EFFECT OF EXPLICITNESS OF TASK PRESENTATION AND RESPONSE FORMAT ON COGNITIVE ROLE-TAKING IN CHILDREN AGES FOUR, SIX, AND EIGHT YEARS

by

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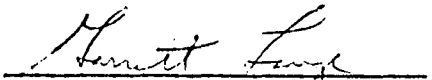

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The purpose of the present study was to assess the relation between cognitive role-taking ability and three independent variables: 1) age, 2) the explicitness with which the cognitive perspectives were differentiated in the presentation of the task, and 3) the type of response required of the child. A picture task and a story task were presented individually to a total of 120 children in nursery school, first grade, and third grade. Both tasks required the child to interpret a situation from the point of view of another person who had less information about the situation than the child himself had. The picture task required the child to interpret a small portion of each picture (the "droodle") from the point of view of a classmate who had not seen the complete picture. The story task required the child to interpret the final scene of the story from the point of view of one of the characters, who had not seen everything that happened.

Half the children in each age group received a task presentation procedure which emphasized the difference between the child's privileged perspective (referred to as a "secret") and the perspective of the other person. The remaining children received a task presentation procedure which made no explicit reference to the difference in perspectives. For each item on each task, the child was asked three questions, all of which required him to take the role of the other, but which differed in the hypothesized difficulty of the responses required. The Level 3 question asked the child to predict the response of the other ("What will he think?"), and was hypothesized to be the most difficult. The Level 2 question asked the child to select one of two

alternate responses, an egocentric or a non-egocentric response. The Level 1 question, hypothesized to be the easiest, directly asked the child whether or not the "other" knew the privileged information.

The results indicated a significant relation between age and role-taking performance. This relation held for both the picture and story tasks, and for all three levels of response. Greater improvement in performance was found between ages four and six than between ages six and eight. No relation was found between explicitness of task presentation and role-taking performance. Emphasizing the difference between the cognitive perspectives did not facilitate role-taking for any level of response on either task. A significant relation was found between role-taking performance and level of response. The Level 1 questions elicited the highest number of non-egocentric responses on both tasks. For Task A, the Level 3 questions were more difficult than the Level 2 questions, as expected. For Task B, however, the Level 2 questions were more difficult than the Level 3 questions. Scores on Task A and Task B were found to be correlated for the total sample, but not within age groups. There were no systematic differences in difficulty between Task A and Task B. There was, however, more internal consistency among the items on Task A than among the items on Task B.

It was concluded that cognitive role-taking performance, as measured by the two tasks used, is related to age and to the type of response required of the child. However, these relations were not directly parallel for the two tasks. It was therefore concluded that there should be more study of role-taking performance in relation to the specific cognitive requirements of the role-taking tasks used.

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CHAPTER I

INTRODUCTION

There has been considerable controversy recently about the age at which children can take the perspective of another; i.e., can understand what another person sees, knows, or feels, when that knowledge, feeling, or percept is different from the child's own. Although there have been a number of studies directed to this question, results have been inconsistent, and authors have drawn very different conclusions about the ability of young children to understand a point of view other than their own. There appears to have been little attempt to reconcile these diverse findings or to integrate them within a cognitive developmental framework. The purpose of the present study was to examine one aspect of perspective-taking ability, about which different conclusions have been drawn. The study focused on cognitive perspective-taking, or the ability of the child to differentiate what another person knows from what he himself knows. Three perspective-taking tasks, which have produced conflicting results, were examined. An attempt to reconcile the discrepant results were made by 1) analyzing the cognitive requirements of successful performance on each task; 2) replicating two of the tasks on children in the developmental range originally used; and 3) introducing variations in task presentation and response format, which were predicted, on the basis of cognitive developmental theory, to alter performance.

The proposition that children younger than seven or eight years are unable to take the perspective of another person was originally presented by Piaget (1926, 1928). Piaget used the term "egocentrism" to refer to the tendency of the young child to view the world only from his own point of view. He defined egocentrism specifically as a lack of ability and a lack of desire or felt need to take into account the viewpoints of others; i.e., an inability to "decenter" from one's own point of view. Piaget supported this definition with evidence from several experiments which showed that children under six or seven years were unable to communicate with a listener in a way that took into account the listener's need for information (Piaget, 1926). In later studies, he showed that children under eight years were unable to reconstruct the aspect of a three-dimensional visual display seen by a person sitting on the opposite side of the display (Piaget & Inhelder, 1956). Piaget considered egocentrism to be an inherent aspect of the preoperational stage of his sequence of cognitive development (Piaget, 1928, p. 201). Other characteristics of this cognitive stage include irreversibility of thought, unselfconsciousness and incommunicability of thought, non-analytic thinking, and the centration of attention on one salient aspect of a situation, to the neglect of other important aspects. Piaget observed a rapid decline in egocentrism at about seven or eight years, which he interpreted as an indication of, and the result of, the qualitative shift from the preoperational to the concrete operational stage of cognitive development. The increased ability of the concrete operational child to decenter was also accompanied by increased ability to reverse thought processes, to understand the logic of classes and relations, and to attend to and integrate multiple aspects of a situation.

More recent theoretical statements have suggested that acquisition of the ability to decenter is a long-term developmental process. Following Piaget, Elkind (1967) and Looft (1972) have defined egocentrism as an embeddedness in one's own point of view. This embeddedness, or inability to decenter, prevents one from understanding the perspectives of others precisely because he is not aware that different people have different points of view. While Piaget emphasized the sharp increase in ability to decenter, which occurred at about seven to eight years, Elkind and Looft have suggested that the ability to decenter, or to understand another point of view, develops in stages over the entire course of childhood and adolescence. Although both Elkind and Looft refer to a series of advances in the ability to decenter, the behavioral changes predicted to accompany each advance have not been specified.

Although Piaget used several different tasks to measure the child's ability to take the point of view of another, he spoke of egocentrism as a unitary trait. That is, the child who was egocentric was thought to be unable to comprehend the visual, cognitive, or affective perspective of another, if that perspective was different from his own. Looft (1972) and Elkind (1967) also referred to the ability to decenter as if it reflected a single cognitive dimension; and Flavell and his associates used the single term "role-taking" to refer to successful performance on a variety of tasks requiring the child to take the visual or cognitive perspective of another (Flavell, Botkin, Fry, Wright, & Jarvis, 1968). There is, in fact, some evidence that different types of role-taking tasks do reflect a common underlying dimension. In a factor analytic study of several tasks previously used to assess visual and

cognitive perspective-taking, Rubin (1973) found a decentration factor, which accounted for a large proportion of the variance of the scores. Despite the evidence for a unitary role-taking or decentration factor, Ambron and Irwin (1974) have suggested that role-taking should be viewed as a summary variable or multidimensional construct. Although the various aspects of a summary variable may be related, they should not be treated as identical. Current studies of role-taking are more frequently making the explicit distinction among perceptual role-taking (the ability to understand what another sees), cognitive role-taking (the ability to understand what another knows), and affective role-taking (the ability to understand what another feels) (Ambron & Irwin, 1974; Marvin, Mossler, & Greenberg, 1975; Yarrow & Waxler, 1975). The present study focused only on the cognitive role-taking dimension.

Recent research on role-taking ability has generally taken one of two approaches. One approach has been to use tasks similar to those devised by Piaget in an attempt to substantiate his findings and support his contention that children younger than seven or eight cannot take the perspective of another. The other approach has been to use other types of tasks in an attempt to demonstrate that children younger than seven or eight have much more perspective-taking ability than has been previously recognized. By using a variety of tasks which differed in the specific role-taking skills required, the nature and complexity of the stimulus materials, and the types of responses required, both approaches have proved successful. That is, some investigators have demonstrated that children as young as three or four can "take the perspective of the other" (e.g., Masangkay, McCluskey, McIntyre, Sims-Knight, Vaughn, &

Flavell, 1974; Fishbein, Lewis, & Keiffer, 1972; Marvin, Mossler & Greenberg, 1975; Maratsos, 1973; Yarrow & Waxler, 1975). Others have demonstrated equally convincingly that children younger than seven or eight are rarely able to be successful role-takers (e.g., Chandler & Greenspan, 1972; Flavell et al., 1968; Greenspan, Barenboim, & Chandler, 1974; Laurendeau & Pinard, 1970). The inconsistent results and conflicting conclusions have made it difficult to specify the developmental course of role-taking skills.

Marvin et al. (1975) suggested that one difficulty with previous research is that role-taking ability has been defined only in functional terms -- that is, in terms of successful performance on a particular task in a specific setting. This functional approach has perhaps diverted attention away from the logical processes involved in various role-taking activities. If the ability to take the perspective of another person is a developmental cognitive characteristic, then investigators must attempt to describe the manifestations of this characteristic at all developmental levels. Further, they must attempt to elucidate the processes which occur in the developmental transition from the profound egocentrism of early infancy to the sophistocated role-taking of adults. This approach is consistent with the theory of Piaget, who believes that rudimentary cognitive processes are present at birth and mature through a series of qualitative changes. Piaget, however, seems to have considered egocentrism only as a characteristic of thinking during the preoperational period, and not as a distinguishable developmental ability. Although recent theoretical statements by Elkind (1967), Looft (1972), Flavell et al. (1968), and Selman (1971b,

1974) have provoded the conceptual underpinnings for developmental research, progress has been slow. More progress could perhaps be made if investigators made a greater effort to specify the performance requirements of the role-taking tasks they used and related these task requirements to developmental theory. While some attempt to do this has been made in regard to perceptual role-taking in very young children (Masangkay et al., 1974; Flavell et al., 1968; Fishbein et al., 1972), little progress has been made in the areas of cognitive and affective role-taking.

Cognitive role-taking requires a child to differentiate what he himself thinks or knows from what another person thinks or knows, when he and the other have different thoughts or information. One way to assess this ability is to devise a situation in which the child is provided with information not available to another person. After the child has received this "privileged" information, he is asked whether the other person knows what he knows. Or he might be asked to predict the response of the other, a process which would require differentiation of perspectives and suppression of his privileged knowledge.

Three different tasks have recently been reported in the literature, all using the "privileged information" approach, and all purporting to assess the child's ability to take the cognitive perspective of another. A summary of the nature and cognitive requirements of each task is presented in Table 1. One task, developed by Chandler, Helm, and Smith (1974), consists of a series of "droodles". based on the cartoon technique popularized by Roger Price (1953). Each droodle consists of a schematized line drawing which represents only a small part of a

Table 1

Description of Task Requirements

of Four Cognitive Role-Taking Tasks

Task	Information Processing Requirements	Response Requirements
Droodles Procedure I (Chandler et al. 1974)	1. Ability to understand that someone who has not seen the total picture will not know what it represents. 2. Ability to infer that a person who has seen only the droodle has not seen the total picture. 3. Ability to assume the perspective of a real "other" (a classmate) to whom the same task materials will be presented. 4. Ability to maintain differentiation between his own privileged perspective and another less informed perspective which he has never experienced.	Willingness to admit that he does not know how the other will respond or Ability to construct a hypothetical response which is plausible but incorrect.
Droodles Procedure II (Chandler et al. 1974)	1. Same as 1 above. 2. Same as 2 above. 3. Same as 3 above. 4. Ability to maintain differentiation between his own privileged perspective and another less informed perspective which he <u>has</u> previously experienced.	Ability to recall his response from the naive perspective. Ability to use his "naive" response as a basis for predicting the response of the other.

Table 1 (continued)

Task	Information Processing Requirements	Response Requirements
Story Task (Ambron & Irwin, 1974)	1. Ability to understand that if the character did not see the middle two pictures, he would not know what had "really" happened. 2. Ability to infer that the character did not see what happened in the middle two pictures. 3. Ability to assume the perspective of a symbolic "other" who is embedded within the task materials. 4. Ability to maintain differentiation between his own privileged perspective and another less informed perspective which he has not directly experienced.	Ability to understand the logical inference implied by only the first and last pictures. Ability to use this logical inference as a basis for predicting the character's response.
Secret Game (Marvin et al., 1975)	1. Understanding that the person who does not see or hear the "secret" will not know the secret. 2. Ability to infer that one person does not know the secret (signaled by an obvious cue). 3. Ability to assume the perspective of two real "others", interacting in a group. 4. Ability to maintain differentiation of perspectives while answering questions about the perspective of each person.	Ability to decide whether or not a particular person has a particular bit of knowledge.

much larger scene. Viewed in isolation, the droodle is essentially uninterpretable. But after seeing the whole picture, one can appreciate the droodle as a highly selective representation of the total picture. Several examples of droodles are presented in Appendix A.

