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ABSTRACT

In this study, preferences for activities with people vs. objects were examined in preschool children and related to two kinds of intellectual abilities. Children with high object orientation were expected to be relatively advanced in organizing and classifying physical objects. In contrast, children with high people orientation were expected to be relatively advanced in social kinds of knowledge. Subjects used in the study were 38 white, middle class children; their mean age was 4 years and 10 months. Data were gathered from these sources: (1) observation of the children during a free play hour in nursery school; (2) four tests of knowledge of the physical environment; (3) six tests of social knowledge; (4) a sociometric measure of peer popularity; and (5) ratings on the qualitative aspects of each child's play behavior. Findings indicated that object-oriented children did perform better on tests of ability to organize and classify physical materials. No relationship was found between people-oriented children and their social scores. Performance on the social tests was found to be related instead to greater popularity among peers and higher ratings on the quality of social behavior. In conclusion, two interactive models suggested by the results are discussed. (SDH)

Orientation to the Social vs. Physical Environment: Relationship to Intellectual Abilities of Preschool Children*

Kay D. Jennings

Today children are generally assumed to play an active role in the development of their intellectual abilities. Through interactions with their environment, children develop and modify concepts about the nature of the world. This view implies that if children show consistent preferences for different activities then they should be developing different kinds of intellectual abilities -- even in similar environments. Research data is almost totally lacking on the relation of children's activity preferences to their intellectual abilities.

In the present study, preferences for activities with people vs. objects were examined in preschool children and related to two kinds of intellectual abilities. The dimension of people vs. object orientation was chosen for study because prior research by Emmerich (1964) has suggested that this dimension is a stable and prominent aspect of children's behavior throughout the two years of nursery school. Furthermore, people and object preferences might be expected on reasonable grounds to be associated with specific intellectual abilities.

Children with high object orientation were assumed to have acquired considerable experience manipulating physical objects; they were expected, therefore, to be relatively advanced in organizing and classifying physical objects. In contrast, children with high people orientation were expected to have acquired considerable experience

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interacting with people; they were expected to be relatively advanced in social kinds of knowledge, e.g., role-taking ability and knowledge of sex-role norms and moral norms.

As these particular intellectual abilities developed, they were expected to 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. Thus, orientation and knowledge were expected to mutually influence each other.

Subjects

Subjects for this study were 38 white, middle class children from three suburban nursery school classes. The mean age was 4 years and 10 months. There were 22 boys and 18 girls.

Observational measures

The children were first observed during their nursery school free-play hour in order to determine the proportion of time spent in interactions with people and objects. The free-play hour was chosen for observations because both people and objects were available and the child was free to choose his own activity. Prior to the collection of data, reliability was established.

Two potentially independent aspects of play behavior were recorded in order to obtain converging measures of People vs. Object Orientation. One of these aspects was the interpersonal Context of play, which consisted of the familiar categories of Parten and Newhall (1943):

solitary, parallel, associative, and cooperative. The other aspect of behavior was the child's Focus of attention, which was determined mainly by where the child's eyes were directed. Possible categories were people, object, both and other; 'other' consisted of activities that could not be adequately described as attention to people or objects, such as play with pets or listening to music.

In addition to Focus and Context, the frequency of various kinds of social behavior were recorded.

Tests

Following these observations, the children were tested on the two kinds of intellectual abilities. Proven factor-pure tests would have been ideal; however, there were no such tests available. So instead, several tests of high face validity were chosen to measure each ability. Taken together, each group of tests was expected to provide a heterogeneous measure, encompassing several facets of each ability.

Four tests of knowledge of the physical environment and six tests of knowledge of the social environment were used in the present study. More social tests than physical tests were used because test development in the area of social knowledge seemed less advanced. The tests of physical knowledge assessed ability to organize and classify physical

materials. The social tests assessed knowledge of sex-role norms, understanding of reasons for social conventions, role-taking ability, perception of another's emotions, and moral judgment.

Scores on each set of tests were standardized and then added to form two summary scores. It was assumed that these two summary scores would be a better assessment of each type of ability than any single test. Table 1 lists the specific tests in each group.

Other measures

In addition to the observational variables and tests, two other measures were obtained. A sociometric measure of peer popularity was derived from the number of times a child was chosen as best friend by the other children in his class. In addition, ratings were made on qualitative aspects of each child's play behavior.

