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THE DEVELOPMENT OF SOCIAL COGNITION IN BLIND CHILDREN

City University of New York

PH.D.

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Allan Gelber

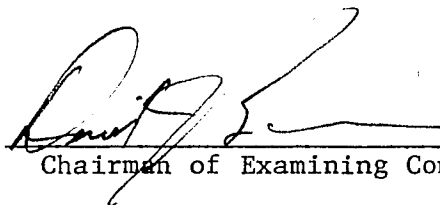
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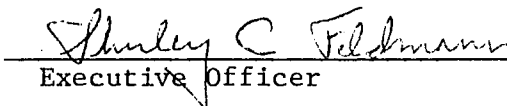
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This manuscript has been read and accepted for the Graduate Faculty in Education in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

April 24, 1980
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Abstract

THE DEVELOPMENT OF SOCIAL COGNITION IN BLIND CHILDREN

by

Allan Gelber

Adviser: Professor David J. Bearison

The purpose of the present study was to examine the development of blind children's social cognitive understanding, and further define the role of vision in social cognitive functioning. While Piaget does not claim that vision is necessary for adequate cognitive development, he did posit a possible delay in the attainment of some capabilities (Piaget in Gottesman, 1976) due to impoverished visual schemes.

Although most of Piaget's work has focused on children's acquisition of physical concepts, Piaget also postulated a parallel structural development of social cognition (Piaget, 1970). Social cognition being defined as the understanding of people (self and others), and social relationships.

In the present study three tasks were used to assess the social cognitive coordination of multiple perspectives in 47 sighted and 41 congenitally blind males and females, ranging from five to eleven years of age. The children were of normal intellectual and emotional functioning, and the blind children had no other physical handicaps.

In the first task, designed to assess sensory perspective taking, each child was presented with six common objects (a fork, pencil, toothbrush, cap, scissors, and hammer) one at a time, to be manipulated and placed appropriately in the experimenter's hand.

In a hypothetical dilemmas task, two stories containing social conflict situations were read to each child. A series of questions followed to determine the degree to which the child could understand

the story characters, people in general, and him or herself. In the projective perspectives task, the experimenter described to each child three characters in a specific setting. The child was then asked to make up a story involving all the characters, and to retell the story from the perspective of each character.

Three major hypotheses were tested by multivariate analyses of the data. They concerned: (a) the sequential development of social cognition from preoperational to operational stages with increasing age; (b) the existence of a delay in the social cognitive development of blind children; and (c) the tendency for this discrepancy between blind and sighted children to decrease with age. Sex, age, and visual condition were independent variables, and scores on the three social cognitive tasks, the dependent variables.

Results supported the developmental nature of social cognitive awareness in both blind and sighted children. On the sensory impressions task there was a significant difference at age six but not at age eight or ten between the blind and the sighted children. A significant difference between the blind and the sighted was found on the hypothetical dilemmas task at age eight. These results supported the hypotheses of delays in social cognitive functioning in blind children, and a decrease in this disparity with age. Differences between the sighted and the blind were not significant on the projective perspectives task. No sex effects were found.

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I would like to thank Dr. Alan Gross, whose methodological and statistical advice helped pull it all together; the many people at the various agencies and schools that I visited across the United States; the parents and children who lent their valuable time and effort; and the U.S. Office of Education (HEW), who provided financial assistance for this research (Grant #G007701992).

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CHAPTER I

INTRODUCTION

The purpose of the present research was to study the effect of blindness on the cognitive development of five- to eleven-year-old children. Blind children have a different sensory experience of the environment than do normal children, yet it is not clear why or how blind children progress from sensory-motor to concrete operational thinking, a developmental path outlined by Piaget (1960; Inhelder & Piaget, 1964). According to Piaget cognitive development proceeds in a series of stages associated with changes in cognitive structures based on knowledge derived from interactions with the environment.

Much of Piaget's understanding of sensory-motor behavior in children from birth to two years of age is based on data about children's reactions to visual experiences. He described three general substages in the development of visual schemas: (a) seeing, as a passive reflexive response to visual stimulation; (b) looking, a more active attempt to register objects visually, especially when they are moving; and (c) coordinating looking with other schemas, as in hand-eye coordination. In regard to the third phase, Flavell commented: "The coordination between vision and grasping ... is a critical one which will, as no other, eventually extricate the child from the stifling egocentrism of early infancy" (1963, p. 101).

Yet Piaget maintained that vision was not essential to cognitive development. In a lecture at Columbia University he said:

Blind infants have a great disadvantage of not being able to make the coordinations in space that the normal children are capable of doing during the first year or two, so that the development of sensory-motor coordinations of actions at this level are seriously impeded in blind children. For this reason we find that there are even greater delays in their development at the level of representational thinking and that language is not sufficient to compensate for the deficiency in the coordination of actions. The delay is made up ultimately, of course, but it is significant and much more considerable than the delay in the development of the logic in deaf and dumb children. (Piaget in Gottesman, 1976, p. 94)

Thus, Piaget concluded that the blind eventually overcome their ego-centric view of the world, but he did not say how.

Other investigators have presented a variety of explanations regarding the role of vision in cognitive development. Rubin (1964) discussed vision as a "perceptual organizer." He emphasized that the lack of visual cues in the blind created considerable difficulty in their ability to mentally represent other sensory experiences and impaired their capacity to organize and operate with these representations. Similarly, Fraiberg (1968, 1969) and Burlingham (1979) spoke of the "integrating" effects of vision on all sensory experience, and Gomulicki (1961) and Tillman (1967a) referred to the inability of blind children to adequately organize and store mental representations in other sensory modalities.

According to Warren, Anooshian, and Bollinger (1973), congenitally blind children* lack a "visual frame of reference" that is present in sighted and adventitiously blind children*. "Even though the later blind child does not receive any visual input, the organizational function of his [early] visual experience continues to be effective" (Warren et al., 1973, p. 152). Finally, a number of investigators have suggested that delays found in the cognitive development of the

*See Appendix D for Definitions of Terms

congenitally blind were due to the absence of the mediating function of imagery (Knots & Miles, 1929; Worchel, 1951; McKinney, 1964; Witkin, Birnbaum, Lomonoco, Lehr & Herman, 1968). For the adventitiously blind, visual imagery could serve as a "mediator," whereas the congenitally blind have to rely on aural and motor images.

The following review of literature focuses on research comparing the development of blind and sighted children's acquisition of concepts of the physical environment. There is considerable evidence (Stephens & Simpkins, 1973) that blind children are anywhere from one to eight years behind their sighted peers developmentally, and that this delay continues into adolescence. The review is organized according to the following domains of cognitive functioning: (a) classification and conservation ability, (b) spatial conceptual ability, (c) other areas of conceptual development, and (d) general intelligence.

With the exception of Stephens and Simpkins (1973) work on moral judgment and moral conduct, there has been no research on blind children's acquisition of social concepts regarding their knowledge of themselves, others, and the relationship between the two. Thus, the role of vision in social cognition is not known. Therefore, the review of literature will be followed by a conceptual framework for investigating social cognitive functioning in the blind. The importance of understanding blind children's social cognitive awareness will be discussed following a description of social cognitive research with sighted children.

Cognitive Development in Blind Children

Classification and Conservation Research

Classification and conservation tasks have been used as the most common indicators of children's concrete operational thinking. Conservation tasks examine children's acquisition of quantitative

concepts of mass, weight, and volume of objects in the face of perceptual changes. For example, after a child has made a ball of clay exactly like the one given to him or her, and the experimenter has flattened one of these balls into a pancake or stretched it into a sausage, the child is asked if the amount of clay has remained invariant (i.e., conserved) (Flavell, 1963). Classification tasks evaluate the child's ability to group things together in terms of their common characteristics. This includes understanding the relation between a class and its subclasses (e.g., "Are there more boys or children in the second grade?").

Only a few studies have used these tasks to study the comparative development of blind and sighted children. Those studies described below have generally aimed at either the evaluation of blind children's intellectual development as to degree of impairment, or the understanding of the development of operational thinking in sighted children.

Hatwell (1966) assessed blind and sighted children's ability to conserve mass. She found that although blind children followed the same sequence of cognitive development as sighted children, their rate of development was slower; they functioned about two years behind their sighted peers. Cromer (1973) assessed discontinuous quantity conservation and conservation of mass, and found no delays in blind children as compared to sighted peers five and one-half through nine and one-half years of age. Cromer criticized Hatwell's study for not having an adequate number of sighted children in the control group, and for using tasks that were not comparable for the blind and the sighted groups. He also considered that the blind and sighted groups were not adequately matched.

Miller (1969) found that blind children had not mastered the conservation of weight, substance, or volume by the age of ten, and hypothesized that they might never completely master it. Stephens and Simpkins (1973) employed a series of twenty-six tasks to assess the development of reasoning in congenitally blind and sighted children from six to eighteen years of age. They found the blind averaged delays of eight years on measures of conservation (substance, weight, volume, etc.), classification (animals, beads, geometric figures, etc.), operativity and symbolic imagery (rotation of squares, beads, etc.), and a measure of formal operations (combination of liquids).

Tobin (1972) in a study of the conservation of substance found that the "best" of the blind children attained conservation as early as six or seven years of age, and therefore, were equal to the "best" of the sighted. However, there was a greater spread among the blind children, with many not making conserving responses until beyond the age of nine or ten.

In his studies of blind children, Gottesman (1971, 1976) paid strict attention to selection criteria, such as degree of blindness, age at onset of blindness, and absence of other disabilities. He felt too little attention to these criteria was confounding others' results. In his research on conservation ability he found, as did Hatwell (1966), that blind children "followed the same developmental patterns as the group of sighted except that the rate of development of the blind was slower" (Gottesman, 1976, p.98). These results were explained "not by total blindness per se but of the younger child's reliance on less sophisticated sensory discriminatory abilities" (p.94). However, at the age of eight the blind began to gain on the sighted group, attaining parity at the age of eleven. According to Gottesman (1976), this phenomenon was the result of the older blind children's reliance on integrative processes of cognitive functioning unavailable to the younger child.

There have been several studies comparing blind and sighted children's classification abilities. Friedman and Pashner (1973) found that blind children between the ages of six and fourteen did not improve as rapidly or as consistently as their sighted peers. They showed an increasing disparity with age on both classification and seriation tasks. However, the visual nature of some of the tasks, as well as uncontrolled IQ factors independent of age, may have confounded the results of this experiment.

Higgins (1973) found that blind children did not lag behind in classification ability when compared to sighted children who were blindfolded. A delay was noted when the blind children were compared to sighted, non-blindfolded children. This delay was concluded to be a limitation of tactile perception rather than the result of a delay in the development of intellectual structures.

Delays were found for blind children in a majority of the conservation and classification studies. However, the rate of cognitive development varied, and the inevitability of the delays was questioned by some researchers. Some studies found the delays to be made up with age.

Spatial Conception Research

"Space is that part of the individual's world which involves the position of objects in their relationship to self, to each other, and to the spatial field" (Gibson, 1950 in Swallow & Poulson, 1973, p.139). There have been several different approaches to studying blind children's spatial thinking. One approach from the work of Piaget and Inhelder (1956) was concerned with children's developmental construction of topological, projective, and Euclidean spatial concepts. According to Piaget, spatial concepts are internalized actions and not merely

images of external objects or events. At each stage in development the child's mental operations are transformed. Vision is not necessary for spatial conceptual development, but blind children might experience delays. Swallow and Poulsen (1973) followed the development of spatial thinking in low vision children from ages twelve to eighteen (visual acuity* ranged from 20/70 to 20/400). They used five tasks developed by Piaget to assess how children deal with topological, projective, and Euclidean space. The authors found that these children "were not able to achieve total decentralization of thought, thereby not allowing their spatial concepts to develop independent of perception and action.... According to Piaget, subjects at the chronological ages in this study should be able to decentrate their thoughts from actions" (p. 143).