Chandler et al. (1974) presented the droodles in two different ways to children ages four, seven, and eleven years. In Procedure I, children were first shown the completed drawing and asked to describe and label it. The drawing was then reversed, revealing only the abbreviated detail or droodle. The child was then asked to anticipate how the droodle would be interpreted by one of his classmates, who was to be shown only that small detail (Chandler et al., 1974, p. 5). Chandler et al. believed that this presentation of the task required skills of abstraction and hypothetico-deductive thinking that are available only to children who have attained the formal operational level of thinking. In order to respond correctly, the child had to assume a cognitive perspective that he himself had never experienced, for once one has seen the total picture, he cannot perceive the droodle in the same way as he would if he had seen only the abbreviated portion. Consistent with Chandler's prediction, the major increase in successful performance on this task occurred just prior to age eleven. Chandler's analysis of his task refers mainly to the child's cognitive processing of the stimulus elements; i.e., his ability to represent the stimuli from both his own and another perspective. However, the response requirements of this task would also seem to make it very difficult for young children. In order to produce a non-egocentric response, the child must either say that he doesn't know how his classmate would interpret the picture (a

response rarely given by young children), or he must think of a hypothetical response which is plausible but incorrect. This latter response would clearly seem to require hypothetico-deductive thinking and is quite difficult even for adults.

In a different presentation of the droodles task (Procedure II), Chandler et al. (1974) first showed the child the abbreviated droodle and asked him to guess what it might represent. He was then shown the complete picture, prior to being asked to anticipate how his classmate would interpret the abbreviated droodle. Chandler et al. reasoned that this change in presentation served two functions. First, it provided the child an opportunity to experience the perspective of the other, as well as the perspective that would be uniquely his. This provision of shared experience was expected to facilitate the performance of children in the concrete operational stage, who still depend on concrete, personal experience to guide their thinking. Chandler et al. also made reference to the different response requirements of this procedure. Because the child was required to construct a response from the naive perspective, he already had in his repetoire one concrete alternative to his privileged perspective. Although he was still required to anticipate the response of another, which was ostensibly "hypothetical", a concrete alternative was readily available, if he was able to use it to mediate his response. Again consistent with Chandler's reasoning, the seven-year-olds were significantly more successful on this task procedure than on the previous one. The preoperational four-year-olds, however, were no more successful with Procedure II than with Procedure I.

A second cognitive role-taking measure is a story task used by

Ambron and Irwin (1974), which was based on the earlier work of Flavell et al. (1968). The task included four story items, each of which consisted of four pictures accompanied by a narrative. The task required the child to take the perspective of a character in the story who did not have all the information that the child himself had. The character was introduced at the beginning of the story (picture 1), temporarily disappeared (pictures 2 and 3), and reappeared in the final scene (picture 4). After being told the complete story, the child was asked a question requiring him to interpret the final scene from the point of view of the character who had just reappeared. In order to do this, the child had to discount important information which had been presented during the character's absence from the story scene. Examples of the story items and questions used by Ambron and Irwin (1974) are presented in Appendix B. Ambron and Irwin presented the task to five- and seven-year-old children, and found a highly significant increase between the two ages in the number of responses that discounted the extra information; i.e., non-egocentric responses.

The story task has several similarities and differences in relation to the droodles tasks described above (see Table 1). The major similarity, of course, is that in all three tasks the subject is given more information than is the "other" whose perspective he must take. In addition, the privileged information is surprising and amusing, and therefore, very salient. The child must suppress this salient information in order to take the perspective of the other and accurately predict his response to a situation. It would appear, then, that both the droodles and the stories were tapping the same dimension of cognitive role-taking.

The presentation of stimulus materials in the story task is more comparable to Procedure I of the droodles task than to Procedure II. The child was first told the entire story and was then asked to interpret the last scene from the point of view of the character who had just reappeared. Because he was not asked to interpret the story without the privileged information, prior to being given that information, the child was not given the shared experience provided to subjects in Procedure II of the droodles task. Although Chandler et al. believed that the shared experience was what accounted for the fact that seven-year-old children performed successfully under Procedure II, but not under Procedure I, the seven-year-olds in the Ambron and Irwin sample were producing accurate role-taking responses without the benefit of shared experience.

While the stimulus presentation in the story task was more similar to Procedure I of the droodles task, the required response was more similar (but not identical) to Procedure II. Although the child had not shared the perspective of the other, he did not have to construct a purely hypothetical perspective. He had only to select one of two available alternatives -- one of which was logical from the point of view of the character in the story, and one of which was objectively correct, but depended on having access to the privileged information. Thus, in both Procedure II of the droodles task and in the story task, the child had to choose between an egocentric but salient and objectively correct response, and a relatively structured and potentially available non-egocentric alternative. In the droodles task, the alternative depended on the child's recalling his own construction of the

naive perspective, while in the story task it depended on his recognition of the only logical alternative available to the story character. In both cases, the child had to spontaneously produce the alternative prior to using it as a basis for predicting the response of the other. The seven-year-olds in the Ambron and Irwin study showed the same pattern of successful performance as the seven-year-olds who received Procedure II of the Chandler et al. study, even without the benefit of shared experience. This result suggests that the structuring of the response alternatives may have been a more important feature of Chandler's manipulation than was the provision of shared experience. Note, however, that preschool children were not able to perform successfully on either of the tasks described.

One other difference between the droodles tasks and the story task should be briefly mentioned. In the droodles task, the "other" whose perspective was to be taken was a real person (a classmate) who was ostensibly going to look at the same stimulus materials the child had seen. In the story task, the "other" was a symbolic character who was embedded within the stimulus materials. It is not clear just how this difference might be expected to affect performance.

A third task used to assess cognitive role-taking is the "secret game", devised by Marvin, Mossler, and Greenberg (1975). The task consisted of an interpersonal situation in which the child, the experimenter, and the child's mother sat in a circle on the floor, with two toys in the center of the circle. While the E hid his eyes and covered his ears, the child and his mother (in whispered tones) chose one toy to think of as their secret. Without moving the toys, the mother and

child indicated that they were ready for the E to uncover his eyes and ears. The E then asked the child three questions: 1) whether he (the child) knew what the secret was ("which toy you're thinking about"): 2) whether his mother knew; and 3) whether the E knew the secret. The questions were asked in random order, and the child had to respond correctly to all three questions for the response to be considered non-egocentric. The game was repeated twice more, once with the mother hiding her eyes, and once with the child hiding his eyes. The same three questions were asked each time, and, of course, the correct responses differed, depending on who had hidden his eyes. Each child was given a summary classification of "non-egocentric", if he made non-egocentric responses on at least two of the three repetitions of the game.

The most striking difference between this study and the ones reported above is that the major increase in successful performance occurred between ages three and four years. While only three of the 20 three-year-olds were classified as non-egocentric, 19 of the 20 four-year-olds were. Yet, the secret game required the child to differentiate between knowledge that he had, based on privileged information, and the knowledge of another, who did not have the privileged information. It thus appears that this task was tapping the same role-taking dimension as did the droodle and story tasks. In addition, the preschoolers were able to perform the task without the benefit of previously shared experience, unless one assumes that the child was drawing on a prior history of occasions on which he had been excluded from secrets. What makes this task so much easier than the droodles or the stories?

Marvin et al. (1975) believed that their task differed from

previously used tasks in four important ways. First, it required the child "to distinguish between his own point of view and that of another where those perspectives are demonstrably different" (Marvin et al., 1975, p. 4). However, the difference in perspectives was made salient by the use of the term "secret" (and accompanying whispering) and by the procedure of having E hide his eyes and cover his ears. Second, the task was "as simple as possible, while still requiring the child to communicate his recognition that the perspectives differ" (Marvin et al., 1975, p. 4). Unfortunately, the authors did not define just what it was that made this task simple enough for preschoolers. Third, the task reflected "situations which are quite natural to the child -- situations which the child might be expected to encounter in his day-to-day activity within his family and peer group" (Marvin et al., 1975, p. 4). Fourth, in order to minimize wariness of strange adults, which could affect performance, the tasks included the child's mother and were administered in the home.

The distinguishing features of the secret game, discussed by Marvin et al., seem to be of two types (see Table 1). One type includes the cognitive requirements of the task (which were not fully analyzed by the authors). The other type includes the use of familiar situations, adults, and test settings, rather than novel tasks and settings, and strange adults. The presentation of stimulus materials in the secret game differed in two important ways from that of the droodles or story tasks. First, the difference in perspectives was made quite explicit, by having E hide his eyes and cover his ears, by having the mother and child whisper, and by using the term "secret" to refer to the privileged

information. Second, the privileged knowledge in the secret game (the choice of a toy) was not as novel and amusing as it was in the droodles or story tasks. The effect of both these features is to make the difference in perspectives in the secret game a more explicit and salient aspect of the situation than it was in the droodles or story tasks.

Since one of the characteristics of the thinking of preoperational children is the centration of attention on the most salient aspects of a situation (Piaget, 1928), one would expect a task in which the role-taking requirements were obvious and explicit to be easier for preschoolers than a task in which the role-taking requirements were more subtle or implicit. Thus, one variable which would be expected to affect performance on cognitive role-taking tasks is the explicitness of the task in defining the different perspectives. Flavell and his associates have demonstrated the importance of this variable in perceptual role-taking tasks (Flavell et al., 1968; Masangkay et al., 1974). They found that preschoolers were able to take the perspective of another when that perspective was signalled by a clearly defined label (upside down vs. right-side up). While the four-year-olds were not able to identify which aspect of a three-dimensional witch another person saw, they were able to tell whether the person saw the orange spot on the hat or the blue spot on the nose. Fishbein et al. (1972) also found that preschoolers could take the visual perspective of another if that perspective was made explicit by a verbal label. The effect of explicitness in defining perspectives has not been directly investigated with respect to cognitive role-taking tasks.

The response requirements of the secret game also differed from those of the droodles and story tasks. In the secret game, the child was required only to make a simple decision as to whether or not a particular person knew something. The question asked by the E directly focused the child's attention on the crucial issue, and the child needed to respond with only a "yes" or "no." In contrast to the droodles and story tasks, he did not need to construct a hypothetical response, nor even to produce spontaneously a non-egocentric alternative based on previously shared experience or logical inference.

The differences between the secret game and the other two tasks discussed suggest two possible reasons that children younger than seven years are unable to produce the responses required for the story task and for Procedure II of the droodles task. According to Piaget (1928), preoperational children are unable to simultaneously attend to and coordinate more than one aspect of a situation. In order to perform successfully on the droodles and story tasks, the child needed to simultaneously attend to and coordinate his own perspective, the perspective of the other, and the response the other was likely to make as a result of his perspective. The secret game, in which preschool children were successful, eliminated the need for attention to several perspectives simultaneously by asking a direct question which focused the child's attention on one dimension; i.e., whether or not the other person knew the secret.

In the droodles and story tasks, the child was not only required to attend to two perspectives, he had to produce spontaneously the non-egocentric alternative from memory or from simple logic. A second

possible reason for the failure of the preschool child on such tasks is that he is unable to perform this retrieval process. However, he might be able to consider the two perspectives if they were presented to him as concrete and equally available alternatives. A direct question format, which has not been investigated, might thus present the child with two response alternatives from which to choose. The experimenter could ask the child if the "other" would think "X" (egocentric response) or if he would think "Y" (non-egocentric alternative). If the preschool child were able to respond non-egocentrically to such a question, the results would lend support to the proposition that children younger than seven years are able to simultaneously consider more than one perspective, if the perspectives are presented in explicit, concrete form.

Statement of the Problem

The present study used two cognitive role-taking tasks to examine the relation between perspective-taking ability and two independent variables: 1) age, and 2) the explicitness with which the cognitive perspectives are differentiated in the task presentation. The effect of variation in response format was also explored through the use of three dependent measures for each task. The three response measures differed in the hypothesized level of cognitive difficulty. The preceding analysis of the two tasks to be used (the droodles task and the story task) and the discussion of these tasks in relation to cognitive developmental theory, formed the basis for the following research questions:

1. Is there a relation between performance on each of the two role-taking tasks and age?

2. Is there a relation between performance on each of the two role-taking tasks and the degree of explicitness with which the cognitive perspectives are differentiated in the task presentation?
3. Is there an interaction between the degree of explicitness of task presentation and age, with respect to performance on each of the role-taking tasks? That is, does the variation in explicitness of presentation have a greater effect on performance (on each task) at some ages than at other ages?

