	-.03	.18	-.12
Social activity (summary)	.13	.06	-.19	-.14	-.06	-.07	-.35	-.17
Observed social behaviors								
Use of another as resource (peer or adult)	-.36*	-.14	-.13	-.25	-.16	-.06	.13	-.04
Seeks attention of peer	.13	.05	.14	-.10	.11	-.02	-.28	-.23
Seeks attention of adult	-.13	.18	.07	-.23	.16	-.03	.28	-.15
Expansion of play with peer	-.09	.05	-.10	.07	-.05	-.13	-.38*	-.04
Expansion of play with adult	.09	.15	.25	.23	.08	-.09	.07	.09

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TABLE G, cont'd

Social interaction variables	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility
Social contact with peer	-.05	-.09	-.09	.16	-.17	.02	.06	.10
Social contact with adult	.04	.05	.01	-.09	.02	.16	.28	.04
Self-assertion to peer	-.11	-.16	-.14	.01	-.35	-.31	-.30	.17
No. of soc. behav. to peers	-.08	-.04	-.12	.10	-.17	-.13	-.29	.01
No. of soc. behav. to adults	-.16	.08	.07	-.14	-.01	.07	.33	.01
Peer-directedness: Ratio peer to adult	.01	-.13	-.14	.14	-.05	-.09	-.34	-.04
Percent time with adult (incl. group)	.01	.13	-.30	.13	.04	-.05	.17	.06
Percent time w/adult (no peer)	.10	.00	-.03	-.10	-.06	-.01	.09	-.05
Associate play w/same-sex peer(s)	-.14	-.24	-.21	-.22	-.02	-.13	-.11	-.33
Associative play w/one peer	-.08	-.09	-.15	-.04	.07	-.15	.24	-.10
Ratings								
Peer leader	.15	-.13	-.10	.28	-.20	-.28	-.10	.31
Engages in hostile behavior	.00	-.24	-.04	-.16	-.34	-.32	-.37*	.00
Dependency	-.15	-.02	-.01	-.28	.00	.14	.10	-.24
Forcefully goes after what wants	.20	-.16	-.15	.09	-.19	-.34	-.20	.21
Self-starting and self-propelled	.16	-.16	-.23	.04	-.20	-.11	-.14	.15
Lacks ability to get along with others	-.17	-.07	-.19	-.36*	-.01	.13	-.25	-.43

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TABLE G, cont'd

Social interaction variables	Maternal attitudes				Paternal attitudes			
	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility	Expect assert. autonomy	Expect prac. autonomy	Expect social-ness	Prefer socia-bility
Other children seek his company	.03	-.10	-.07	.09	-.07	-.29	-.18	.19
Others Popularity among peers	-.10	-.04	.06	-.12	.07	-.16	-.40*	-.21

* $p > .05$

TABLE H

Correlations between Individual Tests and Orientation Measures (N=38)

Tests	Orientation Measures		
	People vs. object orientation	Focus	Context
Physical tests			
Picture completion (WPPSI)	-.19	-.21	-.14
Block design (WPPSI)	-.05	-.12	.03
Geometric design (WPPSI)	-.39*	-.44*	-.26
Classification	-.49*	-.42*	-.50*
Social tests			
Comprehension (WPPSI)	-.16	-.17	-.11
It scale	-.08	-.08	-.06
Role-taking ability (Flavell)	.00	-.01	.01
Penny test	-.06	-.06	-.05
Interpersonal perception	.16	.15	.14
Moral judgment	-.10	-.06	-.14

*$p < .05$

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TABLE I

Correlations between Individual Tests and Social Interaction Variables (N=38)