Another approach to the study of spatial conception dealt with what Warren et al. (1972) have called motor behavior. This area of investigation included both near space tasks such as form recognition (Worchel, 1951), and far space tasks, such as whole body locomotion and orientation in space (Worchel, 1951; Cratty, 1967).

Worchel (1951) tested blind and blindfolded sighted children ranging in age from eight to twenty-one years on their ability to draw, describe, and pick out a replica of a cutout block that he presented to them. He found that the sighted performed better than the blind in their drawing of the cutout block, but that blind children performed as well as the sighted in their ability to verbally describe the block and pick out a replica.

In the same study, Worchel had the children tactilely pick out, from a series of four blocks, one which corresponded to the combination of two forms which he had previously placed separately in each hand. A

*See Appendix D for Definition of Terms

third task required the children, after being led along a right angular path, to return to the starting point along an hypotenuse. Worchel found that the sighted children were significantly better than the blind children on both these tasks.

Gottesman (1971) in a task modeled after one presented by Piaget and Inhelder (1956) and similar to Worchel (1951), asked blind and sighted children of two to eight years of age to haptically select from a group of four, an object identical to one that had been previously presented to them. He found that the blind and sighted children did not differ in this measure of spatial conceptual ability. Supporting results came from Ewart and Carp (1963) and Block (1972). No differences were found between blind and sighted four to seven-year-old children in two studies measuring tactual recognition of common household objects (Simpkins, 1979a), or topological and Euclidean shapes (Simpkins, 1979b).

Menaker (1966) found a marked difference between sighted and blind children in the improvement with age on a task which measured performance on three forms of a size-weight illusion. Axelrod (1959) found blind children lagged significantly behind sighted children on a tactile task, but no difference between sighted and adventitiously blind children was found. Gomulicki (1961) found five-year-old blind children lagged significantly behind sighted children on a wide range of tactile and auditory sensory skills. He concluded that the absence of the integrative function of vision made "the task of developing effective use of other senses a particularly difficult one" (p. 232).

A third approach to the study of spatial conception in the blind was used by Hartlage (1969). He compared blind and sighted children's use of spatial and non-spatial relational concepts. Space questions involved positional referents such as in front of, in back of, and to the right of.

Other questions focused on comparisons of personal characteristics such as the use of smarter, friendlier, and braver. An example of a space question was "John is in front of Mary. Mary is in front of Bill. Bill is in front of John____, in back of John____, can't say____" (p. 180). An example of a nonspace question was "John is smarter than Mary. Mary is smarter than Bill. Bill is smarter than John____, not as smart as John____, can't say ____" (p. 180). Differences were found between the blind and the sighted children on questions involving spatial relations, but no differences were found on questions involving non-spatial relational concepts. These results implied that there were not general cognitive delays in blind children, but rather delays specific to certain aspects of performance.

In a review of the literature on the role of vision in the development of spatial concepts, Warren et al. (1973), concluded that adventitiously blind children performed some tasks better than congenitally blind children, some tasks worse, and some the same. Early vision provided a "frame of reference" which sometimes aided in task performance and sometimes did not. This parallels the overall results of comparisons between blind and sighted children presented thus far, namely, that the blind are at a greater disadvantage in some tasks, and not in others.

Concept Development in Other Areas

Witkin, Goodenough, and Karp (1967) found that the ordinary progression of cognitive development in sighted children is from relatively global to relatively articulated cognitive functioning. Witkin et al. (1968) found that blind children between the ages of twelve and nineteen lagged significantly behind their sighted peers in this process. A battery of tasks was used in their study. A tactile embedded-figures test required children to feel a simple figure with their fingers, and then find this figure in a complex design in which it was embedded. A second task

required the children to reproduce a target design by arrangement of a set of blocks. The blocks and target designs were the same as those in the Wechsler Block Design subtest, except that the patterns were represented by different textures rather than by color. A third task, designed to determine the degree of articulation of body concept, involved the molding of a one pound lump of clay into the shape of a person. In these tasks blind children showed significant lags.

Blind children, however, were superior to the sighted in an auditory embedded-figures test which seemed to require sustained auditory attention, and the performance of blind and sighted on verbal-comprehension material was similar. Witkin et al. (1968) noted the "marked unevenness in level of functioning [of blind children] from one cognitive area to another" (p. 782).

Boldt (1969) in fourteen different studies of children between the ages of seven and seventeen on scientific and technical problems, found the blind to lag regularly behind the sighted. Boldt's explanation of his findings was that vision promotes the "progressive disassociation of subject and object" necessary for "real scientific understanding" (p. 7). According to Boldt, vision provides exact conceptions of causal relationships not obtainable from other sense modalities. This supported Cutsforth's (1951) conclusion that "the most objective sort of human experience is visual experience. It gives detail which no other sense can provide" (p. 4).

Blind children during the first year of life lagged behind their sighted peers in expressions of initiative, such as the gesture to be picked up or embraced (Fraiberg, 1968). This was explained as a "result of not being able to see the consequences of one's actions, to feel that

one is an effector, that one can cause events" (Fraiberg, 1968, p. 276). In addition, Fraiberg (1977) concluded that the developmental delay experienced by blind children in creeping behavior was related to lags in search behavior usually propelled by hand-eye coordination.

Warren (1977) traced the cognitive development of blind children through the sensory-motor period (birth to two years), and discussed some of the implications of visual impairment. He supported Fraiberg's (1968) conclusions of comparable motor development for blind and sighted infants in the early months, and divergence beginning with the failure of the blind infant to reach for objects.

Evidence of protracted separation anxiety in young blind children (Fraiberg, 1968) was explained by the notions that delays in object constancy (psychoanalytic term for maintaining a memory of an absent person) and object permanence (term used by Piaget for maintaining a memory of an absent object) were caused by lags in search behavior, and the reverse, that blind children failed to sustain search behavior because of a lag in object permanence or object constancy (Warren, 1977).

Warren (1977) added, that other delays evidenced by blind children in sensory-motor development were a result first, of less information about the world, and more importantly the loss of the continuity of visual experience. Second, he said the delays were a result of the lack of the organizational function of vision.

Dorothy Burlingham, who also investigated the cognitive development of blind children (Burlingham, 1979), noted that muscular development is inhibited in blind children as a protection against danger, as in impulsive actions and search behavior. Further, blind children do not have the same ability as their sighted peers to satisfy requirements of doing by themselves. Frustrating experiences and the necessity of help

may lead to resentment of that help.

Burlingham questioned the processes involved in and the timing of blind children's awareness of the differences between themselves and sighted others. This knowledge would necessarily effect the nature of their social interactions.

Intelligence Research

Overall, the blind do not do as well as their sighted peers in studies of intelligence as assessed by standardized IQ tests. Hayes (1941) reported that between the ages of ten and seventeen the blind did not perform as well as the sighted in arithmetic reasoning tasks on the Wechsler-Bellevue Scale, and that the blind tested lower on all reasoning items of the Binet test.

Tillman (1967b), using the Wechsler Intelligence Scale for Children, concluded that blind children continued to "approach abstract conceptualization from a concrete and functional level" (p. 112) at later ages than their sighted peers. He hypothesized that the delay was due to a "lack of integration of educational experiences" (p. 112) caused by a lack of vision.

Similar results were found by Zwiebelson and Barg (1967). They gave the vocabulary subtests of the Wechsler-Bellevue to blind and sighted children between the ages of eleven and thirteen, and found that blind children did not use abstract concepts as much as children with normal vision. However, Gilbert and Rubin (1965), Tillman (1967a), and Juurmaa (1967) have all cautioned against the use of IQ scales for comparison of blind and sighted children. According to Juurmaa (1967)

It seems inappropriate, in principle, to compare blind and sighted through IQ scales. If the battery includes all the ordinarily employed items, it is, of course, obvious the blind will prove inferior on certain performance scale components simply because of their technical helplessness. On the other hand, if different items are used, performance comparability is lost. (p. 3)

Juurmaa's caution concerning the comparability of blind and sighted children in intelligence research agreed with Warren's (1976) position that comparisons between blind and sighted children were difficult in general. Warren believed that this was because much of the research on the blind had been done using research models "borrowed with little or no modification from research with sighted children ... and the failure to specify and analyze adequately certain important characteristics of the samples" (p. 53).

Comparative research on the developmental differences in physical knowledge between blind and sighted children has yielded mixed results. The nature and rate of cognitive development of blind children, and the probability of delays need further investigation. Questions of general versus specific cognitive delays, and apparent inconsistencies in some areas of research are also unresolved.

Social Cognition

Although much time is spent thinking about the physical environment, one's most important thoughts are about people. How one conceptualizes the social environment has only recently become a topic of serious investigation. Social phenomena about which one develops knowledge includes other persons, their feelings, thoughts, intentions, the self and the self's thought processes, social relations like friendship, authority, love, and social-regulatory concepts like fairness, custom, and convention (Damon, 1979). Social cognition has also been defined to include communication skills (Glucksburg, Kraus, & Higgins, 1975), and moral judgment (Flavell, 1977).

Social cognitive research has been conducted primarily from two major theoretical perspectives, those of social psychological theory and cognitive developmental theory. Social psychologists have inquired largely about the accuracy of people's judgments of others and the cognitive processes used in making these judgments (Baldwin, Baldwin, Hilton, & Lambert, 1969).

Piaget has been indirectly responsible for the developmental research on social cognition. Social cognitive development, according to him, proceeds from preoperational to concrete operational conceptions of the world. It has been clearly substantiated that adults are able to engage in social cognitive conceptions which young children are not (Feffer & Gourevitch, 1960; Flavell, Botkin, Fry, Wright, & Jarvis, 1968; Selman, 1971).

Several different approaches to studying social cognitive development of sighted children have been used. The following literature review describes some of the more prominent research studies with sighted children. How blind children develop social cognitive knowledge can only be inferred, since a search of the literature found only the work of Stephens and Simpkins (1973) in this area.

In The Child's Conception of Space, Piaget and Inhelder (1956) discussed the development of children's spatial understanding from topological to projective and Euclidean space. In the area of projective space, Piaget and Inhelder developed an intriguing task to study children's understanding of the spatial perspective of another person. Children were seated in front of a three dimensional model of a mountain landscape, and asked to choose from a series of photographs the ones that best represented the respective views that a doll seated at different positions around the model would see. The children's ability to accurately pick the doll's views, together with their level of explanation, indicated the degree of development of their knowledge of projective space representation.

Six- to seven-year-old children, in the early period of concrete operational thinking were able to understand that a doll, seated at different positions around the model, saw something different than they saw, but they could not specify the difference. The children's

cognitive framework had changed from an egocentric conception, to one which showed an increasing tendency to decenter. Specifically, "from the cognitive state in which the cognizer sees the world from a single point of view only--his own--but without the knowledge of the existence of viewpoints or perspectives and, a fortiori, without awareness that he is the prisoner of his own" (Flavell, 1963, p. 60), to an increasing ability "to shift attention from one aspect of an object or situation to another" (Rubin, 1973, p. 103).

Piaget's approach to children's perspective of space has influenced thinking about their perspective of the social environment. According to Piaget (1970), the same general stage of cognitive development is reflected in the child's approaches to problems in both the physical and social domains. The concepts of egocentrism and decentration "also apply to the interpersonal sphere and point to the development in the ability to put oneself in another's place and view the world through his eyes" (Selman & Byrne, 1974, p. 803).

Feffer (1959) extended the concepts of egocentrism and decentration to cover the structuring of social content as revealed in a projective perspective coordination (role-taking) task. Feffer and Gourevitch (1960) used this task to study the development of the coordination of multiple perspectives in children. The children were asked to construct a story then retell it from the perspective of each story character. Children as young as six years of age were found to be able to "refocus" on the individual characters (decenter), but the story line was inconsistent (no balance). At seven or eight, the children could coordinate multiple perspectives.