The three types of response for each task represented three hypothesized levels of cognitive difficulty. The Level 1 response required the child to respond "yes" or "no" to a direct question about whether or not another person possessed a particular bit of knowledge. The Level 2 response required the child to choose between two structured alternatives in predicting the response of the other. One of the alternatives represented the child's own "privileged" perspective, and the other represented a non-egocentric alternative. The Level 3 response required the child to predict the response of another without the benefit of structured alternatives. In this case, the child was required to produce spontaneously an appropriate, non-egocentric response. The responses at each level (for each task) were dichotomously classified as "egocentric" or "non-egocentric." The following research questions were asked with respect to the variation in level of responses:

4. Is there a relation between level of response difficulty and performance on each of the tasks?

5. Is there an ordered relation between the proportion of non-egocentric responses and the level of response for each task? That is, will the highest proportion of non-egocentric responses occur when Level 1 responses are requested, the next highest proportion for Level 2 responses, and the lowest proportion when Level 3 responses are required?

Hypotheses

Based on the research and theory previously discussed, the following hypotheses were proposed:

H_1 There will be a significant difference among the mean scores for Level 3 responses on Task A for the three age groups.

H_2 There will be a significant difference between the mean scores for Level 3 responses on Task A for the two experimental treatments (Explicit vs. Non-Explicit condition).

H_3 There will be a significant interaction between age and treatment, with respect to scores for Level 3 responses on Task A.

H_4 There will be a significant difference among the mean scores for Level 3 responses on Task B for the three age groups.

H_5 There will be a significant difference between the mean scores for Level 3 responses on Task B for the two experimental treatments (Explicit vs. Non-Explicit condition).

H_6 There will be a significant interaction between age and treatment, with respect to scores for Level 3 responses on Task B.

Hypotheses H_1 and H_4 stem directly from previous research using the same tasks and requiring responses that are designated Level 3 in the present study (Chandler et al., 1974; Ambron & Irwin, 1974). Tests of

these hypotheses constituted a partial replication of previous work. Hypotheses H_2, H_3, H_5, and H_6 were derived from the theoretical considerations regarding task presentation discussed in the first section of this chapter.

The following three hypotheses were derived from the theoretical considerations regarding response difficulty discussed in the first section of this chapter:

H_7 There will be a significant relation between level of response and classification of response (Egocentric vs. Non-Egocentric) on Task A.

H_8 There will be a significant relation between level of response and classification of response (Egocentric vs. Non-Egocentric) on Task B.

H_9 There will be an ordered relation between the proportion of Non-Egocentric responses and level of response; i.e., the highest proportion of Non-Egocentric classifications will occur for Level 1, the next highest proportion for Level 2, and the lowest proportion for Level 3.

Significance of the Problem

The major contribution of the present study is to help provide a clearer understanding of the developmental course of cognitive role-taking skills. Although role-taking is thought to be a developmental characteristic (Elkind, 1967; Flavell et al., 1968; Looft, 1972), a comprehensive description of its developmental course is just beginning with respect to perceptual role-taking (Flavell et al., 1968; Fishbein et al., 1972; Masangkay et al., 1974), and has hardly been attempted

with respect to cognitive and affective role-taking (with the exception of Selman, 1971b, 1974). The existing studies have used very different tasks and have usually described performance only at the functional level of success or failure. As a result, the reported findings have frequently been inconsistent from study to study. Because the logical processes involved in the different tasks have not been specified, very different conclusions have been drawn with respect to the age at which children can take the perspective of another (e.g., Marvin et al., 1975 vs. Chandler et al., 1974; Borke, 1971, 1972 vs. Chandler & Greenspan, 1972). The present study has attempted to clarify the logical processes involved in three cognitive role-taking tasks which have produced conflicting results. The study has contributed to a more complete description of role-taking abilities in young children, by manipulating task requirements in ways suggested by cognitive developmental theory.

Several recent studies have suggested that role-taking may be related to other aspects of behavior, such as moral jugement (Ambron & Irwin, 1974; Moir, 1974; Selman, 1971a; Stuart, 1967), prosocial behavior (Rubin & Schneider, 1973), delinquent behavior (Chandler, 1973), and emotional disturbance (Chandler, 1972; Chandler, Greenspan & Barenboim, 1974). Other studies have indicated that role-taking skills form an important basis for interpersonal understanding (Flapan, 1968; Feffer, 1959, 1960). If role-taking skills are related to, and possibly prerequisite to, a number of desirable behaviors, such as mature moral jugements, cooperation, and empathic understanding, it would seem all the more urgent to study its developmental course from its earliest beginnings to its most sophistocated forms. Once the developmental

processes have been more completely specified, investigators can begin to answer important questions about environmental influences which facilitate or retard the development of role-taking (Marvin et al., 1975). Bearison (1975), for example, has asked what effect different organizations of parent-child relationships have on the development of role-taking. Other important questions might be: What characteristics of adult caretakers are related to development of role-taking in children? Do peer relationships facilitate the development of role-taking? At what age do peer relationships begin to have a facilitating effect? Does opportunity and encouragement to engage in role playing or dramatic play facilitate the development of role-taking? The answers to these and other related questions may provide the basis for suggestions to parents and teachers who wish to facilitate the development of role-taking in young children. But it is difficult to study influences on development until one has specified the course of that development.

If role-taking is an important ability which is related to other cognitive and social skills, it may also be useful to be able to assess an individual's level of development with respect to role-taking. Once the developmental course of role-taking has been more thoroughly described, it will be possible to develop a series of standardized tasks of graded difficulty which can be used to assess individual development. Such tasks could also be used to evaluate the effect of programs or procedures designed to facilitate role-taking.

Assumptions

The logic of the present study rests on several assumptions. First, it is assumed that cognitive role-taking is a measurable ability, or at least a measurable component of a more general role-taking ability. It is also assumed that the two tasks used in the study (i.e., the scores derived from performance on these tasks) are valid indicators of cognitive role-taking ability. Further, it is assumed that role-taking is a developmental ability; i.e., that different levels of the same basic ability are present and can be assessed at different ages.

The two procedures of task presentation are assumed to represent two levels of explicitness, with respect to the differentiation of cognitive perspectives. The "Explicit" condition uses the word "secret," and it is assumed that all children within the age range sampled are familiar with this word. It is also assumed that the two procedures used with each task represent comparable levels of explicitness for each task. Although the procedure used in the "Explicit" condition is designed to make the task easier for young children, it is assumed that some role-taking ability is still required in order for the child to perform successfully.

Finally, it is assumed that the three levels of response for each task represent three levels of difficulty, as suggested by cognitive developmental theory. Whether or not levels of actual performance are systematically related to the levels of response is an empirical question included in the study.

Limitations

Results of the study have several limitations. Population restrictions limit generalization of the findings to individuals similar to those in the sample studied. Generalization must also be restricted to variables using the same operational definitions and measures. "Explicitness of Task Presentation" is a variable that could be operationalized in many ways. The findings shed light on the role of this variable only as it is defined by the specific procedures used in the present study. The two role-taking tasks are behavioral measures presumed to reflect the developmental construct of theoretical interest. But because of the limited evidence for the reliability and validity of the instruments, generalization about "cognitive role-taking" measured by other tasks or instruments is not warranted. Because the data were collected in an experimental setting, generalizations about the ability of children to take the role of another in naturalistic settings are also not warranted.

Definition of Terms

Role-Taking. This term refers to the ability to take the perspective of another person and to understand a situation from his point of view (Flavell et al., 1968). "Role-taking" is a general term which includes the ability to understand what another person sees, knows, thinks, or feels.

Cognitive Role-Taking. This term refers specifically to the ability to understand what another person knows or thinks. It is one aspect or component of the multidimensional construct "role-taking" (Ambron & Irwin, 1974; Marvin et al., 1975; Yarrow & Waxler, 1975).

Explicitness of Task Presentation. This term is used to refer to the clarity and salience with which the two cognitive perspectives (the child's and the "other's") were differentiated when the task materials were presented. In the "Explicit" condition, the word "secret" was used to refer to the child's privileged perspective, and the child was reminded that only he and the experimenter knew the "secret." In the "Non-Explicit" condition, no specific mention was made of the fact that the child and the "other" had different information.

Response Level. This term refers to the hypothesized difficulty level of the three responses which were requested for each item on the role-taking tasks. Level 1 responses required a "yes" or "no" response to a direct question about what the other person knew. Level 2 required the child to predict the other's response by choosing between two structured alternatives. Level 3 required the spontaneous prediction of the response of the "other," without the benefit of structured alternatives.

Non-Egocentric Response. This term refers to responses to the items on the role-taking tasks which show clear evidence that the child has differentiated his own privileged perspective from the perspective of the other. Specific criteria for classifying the responses on each task as "Non-Egocentric" are given in Appendix E.

Egocentric Response. This term refers to responses to the items on the role-taking tasks which show evidence that the child has failed to distinguish his own privileged perspective from that of the other. Specific criteria for classifying the responses on each task as "Egocentric" are given in Appendix E.

Task A. This term refers to the droodles task, described on pages 6 and 9.

Task B. This term refers to the story task, described on pages 10 and 11.

CHAPTER II

REVIEW OF LITERATURE

Research on the ability of children to take the perspective of another person stems directly from the work of Piaget. As discussed in Chapter I, Piaget (1926, 1928) proposed that children younger than seven or eight years could view the world only from their own point of view and were unable to see a situation from another perspective. Piaget referred to this centeredness or embeddedness in one's own point of view as "egocentrism." Egocentrism was thought to be an inherent aspect of the preoperational stage of Piaget's sequence of cognitive development. The marked decrease in egocentrism which Piaget observed at about eight years was attributed to the qualitative shift from the preoperational to the concrete operational stage of cognitive development. The increased ability to decenter, or to take the perspective of another, was accompanied by increased ability to reverse thought processes, to understand the logic of classes and relations, and to attend to and integrate multiple aspects of a situation.

Piaget's theoretical statements and limited empirical research emphasized the marked increase in perspective-taking ability which occurred at about eight years of age. His writings have left the impression that children younger than eight years are totally unable to take the perspective of another, while children over eight years are fully able to take the perspective of a specific, concrete other. (According to Piaget's theory, children are unable to take the

perspectives of various hypothetical others until they have attained formal operational thinking).

More recent theoretical statements have suggested that the ability to understand the perspective of others develops more gradually over the period of early and middle childhood and into adolescence. Both Elkind (1967) and Looft (1972) have referred to a series of advances in the ability to decenter. They have not, however, specified the behavioral changes predicted to accompany each advance. Flavell and his associates have also taken a developmental view of decentering or perspective-taking ability (which they refer to as "role-taking"). Flavell's early work on role-taking and communication skills focused primarily on the developments which occurred during middle childhood and adolescence (Flavell, Botkin, Fry, Wright, & Jarvis, 1968). However, a small part of that early work and more recent studies have focused on the early development of role-taking ability in children ages two to five years (Masangkay et al., 1974; Flavell, 1974). Selman (1971b, 1974) has also been attempting to integrate developmental findings on role-taking into a developmental conceptual framework. Thus, the conceptual foundations for studying the development of role-taking are gradually being constructed. As the present review will show, however, we are far from a coherent description of the developmental course of role-taking.

One source of confusion in the research presented below is that many of the studies have sought either to substantiate or to repudiate Piaget's theory regarding the age at which children can take the perspective of another. In their attempts to do so, investigators have

used tasks or instruments that differed in many ways from other tasks purporting to measure the same role-taking ability. The conflicting results have led to contradictory conclusions about the abilities of young children and to arguments about the criteria of "true" perspective-taking. It is beyond the scope of this review to fully analyze the similarities and differences among the many different tasks used to assess role-taking. However, major differences will be pointed out. A more thorough analysis of the three studies which directly guided the present research is presented in Chapter I.