Before presenting the results, the independence of the various measures should be stressed. The observations and ratings were done by an experienced nursery school teacher who was naive as to the purpose of the study. The testing was done by myself; and the measure of popularity was obtained directly from the children themselves.

Results

The observed measures of the interpersonal Context of play and the [illegible] of attention were found to be highly correlated (r=.75, [illegible]). These two measures were, therefore, summed to form a single index of People vs. Object Orientation. The sizeable correlation between these two potentially independent measures suggests that differences in preferences for activities with people vs. objects are a meaningful characterization of children's play behavior.

The main focus of interest in the present study was on the possible relationship of orientation to intellectual abilities. People vs. Object Orientation was found to relate to scores on the physical tests ($r = -.41$, $p < .01$); however, orientation was not related to scores on the social tests. Theoretical expectations were thus partially fulfilled. Children who spent relatively more time in play with objects performed better on tests of ability to organize and classify physical materials. Spending more time with people, however, did not relate to better performance on tests of social knowledge. The correlation between orientation to objects and physical knowledge seems to provide some evidence for the notion that preferences for activities with objects provide opportunities for more learning about the physical environment. It also suggests the converse notion that increasing physical knowledge strengthens preferences for activities with objects because of increased success and more ideas for things to do.

Possible questions about this interpretation were raised by an unexpected association between orientation towards objects and more interactions with adults. Please turn to Table 2 which presents correlations between the Orientation index and other nursery school behaviors. The most important correlations are with the observed social behaviors (the last group of correlations in the table). This group of correlations showed an interesting reversal; children who spent relatively more time with objects interacted less frequently with peers (as expected) but more frequently with adults than did other children.

The larger number of interactions with adults on the part of more object-oriented children raised a couple serious questions of interpretation. First, perhaps greater object orientation did not indicate intrinsic interest in objects (as assumed) but instead was simply the result of an immature dependence on adults, accompanied by general timidity with peers. The data, however, provide no support for this position as Orientation was not associated with greater dependency, nor was there any evidence of timidity in interactions with peers. Thus, the greater interest in objects on the part of these children seemed intrinsically motivated.

A second question of interpretation was the meaning of the relationship between orientation and physical test scores. Perhaps better performance on the tests of physical knowledge was due to the higher frequency of interactions with adults, rather than the higher frequency of interactions with objects. The data do not support this position either, however, as no relationship was found between frequency of interactions with adults and scores on tests of physical knowledge. Thus, an interpretation relating preferences for interactions with objects to physical knowledge, via enhanced intrinsic motivation, seems to reflect the present findings better than other plausible hypotheses.

Additional support for this interpretation is found in the specificity of the relationship between physical knowledge and orientation. Table 3 presents correlations between the various nursery school behaviors and the two types of tests. Looking at the first column, orientation clearly showed the strongest relationship

to physical knowledge and, indeed, almost the only significant relationship among the present variables. Thus, preferences for activities with objects was the best predictor of ability with objects.

In contrast to physical knowledge, social knowledge was predicted, not by preference measures, but by qualitative aspects of social behavior. Looking at Table 3, social tests were associated with popularity and with qualitative ratings. Specifically, better performance on the social tests were correlated with the frequency of being chosen best friend by the other children, and with higher ratings on peer leadership, forcefulness, and self-starting, and with lower ratings on the lack of ability to get along with others. Thus, children who were most socially-knowledgeable might be described as more socially competent. The lack of relationships between social knowledge and the observed social behaviors is consistent with this impression because frequencies of these social behaviors do not seem to indicate degree of social competence. This pattern of findings suggested that social knowledge is linked to the quality of social behavior; children who are popular and seen as peer leaders show greater intellectual development in the area of social knowledge.

The above findings are applicable to both boys and girls as virtually no sex differences were found; the data were examined both by means of t-tests and by separate correlation matrices.

Summarizing these findings, children who spent relatively more time in play with objects were found, as expected, to perform better on tests of ability to organize and classify physical materials. Contrary to expectations, no relationship was found between greater orientation

to people and performance on tests of social knowledge. Instead of orientation, greater popularity among peers and higher ratings on the quality of social behavior were found to relate to performance on these social tests.