Flavell et al. (1968) found that by using simplified tasks with fewer verbal requirements, coordination of spatial perspectives were evident at earlier ages than those posited by Piaget or found by Feffer and Gourevitch (1960). Findings supporting the ability to coordinate multiple perspectives at earlier ages have come from Masangkay, McCluskey, McIntyre, Sims-Knight, and Flavell (1974). Shantz (1975) concluded that "the average age of spatial role taking depends heavily on task factors and type of response required" (p. 272).

Selman and Byrne (1974) focused on the development of social cognition within the context of moral dilemmas similar to those developed by Kohlberg (1969), but modified for young children. The developmental sequence of intellectual structures outlined by Selman and Byrne closely paralleled that reported by Feffer (1959). The stages of perspective-taking development described by both Selman and Byrne and Feffer will be presented in detail in this paper.

Chandler and Greenspan (1972) showed cartoon sequences to children between the ages of six and twelve. The task was to explain the character's situation to a third person who was subsequently shown only part of the cartoon sequence. The degree to which the children used privileged information in their retelling of the story was assessed. The authors found that errors in the process of social decentration persisted well into middle childhood, contrary to the findings of Borke (1971) that younger children were able to infer accurately the affective responses of others.

A popular area of research on the developmental ability to understand another's intentions has been that concerning children's moral reasoning. The major impetus for this again has been the work

of Piaget (1960). Shantz (1975) said "the ability to differentiate between events that are intended or not intended (accidental) and the ability to differentiate between types of intended actions, good or bad, are both clear developmental achievements" (p. 290). Children approximately six years of age "appear to be able to infer whether a person's actions are intended or accidental and to use such inferences in assigning blame or credit" (Shantz, 1975, p. 295).

Another area of social cognitive research has been concerned with developmental changes in children's open-ended descriptions of others. Livesley and Bromley (1973) found that the number and proportion of psychological descriptions in children's free description of familiar others increased significantly between the ages of seven and eight. That is, there was a shift in the focus of description from overt to covert qualities. Flapan (1968) assessed six- through twelve-year-old children's descriptions of unknown others whom they saw in film clips portraying episodes of social interaction. Flapan found that with increasing age, children offered more causal explanations of behavior, and made more inferences of thoughts and intentions not overtly expressed in the film clips.

Generality of Social Cognition

One should not assume that Piaget meant that six-year-old children are solely operational, logical, and discursive. What are the factors that determine whether or not children will conceptualize a situation freed from the pulls of the "here and now" of preoperational thinking? Higgins (1973) stated:

Although Piaget postulates that a 'general structure' underlies concrete operational thought, he emphasizes (Piaget, 1950; Inhelder and Piaget, 1964) that a concrete operation is not applied with equal facility in all situations. A concrete operation, by definition, structures only those actions which have actually been carried out. Such actions are, necessarily, task specific: hence, any operational structuring of them must be, likewise, task specific. It follows that there is no automatic generalization of concrete operational schemes from one task to another: a grouping must be constructed many times before it pervades behavior. (p. 73)

Indeed there is growing evidence (Borke, 1971; Liben, 1978) that egocentrism is not a fully pervasive characteristic of young children's thinking, but one significantly controlled by stimulus task variables. Ford (1979) in a review of research on the construct validity of egocentrism, concluded that the most common finding was a lack of relationship among measures of egocentrism.

Shantz (1975) in a review of research, stated that findings of generality of social cognitive ability ranged "from indications of no significant generality to a moderate significant degree of generality" (p. 301). She cited studies by Sullivan and Hunt (1967), Finley, French, and Cowan (1973), and Rothbaum (1973), who intercorrelated two or more social cognitive tasks and found no significant relationships, and studies by Rubin (1973), Van Lieshout, Leckie, and Smits-Van Sonsbeck (1973), and Kingsley (1971) who found significant intercorrelations among a variety of social cognitive tasks, such as spatial, communication, and perceptual tasks, as well as empathy.

Social Cognitive Research With Blind Children

There has been only one major study of social cognitive development with blind children. Stephens and Simpkins (1973) tested congenitally blind and sighted children ages six through eighteen on tasks of moral

judgment and moral conduct and found that there was a slight delay for the blind children. However, they stated that these delays were "inconsequential in comparison to the major deficits evidenced by the blind subjects on measures of reasoning" (p. 60).

Moral judgment was assessed by responses to situations involving lying, justice, and clumsiness and stealing. Significant differences were found on five of fifteen moral judgment variables. The authors noted that some of these differences may have resulted from the blind children's lack of complete familiarity with some of the situations and objects (rules of bowling), a lack of understanding of the instructions, and different interpretations of the stories involved. For example, in one story considering intention versus consequences, the situation involved a character being lost. Stephens and Simpkins noted that "the exceedingly traumatic interpretation the blind subjects gave to being lost probably influenced the final response" (p. 59).

Moral conduct was assessed by tasks designed to measure self control, truthfulness, persistence, and honesty. As with sighted children, acts of misconduct in blind children decreased as age increased. The authors added that despite efforts to make the tasks analogous for the blind and sighted children, lack of experience may have penalized the performance of the blind children.

Further research directed toward the understanding of social cognitive development of blind children is especially important because the blind must rely on other people to a greater degree than sighted children to effectively deal with the world. Extreme dependence as well as social isolation are problems for many blind children (Burlingham, 1979). The way in which a person regards others has an important effect on his/her

social behavior (Shantz, 1975). Therefore, teaching the blind to be independent yet socially involved requires also that they be socially aware. Social cognitive development may be more critical for the blind than for the sighted during much of their early development.

The study of social cognition in blind children assumes another dimension because of the current emphasis on integrating blind children into the normal school setting (i.e., mainstreaming). A temporary developmental delay may be made up by older blind children's reliance on integrative processes not available to younger children (Tillman, 1967b; Swallow & Poulsen, 1973; Gottesman, 1976). Intervention programs may also be effective (Stephens & Simpkins, 1977).

Research Objectives

Most developmental research with blind children has been oriented toward their acquisition of knowledge of the physical environment. The present study was designed to compare the social cognitive development of blind and sighted children. The focus of the study was the development of the ability to coordinate multiple perspectives. The following issues are reflected in the hypotheses:

1. Do blind children develop social concepts in the same sequence and at the same rate as their sighted peers, or do they evidence delays?
2. If delays are present, are they eventually made up, or do these delays persist?
3. Does social cognitive development in blind children proceed at a uniform rate across all tasks of social cognitive ability; that is, to what extent does development depend upon specific task variables?

Hypotheses

The present study tested three hypotheses concerning the nature and development of social cognition.

Developmental Hypothesis

Both sighted and congenitally blind children will show increased ability to coordinate multiple perspectives with age. This hypothesis follows from Piaget's position that all children progress sequentially from preoperational to concrete operational forms of thinking.

Developmental Delay Hypothesis

Sighted children will display superior perspective coordination at all ages compared to blind children. Since vision is the major sense modality of early childhood, young blind children will display a delay in cognitive functioning.

Make-Up Hypothesis

The disparity between sighted and blind children's ability to coordinate social perspectives will decrease with age. Blind children will "catch up" to their sighted peers.

Research Plan

Sighted and congenitally blind male and female children ranging in age from five to eleven years were selected. The age range was chosen because it covered the period of transition from preoperational to concrete operational thinking for sighted children. Children were administered three tasks involving different aspects of perspective coordination.

One task assessed children's ability to coordinate sensory perspectives vis-a-vis a series of objects. A hypothetical social dilemmas task examined both the understanding of self and interpersonal relations. A third perspective coordination task assessed children's ability to coordinate multiple perspectives in a projective situation.

These tasks were chosen for the following reasons:

1. The same tasks could be used to assess development of both sighted and blind children;
2. Clear and precise working definitions of the task variables with specific indications of their relationship to Piaget's conceptual model could be provided;
3. Individual task scores could give information on the generality of egocentrism across a variety of task variables;
4. The tasks were appropriate for the younger as well as the older children.

CHAPTER II

METHOD

Design

The experimental design of the study was a 3x2x2 repeated measures factorial design consisting of three between-subject factors. They were: chronological age, (six-, eight-, and ten-years); sex, (male and female); and visual condition, (congenitally blind and sighted).

Subjects

A congenitally blind group of 41 children and a sighted group of 47 children were administered the three social cognitive tasks. The congenitally blind children were totally blind (light perception* or less) at birth or became so during so during their first year of life. These children had no other physical or emotional disabilities, and were of normal intelligence. This judgment was based on IQ scores (when available) of 90 to 115, class placement, teacher evaluation, and the interviewer's appraisal.

The sighted group had normal vision, and an absence of other disabilities. They were of normal intelligence based on the same criteria as above, plus scores on the Metropolitan Achievement Test (1977).

Sighted and congenitally blind children were selected from three age levels: six, eight, and ten. Mean ages and standard deviations for each group are given in Table 1. The age range for the congenitally blind group at each age level was greater than that for the sighted group. Table 2 presents the number of children at each age, sex, and visual condition. A total of 42 males and 46 females was tested.

*See Appendix D for Definition of Terms

Congenitally blind children were tested in their homes or schools depending upon both the preferences of the parents and the individual state's operating procedures in California, Connecticut, Delaware, Florida, New Jersey, New York, and Pennsylvania. In New Jersey some children were tested at a summer camp.

Sighted children were all selected from a public school in Brooklyn, New York. They were randomly chosen (two out of every three children whose parents gave permission) from first, third, and fifth grades. Both sighted and blind children came from middle class families, and were predominately Caucasian.

Tasks

The children were tested individually, and the total time for the administration of the three social cognitive tasks was approximately forty minutes. To control for possible order effects both between and within the tasks, the tasks were presented in a counterbalanced order, as were the items within each task.

Task I - Coordination of sensory impressions. This task was a modification of a task used by Flavell et al. (1968) to assess social cognition in young sighted children. The children were seated at a small table opposite the interviewer. They were asked to manipulate and to identify six common objects--a pencil, fork, hammer, toothbrush, scissors, and baseball cap. To make the task comparable for both the sighted and blind children, the sighted children were blindfolded.

Table I
Mean Ages (and Standard Deviations) by
Age and Visual Condition

		Age Level (in years)		
Visual Condition		6	8	10
Sighted	M	6.5	8.5	10.4
	SD	(.38)	(.38)	(.36)
Blind	M	6.3	8.3	10.2
	SD	(.60)	(.56)	(.80)

After handling and correctly identifying each object and its use, the children were asked to hold the objects in their hands (or place the cap on their heads) as if they were going to use it; e.g.,

MAKE BELIEVE YOU ARE GOING TO EAT SOME MEAT.

HOW WOULD YOU USE THE FORK? SHOW ME.

If the children could not identify any object or its use, they were told what it was and shown how it was used. The children were then asked to

PLACE THE FORK IN MY HAND SO THAT I CAN

HOLD IT THE SAME WAY YOU ARE HOLDING IT.

Children received one point each time they properly manipulated the object demonstrating understanding of a change in perspective. Scores ranged from zero to six.

Task II - Coordination of perspectives in hypothetical interpersonal dilemmas. The children were told two stories. These were modifications of ones used by Selman and Jaquette (1977) and Selman and Byrne (1974). The stories were followed by a series of questions designed to assess their ability to coordinate multiple perspectives in social conflict situations. All responses were tape recorded and later transcribed.

The first story involved a decision that had to be made by one boy about whether or not to buy his friend a puppy for his birthday. The story was complicated by the fact that the friend had just lost his dog and said that he didn't want another one. The second story concerned a little girl's decision to climb a tree to help her friend rescue her kitten. The girl's dilemma was a promise she had previously made to her father not to climb trees.