The following review is organized under three headings which represent three aspects of role-taking: perceptual role-taking (the ability to understand what another person sees), affective role-taking (the ability to understand what another person feels), and cognitive role-taking (the ability to understand what another person thinks or knows). The section on cognitive role-taking is further sub-divided into research dealing with interpersonal communication and research dealing with the ability to predict the response of another person. As mentioned in Chapter I, Piaget, Elkind, Looft, and Flavell have referred to perspective-taking as if it were a unitary dimension. Although there is some evidence for a common "decentration" factor underlying performance on a variety of role-taking tasks (Rubin, 1973), recent investigators have suggested that role-taking should be considered a multidimensional construct with several related but distinguishable aspects (Ambron & Irwin, 1974). The three headings which organize the following review represent the dimensions of role-taking most frequently distinguished in recent literature. The studies reported in each

section are divided into those which have been interpreted as supporting Piaget's theory regarding the age at which role-taking ability is attained, and those which appear to have demonstrated role-taking ability in children at an earlier age. The summary for each section will highlight some major differences in research strategies that could account for the discrepant results. The review closes with a short section on socialization experiences and role-taking.

Research on Perceptual Role-Taking

Research supporting Piaget's theory. Piaget based his conclusions about perceptual role-taking on the results of studies using his well-known "three mountains" task (Piaget & Inhelder, 1956). In this task, children were presented with a three-dimensional pasteboard model and ten paintings representing different visual perspectives on the display. The children were to indicate which of the paintings represented the view seen by a doll which was placed in different positions around the display. The results, which have been replicated by Laurendeau and Pinard (1970), indicated that the ability to reproduce the different perspectives accurately was not well developed until early adolescence. Children younger than seven years invariably attributed their own perspective to the doll, regardless of where the doll was placed. On the basis of his data, Piaget hypothesized four stages in the development of the ability to reconstruct the visual perspectives in the "three mountains" task. In the first stage, pure egocentrism, the child is unaware that a person who views the display from a different position will have a view different from his own. In the second stage, the child recognizes that the other should see something different, but

can still reconstruct only his own view. In the third stage, the child attempts to reconstruct a perspective other than his own, but may not be accurate in his reconstruction. In the last stage, the child can reconstruct the view of the other from several different perspectives. According to Piaget, children under seven or eight years would be in the first stage of pure egocentrism.

Flavell et al. (1968) presented four perceptual tasks, similar in conception to the task of Piaget and Inhelder, to children in grades two through twelve. Their tasks, however, varied in the number of different dimensions that had to be considered in the reconstruction of the perspectives. The easiest task (representation of the side view of a single object) was successfully accomplished by only one-half of the second graders. The most difficult task (a display of three cylinders which varied in height and color pattern) was successfully performed by less than half of the eleventh graders. The results of this study suggest that successful performance on perceptual role-taking tasks is partly a function of task complexity. However, the findings also suggest, in support of Piaget, that the perceptual role-taking skill of children younger than eight years is extremely limited.

Coie, Costanzo, and Farnill (1973) hypothesized that the ability to successfully reconstruct the perspective of another was a function of both age and the type of reconstruction required. They tested their hypotheses by using a three-dimensional display, consisting of three houses of different size and color, mounted on a board. They focused on three types of reconstruction processes, which they classified as "interposition," "aspect," and "right-left." For the interposition

items, three pennies were placed on the board among the houses, and the child was asked how many pennies a doll saw when placed in different positions. For the aspect and right-left items, the child was to choose one of four pictures which represented the doll's view of the display. The right-left items specifically required a different right-left orientation from that seen by the child. The three types of items were presented to children in kindergarten and grades two and four. As expected, there was a significant main effect for age, with the kindergarten children making an average of 5.0 errors out of nine trials, while the second and fourth graders made an average of 3.2 and 1.7 errors respectively. A significant main effect for error type was also found, with the interposition items being the easiest, and the right-left items the most difficult. The results of the study generally support Piaget's findings, since major increases in successful performance occurred between five and seven years, and between seven and nine years. It is interesting to note, however, that the kindergarten children made an average of only 0.6 errors out of three trials on the interposition items. Thus, the five-year-olds in this study were able to give predominantly non-egocentric responses when they were asked to tell how many pennies could be seen from another perspective.

Research questioning Piaget's theory. In what they considered to be a preliminary pilot study, Flavell et al. (1968) devised a series of tasks which they thought would be valid measures of role-taking skill, but would be appropriate for preschool children. The tasks required children to 1) orient a picture so that the E sitting opposite the child could see it right-side-up; 2) turn a card with a picture on each

side so that he (the child) saw the same picture on his card that E was looking at on an identical card; 3) turn a cube so that he saw the same picture that E was looking at on an identical cube; and 4) tell what picture E saw on his side of a single card with a picture on each side. On the basis of data from 40 children between the ages of three and six years, the authors tentatively concluded that preschool children have some competence for visual perspective-taking. This competence consists primarily of the awareness of the existence of different perspectives. This awareness was manifested in the recognition of perspectives involving the presence or absence of an object (E sees or does not see it), opposite views of objects placed between E and S, and the up vs. down orientation of a picture placed on the table between E and S. Flavell et al. recognized a number of variations in the stimulus characteristics and response requirements of their tasks that still need to be explored. They stressed, however, that tasks assessing role-taking activity in young children should explicitly request such activity, since their data indicated that preschoolers were not able to infer implicit role-taking requirements of a task.

As part of a larger study, Yarrow and Waxler (1975) used several of the perceptual tasks devised by Flavell et al. (1968), as well as some original ones. The tasks included 1) having the subject orient a picture of a child so that the E (sitting opposite) could see the child "standing on his head"; 2) arranging a place setting (plate, knife, fork, and spoon) in front of the child and having him duplicate it for the E sitting opposite; 3) having the child orient the photograph of a man's face so that it was "looking at" E; and 5) having the child orient a

photo cube so that he saw the same picture that the E was looking at on an identical cube. The tasks were presented to approximately 100 children between the ages of three and seven years. Although statistical analyses of the data have not yet been reported, a preliminary report stated that successful performance on the perceptual tasks increased with age, "with most substantial jumps occurring between 4½ and 5 years of age" (Yarrow & Waxler, 1975, p. 6). The studies by Flavell et al. (1968) and Yarrow and Waxler (1975) suggest that children between the ages of four and six years have more perceptual role-taking ability than was recognized by Piaget.

A series of three experiments by Masangkay et al. (1974) extended the research of Flavell et al. (1968) and explored the awareness of visual perspectives in children from two to five years. The tasks were designed to test the authors' hypothesis that awareness of whole-object perspectives (does E see or not see something?) would develop earlier than awareness of aspectival perspectives (what aspect of an object does E see?). Stimulus materials included pictures and three-dimensional toys, and involved seeing vs. not seeing, right-side-up vs. upside down orientations, and front vs. back perspective. On the task involving seeing vs. not seeing, half of the two-year-olds and almost all of the three-year-olds performed correctly. As was expected, the tasks involving aspectival perspective were mastered one to two years later than those requiring only whole-object responses. The most difficult task involved the recognition of the front vs. back perspective of a three-dimensional witch, plus the ability to match E's perspective to one of three comparison witches. However, even this

task was performed successfully by 10 of the 12 five-year-olds. When the task was simplified so that the children were asked if E saw a blue spot painted on the witch's nose (front orientation) or an orange spot painted on the peak of the witch's hat (back orientation), three- and four-year-olds were easily able to respond correctly. These results suggest that young children may be able to differentiate between their own and another's perspective, if those perspectives are presented as explicit, concrete alternatives (seeing vs. not seeing an object, or seeing a blue spot or an orange spot). The ability to reconstruct the aspect of an object seen by another appears to develop later than the ability to distinguish between two whole-object perspectives.

Fishbein, Lewis, and Keiffer (1972) have further explored the methodological aspects of the study of perspective-taking in young children. Forty children at each of three ages (preschool, first grade, and third grade) were given one of four tasks which varied in stimulus complexity. The children were to respond to each task both by turning a lazy susan containing one or more toys so that E could see an aspect that was verbally designated (e.g., "Show me the front of the mouse and the side of the soldier holding his candy cane"); and also by pointing to the one among several pictures which represented the view seen by E. The two dimensions of stimulus complexity varied were one toy vs. an arrangement of three toys, and the presentation of four vs. eight pictured views. Results indicated that performance was a function not only of age, but of mode of responding and stimulus complexity. When the response was turning, the performance of even the youngest children was almost errorless, while the largest percentage of correct choices for this age group

on the pointing task was 75%. The task involving three toys was more difficult than the task involving one toy, and choosing among eight pictures was more difficult than choosing among four. When the turning task was modified so that the desired aspect was designated by a photograph rather than a verbal label, the task became considerably more difficult for the youngest group, though turning was still easier for them than pointing, especially in the three-toy task. Kurdek (1975) used a modification of this task, in which the subject had to turn his tray to indicate the aspect of the three-toy display that was seen by the E, who was sitting opposite S with an identical display. Kurdek found generally low levels of performance in kindergarten through third-grade children, with no improvement over the age range studied.

Fishbein et al. (1972) concluded that an important aspect of stimulus complexity as defined in this study was availability of a salient perceptual cue. On the basis that one of the established characteristics of the thought of the preoperational child is an inability to deal with relations among objects (Piaget, 1928), Fishbein et al. (1972) suggested that the preschool child depends on a salient cue even in dealing with the three-toy display. Provision of a verbal label (as in the original turning task) provided such a cue and could thus account for the successful performance of the youngest children. The pointing tasks required the child to select his own cues, an apparently more difficult task. It is interesting to compare the turning and pointing tasks used by Fishbein et al. (1972) to the task used by Flavell et al. (1968), in which the child had to indicate which of four sides of his cube matched the side of an identical cube facing E. The cube task

appeared to fall mid-way in difficulty between the Fishbein et al. turning and pointing tasks (according to the percentage of correct responses at each age). While apparently more difficult than the turning task (perhaps because no verbal cues were given), it appears to have been easier than the pointing task (perhaps because the different perspectives were different whole objects rather than different aspects). It is also possible that the cube task was less difficult than the pointing task because the child was matching two concrete displays, rather than a concrete display and a pictured representation.

Two other studies have provided evidence that preschool children have some ability to understand visual perspectives that differ from their own. Selman (1971b) used a house-like apparatus, consisting of three rooms, to assess perceptual role-taking in four- to six-year-old children. A person in the "watching" room could see through a window into the two other rooms, the "choosing" room and the "secret" room. A person in the "choosing" room, however, could not see into the "secret" room. Each subject took a turn sitting in the "watching" room and in the "choosing" room. From each vantage point, S was asked whether he or E (seated in the other room) could see into more rooms, and whether he or E could see a toy in the "secret" room. S was also asked who could see into more rooms and who could see the toy if S and E changed places. Selman found a significant increase in the accuracy of responses between ages four and five years. Ability to perform accurately on this task seemed to be achieved about a year later than successful performance on the tasks used by Masangkay et al. (1974) to assess the ability to predict whether the E could or could not see something.

A study by Shantz (1970) suggests another possible methodology to assess awareness of perspectives in young children. Three- and four-year-old children were given the opportunity to look into a "peek-in-the-box" with a window on each side. The box contained a three-dimensional display which could be surreptitiously rotated to provide an "expectancy violation" to subjects who were aware that the display should look different from the different sides. While there were no developmental differences between the three- and four-year-olds, about one-half of the preschool children clearly verbalized their awareness of the "trick." While, in this task, both of the perspectives were seen by the child himself, the "expectancy violation" model might be employed in assessing awareness of the perspectives of others.

Summary. Taken as a group, the studies reported in this section suggest that perceptual role-taking ability is a function not only of age, but also of task complexity. The studies which appear to support Piaget's theory of egocentrism have used stimulus materials that were quite complex. That is, they have used three-dimensional visual displays, in which the elements varied in size, shape, color, and/or pattern. In order for the child to successfully reconstruct various perspectives on the display, he must be able to transpose all the relations among the stimulus elements, as they are seen from different positions. However, one of the characteristics of the thinking of the preoperational child, according to Piaget (1928), is the inability to understand the logic of relations. Therefore, the reconstruction process in these complex tasks would be expected to be too difficult for children younger than seven or eight years. The studies of Piaget

and Inhelder (1956), Flavell et al. (1968), and Coie et al. (1973) suggest that the ability to reconstruct perspectives on complex visual displays continues to develop throughout middle childhood and adolescence. The more elements to be related, the later the tasks are mastered. Several authors have pointed out that, if perspective-taking is defined solely in terms of such complex tasks, then children younger than seven or eight years will obviously appear to be unable to take the perspective of another (Borke, 1972; Fishbein et al., 1972; Marvin et al., 1975; Watson, 1975).