Discussion

Conceptually, these results suggested two distinct interactive models. The first model, suggested by the relationship between interest in and knowledge of the physical environment is based on concepts from Piaget and Hunt. Through interactions with their environments, infants and young children gradually develop concepts of the inanimate 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 already somewhat acquainted. The more interactions they have with these aspects, the more detailed and differentiated the concepts they develop about them and the more likely they are to attend to subtle differences in these aspects in the future. Thus an interactive system is established in which interest in the inanimate environment leads to greater knowledge of that environment; and, in turn, greater knowledge leads to increased interest.

For the social environment, interest and knowledge apparently do not become intertwined in a similar manner. Instead, the quality of social behavior apparently forms an interactive system with level of social knowledge. Such a reciprocally interactive system is easily conceptualized. Well developed concepts of the social world should

assist children in forming satisfying relationships with others; conversely, more positive feedback from other people should provide a more favorable climate for learning social roles, expectations, etc.

In conclusion, a child's preferences for activities with objects may develop his ability to deal with the physical world, and increasing ability in this area may then, in turn, strengthen his preferences for objects. Social knowledge, on the other hand, seems more closely tied to qualitative aspects of social behavior, rather than to preferences for social activity.

Table 1

List of Tests Used to Assess Physical and Social Knowledge

Tests of physical knowledge

1. Picture Completion test from the Wechsler Preschool and Primary Scale of Intelligence (WPPSI)
2. Block Design test (WPPSI)
3. Geometric Design test (WPPSI)
4. Meyer's et al test of object classification (Meyer's, Dingman, Orpet, Sitkei, and Watts, 1964)

Tests of social knowledge

1. Comprehension test (WPPSI)
2. Flavell's tasks of role-taking ability (1968)
3. Devries' penny test of role-taking ability (1970)
4. Borke's test of Interpersonal Perception (1971)
5. Irwin and Moore's moral judgment stories (1971)
6. The It Scale for Children

Table 2

Correlations between People vs. Object Orientation and Other Nursery School Behaviors (N=38)

Nursery-school behaviors	People vs. object orientation[a]
Sociometric measure	
Popularity among peers	.23
Ratings	
Peer leader	.28
Other children seek his company	.36*
Forcefully goes after what wants	-.02
Self-starting and self-propelled	-.03
Lacks ability to get along with others	-.32*
Dependency	.05
Engages in hostile behavior	-.06
Observed social behaviors during play	
Seeks attention of peer	.33*
Expansion of play with peer	.07**
Social contact with peer	.52**
Self-assertion to peer	.25
Number of social behaviors to peers (summary)	.76**
Seeks attention of adult	-.23
Expansion of play with adult	-.29
Social contact with adult	-.38*
Number of social behaviors to adults (summary)	-.36*
Use of another as resource (peer or adult)	-.13

* $p < .05$
** $p < .01$

[a] Higher scores on People vs. Object Orientation indicated relatively more time spent in interactions with people than objects.

Table 3

Correlations between Tests of Physical and Social Knowledge and Nursery School Behaviors (N=38)

Nursery-school behaviors	Tests	
	Physical Knowledge	Social Knowledge
Orientation		
People vs. object orientation[a]	-.41**	.07
Sociometric measure		
Popularity among peers	.29	.47**
Ratings		
Peer leader	.13	.44**
Other children seek his company	.07	.31
Forcefully goes after what wants	.11	.34*
Self-starting and self-propelled	.22	.40*
Lacks ability to get along with others	-.16	-.34*
Dependency	-.23	-.17
Engages in hostile behavior	.07	.07
Observed social behaviors during play		
Seeks attention of peer	-.02	.06
Expansion of play with peer	-.34*	-.00
Social contact with peer	-.10	.23
Self-assertion to peer	-.04	.00
Number of social behaviors to peers (summary)	-.26	.13
Seeks attention of adult	-.06	-.10
Expansion of play with adult	.11	.07
Social contact with adult	.12	.07
Number of social behaviors to adults (summary)	-.04	-.08
Use of another as resource (peer or adult)	-.16	-.22

* $p < .05$
** $p < .01$
[a] Higher scores on People vs. Object Orientation indicated relatively more time spent in interactions with people than objects.