The interviewer attempted to delve beyond the children's initial responses to determine underlying cognitive concepts or reasoning. There were two parts to the questioning procedure: the structured phase of the interview, during which standard questions were asked, and the open-ended phase, during which the interviewer formulated questions to further clarify or ascertain the children's highest stage level of social cognitive reasoning. The interviewer chose questions from the hypothetical story situation and also tried to elicit general statements about people and about the child's own experiences.

The scoring used was based on the five stages of the development of perspective coordination detailed by Selman and Jaquette (1977). Progress across stages was judged in terms of three interpersonal "issues:" (a) subjectivity - referring to children's conceptions of the nature of inner experience (thoughts, feelings, motives, etc.) and their relations within the individual, for example, whether someone can be happy and sad at the same time; (b) self-reflection - concerning children's knowledge of the self from a second point of view; and (c) personality - referring to children's conception of what makes individuals uniquely themselves, for example, "What kind of person is he?".

Generally, social cognition develops, according to Selman and Jaquette (1977), from an undifferentiated or egocentric view to the ability to coordinate multiple perspectives. In stage zero, children do not clearly distinguish their own perspective from that of another, and there is confusion between subjective and objective aspects of the

social world. At stage one children understand that different perspectives exist for different people in different social situations, and that the self and others have an inner mental life. At stage two children are able to view the self from another's perspective, and at stage three they are able to view the two-party interaction (self and other) from a third person's point of view. At stage four children have a much richer understanding of the depth of human interaction, as in the case of the communication of un verbalized unconscious feelings.

Zero points were given for stage zero responses, one point for stage one responses, etc. The range of scores was from zero to four. A more detailed description of the stages of development, the scoring procedure, the standard probe questions, and a complete interview with sample scoring, are contained in Appendix A.

Scoring was done by a graduate student in the Educational Psychology program at The Graduate School of the City University of New York, who was familiar with developmental stage sequence. Each set of stories was scored separately. The scorer had no knowledge of the ages of the children, their sex, or that some of the children were blind.

Task III - Coordination of multiple perspectives on a projective task. This task was a modification of one used by Feffer (1959) and Feffer and Gourevitch (1960) to accommodate blind children. Two story situations with three characters in each setting were described to the children. The children were asked to tell a story based on the settings and involving all three characters (initial story). The first situation involved a man, woman, and child in the kitchen. The woman was at the stove, the child was at the table, and the man was coming into the kitchen with his coat on and a package

in his hand. The second situation took place in a school classroom, where a boy and a girl were sitting at their desks next to one another and a teacher was standing behind the boy's desk.

After completing the initial story the children were asked to sequentially retell the story as it would appear from the point of view of each of the characters.

NOW I WANT YOU TO MAKE BELIEVE THAT YOU ARE

_____ (THE WOMAN, MAN, BOY), AND THAT

YOU ARE RIGHT IN THIS SITUATION. HOW DOES

THE _____ FEEL? HOW DOES THE _____

SIZE UP THE SITUATION? HOW DOES THE _____

SEE THE OTHERS?

All responses were tape recorded and later transcribed.

The children's ability to take the point of view of each character in retelling the story, and maintaining a consistent story line were scored according to a procedure by Schnall and Feffer (1974). The following categories were used in assessing the degree of perspective coordination: (a) no refocusing, (b) simple refocusing, (c) character elaboration, (d) perspective elaboration, and (e) change of perspective. There were a number of levels within each category which reflected the extent of thematic consistency of the story line.

If a child could not make up a story or could not retell it from the viewpoint of a given character, a score of zero was given (no refocusing). If a child took the role of a given character in his or her retelling of the story, a score of one, two, or three was given depending on the degree of consistency in the story line (simple

refocusing). If a child referred to a second character (elaboration) while telling the story from the perspective of the first character, a score of four, five, or six was given, again, depending on the degree of consistency in that reference (character elaboration). If this response was thematically consistent when the child was using the second character's point of view in his retelling of the story, and there was a distinction made between inner experience and outer behavior, a score between seven and eleven was given (perspective elaboration). Finally, if a child reached the stage of perspective elaboration involving two characters, each one being a reference for the other, then the scores were given between twelve and nineteen (change of perspective). A more detailed description of the stages of development, the scoring procedure, and a complete interview with sample scoring is contained in Appendix B.

Scoring was done by a graduate student in the Educational Psychology program at The Graduate School and University Center of the City University of New York, who was familiar with the developmental stage sequence. Each set of story situations was scored separately. The scorer had no knowledge of the ages of the children, their sex, or that some of the children were blind.

CHAPTER III

RESULTS

Scoring

A single score for each task was used in the data analysis. Scores on the coordination of sensory impressions task ranged from zero to six based on the children's ability to coordinate perspectives with six objects. Scores by an independent observer of sensory perspective coordination correlated .96 with those of the investigator in pilot tests based on 30 items from five children.

Scores on the hypothetical dilemmas task ranged from zero to four based on the children's ability to coordinate multiple perspectives according to scoring criteria developed by Selman and Jaquette (1977). Inter-scorer reliability was determined by correlating the overall scores obtained by the scorer with 12 randomly selected protocols scored by the investigator. Inter-scorer reliability was .90.

Scores for the hypothetical dilemmas task were obtained by a modal procedure and a highest level of functioning procedure. In the former, the scorable responses, approximately 10 to 15 for each interview (the two stories were combined), were totaled at each developmental stage, zero to four. The stage in which the most frequent responses occurred was used as the overall score. In a few instances when two stages had the same number of responses, the higher one was used. The modal scoring procedure followed the one used by Selman and Jaquette. In the highest level scoring procedure, the highest stage score attained on any single response was used. Since separate statistical analyses using both methods of scoring yielded no differences affecting any of the hypotheses, only the modal procedure analysis is presented.

Scores on the projective perspectives task ranged from zero to twenty based on the children's ability to coordinate multiple perspectives according to scoring criteria developed by Schnall and Feffer (1974). Scores were determined according to the highest attained scored response, following Feffer (1959). Inter-scorer reliability was established by correlating scores obtained by the scorer with 12 randomly selected protocols scored by the investigator. Inter-scorer reliability was .93.

Problems with the Data

Some limitations of this study should be noted. First, the blind population who participated in this study resided in six states, and although most were from cities or areas immediately surrounding cities, some lived in more rural areas. Second, the blind children were tested in their homes as well as their schools, while the sighted children were all tested in a school in New York City.

Third, the scores of three blind children in the six-year-old group were dropped from the study because of the children's poor performance on all the tasks. For example, they were unable to coordinate sensory perspectives because they did not understand the instructions, thus making it impossible for them to perform the task at all. In the hypothetical dilemmas and the projectives tasks, these children had difficulty following the story line and remembering the sequence of events. Their responses were either inappropriate or not

given at all.

Fourth, there were no IQ data for many of the sighted children, and therefore, other indices of intelligence (class placement, teacher evaluation, investigator's appraisal) were used. In addition, a small number of adventitiously blind children were tested, but their number was too small to be included in the data analysis.

Finally, the sensory impressions task may not have assessed the social cognitive coordination of multiple perspectives, but the ability to negotiate space. It has been noted that blind children have problems in spatial orientation (Worchel, 1951; Cratty, 1967), which may have affected the blind children's ability to turn the cap around to place it on the investigator's head. However, the children had to manipulate the cap to get it on their own heads, and there were few problems with this.

Statistical Analysis

The study involved three age groups (six-, eight-, and ten-year-olds), two visual condition groups (sighted and blind), and sex (male and female), (3x2x2). The children's scores on the three social cognitive tasks (sensory impressions, hypothetical dilemmas, and projective perspectives) were the dependent variables.

Two basic approaches of analyzing this data were possible; a univariate analysis performed on each of the three dependent variables separately, and a multivariate analysis performed on the three dependent variables simultaneously. A major advantage of the multivariate approach is that it protects against the buildup of overall levels of significance with respect to tests of hypotheses investigating the relationship of the independent variables to each of the dependent variables. For example,

suppose one were testing the main effect for sex of males, $\bar{Y}_{m1}$, $\bar{Y}_{m2}$, $\bar{Y}_{m3}$, against females, $\bar{Y}_{f1}$, $\bar{Y}_{f2}$, $\bar{Y}_{f3}$, simultaneously. If significance is found, then post hoc tests enable one to analyze the male-female differences on each of the dependent variables separately. The overall level of significance for all of the analyses is alpha. On the other hand, three separate univariate analyses can produce an overall significance level much higher than alpha.

The multivariate test procedure used in the present research was based upon the largest root procedure (Harris, 1975). This method basically involved the construction of linear combinations or weightings of the original dependent variables. The weights were constructed so as to produce maximum difference in terms of the independent variables. The weights are commonly known as discriminant function weights (Harris, 1975). This procedure provided for ther overall test of an effect on all the dependent variables simultaneously. The critical values used for determining the level of significance of the overall test (F_{MULT}) are found in the table of the largest root statistic (see Harris, 1975). Three indices or parameters are required to find the appropriate critical value; (a) s = smaller of the number of dependent variables or the degrees of freedom in the effect being tested, (b) $m = (|dfeffect - nYvar| - 1)/2$, and (c) $n = (nsubj - ncell - nYvar - 1)/2$.

Following a significant result, separate post hoc tests (F_{POST}) on each of the dependent variables were performed. The critical value was the multivariate critical value used in the overall test, which was again found in the table of the largest root statistic (Harris, 1975).

Results

The main effects for sex, age, and visual condition, followed by post hoc tests where significant differences were found, and interaction effects will be presented. This will be followed by intra- and inter-task correlations among the three social cognitive tasks.

Sex. The main effect for sex was not significant, nor did it interact significantly with any of the other independent variables. In other words, the multivariate analysis indicated that there was no linear combination of scores on the three social cognitive tasks that produced significant differences between males and females. Since no overall significance was found, no post hoc analyses of the individual task scores were performed.

Age. There was a significant main effect for age, $F_{MULT} = 30.39$, $s=2$, $m=0$, $n=36$, $p < .001$. Post hoc analyses revealed that age effects were significant on the sensory impressions task, $F_{POST} = 17.62$, $s=1$, $m=0$, $n=36$, $p < .01$ (see Table 3), and the hypothetical dilemmas task, $F_{POST} = 15.89$, $s=1$, $m=0$, $n=36$, $p < .01$ (see Table 4). The older children received significantly higher scores than the younger children on these tasks. There was no significant main effect for age on the projective perspectives task (see Table 5).