The studies which have used "simpler" tasks have found clear evidence of perceptual role-taking in children as young as two years. The age at which children were predominantly successful varied from two to six years, depending on the specific task used. Although the tasks used with younger children are all described as "simpler" than the visual display tasks used with older children, the relevant dimensions of stimulus complexity which differentiate among the tasks have not been defined. One relevant feature, however, alluded to in several studies, is the concreteness and explicitness of the different perspectives. The preschool children in the studies described performed most successfully on tasks in which the "other" perspective was a whole object or was made explicit by a verbal label (Coie et al., 1973; Fishbein et al., 1972; Masangkay et al., 1974). They performed less successfully when the perspective to be represented was an aspect of an object or group of objects (Coie et al., 1973; Fishbein et al., 1972; Masangkay et al., 1974). Another relevant feature of task complexity appears to be the type of response required. Preschool children

performed most successfully when asked a direct question with a specific, concrete answer (e.g., "What do I see?"), or when they were asked to manipulate the stimulus materials ("Turn it so I can see . . ."). They were less successful at reconstructing a visual perspective and matching it to one of several pictured alternatives (Coie et al., 1973; Fishbein et al., 1972; Masangkay et al., 1974). These implications regarding the importance of explicitness of perspectives and type of response have had an important influence on the formulation of the present study.

The differing results produced by studies using different stimulus materials and response modes suggest the need for more methodological research related to perceptual role-taking in preschool children. One goal of such research should be to specify the significant features of stimulus materials, task presentation, and response modes. When these features have been specified, role-taking tasks can be analyzed in terms of cognitive requirements and of the logical processes involved in successful performance. Specification of these logical processes will contribute, in turn, both to a coherent description of the developmental course of role-taking and to a cognitive developmental theory of role-taking.

Research on Affective Role-Taking

Research supporting Piaget's theory. Several studies have used tasks which required the subject to infer the motives or feelings of a person or persons, based on cues presented through a videotape, film, story, or tape recording. Gollin (1958) presented 712 children ages ten to sixteen years with a silent motion picture of an eleven-year-old boy who was portrayed in two scenes as being "good" and in two scenes

as being "bad." Following the film, the students were asked to write their opinion of the boy in as much detail as possible. The protocols were scored for 1) inference of motives underlying one or more aspects of behavior and 2) the attempt to synthesize the inconsistent behaviors into an overall concept of the boy. Specific criteria were developed for classifying the protocols as using inference and/or attempting to synthesize an overall concept. Interrater reliability for scoring the protocols was .91 for the "inference" category and .84 for the "concept" category. The percentage of children using inference increased from about 20% at age ten to almost 90% at age 16. The attempt to synthesize an overall concept occurred less frequently at all ages than the attempt at inference, with girls showing consistently more attempts at synthesis than boys in the oldest age group. Gollin concluded that the use of inference about another's feelings and motives is a relatively late development which begins during the transition from the concrete operational to the formal operational period.

Flapan (1968) used two brief sound films to investigate the ability of children, ages six, nine, and twelve, to interpret the feelings, thoughts, and intentions that were expressed in a sequence of behaviors and interpersonal events. Each film was divided into five episodes, and following each episode, the film was stopped and the child was asked to tell the E what had happened ("Pretend I didn't see the movie and tell me what happened", p. 62). Following this, the child was asked several specific questions about the behavior and feelings of the characters. While there was no difference in the ability of the children at the three ages to describe expressive behavior or obvious feelings, there

was a major increase between six and nine years in the ability to describe intentions that were not obviously expressed. In these films, it is quite likely that obvious feelings were signalled by one salient cue (behavioral or situational), while the feelings and thoughts requiring inference also required the consideration of multiple or subtle cues.

In a similar study, Rothenberg (1970) assessed the ability of children in third and fifth grades to accurately perceive and comprehend the behavior, feelings, and motives of actors in tape recorded short stories. Each story presented a dramatic interaction between a male and female and portrayed one dominant emotion. The subject was instructed to concentrate on one of the actors. The subjects' descriptions of the behavior and feelings of the actor were scored (using a five-point scale) for 1) accuracy of descriptions of the feelings portrayed and 2) degree of understanding of motives. The two scores were combined into an overall social sensitivity score. The interrater reliability for this score was .91. Results showed that fifth graders had significantly higher scores than did the third graders. The difference between the two groups was especially noticeable with respect to the understanding of motives. However, even the fifth graders were not scoring at the highest level in the "motives" category. These results are consistent with the findings of Flapan (1968) and Gollin (1958) that the inference of feelings and motives continues to develop throughout middle childhood and adolescence.

Several investigators have attempted to assess affective role-taking by asking children to interpret pictures or films in which the

facial expression of the story character was inconsistent or incongruous with the situational context. The assumption of these studies was that, if the child interpreted the character's emotion as being consistent with the situational context, he was projecting his own feelings rather than accurately perceiving the feelings of the story character. Burns and Cavey (1957) presented a series of pictures to 39 children, ages three to six years. The pictures included two birthday party scenes (one with no child pictured and one with a frowning child) and two dentist office scenes (one with no child and one with a smiling child). For the pictures with no child, the subject was asked how he would feel in the situation, while for the other pictures, he was asked how the child in the picture felt. An empathic response was one in which the reported feeling was consistent with the facial expression. As predicted, three- to five-year-old children were significantly less accurate in their jugement of the facial expressions than were five- to six-year-old children. Burns and Cavey interpreted their results as indicating that the younger children inappropriately projected their own feelings into the pictures. However, Flavell et al. (1968) suggested that a more parsimonious explanation would be that the children failed to notice the incongruent facial expression in the context of the more compelling situational cue.

In a similar study, Greenspan, Barenboim, and Chandler (1974) exposed 80 first- and third-grade children to one of two one-minute videotaped stories. In the "unambiguous" story, the feelings expressed by the central character at the end of the story were consistent with the situational expectancies from preceding events. In the "ambiguous"

story, the character's feelings were inconsistent with expectancies. Results showed no significant differences between responses of first- and third-grade children to the general question, "How does he feel?" (100% chose a feeling consistent with the context in the unambiguous condition, and 80% did so in the ambiguous condition). However, when children were specifically asked to identify the facial expression, the third graders were significantly more accurate than the first graders in the ambiguous condition. Third graders were also significantly less certain of their jugements in the ambiguous condition than were the first graders. The findings of Burns and Cavey (1957) and of Greenspan et al. (1974) are consistent with the findings of Piaget that children under six or seven tend to center their attention on one aspect of a situation, rather than considering and synthesizing multiple cues (Piaget, 1928). This centration of attention on only one aspect of a complex interpersonal situation would be likely to lead to frequent misinterpretations of the feelings and motives of others.

Ambron (1973) used three types of affective role-taking items with five- and seven-year-old children. The first type were items in which the child was to identify six affective states (puzzlement, anger, boredom, happiness, sadness, and fright) from pictures of facial expressions, gestures, and body postures. The second type required the child to select one of three pictured situations that was most likely to have produced a particular affect. The third type of item required the child to select one of two affective expressions that was most likely to have been produced by a particular situation described by E. Items were given a score of 1 for appropriate responses and 0 for

inappropriate responses. As would be expected within Piaget's theoretical framework, seven-year-olds scored significantly higher on this task than did five-year-olds. Correct affect identification varied with the affect, with puzzlement, fright, and boredom being more difficult than happiness, sadness, and anger. Matching situations to affects was easier for both age groups than matching affects to situations.

Research questioning Piaget's theory. The results of several studies of children's ability to identify affective expressions have been interpreted as evidence that children younger than seven or eight years can understand the feelings of others, even when these feelings differ from their own. Perhaps the earliest developmental study of social perception was carried out by Gates (1923). She used photographs of human faces which represented laughter, pain, anger, fear, scorn, and surprise. The pictures were presented individually to children three to fourteen years old. The child was requested to give a verbal description of the facial expression or emotion behind it. Results showed a gradual increase in the ability to interpret each picture with increasing age. Laughter was correctly identified by more than half of the children at age three, pain by more than half at age six, anger at age seven, fear at age ten, and surprise at age 11. Scorn was not correctly identified by more than half of even the oldest group. The pattern of results suggested that the more obvious emotions (laughter, pain) were identified considerably earlier than were the more subtle emotions. In contrast to most of the studies reported below, this task required interpretation of a feeling in the absence of contextual cues,

which are an important source of information in many social situations. The responses also required quite advanced verbal labeling.

Feshbach and Roe (1968) asked children to report on both their own and another person's feelings in a situation which emphasized contextual cues. Forty-six first-grade children were individually shown a series of slide sequences (three slides per sequence) with a narration. The slides portrayed situations in which the expected feelings were happiness, sadness, fear, or anger. After each sequence, the child was asked how he felt. The congruence between the child's reported feeling and the affect in the slide sequence was considered a measure of empathy. The sequences were presented again to 27 of the subjects, and they were asked to tell how the child in the slide felt. The accuracy of their jugements (based on adult standards) was used as an index of social comprehension. Results showed that all subjects showed accurate comprehension of the happiness and sadness situations, while 50% correctly labeled anger, and 20% correctly labeled fear. When responses were scored only as affectively positive or negative, all responses for all affects were correct. The fact that accurate social comprehension was not necessarily accompanied by empathy suggested to the authors that these first graders were able to understand the feelings of another and to differentiate the other's feelings from their own. While empathy was systematically related to the similarity between the child and the stimulus person, social comprehension was not. Feshbach (1975) also reported the use of this task with kindergarten, first, and second grade children. Significant developmental gains were found for both social comprehension and empathy. When the visual and

auditory components of the task were separated, the highest social comprehension scores were elicited by the visual mode, while the highest empathy scores were elicited by the combined visual-auditory mode.

Borke (1971, 1973) studied the ability of three- to eight-year-old children to select from among pictures of a happy, sad, angry, and fearful face, the one which most appropriately matched a picture with accompanying story description. In two studies, a total of 776 Chinese and American children were individually tested. The children first identified each schematic face and were then asked to select the appropriate one for the blank face of the child in each pictured situation. While there were significant main effects due to sex, socioeconomic status, and nationality, the ability to recognize all four emotions significantly increased with age in all subgroups. At age 3-3.5, almost all American children correctly selected the happy face, 50% correctly selected the sad face, and 40% correctly selected the fearful face. By age 4-4.5, 70% correctly chose the fearful face, and by 6-6.5 years, 88% were correct on sad responses. Anger was perceived least accurately at all ages and was frequently confused with sadness. Borke concluded that children as young as three years are aware that other people have feelings and that feelings vary according to the situation. She contended that her results contradicted Piaget's conclusion that children younger than six or seven are egocentric. She attributed her findings to the greater sensitivity of her instrument to the capabilities of young children.

In a reply to Borke's 1971 study, Chandler and Greenspan (1972) contended that Borke's conclusions represented "a major retreat in

conceptual clarity" (p. 104). They suggested that, since Borke's stories evoked predictable, stereotypic responses, the children may have been projecting their own responses to the situation rather than responding empathically or non-egocentrically. To support their criticism, Chandler and Greenspan reported data from a story task, in which a story sequence led to an expression of anger, fear, or sadness on the part of the main character. The task for the subject was to interpret the affect of the character in the last scene from the point of view of another character who had entered at this final point and did not know the cause of the emotional reaction. The results supported Chandler and Greenspan's hypothesis (and Piaget's theory) regarding age changes in performance, which occurred predominantly after age seven. However, the authors failed to mention that their task was also assessing cognitive role-taking, in that the child had to recognize that the late-arriving character did not know the cause of the affect. The task was thus not a simple test of awareness of affect in another.

Several recent studies have attempted to reduce the problem of possible situational projection by using behavior and expressive cues to signal emotions which were inconsistent with situational expectancies. These studies are similar in conception to the previously discussed studies by Burns and Cavey (1957) and Greenspan et al. (1974). Deutsch (1974) used a technique very similar to that of Greenspan et al. (1974). She used eight brief videotaped episodes, in which the final positive or negative affective expression of the main character was either congruent or incongruent with situational expectancies. Adult characters were used in the tapes to reduce the tendency toward

projection which might result from the child's identification with the actor. The tapes were presented to 48 girls, ages three and four years. The children were asked to retell the story after each episode. Using the scoring system developed by Rothenberg (1970), the protocols were scored for 1) accurate description of affect, 2) accurate description of behavior, and 3) reasons for the final affective response. As expected, scores were significantly higher on the congruent episodes than on the incongruent episodes. While the scores were not significantly related to chronological age within the restricted age range sampled, there was a significant relation between performance and mental age. On the basis of her results, the author concluded that "bright young females, can not only perceive affective responses, but also recognize intrapersonal cues and reasons for affective responses in both congruent and incongruent accounts" (Deutsch, 1974, p. 739).