Social interaction variables	Tests									
	Pict. comp.	Blk. des.	Geom. des.	Clas.	Comp.	It scale	Role-taking	Penny test	Inter-pers. perc.	Moral judg.
Play activities										
Manipulates object	-.11	.15	-.02	-.06	-.07	-.15	-.12	-.17	-.04	-.08
Construct product	.36*	.26	.49*	.33*	.34*	.28	.19	.12	-.05	.07
Gross-motor activity	-.13	-.27	-.02	.01	-.06	.15	.10	.07	.14	.12
Pets	.07	.09	.10	.10	-.20	.03	-.00	.02	-.04	-.04
Role-playing	-.07	.09	-.27	-.39*	-.04	-.14	.06	.01	.13	.11
Social interaction	-.31	-.11	-.13	-.22	-.02	-.04	-.06	.02	.19	-.25
Idle, passive watching	-.03	-.45*	-.28	.16	-.36*	-.07	-.05	.00	-.41*	.01
Manip. or construct (summary)	.17	.31	.34*	.19	.19	.08	.03	-.05	.06	-.01
Social activity (summary)	-.27	-.03	-.32*	-.45*	-.07	-.06	-.02	.01	.19	-.08
Observed social behaviors										
Use of another as resource (p. or a.)	.02	-.15	-.19	-.12	-.08	-.27	-.26	-.21	-.18	.21
Seeks attention of peer	-.05	-.06	-.15	.19	.00	.05	.13	-.01	-.01	.06
Seeks attention of adult	-.19	-.01	-.08	.12	.23	.07	-.23	-.03	-.13	-.14
Expansion of play with peer	-.27	.17	-.31	-.51*	-.02	-.10	.05	-.09	.36*	-.22

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TABLE I, cont'd

Social interaction variables	Tests									
	Pict. comp.	Blk. des.	Geom. des.	Clas.	Comp.	It scale	Role-taking	Penny test	Inter-pers. perc.	Moral judg.
Expansion of play with adult	.06	-.04	.03	.24	.12	-.03	.01	-.12	.20	.06
Social contact with peer	-.11	.02	.08	-.25	.14	.22	.13	.21	.21	-.08
Social contact with adult	.08	.03	.13	.10	.18	.06	-.18	.14	-.13	.17
Self-assertion to peer	-.08	.33*	-.03	-.32*	.03	-.11	.00	-.11	.21	-.02
Number of social behaviors to peers	-.24	.17	-.17	-.47*	.09	.03	.11	.05	.36*	-.17
Number of social behaviors to adults	-.04	-.09	-.06	.09	.14	-.08	-.22	-.11	-.08	.08
Peer-directedness: ratio peer to adult	-.03	.06	.01	-.20	-.13	.10	.23	.07	.17	-.09
Percent time w/adult (incl. group)	.19	.12	.25	.25	.28	-.04	-.12	.12	-.08	.16
Percent time w/adult only (no peer)	.05	.03	-.04	.23	.25	-.03	-.14	.08	-.15	.12
Associative play with same-sex peer(s)	-.01	-.00	-.23	-.09	.10	.26	.11	-.09	.28	.08
Associative play with only one peer	.06	.06	.07	-.24	-.02	.25	.02	.08	-.04	.09

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TABLE I, cont'd

Social interaction variables	Tests									
	Pict. comp.	Blk. des.	Geom. des.	Clas.	Comp.	It scale	Role-taking	Penny test	Inter-pers. perc.	Moral judg.
Ratings										
Peer leader	.14	.19	.03	-.01	.45*	.18	.16	.20	.45*	.11
Engages in hostile behavior	-.02	.15	-.09	.14	.10	-.23	.08	.05	-.02	.26
Dependency	-.06	-.27	-.13	-.17	-.24	-.06	.15	-.19	-.28	.04
Forcefully goes after what wants	.09	.18	-.04	.08	.45*	.15	.09	.18	.25	.07
Self-starting and self-propelled	.14	.24	.17	.06	.49*	.21	.04	.23	.33*	.11
Lacks ability to get along with others	-.27	-.07	-.13	.04	-.48*	-.35*	-.14	-.10	-.26	.13
Other children seek his company	.10	.18	-.06	-.02	.43*	.25	.06	-.00	.34*	-.00
Other										
Popularity among peers	.21	.28	.18	.11	.32*	.24	.47*	.11	.30	.21

* $p < .05$