Table 3
Means (and Standard Deviations) by Age
and Visual Condition on Sensory Impressions Task *

		Age (in years)		
Visual Condition		6	8	10
Sighted	M	5.50	6.00	6.00
	SD	(1.00)	(0.00)	(0.00)
Blind	M	4.17	5.42	5.75
	SD	(1.40)	(0.76)	(0.55)

*Range of scores from zero to six

Table 4
Means (and Standard Deviations) By Age
and Visual Condition on Hypothetical Dilemmas Task*

		Age (in years)		
Visual Condition		6	8	10
Sighted	M	1.06	1.53	1.69
	SD	(.83)	(.47)	(.46)
Blind	M	.67	1.00	1.41
	SD	(.47)	(.00)**	(.52)

* Range of scores from zero to four

** All eight-year-old blind children received a score of 1 on this task.

Table 5
Means (and Standard Deviations) by Age
and Visual Condition on Projective Perspectives Task*

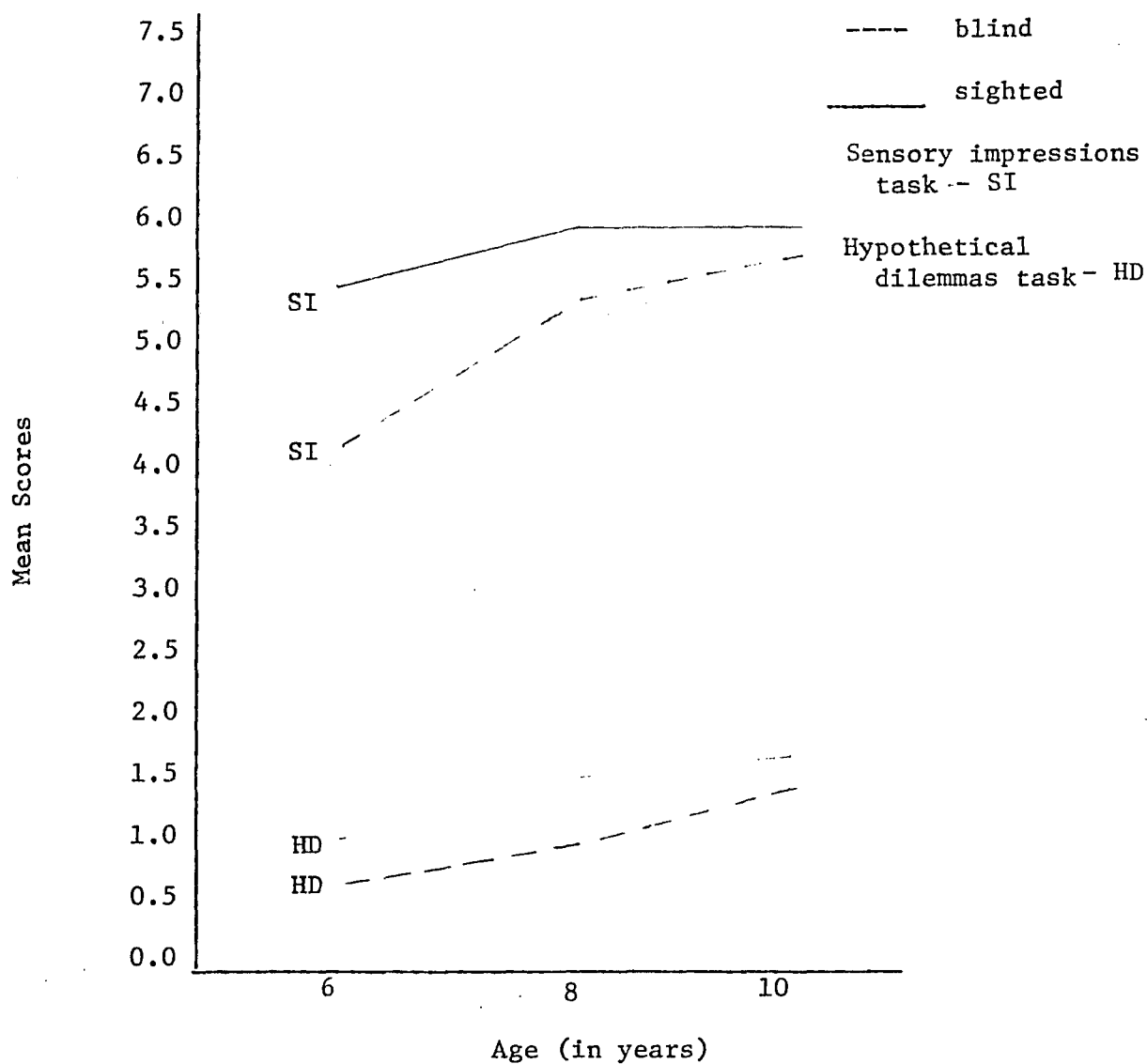
		Age (in years)		
Visual Condition		6	8	10
Sighted	M	5.94	5.86	7.06
	SD	(2.62)	(1.65)	(1.30)
Blind	M	4.42	5.17	6.00
	SD	(1.72)	(1.43)	(1.88)

*Range of scores from zero to nineteen

Visual condition. A significant main effect was found for visual condition, $F_{MULT} = 35.11$, $s=1$, $m=.50$, $n=36$, $p < .001$. Separate tests of significance on each of the dependent variables found that significant effects for visual condition were present for the sensory impressions task, $F_{POST} = 20.34$, $s=1$, $m=.50$, $n=36$, $p < .001$, and the hypothetical dilemmas task, $F_{POST} = 14.78$, $s=1$, $m=.50$, $n=36$, $p < .01$. The sighted children received significantly higher scores than the blind on these tasks. There was no significant main effect for visual condition on the projective perspectives task.

Age x visual condition interaction. There was a significant interaction between age and visual condition, $F_{MULT} = 5.86$, $s=2$, $m=0$, $n=36$, $p < .05$. Differences between the sighted and the blind decreased as age increased (see Figure 1). Post hoc tests revealed that the differences between the sighted and the blind groups were significant at the six-year-old age level, $F_{POST} = 30.30$, $s=1$, $m=.50$, $n=36$, $p < .001$, and the eight-year-old age level, $F_{POST} = 9.75$, $s=1$, $m=.50$, $n=36$, $p < .05$, but not at the ten-year-old age level. Further analysis revealed that significant effects were found for visual condition on the sensory impressions task only for the six-year-old group, $F_{POST} = 24.75$, $s=1$, $m=.50$, $n=36$, $p < .001$. The effects were not significant on this task for visual condition for the eight- and ten-year-old groups. Significant effects were found for visual condition on the hypothetical dilemmas task only at the eight-year-old age level, $F_{POST} = 7.33$, $s=1$, $m=.50$, $n=36$, $p < .05$.

Figure 1
 Mean Scores by Age on Sensory Impressions
 and Hypothetical Dilemmas Task*



* Sensory impressions task is based on a range of scores of 0-6;
 Hypothetical dilemmas task is based on a range of scores of 0-4.

Separate tests of significance on the sighted and the blind groups found age effects were significant for the sighted, $F_{MULT} = 8.59$, $s=2$, $m=0$, $n=36$, $p < .01$, and the blind, $F_{MULT} = 24.94$, $s=2$, $m=0$, $n=36$, $p < .001$. For the sighted group, separate analyses of the dependent variables found age effects significant only on the hypothetical dilemmas task, $F_{POST} = 6.80$, $s=1$, $m=0$, $n=36$, $p < .05$. This significant age effect was found between the six- and ten-year olds, $F_{POST} = 12.43$, $s=1$, $m=0$, $n=36$, $p < .05$.

For the blind group, separate analyses of the dependent variables revealed age to be significant on both the sensory impressions task, $F_{POST} = 18.20$, $s=1$, $m=0$, $n=36$, $p < .001$, and the hypothetical dilemmas task, $F_{POST} = 9.18$, $s=1$, $m=0$, $n=36$, $p < .01$. Age effects for the blind group on the sensory impressions task were significant between six- and eight-year-olds, $F_{POST} = 19.38$, $s=1$, $m=0$, $n=36$, $p < .001$, and six- and ten-year-olds, $F_{POST} = 35.18$, $s=1$, $m=0$, $n=36$, $p < .001$. Significant age effects were found for the blind group on the hypothetical dilemmas task between six- and ten-year-olds, $F_{POST} = 17.90$, $s=1$, $m=0$, $n=36$, $p < .01$.

Intra-task correlations. A Kuder-Richardson measure of reliability was computed for the scores of each of the six objects in the sensory impressions task (Freeman, 1963). This was done to determine if the coordination of perspectives on different items in this task was consistent. The reliability among the sighted group was .73, and .66 for the blind group.

Scores derived from each of the two stories presented to the children on the hypothetical dilemmas task were correlated (Winer, 1971).

The correlations of .43 for the sighted group and .40 for the blind group, indicated that there was considerable difference between the cognitive functioning measured by the two stories.

Scores derived from each of the two story situations presented to the children in the projective perspectives task were correlated (Winer, 1971). The correlations of .20 for the sighted group and .51 for the blind group, indicated, as in the hypothetical dilemmas task, that there was considerable difference between the cognitive functioning measured by the two story situations. The higher correlation found for the blind children is not readily explained.

Inter-task correlations. Correlation coefficients between the social cognitive tasks are presented in Table 6 (Winer, 1971). Significant correlations were found for the sighted and blind combined, and the blind separately, but not for the sighted group.

Table 6
Inter-Task Correlations for Sighted,
Blind, and Sighted-Blind Combined

TASKS			
Tasks	SI	HD	PP
<u>Sighted Group</u>			
Sensory Impressions (SI)		.20	-.14
Hypothetical Dilemmas (HD)			.04
Projective Perspectives (PP)			
<u>Blind Group</u>			
Sensory Impressions		.55*	.32**
Hypothetical Dilemmas			.33**
Projective Perspectives			
<u>Sighted-Blind Combined</u>			
Sensory Impressions		.45*	.20
Hypothetical Dilemmas			.22**
Projective Perspectives			

* significant at $p < .01$

** significant at $p < .05$

CHAPTER IV

DISCUSSION

This section will be devoted to a discussion of the following issues: (a) social cognitive development, (b) the role of vision in social cognitive development, (c) social cognitive development in blind children, (d) the generality of social cognitive development, and (e) implications for further research and applicability to education.

Review of Findings

There were significant main effects for age and visual condition, and there was a significant age-vision interaction. Significance was not found for sex effects. The age main effect indicated social cognitive development from preoperational to concrete operational thinking, and the main effect for visual condition indicated a delay in social cognitive development of blind children.

Further analyses indicated that age effects were significant for the sensory impressions task and the hypothetical dilemmas task, but not on the projective perspectives task. Similarly, significant effects for visual condition were found for the sensory impressions task and the hypothetical dilemmas task but not for the projective perspectives task. Further analysis of the significant age-vision interaction displayed significant differences between the sighted and the blind at the six-year-old level and the eight-year-old level, but not at the ten-year-old level.

Social Cognitive Development

Evidence of social cognitive development from preoperational to operational thinking was shown by significant age effects on the sensory impressions task and the hypothetical dilemmas task, and positive but not significant effects on the projective task.

An example of preoperational thinking on the sensory impressions task is the following. The children were asked to place the cap on the experimenter's head so that it would be worn by the experimenter just as the children were wearing it. Those children responding from an egocentric, preoperational orientation, moved the cap from their heads to the experimenter's head keeping the brim facing in the same direction, so that the cap sat on the experimenter's head with the brim in the back. Concrete operational thinking, i.e., placing the cap on the experimenter's head so that the brim was in the front, was evidenced by most of the children by age eight (see Table 3).

As with the sensory impressions task, the greatest increase in social cognitive development on the hypothetical dilemmas task occurred between the ages of six and eight (see Table 4). The following examples of preoperational and operational thinking on the hypothetical dilemmas task were taken directly from children's protocols.

Congenitally Blind Child at 6;10

WELL DO YOU THINK HE'LL BE HAPPY IF HE GETS A NEW PUPPY?

Yes

HOW CAN YOU TELL?

I don't know. I just thought it up.

Congenitally Blind Child at 6;7

WHAT KIND OF PERSON DO YOU THINK TOM IS?

A boy.

HOW CAN YOU TELL?

I know what boys are.

IS HE ANY OTHER KIND OF PERSON?

I don't think... alive.

Congenitally Blind Child at 6;8

HOW DID TOM AND GREG KNOW THAT MIKE WAS SAD IN THE STORY?

Cause he missed his puppy.

HOW CAN YOU TELL WHEN SOMEONE IS SAD?

Cause. We miss whatever run away or something.

CAN YOU EVER TELL WHAT SOMEONE IS FEELING?

Mad, sad, happy, sleepy.

THAT'S RIGHT. THOSE ARE FEELINGS. HOW COULD YOU TELL WHAT
SOMEONE IS FEELING?

Cause, just by looking at them.

AND WHAT DO YOU LOOK FOR? HOW CAN YOU TELL?

By looking for the person.