In another study, Deutsch (1975) used a series of three-card stories with lower-class three- and four-year-old children. The first and third cards portrayed the primary character alone in a context, and the second card portrayed the primary character and another character in a context. In all cases, the final affective expression of the primary character was incongruous with the interpersonal interaction. Each subject was shown three stories, all of which portrayed either male or female peer characters. Scores for accurate verbal responses about the primary character's affective responses and behavior were assigned on the basis of the subject's description of the card sequence. Correct identification of the final affective state was determined by the S's choice of the first or third card, both of

which were replaced on the table. Correct identification of the reason for the final affect was determined by the S's choice of two pictured reasons. Performance on all dependent measures was significantly related to mental age, a finding consistent with Deutsch's previous study (1974). Performance on all measures was also more accurate on stories with same-sex characters than on stories with opposite-sex characters. This result is only partially consistent with the finding of Feshbach and Roe (1968) that empathy was related to the similarity between subject and story character, while correct affect identification was not.

Watson (1975) used single pictures similar to those used by Burns and Cavey (1957). Half of the pictures presented a happy or sad expression congruent with the situation, while the other half presented incongruous expressions. Children in nursery school and grades one and four were asked to verbally identify the emotion being experienced by the child in the picture, and to report any feeling they had from looking at the picture. In contrast to the results of Burns and Cavey (1957), Watson's results showed that 96% of the nursery school children, 97% of the first graders, and 86% of the fourth graders made emotional jugements that were consistent with the facial expression rather than the situational cue. In addition, at all ages, the child's report of his own emotion was independent of his jugement of the other person's emotion. Watson concluded that the youngest children in her sample appeared to understand the inner state of another, on the basis of the other's expressive behavior, even when the other's inner state was different from the child's own state. It should be noted that Watson

used only happy and sad expressions. The high proportion of correct identification of these expressions is consistent with the findings of Borke (1971, 1973) and Feshbach and Roe (1968), even though these latter studies used only congruous episodes.

Iannotti (1975b) used a picture task very similar to that of Watson (1975). Six- and nine-year-old boys were asked to indicate how the boy in the picture felt and how they felt by pointing to one of eight drawings representing emotional responses. As in Watson's study, half the pictures presented expressions congruous with the situation, while the other half presented incongruous expressions. Iannotti's task included situations representing fear and anger as well as happiness and sadness. Correct identification of affect in the congruous situations was at a high level for all subjects and did not increase with age. Correct identification of the facial expression in the incongruous situations occurred significantly less often than in the congruous situations and did not change with age. Although these results seem to conflict with those of Watson (1975), it must be remembered that Iannotti included four specific affects, while Watson used only happiness and sadness. Iannotti's task also required a pointing response which may have been more complicated than Watson's verbal labeling, even though it was non-verbal. Iannotti's results do not seem consistent with other findings of developmental change in correct identification of affects other than happiness and sadness (Borke, 1971, 1973; Feshbach, 1975).

Kurdek (1975) also used a picture task presenting congruous and incongruous situations representing happiness, sadness, fear, and anger.

In contrast to Iannotti (1975b), he found that correct identification of affect in congruous situations increased significantly between kindergarten and third grade, a finding consistent with the work of Borke (1971, 1973) and Feshbach (1975). Also in contrast to Iannotti (1975b), Kurdek found that correct affect identification in the incongruous situations decreased significantly with age. This result is consistent with the finding of Watson (1975) that older children tend to use the situation as the most salient cue to affect, a tendency which would lead to incorrect responses in incongruous situations.

Summary. The studies reported in this section indicated that children younger than six or seven years could identify the feelings of others, but only if these feelings were signalled by a salient behavioral or situational cue. Where situational and behavioral cues were inconsistent, some evidence has suggested that young children tend to center on the situation (Burns and Cavey, 1957; Greenspan et al., 1974). These findings were interpreted as evidence that the children were projecting their own feelings into the situation, rather than accurately interpreting the feelings of the other. A recent study, however, found that nursery school children and first graders used facial expressions rather than situational cues in making emotional jugements from pictures of incongruous situations (Watson, 1975). Results of this study and two others (Iannotti, 1975b; Kurdek, 1975) further suggest that use of situational cues increases rather than decreases with age.

If young children tend to center their attention on the most salient aspect of a situation, as Piaget (1928) has suggested, they may focus on either the situation or the facial expression, depending on

which is most salient. Focusing on the situation will more frequently lead to inaccurate jugements, but only when the actual emotion is inconsistent with the usual situational expectancies, or when the person in the situation is not faking an emotional reaction (Iannotti, 1975b). While the inability to focus attention on the multiple cues of situation and behavior is consistent with Piaget's description of preoperational thinking, this cognitive limitation may have little practical effect on the child's jugement of emotions in most simple behavioral situations. The studies reported in this section do indicate that only after age six or seven can children accurately interpret feelings that require consideration of multiple or subtle cues, and only in early adolescence do children begin to infer motives in complex behavioral situations. As was the case with studies of perceptual role-taking, successful performance on affective role-taking tasks seems to depend on the complexity of the stimulus situation.

It is more difficult to integrate the studies of affective role-taking into a cognitive developmental framework than it is to integrate studies of perceptual or cognitive role-taking. One reason for this difficulty is that it is not clear to what extent the various responses studied (e.g., identification of affective expressions, inference of complex feelings and motives, ability to empathize with another) are manifestations of the same construct; i.e., "affective role-taking." As with the other areas of role-taking, the cognitive requirements and logical processes involved in the various affective tasks have not been specified. However, the study of affective role-taking is complicated by two other problems. One problem is that interpretation of affect

is based largely on socially and culturally conditioned relations between expressive behavioral cues and the verbal labels used to refer to feelings or emotions. Several of the studies reported above reflect developmental patterns of increasing discrimination among such behavioral cues and verbal labels (Borke, 1971, 1973; Feshbach & Roe, 1968; Gates, 1923). Investigators of affective role-taking need to try to separate (logically at least) knowledge of socially conditioned relations, referred to by Chandler and Greenspan (1972) as "stereotypical responses from true affective perspective-taking. They must then attempt to evaluate the role of each of these dimensions in interpersonal understanding.

A second problem relating to the study of affective role-taking is that emotions are private and subjective, rather than public and objective. As Baldwin (1967) has pointed out, we have not discovered an underlying logic of interpersonal behavior comparable to the logic governing perceptual perspective-taking. Baldwin suggests that, because of the highly personal nature of affective perspectives, even adults must frequently use an intuitive approach to interpersonal understanding. Because affective perspectives are subjective rather than objective, we should be cautious about assuming that affective role-taking follows a developmental course directly parallel to that of perceptual or cognitive role-taking. Since affective role-taking is not the major focus of the present study, these very complex issues are only briefly mentioned. They indicate, however, that there is much work to be done on this dimension of role-taking ability. This work should build not only on the studies reported above, but on the

literature relating to interpersonal understanding stemming from sociology and social psychology.

Research on Cognitive Role-Taking

Studies of interpersonal communication. One way of demonstrating an awareness of the cognitive perspective of another person is to talk to that person in a way that takes into account what he already knows and does not know about the topic under discussion. Adults who are sophistocated role-takers do this every day, as they adjust their communication style and content to the various people they talk to. When asked directions to a new pizza parlor, one will (or should) give a different response if the asker has a working knowledge of the city than if he is totally unfamiliar with the area. According to Piaget, one of the features of egocentrism in young children is that, when they talk to someone, they actually believe that the other person already knows what he is telling them. Because the young child supposedly believes that the other person knows what he is saying, he makes no effort to make his message complete and specific. According to Piaget, it is not until seven or eight years of age that the child seriously begins to adapt his verbal communication to the needs of the listener.

Following Piaget's early writings, a number of studies have assessed the ability of children to communicate with another person in a way that takes into account the cognitive perspective of the other. In their book on role-taking and communication skills, Flavell et al., (1968) have specified three criteria of adequate role-taking in situations involving interpersonal communication. First, the speaker must attend carefully to the listener. Second, the resulting image of

listener role attributes must act as a monitor of communication. That is, the speaker must adjust his message to fit what the listener does and does not know. Third, the monitoring requires real effort to suppress the more natural self-coding. That is, when one codes a message for himself, or for someone who already knows the message, he can use a much briefer and more cryptic style than he can if he is communicating with someone who does not know what he knows. When one takes the role of the other, he must suppress the tendency to use the briefer, more efficient coding (based on the assumption of mutual knowledge) and make an effort to give a more complete and elaborate message. Flavell et al. (1968) suggested that all studies of role-taking should use these criteria.

Empirical research on role-taking in communication tasks began with the early work of Piaget (1926). Piaget presented two tasks to 20 six- to seven-year-olds and 30 seven- to eight-year-olds. In one task, children were told a story, which they were to reproduce for another child, who in turn was to reproduce it for the experimenter. In the second task, the child was shown a diagram of a tap or of a syringe, and was given an explanation of how it worked. Again, the child was to reproduce the explanation for another child, who in turn reproduced it for the adult. On both tasks, Piaget found that seven- to eight-year-olds gave more specific, complete, and accurate reproductions than did six- to seven-year-olds. Piaget attributed his results to the incommunicability of the young child's thought, which he considered to be an essential characteristic of egocentrism. While the younger children appeared to have an intuitive understanding of the meaning of the task

materials, they were unable to adequately verbalize their understanding. The improvement in communication skill reported by Piaget coincided with the qualitative change in thinking which he believed characterized the transition from preoperational to concrete operational thinking. The improvement most likely also coincided with school entry; and there is some evidence from Bruner and his associates (1966) that school entry is related to improvement in cognitive operations which depend on language. Thus, Piaget's studies may have required a level of linguistic and cognitive response which prevented the younger communicators from making the necessary response, regardless of their awareness of the cognitive perspective of their listener.

Flavell et al. (1968) developed several communication tasks which included 1) explaining how to play a game to two different listeners, one of whom was blindfolded and 2) composing a message designed to persuade a man to buy a necktie. The tasks were administered to children in elementary and high school grades. Responses indicated a developmental progression in the adequacy of response, with a particularly noticeable advance between eight and ten years of age. While the tasks varied in a number of dimensions, Flavell et al. pointed out that, in some cases, the relevant role attributes of the listener (e.g., knowledge, attitude etc.) were quite subtle, involving inference beyond the obvious, or consideration of multiple cues. In other cases, an adequate response required advanced verbal development or mastery of logical operations.

Glucksberg and Krauss (1967) devised a communication task in which a listener had to select one figure from a set, based on a verbal

description provided by another person (the subject). The task was administered to pairs of individuals from three years to adulthood. Even the youngest children were able to communicate adequately when the figures were easy to encode. But when nonsense figures were used, the younger children tended to use short, idiosyncratic names, rather than effective analytic descriptions. The nonsense figure task discriminated smoothly over the age range studied, with adults immediately achieving an errorless performance. Glucksberg and Krauss also studied the response of children in grades K, 1, 3, 5, and college to listener feedback provided by E. Even when the E indicated a lack of understanding of the description, the younger children most frequently failed to modify their response, either repeating the original description or remaining silent.

Rubin (1973) used the Glucksberg and Krauss task and several other measures of egocentrism with 20 children in each of grades K, 2, 4, and 6. The measures included a spatial egocentrism task taken from Flavell et al. (1968), a cognitive role-taking task (Miller et al., 1970), and a battery of five conservation tasks. Results showed a significant improvement in performance on the Glucksberg-Krauss communication task between grades K and 2, and between grades 2 and 4, but not between grades 4 and 6. Performance on the communication task was also significantly correlated with performance on the spatial, cognitive role-taking, and conservation tasks.

Kingsley (1971) also used a communication task similar to the one used by Glucksberg and Krauss, and related performance on the task to performance on several other measures of egocentrism and to measures of

perceptual and linguistic ability. The measures of egocentrism included a version of Piaget's "three mountains" task, a spatial perspective task presented entirely through pictures, and a story task used by Flavell et al. (1968). Kingsley found that the three tests of egocentrism were related for third graders and seemed to reflect a common dimension. The measures were not related, however, for kindergarten children. Furthermore, while the communication performance of third graders was significantly related to the measures of egocentrism, the communication performance of kindergarten children was a function only of their perceptual and linguistic skill. Layton (1975) also found that linguistic skill, as measured by sentence length, was significantly related to role-taking performance on a story task (similar to Flavell et al., 1968) in five- and six-year-old children.

One problem with the Glucksberg-Krauss method of studying egocentrism is that the difficulty level of the required response is confounded with the awareness of the other's cognitive perspective. If the required description is very easy, the response may indicate spontaneous encoding rather than a serious attempt to make one's message understood. On the other hand, if the required description is beyond the child's cognitive capacity, he will not be able to perform adequately, regardless of his intent to communicate. Borke (1972) made a similar point when she said that measures of role-taking must be sensitive to other aspects of the child's cognitive maturity. Some new measures of role-taking skill might be devised which require responses which the child could make, but which he ordinarily would not make spontaneously.

A study by Maratsos (1973) provides evidence of the ability of three- to five-year-old children to adapt their communication to the needs of a listener when the response is appropriate to their cognitive ability. The tasks were presented through a game in which the experimenter rolled a toy car down a "hill" to the child who was seated on the opposite side of the table. Before the car was released, the child had to specify which of two toys he would like placed in the car. Half of the children played under conditions in which the E could see normally; for the other half, the E was blindfolded. In addition, three variations of the task required responses representing three levels of descriptive difficulty. The easiest task required the child to specify a toy girl vs. a toy dog. The second level task required the child to choose one of two dogs which were identical except for color. The hardest task required the child to specify one of two identical dogs which differed only in their position in relation to the car (e.g., next to vs. away from the car). Responses were coded as "adequate" or "inadequate" on the basis of whether or not the description was specific enough for the E to choose the desired toy. Results showed that even the youngest children used significantly more specific descriptive phrases under the "no vision" condition than under the "vision" condition. While there were only two pointing responses out of 144 responses for the total sample in the "no vision" condition, the three-year-olds used an average of 10.50 pointing responses out of 12 responses in the "vision" condition. While the three-year-olds clearly modified their typical response in the "no vision" condition, the five-year-olds were more likely to use "adequate" verbal descriptions

even in the "vision" condition. Maratsos also found that task difficulty interacted with the vision conditions. The task requiring the most difficult verbal description was performed less adequately than the others, even in the "no vision" condition. In contrast, the task requiring the easiest response was performed almost as adequately in the "vision" condition as in the "no vision" condition. The task requiring a response of intermediate verbal difficulty seemed to satisfy the condition of requiring a response which the child could make, but which he ordinarily would not make spontaneously.

In addition to using structured communication tasks, Piaget made extensive recordings of the spontaneous language of two six-year-old boys. He reported that nearly half of their total spontaneous speech consisted of egocentric language; i.e., language not adapted to nor seriously intended to communicate with a listener. In a comparable study, Garvey and Hogan (1973) analyzed the verbalizations of children age three to five who were brought in pairs to play in a special playroom for 15 minutes. The spontaneous speech records of the children were divided into utterance units; i.e., words, phrases, or sentences which conveyed a single message. The utterance units were coded for genuine communicative interaction, which was defined as sequences in which a message was followed by an appropriate verbal or nonverbal response. Results showed that 59% of the total speech output consisted of communicative exchanges. Younger children ($3\frac{1}{2}$ to $4\frac{1}{2}$) most frequently used single exchanges, while older children produced longer sequences. While Garvey and Hogan's results were not strikingly different from the results of Piaget, their interpretation of the data was. Piaget

considered the 50% of unsocialized speech that he found to be a significant indicator of egocentrism. In contrast, Garvey and Hogan believed that the 59% of socialized speech they observed indicated a desire and an elementary ability to communicate meaningfully.

Results of the studies presented in this section indicate that several of the tasks used to study the ability of children to communicate adequately with a listener required verbal and cognitive skills that were available only to children older than seven or eight years. Once again, role-taking performance appeared to be at least partly a function of the complexity of the task stimuli and the cognitive demands of the required response. The one study that used much simpler stimuli and responses (Maratsos, 1973) found that even three-year-olds could change their communication as a function of different listener attributes.

The significance of the spontaneous speech studies does not seem clear. The results of these studies raise several complex issues, such as the controversy about the development and function of socialized and private speech (debated by Vygotsky and Piaget in Vygotsky, 1962). These issues, however, are not directly related to the concerns of the present study.

Studies of the ability to predict the response of another. Another aspect of cognitive role-taking is the ability to predict the response of another person to a situation, based on a recognition of the knowledge and information which the other person brings to the situation. There have been several studies of this aspect of cognitive role-taking. Feffer and Gourevitch (1960) used a task developed by

Feffer (1959) to assess cognitive role-taking ability in six- to thirteen-year-old boys. The task consisted of a three-dimensional backdrop scene and several miniature figures which the child was to use to make up a story. When the child had completed his story, it was read back to him, to remind him of the content. The child was then requested to retell the story from the point of view of each of the characters, keeping behaviors, feelings, and interpersonal cognitions consistent with the original version. Each of the child's stories was recorded verbatim. A scoring system was developed which indicated the degree to which the various stories reflected simple refocusing, consistent elaboration, or simultaneous reconstruction of several viewpoints. "Simple refocusing" referred to the ability to change perspectives but without maintaining consistency. "Consistent elaboration" referred to the ability to maintain consistency among perspectives considered sequentially but not simultaneously. "Simultaneous reconstruction of viewpoints" referred to the consistent congruence between behaviors and interpersonal perceptions from all the various viewpoints. Role-taking ability, as indicated by higher scores on the role-taking task, improved over the age span studied, with a marked improvement between eight and ten years. Scores on the role-taking task were also significantly correlated with scores on several Piagetian conservation and class inclusion tasks.

Turnure (1975) used a modification of Feffer's role-taking task with seven-, nine-, and twelve-year-old children. She related performance on the role-taking task to performance on two tasks which were used by Inhelder and Piaget (1958) to assess the transition from

concrete operational to formal operational thinking. While performance on all tasks improved with age, the Piagetian and role-taking tasks were not significantly correlated. Role-taking ability was related, however, to IQ in seven-year-old boys and girls and in twelve-year-old boys. Sullivan and Hunt (1967) also used Feffer's role-taking task with seven- to eleven-year-old boys. They correlated scores on the role-taking task with scores on Piaget's "three mountains" task. The scores on both measures showed a significant increase with age. However, the correlation between the two measures was substantial only at age eleven. These findings suggest that the relationship between cognitive role-taking skills and other cognitive abilities is quite complex.

Building on the work of Feffer (1959), Flavell et al. (1968), and Selman (1971b), Selman and Byrne (1974) hypothesized four developmental levels of role-taking. Level 0 indicated "Egocentric Role-Taking." At this level, the child does not differentiate among points of view and shows no relation of perspectives. Level 1 indicated "Subjective Role-Taking." At this level, the child realizes that people in different situations feel and think differently. However, he is unable to simultaneously maintain his own and another perspective. Neither can he judge his own actions from another viewpoint. Level 2 indicated "Self-Reflective Role-Taking." At this level, the child can reflect on his own behavior and motivation as seen by others, but he still cannot coordinate several perspectives simultaneously. Level 3 indicated "Mutual Role-Taking." At this level, the child can maintain a disinterested point of view and simultaneously consider several perspectives.

To test their hypothesized sequence of role-taking levels, Selman and Byrne asked children to retell two stories presented with filmstrips, each of which portrayed an open-ended moral dilemma similar to those developed by Kohlberg (1969). In a follow-up interview, specific questions were designed to assess understanding at each of the role-taking levels. "In addition, open-ended discussion ... and role-playing techniques were used further to assess level of role taking" (Selman and Byrne, 1974, p. 805). Subjects were assigned the highest level of role-taking that was clearly evidenced during the interview. The stories were presented to a total of 40 children, ages four, six, eight, and ten years. Results showed a highly significant correlation between age and level of role-taking. Eighty percent of the four-year-olds were responding at Level 0, while 90% of the six-year-olds were responding at Level 1. Among the eight-year-olds, 40% responded at Level 1 and 50% at Level 2. At age ten, the predominant response level was Level 2. Even at this age, only 20% of the children were responding at Level 3. Selman and Byrne concluded that their results closely paralleled those of Feffer and Gourevitch (1960).

Flavell et al. (1968) assessed cognitive role-taking with a story task which consisted of a series of seven pictures which portrayed a complete sequence of events. When three of the pictures were removed, a different, but complete, story was suggested. After the child was told the seven-picture story, the three cards were removed, and the child was asked to predict the story which a second E would tell, based on the four pictures he saw. In order to tell the story accurately from the point of view of the E, the child had to recognize that he had

privileged information about the story sequence (based on the seven-picture story) that was not available to a person who had seen only the four pictures. As he was retelling the story, the child had to maintain the distinction between his own and the other perspective, and suppress his own privileged information. The task was presented to children in grades two through twelve. The data indicated that a major improvement in performance occurred between grades three and four, after which time performance became stable. Selman (1971a) used the same story task with a sample of 60 children, ages eight to ten years and also found a significant improvement in performance between these two ages. Kurdek (1975) also used the story task with children in kindergarten through third grade. The only significant improvement in performance occurred between grades two and three. Layton (1975) used a very similar story task with five- and six-year-old children. He found less than 40% of his sample demonstrating role-taking ability, with no improvement between ages five and six.

Chandler and Greenspan (1972) used a story task similar to the one developed by Flavell et al. (1968). The task consisted of several story sequences which logically led to an emotional response (anger, fear, or sadness) on the part of the child in the story. In the last picture, another child entered the story scene. The central character reacted to the second child in a manner appropriate to his affect, but did not reveal the cause of his feeling. Subjects in grades one through seven were asked first to tell the complete story, and then to retell the story from the point of view of the child who entered in the last scene. Many of the younger children made "egocentric"

errors by confusing their own privileged perspective with that of the "other," and assuming that the other would know the "real" reason for the central character's emotion. Chandler and Greenspan found a highly significant decrease in number of egocentric errors between ages six and thirteen, with the six-year-olds making errors on 85% of the responses, while the thirteen-year-olds made errors on only 4% of the responses.

Ambron (1973) used a modification of Flavell's story task with a sample of 72 children in kindergarten and second grade. Her stories consisted of four pictures with accompanying narrative. Similar to Chandler and Greenspan's task, this task required the child to take the perspective of a character in the story who did not have all the information that the child himself had. The character was introduced at the beginning of the story (picture 1), temporarily disappeared (pictures 2 and 3), and reappeared in the final scene (picture 4). After being told the complete story, the child was asked a question requiring him to interpret the final scene from the point of view of the character who had just reappeared. Ambron found a significant increase between five and seven years in the number of responses that discounted the privileged information, available to the child, but not to the story character. A more detailed analysis of the task is presented in Chapter I. The use of this task in the present study is described in Chapter III.

Another task used to assess cognitive role-taking is a hiding and guessing game in which the subject is asked to predict the game behavior of another child, based on what the other knows about the nature

and object of the game. The task was developed by Flavell et al. (1968), and was also used by Selman (1971a), and Iannotti (1975a). The task consisted of two boxes, one marked 25¢ and one marked 10¢, each with the appropriate amount of money inside. The object of the hiding game was to trick another child who was going to come and choose one of the boxes. The other child was to be allowed to keep the money from the box he chose. But the trick was that the S was to remove the money from one box. Furthermore, the other child supposedly knew that E and S were going to try to trick him. The S had to decide which box to empty and give his reasons. For the guessing game, S was asked to choose one of two boxes that had presumably been fixed for him by another child. For both aspects of the task, the S's level of role-taking was based upon the reasons for his response, rather than on the response itself.