Sighted Child at 6;2

WELL, WHAT KIND OF PERSON DO YOU THINK HOLLY IS?

A little girl.

HOW CAN YOU TELL WHAT KIND OF A PERSON SOMEONE IS?

Because, if its like a story, sometimes some kids could tell if they're small or big because they may be the same size.

IS THERE SOME OTHER WAY TO DESCRIBE HOLLY?

If you visit and measure with your friend, then you know if you're the same height or something.

Clearly, the preceding examples illustrate young children's difficulty in getting past the overt, physical, surface explanations of what is going on, and a lack of ability to understand alternate viewpoints. When pressed for clarity, their responses were often digressions. The following set of dialogues show more depth, psychological understanding, and the ability to take alternate viewpoints. These are examples of operational thinking.

Sighted Child at 10;1

WHAT KIND OF PERSON DO YOU THINK TOM IS?

A polite one.

POLITE. WHY DO YOU SAY POLITE?

Well, polite. Polite means very kind, you know, very helpful, helpful....

HOW CAN YOU TELL IF SOMEONE IS POLITE AND KIND?

Well, like um....buying someone presents or calling someone to say happy birthday, or to say thank you, or like sharing, like sharing something you have.

Congenitally Blind Child at 8;2

WHAT KIND OF PERSON DO YOU THINK TOM IS?

A nice person.

WHY DO YOU SAY HE'S NICE?

Cause he wants to get Michael a new dog. He doesn't want Mike to be sad any more.

Congenitally Blind Child at 10;7

YOU MEAN HE WOULD CHANGE HIS FEELINGS ABOUT NOT WANTING TO HAVE A DOG?

He would still probably feel sad about his other dog but he might, you know, think it would be nice to have a dog.

YOU MEAN HE COULD BE HAPPY ABOUT HAVING A NEW DOG AND SAD ABOUT MISSING HIS OLD DOG AT THE SAME TIME?

Yeah, but he wouldn't be as sad as he is.

SO YOU COULD HAVE TWO FEELINGS AT THE SAME TIME?

Yes.

HAVE YOU EVER HAD TWO FEELINGS AT THE SAME TIME?

I think so.

Most of the responses made by the children on the projective perspectives task fell within the category of "character elaboration" (see Table 5 and Stages in Appendix B). This indicated that the children were able to take the role of a given actor, and retell the story from the point of view of that actor (self entry). Further, while taking the role of a second actor in the same story, the

children made observations (with varying degrees of thematic consistency with the original story line) about one of the other actors in the story (elaboration entry).

For example, while taking the perspective of the man in the first story situation, a child said that the man was feeling tired from a long day at work (self entry). While taking the role of the woman in the story, the child said that she was hurrying to make dinner for the man because he looked like he had worked hard. This observation by the woman about the man was an elaboration entry, and was consistent with the story line.

Schnall and Feffer (1974), whose scoring criteria were used to determine the level of social cognitive development on this task, did not employ the distinction between preoperational and operational thinking. One could consider the stage of "character elaboration" to be the beginning of operational thinking as it involves the ability to coordinate two points of view, that is, the man's tiredness, and the woman's recognition of this. This would mean that on this task most of the children, ages five through eleven, were making beginning operational responses.

The interviewer, however, may have inadvertently elicited responses superior in level to those the children would have given spontaneously. Most of the children did not respond well to the general instructions given prior to the retelling of the story (p. 28). Therefore, to elicit more information than that originally given, the interviewer repeated the instructions in parts: How did the woman see the others in the story, the man and the boy?" Any

response to this question such as "She saw the man looking tired" or "He seemed to want to eat dinner soon," would evidence a score of character elaboration. Thus, a modification of the testing procedure to obtain more information may have made the task invalid.

In addition, the fact that there was such a narrow range of responses on this task, and the very low intra-task correlations for both the sighted and the blind groups, indicate that there is a general question about the reliability of this task.

The Role of Vision in Social Cognitive Development

Analysis of the blind group separately indicated a significant main effect for age. This means that vision did not emerge as necessary for social cognitive development. This finding is in agreement with most of the research presented in the review of the literature concerning the physical environment (Tobin, 1972; Cromer, 1973; Higgins, 1973), and can be explained by the theoretical position espoused by Piaget, that social cognitive development proceeds in sequence from preoperational to operational thinking (Piaget, 1970), regardless of visual ability (Piaget in Gottesman, 1976).

At early ages (birth to two years) more information is conveyed through visual perceptual processes than through the aural, tactile, and olfactory senses (Boldt, 1969). The blind do not have less ability to integrate perceptual information than do their sighted peers, but they do experience an information deficit which delays the structuring of knowledge. As the blind child continues to act upon the environment, intellectual structures develop so that later the blind child can effectively use information obtained via other sense

modalities.

Thus, there is no indication that the visual perceptual system enjoys a special position with regard to social cognitive development as might have been expected (Gomulicki, 1961; Rubin, 1964; Swallow and Poulsen, 1973; etc.). The lack of visual cues for blind children is surely a loss of important social information, but it is not critical to the development of social cognitive functioning. In the following section, however, specific factors are cited which seem to affect the rate of their social cognitive development.

Social Cognitive Development in Blind Children

Although there was evidence of social cognitive development in blind children in the present study, the sighted children at six and eight years of age, scored significantly higher on the overall analysis. This finding of delays in cognitive functioning in blind children accords with the research of Hatwell (1966), Miller (1969), Friedman and Pashner (1973), and others who compared blind and sighted children on tasks of cognitive development with regard to the physical environment, and Stephens and Simpkins (1973) who found delays in social cognitive development.

Social cognitive development begins with children's differentiating the self from the other, followed by distinguishing one person from another, most importantly the mother from others. This recognition is what is currently called "social attachment" (Flavell, 1977).

According to Yarrow and Pederson (1972), one prerequisite for the formation of social attachment is the infant's ability to make fine visual discriminations so as to distinguish one face from another.

Fraiberg (1969) concluded that social attachment depends upon mental representation, and the blind experience delays in the formation of true evocative memory during the second to third year of life. Support came from Ewart and Carp (1963) who reasoned that the lack of differences between the sighted and the blind on their task of spatial conceptual ability was due to requirements of form recognition and not evocative memory. Further, Flavell (1977) stated that "social attachment is always a reciprocal process of social interaction necessarily involving the feelings and behaviors of both parties in the interaction" (p. 50). Children's progressive understanding of the reciprocal nature of social attachment leads to the development of perspective coordination.

Blind children must rely on auditory and tactile sensory discriminatory abilities (Gottesman, 1976) which do not provide the quantity or accuracy (Boldt, 1969) of information that vision provides. Attachment development, specifically, the reciprocal interaction between the child and his or her mother (Fraiberg, 1968), and the cognitive awareness of this reciprocity, is therefore delayed. This in turn delays the development of multiple perspective coordination.

Stephens (1972) concluded that imitation was delayed in blind children due to incomplete accommodation. Stephens (1972) said that this resulted in delays in experiencing the self as a whole as opposed to a sum of parts. Fraiberg (1977) said that self-image was delayed because blind children needed some way to get a mirror image of themselves. This conclusion was based on her findings that blind children did not use the pronoun "I" until much later than their sighted peers. Swallow (1977) added, that experiences for play were restricted for blind children, and that this delayed a shift to abstract thinking from symbolic thought.

Delays may also result from the covert nature of much of social understanding, which necessitates reliance on inference and indirect verification of one's social experiences. To gain a veridical understanding of another's perspective, one often has to listen and look for the possibility of contradictory information. A man may say, for example, that he feels happy but his tone may be tinged with sadness or his face may look rigid and tense. Blind children lack the information conveyed by smiles, frowns, head turns, eye movements, and the general body language available to sighted children, and they therefore have less chance to comprehend the fullness of social interactions. Swallow (1977) discussed the difficulty blind children have in judging the impact of their remarks on others, and how this might lead to feelings of insecurity.

In addition, blind children are excluded from much social interaction and denied relevant social experience that they are capable of having (Cutsforth, 1951). Fraiberg (1977) said the fact that blind children showed few facial expressions, others did not know how to react to them, and this restricted social interaction.

Warren (1977) said that the way other people (most importantly the parents) responded to the child's handicap may play a greater part in socialization than in other areas of development. (Socialization was defined as the child's change from a self-centered being to a social being.) Burlingham (1979) spoke of mothers' mistaking active listening for passivity by their blind children because the children were not moving. This often resulted in mothers urging their children to move, which actually restricted interaction. Further, Burlingham noted, mothers may give strong disapproval of their blind child's continued use of his mouth

and tongue beyond the age appropriate timetable of sighted children, thereby restricting another source of valuable information.

Other parents do not know how to translate social experiences into alternate sense modalities, since their own world is so visually oriented (Burlingham, 1979). Finally, many mistakenly associate blindness with an inability to learn. The non-significant difference between the sighted and the blind at ten years of age indicated that the blind children had begun to make up the delays.

Generality of Social Cognitive Ability

In the present study there was a significant main effect for age on the sensory impressions task and the hypothetical dilemmas task but not on the projective perspectives task. Significance for visual condition was found also on the sensory impressions task and the hypothetical dilemmas task but not on the projective perspectives task.

However, differences between the sighted and the blind on the sensory impressions task were significant only at six years of age, and on the hypothetical dilemmas task the differences between the sighted and the blind were significant only at eight years of age, not at six or ten. Non-significant effects for visual condition on the sensory impressions task for the eight- and ten-year-old groups is explained by ceiling effects operating on the scores of the sighted children. The range of scores for this task was restricted at the upper end for the sighted children at ages eight and ten (See Table 3). Significant effects for visual condition on the hypothetical dilemmas task only at the eight-year-old level may be explained by the increase in performance of the sighted children between six and eight years compared to the blind group. The blind group increased their performance between eight and ten

years, thus decreasing the disparity between the blind and the sighted by age ten.

Although the presence of ceiling effects on the sensory impressions task decreased the correlations between the measures of social cognition (see Table 6), different performance patterns for each task were evidenced. This indicated that task variables played a large part in performance ability (Borke, 1971; Cromer, 1973). Hoy (1974) and Salatas and Flavell (1976) in studies of spatial perspective taking found that increased task complexity elicited more preoperational responses than less task complexity. Hoy concluded that "children's ability to reproduce another's view is dependent on the type and number of dimensions that must be considered simultaneously and on the type of response required" (p. 462). The following discussion will consider some of the task factors that might have been operating on the three measures of social cognition in the present study.

First, the response request in the sensory impressions task was much simpler than in the other two tasks. For example, in the sensory impressions task the children were asked to "put the hammer in my hand so that I can hold it the same way as you are holding it," which seem more explicit than the instructions given in the hypothetical dilemmas task, "what kind of person is Holly?" or in the projective perspectives task, "taking the role of the man in the story, how would you size up the situation...." In addition, the nonverbal response required in the sensory impressions task made it much less complex than the other two tasks which required verbal responses. This is supported by the findings of Flavell et al. (1968), who found non-verbal tasks elicited role-taking behavior in children at earlier ages than had been postulated by Piaget.

Second, Salatas and Flavell (1976) suggested that although it is always true that each person has his or her own unique view, these perspectives are not different in every situation. In the hypothetical dilemmas task and the projective task the children were encouraged to explore situations where a number of characters, having unique perspectives, concurrently shared similar perspectives toward a third character. This was more complex than the situation in the sensory impressions task where the physical orientation of the children and the experimenter de facto made for different perspectives. In other words, the cognitive understanding of unique viewpoints made the sensory impressions task much easier than the other two tasks because the children did not have to contend with the added possibility of similar perspectives.

Finally, the objects to be manipulated and the presentation of the other were concrete for the sensory impressions task, whereas in the hypothetical dilemmas task and the projective perspectives task, the objects and the other were hypothetical.

Implications for Further Research and Applicability to Education

What questions were raised by the findings of this study? What types of research are needed to resolve them? A number of suggestions are presented for consideration. First, continued social cognitive research with blind children is indicated in areas of investigation such as those proposed by Selman and Jaquette (1977) concerning blind children's understanding of close friendships (e.g., closeness, intimacy, reciprocity, and conflict resolution), and issues related to group organization (e.g., formation, cohesion, conformity, decision making, and leadership).

Second, the absence of vision makes it necessary that the other senses take over some of its functions. Burlingham (1975) stated that the development of the other senses, in many respects has to be taught. Fraiberg (1977) reported a decrease in delays of mobility (walking) of blind children through attachment and prehension education. Further, Stephens, Fitzgerald, Hitt, and Grube's recent Student Activity Guide, is a compilation of activities, organized into modules, designed for the purpose of remediation of reasoning for blind children. It is strongly suggested that research on intervention programs to treat social cognitive delays in blind children be investigated. Swallow's (1977) caution about the necessity of some delays should be kept in mind.

Third, further work bearing on the relationship between social cognitive awareness and social behavior is desirable for the sighted as well as the blind. Shantz (1975) stated that "the relation between social cognition and interpersonal behavior may be one of the largest unexplored areas of developmental psychology today" (p. 303). The present view of the relationship between social cognitive abilities and social behavior has stemmed mostly from Piaget's theory (1960,1970). Piaget "suggests a bidirectional causal relation: peer interaction as a necessary factor for the development of role-taking skills, and vice versa.... Piaget suggests that egocentric functioning decreases as a result of the child's confrontation with peers who differ in their wishes, perspectives, needs, and thoughts" (Shantz, 1975, p. 304). Flavell (1977) added that cognitive development was a necessary but definitely not a sufficient condition for social behavior. Research on social cognition and social behavior would be especially helpful to classroom teachers who must work with the very delicate interaction

between normal and handicapped children in the school setting. More and more handicapped children are being placed in regular classrooms (mainstreaming) as a result of the Education for All Handicapped Children's Act, PL94-142, enacted in 1975.

Johnson and Johnson (1975) in Learning Together and Alone stressed the need for "cooperation" in the classroom, as opposed to individualization and/or competition, if mainstreaming is to work. Research was cited which indicated that (a) friendships were more easily developed in cooperative settings between handicapped and non-handicapped children, and (b) in cooperative groups social perspective-taking skills were more fully developed. In order to set up cooperative groups, Johnson and Johnson made a number of suggestions which stressed the cognitive awareness of what it means to cooperate. From the present research it is evident that one must take into consideration the possibility of delays in such awareness in blind children.

In 1956, in an article in New Outlook for the Blind, Norris stated: "At the outset let me stress that we have found that blindness in and of itself, is not the determining factor in the child's development" (p. 262). Today the trend in educating the visually handicapped continues to support the idea that "the visually handicapped child is a child first....," going through "the same developmental sequence and stages as all children" (Grogan and Maron, 1976, p. 31). However, we must continue to address ourselves to the ways blind children can gain relevant social cognitive experiences that will not overload or confuse the processing of this information. Educators must tailor these experiences to the cognitive developmental timetable of the blind, which may be different than that of the sighted.

APPENDIX A

Hypothetical Dilemmas Task

Stories and Standard QuestionsStory A.

Tom has just saved some money to buy his friend Mike Hunter a birthday present. Tom and his friend Greg go to the store to try and decide what to get Mike. Tom tells Greg that Mike is sad these days because Mike's dog Pepper ran away. In the store they see Mike and try and find out what he would like for his birthday without asking him. After talking to Mike for a while the kids realize that Mike is really sad because he lost his dog. When Greg suggests that he get a new dog, Mike says that he can't just get a new dog. Things wouldn't be the same. Then Mike leaves to do some shopping for his mother. As Mike's friends shop some more for a present for Mike's birthday, they see a puppy for sale in the pet department. It is the last one left. The owner of the store says the puppy will probably be sold by tomorrow. Tom and Greg discuss whether or not to get the puppy for Mike. Tom has to decide right away.

Standard Questions.

What do you think Tom will do? Why?

How do you think Mike will feel if Tom buys him the puppy?

Could Mike feel happy and sad at the same time? Have you ever been in a situation where you felt happy and sad at the same time? How can a person have both feelings, happy and sad? Mike said that he didn't want a new puppy because things wouldn't be the same. What did he mean by

that? Do you think he will ever change his mind? Why or why not?
 Can you ever know what another person is feeling? How is that possible?
 Is it possible not to know your own feelings even if you think about
 them? How does that work? Is it possible that Mike doesn't know
 his own feelings? How is that possible? Did you ever think you'd
 feel one way and then find out you felt another? How could that
 happen? Can you ever fool yourself about the way you're feeling? How?

Story B.

Holly is an eight-year-old girl who loves to climb trees. She is
 the best tree climber in the whole neighborhood. One day while
 climbing down from a tall tree she fell off the bottom branch but
 didn't hurt herself. Her father saw her fall. He was upset and asked
 her to promise not to climb trees any more. Holly promised.

Later in the day Holly met her friend Sean. Sean's kitten was
 caught up in a tree and couldn't get down. Something had to be done
 right away or the kitten might fall. Holly is the only one who climbs
 trees well enough to reach the kitten and get it down, but she
 remembers her promise to her father.

Standard Questions.

What do you think Holly will do? Why?

If Holly climbs the tree to get the kitten, what will her father say?

Will he understand why she climbed the tree? Why or why not?

If Holly and her father talked about the situation, what do you think
 they would decide together? Why?

Does Sean know why Holly cannot decide whether or not to climb the tree?

What will Sean think if Holly doesn't climb the tree?

Have you ever made a promise to someone that you didn't want to keep?
 What did you do? How did you feel? Do you always know what you feel?
 Is it possible to feel something and not know what it is? How is that
 possible? Have you ever been in a situation like Holly when you had
 two feelings and couldn't decide? What happened?
 What kind of person is Holly? How do you know? How can you tell what
 kind of person someone is? Are they always like that?

Stages of Perspective-Taking Development*

Stage 0 - Persons as physical entities. There are several major characteristics of this stage. There is a confusion of the causal relation between physical and psychological experience (someone is sad because he/she is crying, not crying because he/she is sad). Overt behavior is seen as defining the inner (subjective) experience rather than the other way around. Similarly, subjective states are confused with physical states so that a person is seen as capable of only one emotion at a time in the same way that he/she can only be in one place at a time. The child at stage 0 has little conception of self-awareness. Whatever conception he has, in the sense that the child can verbalize an awareness of self, is a conception of physical self, characterized by the self's inherent bigness or strongness. (I am a good boy. WHY? Because I am big.)

*Author's version of scoring criteria employed by Selman and Jacquette (1977).

Stage 1 - Persons as intentional subjects. At stage 1 children more clearly differentiate psychological and physical causality. Thoughts are seen to underlie actions. Motives are more clearly seen as important for the understanding of behavior. Different people are capable of having different reactions to similar types of events, and one person is seen as having the capacity for having several feelings within himself. It is still difficult, however, for the stage 1 child to understand that one person can have conflicting thoughts or feelings toward the same social situation at one time.

With regard to self awareness, although the stage 1 child is aware that motives can underlie behavior, they generally take what other's say about their own motives at face value. They believe that what a person says is what they mean. It is not that the child at stage 1 has not reflective conception of lying for they know that people can purposefully distort facts. What is still difficult to understand for the child at this stage is that people can distort feelings, i.e., to feel one way and say they feel another. In general, the stage 1 child believes that feelings are not easily hid, and are aware that overt behavior will generate clues to inner feelings.

Stage 2 - Persons as introspective selves. The stage 2 perspective-taking awareness that one's perspective of others must take account of other's perspective of self, corresponds to the awareness that although others can take account of the self's inner thoughts, the self can conceal his own inner subjective reality from other's view. Put another way, the child becomes aware of a dual-layered conception of persons, an inner an outer self, and he or she realizes that people

can present an overt appearance that may or may not reflect the inner subjective reality.

Being more self-reflective, the child understands that thoughts, feelings, or motives toward one object or within one individual can conflict or be ordered into a hierarchy. There may be multiple, albeit separate subjective reactions to the same situation or acts. (A gift of a new puppy can make someone happy because that person wants a puppy, and sad because it reminds that person of his or her old dog.) Similarly, the child now perceives that people can do things that they may not want to do or say things they do not believe because other inner thoughts or motives dictate this. (He may pretend he likes the gift but he really doesn't. He is only saying that not to hurt Tom's feelings.) Here the child is self-aware in the sense that he can weigh the relative value of his feeling toward his friend versus his feelings toward the gift. However, this conception of people as self-aware is limited in the sense that such reflection is always seen as potentially available to the self. If one does not know something about the self's attitudes it is because of forgetting or not paying attention to his inner experience. One can trick others but not one's self.

Stage 3 - Persons as stable personalities. At the previous stage different subjective aspects of experience exist for the child separately but coterminously. In stage 3 people can have mixed thoughts, feelings, and motives toward the same object at the same time. (Mike can hate and love the dog at the same time.)

The stage 3 child believes that it is possible to fool the self, but only in the sense that the mind makes a special effort to trick itself; fooling oneself only emerges or is only possible if one wills it, and even then, once one pays attention to the concern one can no longer fool the self. The awareness of true unawareness emerges at stage 4. Although conflicts of motives, thoughts, and feelings can exist within people and exist hand-in-hand with one another, it is not until stage 4 that these conflicts lead to new forms of thoughts, motives, or feelings qualitatively distinct from the component parts.

Stage 4 - Persons as complex self systems. Stage 4 is seen as a stage which integrates the elements which have emerged for each issue at stage 3. For example, at stage 3 the child is aware that people can have mixed feelings toward the same social situation. At stage 4 there is an awareness that mixed feelings themselves may be psychologically integrated to form qualitatively distinct emotions (e.g., ambivalence is not just a mixture but a new psychological state).

With regard to self-awareness at stage 3, the child is both aware that there are certain aspects of the self's behavior that the self is not in control of or aware of, and at the same time realizes that the self is able to examine its own motivations and behaviors. Putting together these conceptions moves the stage 4 child to construct a new psychological process, the unconscious, as a concept to explain the observed phenomenon that persons are not always aware of their behavior,

that even introspection may not yield the psychological causal mechanisms that best explain this behavior, and that external causes cannot explain all of the self's behavior either.

Sample Protocol

The following interview was conducted with a sighted boy, age ten years ten months. Diagonal lines in left hand margin indicate the end of an issue; i.e., subjective (subj), self-awareness (SA), and personality (pers), as marked. Numbers in the margin indicate the score for that issue, and the total scores are given at the end.

F: He'll buy the puppy.

Subj E: Why do you think Tom will buy the puppy?

2 F: Well, first of all, he's sad because he don't got a puppy, and he'd probably never get Pepper back?

/ E: Well, how do you think Mike would feel if Tom gets him the puppy?

F: Well, he'd feel kind of sad at first, but he'll feel better ... He knows his friend cares.

E: You said he'll feel better. Do you think he could feel sad and happy at the same time?

F: Yes.

Subj E: How is that possible?

2 F: Well...he said...well, you can't...I can't explain it, but he'd be sad and happy at the same time.

E: At the same time. Did you ever hear of having mixed feelings?

F: Yes.

E: What does that mean?

F: Well, like...you get too many things on your mind and have an accident or something.

/ E: Do you think that...How do you think Tom and Greg know that Mike was sad?

F: Well, first of all, he told them that he didn't want a puppy, and it kind of sounded like that he was sad

SA cuz...cuz of his puppy. It said it in the (inaudible) story.

E: How can you tell when someone is sad?

F: By...by the way they act.

2 E: So you can tell what people are feeling.

F: Yeah.

E: Is there another way to tell besides the way they act?

F: Well, by their faces...what they do.

E: Do you think if you had a feeling that you didn't want
anyone to know about you could hide it from other people?

F: Yes, if...yes, in ways.

SA E: How? How could you do that?

F: Like, first of all, when you're doing something and you're
occupied on it, you might get it off your mind.

2 E: Um-hum. You mean...

F: If it's a big thing like...

E: You mean you could hide it from yourself?

F: I guess so.

E: Well, you said, "Get it off your mind." Did you mean
that you hide it...fool yourself in a way so you're not
feeling what you're really feeling?

F: Yes, but, I doubt...No, I don't think so. I don't think
you can get it off your mind.

E: Uh-huh.

F: If you did something really bad ... or something...

E: But you could fool other people about the way you're
feeling?

F: No, I don't think so.

E: Well, if you had a feeling...say you were sad and you didn't want people to know, could you hide that feeling from other people? ...if you wanted to?

F: Yes.

E: Could you ever hide that feeling from yourself?

F: No.

E: No. So you couldn't do that.

What kind of a person do you think Tom was in the story?

pers

F: He was nice...He was a nice fellow.

E: Why? Why do you say that?

2

F: Well, I sometimes feel like that...like if...if you're mixed up and you want to get something for your friend and that you show that you love him.

E: How can you tell that a person is nice?

F: Well, you can't tell.

E: There's no way of telling?

F: Yeah, there is by...by knowing them a lot.

E: What would you know?

F: What he does...what he does.

E: Can someone who is nice also be not nice? How can that be?

F: He can do bad things again. Like sometimes he might like animals and sometimes he can do bad things.

E: So what does that say about people?

F: Well, people are bad and nice in all kinds of ways.

E: Different parts they have to themselves.

F: Yeah.

E: What does it mean to have different parts?

F: Like...you might feel bad in your heart, and then you
might feel good in your heart.

E: Very good. Did you like that story?

F: Yeah.

<u>Stage</u>		<u>Subj</u>	<u>SA</u>	<u>Pers</u>
0	-	0	0	0
1	-	0	0	0
2	-	2	2	1
3	-	0	0	0
4	-	0	0	0

Projective Perspective-Taking Task

Stages of Perspective-Taking Ability*

No refocusing. (Score 0)

1. material is not given in initial story pertaining to an actor
2. self entry is not given

Simple refocusing. (Score 1-3)

1. material is given in initial story pertaining to an actor
2. while taking the role of that actor, material is given in a self entry
3. the theme of the self entry may be made along a dimension of consistency and balance, thus, SR I, II, III

Character elaboration. (Score 4-6)

1. while taking the role of a given actor, material is given in a self entry
2. in addition to the self entry, material is given on that actor in an elaboration entry
3. the elaboration entry can be made with varying degrees of thematic consistency, thus, CE I, II, III

Perspective elaboration. (Score 7-11)

1. while taking the role of a given actor, material is given in a self entry
 2. in addition to the self entry, material is given on that actor in an elaboration entry
 3. the elaboration entry is thematically consistent with the self entry
 4. this consistency takes place on a space-action level
 5. the self and elaboration entries must indicate appropriate inner-outer orientations, respectively differentiating a "self" and an "other"
- this proceeds to a description of the actor's internalized state in the self entry with vary degrees of consistency with a description of that actors externalized state as referred to by another actor (elaboration entry), thus, PE I, II, III, IV, V

Change of perspective. (Score 12-19)

To achieve this score, the subject must have two perspective elaborations involving the same two actors. Since no child in the study scored on this level, no further description will be given. For additional information see Schnall and Feffer (1974).

*Author's version of scoring criteria employed by Schnall and Feffer (1974).

Sample Protocol and Scoring Sheet

This interview of a ten-year one-month congenitally blind boy is followed by a scoring sheet. The story produced by the child is referred to as the initial story, and the characters are the actors. The initial story is presented in column 2 next to the actor in column 1 to whom it was relevant, and describe him or quotes him. It is presented in short form, and not necessarily in the order in which it occurred in the story.

As the child then described the situation from each of the actors' points of view, the story was rewritten in columns 3, 4, and 5, depending on which character's role the child was taking at the time. For example, when the child was retelling the story from the point of view of the man, his responses were put in column 4, (by Man), but in the row corresponding to the actor of whom he was speaking. If he spoke about himself (the man) then his statements would be put in column 4 row Man. This would be a self entry.

As can be seen on the scoring sheet, when the child retold the story from the perspective of the boy (column 5), he made some statements about the man and the woman as well as about himself. These statements about the man and the woman were elaboration entries.

E: Could you make up a big story about what's going on and how everyone feels and what's happening in that situation?

JT: On that one story?

E: Yeah.

JT: A woman is standing in the kitchen...Does it have to be exactly the same as...

E: Well, yes, it has to include the woman in the kitchen, a man coming into the kitchen with his coat on and a package, and a little boy sitting at the table.

JT: O.K. so, now, the woman is standing in the kitchen. A man comes in the door with a package in his hand. Then he says...then he took off his coat, and then a little boy was sitting anxiously at the table and shouted, and then said, 'When is dinner, Mom?' She says, 'Just a minute. I haven't even started the roast beef yet.' And then the man says, 'I got you some roast beef and apples and pears.' So then the woman starts cooking the roast beef. Then, soon it finished. She took it to the table then she calls, 'Supper time.' And then the man comes to the table. And then the anxious little boy eats very quickly.

E: O.K. All done?

JT: Yep.

E: All right. Now here's the tricky part. Can you make believe that you are the man in that story, and that you just came in with your coat on and the package in your hand, the roast beef, and that you're right there in that story. How do you feel? What's going on? How do you see the other people in that story?

JT: Well, I would feel,..kind of like...kind of tired..cuz I would be out there a long time shopping. I guess I'd be...I guess I'd feel a couple different ways or something. And then I'd feel...oh...then...then otherwise I wouldn't feel anything...I would feel a little bit curious, though, because of what the little boy did in school or what he did today. And, if the roast beef is good enough...

E: O.K. Can you make believe now that you are the lady in that story and that you are right there in that situation?

JT: Yes.

E: Can you make believe...and how does she feel about the situation? How does she feel about what's going on there with the other people?

JT: Um...she...she...I think she...she's like um...I guess she feels kind of curious too, and kind of anxious and bored. Bored, because you know, like, sometimes you get tired of standing in the kitchen, usually. Sometimes, like sometimes my mother gets tired of the normal rituals...long ago when my father lived in this place. So then her'd feel curious because...what the man's going to bring for supper, what he has got in that package...curious, and excited, too.

E: Hmm...So you'd be curious and excited about what the man had in the package?

JT: Yep

E: O.K. Last part. Can you make believe that you are the little boy in that story? You're right there in that story that you made up?

JT: Yes.

E: O.K. How is the little boy feeling? How does he size up the situation? How does he see the others?

JT: He would see the others talking and preparing and he would feel anxious and curious because of what they're going to have for dinner. And uh,..he would feel hungry, too.

E: Anything else?

JT: Um...oh,...no...curious.

Scoring Sheet of Projective Task

(1)	(2)	(3)	(4)	(5)	(6)
Actors	Initial story	by Woman	by Man	by Boy	Score
WOMAN	in kitchen just a min, I haven't start RB yet cooks dinner	curious too bored you get tired in Kitchen curious about pkg.		talking & preparing	CE II
MAN	comes in takes off coat I got some RB, apples and pears		tired of shopping curious about what boy did at school	talking & preparing	CE II
BOY	When is dinner mom? anxious eats			anxious & curious about dinner hungry	SR III

APPENDIX C

Participating Schools and Agencies

California

Los Angeles Unified School District
450 North Grand Ave.
Los Angeles, Calif. 90012
Jim Esterle

Bureau for Physically Exceptional Children
Department of Education
State Education Building
721 Capitol Mall
Sacramento, Calif. 95814
Fred Sinclair, Chief

Programs for the Physically Handicapped
6404 Linda Vista Road
San Diego, California 92111
C. Robert Calhoun

Education Center
4100 Normal Street
San Diego, Calif. 92103
Ralph Patrick, Deputy Superintendent

Connecticut

Board of Education and Services for the Blind
170 Ridge Road
Wethersfield, Conn. 06109
Dr. Robert Long, Chief of Children's Services

The Connecticut Institute for the Blind
Oak Hill School
120 Holcomb Street
Hartford, Conn. 06112
Mrs. Anne J. Lasser

Delaware

Bureau for the Visually Handicapped
305 W. 8th Street
Wilmington, Delaware 19801
Norman Balot

Florida

Division of Blind Services
P.O. Box 1229
412 S. Tampania
Tampa, Florida 33601
Donald H. Wedewer, Director

Division of Blind Services
2571 Executive Center Circle, East
Howard Building
Tallahassee, Florida 32301
Douglas G. Smith, Director

New Jersey

New Jersey Commission for the Blind and Visually Handicapped
1100 Raymond Boulevard
Neward, New Jersey 07102
Vahram Kashmanian, Director

New York

New York Institute for the Blind
999 Pelham Parkway
Bronx, New York 10469
Roger Walker

IHB Services for the Blind
57 Willoughby Street
Brooklyn, New York 11201
Edith Patt

IHB Services for the Blind
329 Hempstead Turnpike
West Hempstead, New York 11552
Joann Berger

Central Association for the Blind
301 Court Street
Utica, New York 13502
Donald LoGuidice, Executive Director

The New York Association for the Blind
111 E. 59th Street
New York, New York 10022
Arlene R. Gordon, Associate Executive Director

Albany Association of the Blind, Inc.
301 Washington Avenue
Albany, New York 12206
Joseph W. Pike

Blind Work Association, Inc.
 55 Washington Street
 Binghamton, New York 13901
 James F. Zinck, Managing Director

Independent parents of Buffalo area
 116 Jeffrey Drive
 N. Tonawanda, New York 14120
 Terri Limina

Bureau of the Visually Handicapped
 110 Livingston Street
 Brooklyn, New York
 Lester Barad

American Foundation for the Blind
 15 W. 16th Street
 New York, New York 10011
 Dr. Susan Spongin

P.S. 102
 211 72nd Street
 Brooklyn, New York 11209
 Mrs. Connors, Principal

Board of Education of the City of New York
 Office of Educational Evaluation
 110 Livingston Street
 Brooklyn, New York 11201
 Anthony J. Polemeni, Director

Pennsylvania

Delaware County Intermediate Unit
 State Building
 6th and Olive Street
 Media, Pennsylvania 19063
 Peggie Mullan, Supervisor

Westmoreland Intermediate Unit
 Special Education Offices
 409 Coulter Ave.
 South Greensburg, Pennsylvania 15601
 Dr. C. Eugene Hampton

Schuylkill County Intermediate Unit
 420 N. Center Street
 Pottsville, Pennsylvania 17901
 Charles E. Wernert

Virginia

The Virginia School for the Deaf and the Blind
Staunton, Virginia 24401
Whit Menefee, Principal

APPENDIX D

Definition of Terms

Adventitiously Blind - Blind by accident or acquisition; not natural or hereditary (Dorland's Medical Dictionary, 1974); after the first year of life (Warren et al., 1973)

Congenitally Blind - Blind at birth and usually before birth; referring to conditions present regardless of their causation (Dorland's Medical Dictionary, 1974); in the present research congenitally blind children include those becoming blind during the first 12 months of life (Warren et al., 1973)

Light Perception - Ability to perceive light not direction from which it's coming (Faye, 1976)

Visual Acuity - Ability of the retina to separate and discriminate stimuli; measured by the Snellen Chart, a person with 20/200 vision at 20 feet can discriminate only what a normal person can discriminate at 200 feet (Dorland's Medical Dictionary, 1974)

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