Flavell et al. (1968) presented the task to children in grades two through twelve. Responses were scored as including 1) no recognition of motives, 2) a recognition of a simple motive of the other (e.g., wanting to choose the most money), or 3) a recognition of the other's recognition of the S's motives. Flavell et al. found a significant increase in higher level responses over the age span studied, with the most marked improvement coming between age eight and ten years. Selman (1971a) also found a significant increase in higher level responses on this task between ages eight and ten years. However, he found the game task to be more difficult than the story task, which he also presented. This latter finding is consistent with the findings of Gollin (1958) and Flapan (1968) that the ability to make inferences about human

motives develops later than the ability to understand the more obvious feelings, thoughts, and knowledge of the other. Ambron (1973) used the hiding game task with a scoring system of stages developed by Kuhn (1972). Scores for seven-year-olds were significantly higher than for five-year-olds, with the hiding aspect producing higher scores than the guessing aspect. Ambron thus appeared to be finding improvement on this task several years earlier than did Flavell et al. (1968) and Selman (1971a). Consistent with Selman (1971a), however, Ambron (1973) found the game task to be more difficult than the story task she also used.

Iannotti (1975a) used the game task to assess the effectiveness of two types of role-taking training with six- and nine-year-old boys. The boys met in groups of five for 25 minutes a day for ten days. In one type of training, the boys took the role of one character in a skit involving all five boys. Each boy's attention was directed to the motives, thoughts, and feelings of the character he was portraying. In the second type of training, the boys switched roles and played the part of every character in the story. Changes in perspective resulting from different roles were emphasized. Performances in the hiding and guessing game showed a highly significant age difference and a significant effect of training. The two types of training both improved performance and did not differ from each other. Iannotti also used the moral dilemma stories used by Selman and Byrne (1974) to measure role-taking, but presented them without the filmstrips. Performance on this task was found to be less consistently related to age or to training, due to a significant relation between performance and the school attended.

Devries (1970) used a similar hiding and guessing game, in which children were asked to guess in which of the E's hands a penny was hidden. After a series of guessing trials, the S was given the opportunity to be the hider in a series of trials. Scores were assigned to subjects on the basis of the game strategy employed, with perseveration and lack of competition receiving the lowest scores, simple alternation and recognition of the competitive nature of the game receiving higher scores, and the use of shifting strategies and intense competition receiving the highest scores. Since game strategy requires recognition of the behavioral and motivational roles of the other player, increasing scores were assumed to reflect increasing role-taking ability. In a series of studies, Devries found significant increases in scores between ages three and seven years, with improvement on the hiding task preceding improvement on the guessing task. These results are consistent with the findings of Ambron (1973). Although improvement in performance on Devries' task seems to occur several years earlier than similar improvement on Flavell's task, the scores on Devries' task were based on behavioral choices rather than on verbal justification for those choices.

Several other tasks have been used to assess cognitive role-taking in children. All the tasks used the same general paradigm of providing the child with information not available to another person. The child was then required to respond in a way that indicated a clear differentiation between his own privileged perspective and that of the other. Chandler, Helm, and Smith (1974) used a series of droodles, each of which consisted of a schematized line drawing which represents only a

small part of a much larger scene. Viewed in isolation, the droodle is essentially uninterpretable. But after seeing the whole picture, one can appreciate the droodle as a highly selective representation of the total scene. Chandler et al. presented the droodles in two different ways to children ages four, seven, and 11 years. When children were shown the completed drawing first and then asked to interpret the droodle from the point of view of another, the major improvement in performance (based on a three-point scoring system) occurred between ages seven and 11 years. When children were first permitted to share the experience of the less-informed other, by seeing the abbreviated droodle first, the major improvement in performance occurred between four and seven years. The two procedures of the task are analyzed more fully in Chapter I. The use of the task in the present study is described in Chapter III.

Yarrow and Waxler (1975) used a task consisting of an 18" x 24" display of a large cat in some bushes. From the front view, one could see only a fierce and snarling face coming out of the bushes. But from the back, it could be seen that the cat's hind leg was caught in a trap. In a procedure similar to the "shared experience" procedure of Chandler et al. (1974), the child was first asked to interpret the cat's expression from the front view (e.g., "He's mad," "fierce," etc.). After seeing from the opposite side that the cat was hurt, the child was asked to interpret the cat's expression from the point of view of another "naive" observer. Adequate role-taking was evidenced by interpretations that did not include information about the cat being hurt, since this information was available only to the child. The task was

administered to approximately 100 children, ages three to seven, as part of a larger study. Although specific data have not yet been reported, a preliminary report indicated that the major improvement in performance occurred between four and five years.

Marvin, Mossler, and Greenberg (1975) assessed cognitive role-taking with a "secret game The task consisted of an interpersonal situation in which the child, the experimenter, and the child's mother sat in a circle on the floor with two toys in the center of the circle. While the E hid his eyes and covered his ears, the child and his mother, in whispered tones, chose one toy to think of as their secret. Without moving the toys, the mother and child indicated that they were ready for the E to uncover his eyes and ears. The E then asked the child three questions: 1) whether he (the child) knew what the secret was ("which toy you're thinking about"); 2) whether his mother knew; and 3) whether the E knew the secret. The questions were asked in random order, and the child had to respond correctly to all three questions for the response to be considered non-egocentric. The game was repeated twice more, once with the mother hiding her eyes, and once with the child hiding his eyes. The same three questions were asked each time, and, of course, the correct responses differed, depending on who had hidden his eyes. The task was administered to children ages two through six years, and the major increase in successful performance occurred between ages three and four years. While only three of the 20 three-year-olds were classified as non-egocentric, 19 of the 20 four-year-olds were. This task is analyzed more thoroughly in Chapter I.

In another study of children two- to six-years-old, Mossler, Marvin, and Greenberg (1976) used a simplified version of the story tasks used by Flavell et al. (1968) and Ambron and Irwin (1974). Each child was shown two short videotaped stories about children of his own sex. Each story consisted of a brief sequence of action and one spoken sentence which explained the action. One story, for example, showed a child walking across a backyard and into a house, with the accompanying sentence, "This boy/girl is going into his/her grandmother's house" (Marvin et al., 1976, p. 85). For each story, the child's mother was asked to leave the room, and the child was shown the videotape. The mother then returned and the videotape was shown again, but with the sound turned off. The child was then asked if the mother knew information about the story which was available only through the spoken narrative (e.g. "Does your Mommy know whose house the boy/girl went into?"). Responses were scored as egocentric or non-egocentric. The children were also asked to justify their responses. The answers were scored as incorrect or correct (i.e., based on the reasoning that the mother could not hear the sound or was out of the room when the sound was played). While only 5% of the three-year-olds were classified as non-egocentric, 60% of the four-year-olds, 85% of the five-year-olds, and 100% of the six-year-olds were. Ability to correctly justify non-egocentric responses appeared to develop about one year later than ability to respond to the direct questions non-egocentrically.

Selman (1971b) assessed the conceptual role-taking skills of four- to six-year-old children by using a houselike apparatus, in which a person in only one of two rooms could see (through a window) into a

third room (see p. 38). Two dowels extended from the "choosing" room into the "secret" room. Two toys (e.g., a red airplane and a horse) were placed on the ends of the dowels in the "choosing" room. A third toy, which could be associated with either of the other two by one cue (e.g., a red Indian which could be matched either to the horse or to the red airplane) was placed in the "secret" room at the other end of one of the dowels. The actual placement of the toy was determined on the basis of the actual association made by the subject prior to the task; i.e., tha match was the opposite of that spontaneously made by the S. One of S's peers was seated in the "choosing" room and was told he would have to guess on which dowel in the "secret" room the toy was placed. Then E and S went into the "watching" room where S could see the correct placement. S was then asked to predict the guessing response of his peer and to give a reason for his prediction. On the basis of pilot data, Selman defined four developmental levels of role-taking ability. At the first level, the S seems unaware of different perspectives and immediately predicts the "right" answer. At the second level, the S indicates an awareness of the two perspectives, but is unable to predict the response of the other at all (e.g., may respond "I don't know"). At the third level, the S is aware of perspectives and uses his own choice as a basis for prediction. That is, the S expresses an awareness that the peer cannot see the placement of the toy, but thinks he might make the same choice the S himself had. At the fourth level, the S uses his own response as a basis for prediction, but expresses awareness that the other person might make a different choice, based on a different reasoning process. In Selman's study, the

four-year-olds were found to use mainly levels one and two, the five-year-olds predominantly used levels two and three, and the six-year-olds most frequently used level four thinking.

The studies reported in this section have used a number of different tasks to assess cognitive role-taking. Evidence based on Feffer's role-taking task (Feffer & Gourevitch, 1960), on the hiding game (Flavell et al., 1968; Selman, 1971a), and on story tasks (Chandler & Greenspan, 1972; Flavell et al., 1968; Kurdek, 1975; Selman, 1971a) indicates that a major development in role-taking ability occurs between ages eight and ten years. During this time, the child appears to become increasingly able to spontaneously reconstruct several different cognitive perspectives on the same situation. This period of improvement seems to coincide with the consolidation of concrete operational thinking and the understanding of relations.

Studies that have used easier tasks, such as the modified story task of Ambron (1973), the droodles task (Chandler et al., 1974), the "cat in the bush" task (Yarrow & Waxler, 1975), the moral dilemmas of Selman and Byrne (1974) and Selman's cognitive task (1971b), have found developmental advances in role-taking skill between ages four and seven. These advances have consisted primarily of development of awareness that other people may have different perspectives and of the ability to make simple predictions of the response of another. The studies by Marvin et al. (1975) and Mossler et al. (1976), which used very simple tasks (the secret game and videotaped stories), found a striking improvement in role-taking ability between ages three and four. The Marvin et al. (1975) study (analyzed in Chapter I) had an important influence on the design of the present study.

Socialization Experiences and Role-Taking

There has been very little research on socialization experiences that might influence the development of role-taking abilities. Three recent studies, however, have assessed the effect of social interaction on role-taking and other cognitive abilities. Hollos and Cowan (1973) and Hollos (1975) studied the effect of social setting on role-taking and logical operations in seven-, eight-, and nine-year-old children. Three comparable social settings (a dispersed area, a village, and a town) were selected in Norway and in rural Hungary. Children were given ten tasks, including a visual perspectives task, a communication accuracy task (Piaget, 1926), and a story task (Flavell et al., 1968). For both national samples, there were significant age and setting effects. The socially isolated children performed less well than the village or town children on the role-taking tasks.

Extending the work of Hollos and Cowan (1973), West (1974) compared the role-taking performance of kindergarten and third-grade boys reared in three different social settings in Israel. The three settings (kibbutz, moshav, and city) varied in the amount of peer contact children had. While performance on the visual and cognitive (story) tasks increased significantly with age, there was no effect due to social setting. The results of all three studies tend to support Hollos and Cowan's "threshold of verbal stimulation hypothesis." This hypothesis stated that:

> proper development of role-taking skill requires a basic minimum of early social interaction, but that beyond this, differences in amount of such experience fail to contribute differentially to individual achievement (Hollos & Cowan, 1973, p. 1121).

Summary

Taken as a whole, the research literature on perceptual, affective, and cognitive role-taking presents a relatively consistent, but incomplete picture. There seems to be no question that important developments in role-taking ability occur during middle childhood, especially between eight and ten years (Coie et al., 1973; Flapan, 1968; Flavell et al., 1968; Selman, 1971a; Sullivan & Hunt, 1967). These advances consist of marked increases in ability to construct complex perceptual and cognitive perspectives, and to maintain the simultaneous coordination of several different perspectives. The increases in role-taking ability that occur between eight and ten years seem to coincide with development in other aspects of thinking that accompany the consolidation of the concrete operational stage.

Because the tasks used to assess role-taking skill have frequently required concrete operational cognitive skills, the complexity of task requirements has been confounded with role-taking ability per se (defined as awareness of the different perspective of another). The result has been the premature conclusion that children younger than seven or eight years have essentially no role-taking ability. Only in the past few years have attempts been made to develop tasks that would tap the role-taking abilities of children with preoperational cognitive skills. Several investigators have made progress in describing the perceptual role-taking abilities that are available to children two to six years of age (Fishbein et al., 1972; Flavell et al., 1968; Masangkay et al., 1974; Selman, 1971b). But only a few studies have begun to examine cognitive role-taking in preoperational children (Maratsos, 1973;

Marvin et al., 1975; Selman, 1971b; Yarrow & Waxler, 1975). As mentioned above, progress in the study of affective role-taking has been hindered by the difficulty of separating the social learning and cognitive role-taking aspects of affect identification.

Two important variables that are suggested by the limited research on role-taking in preschool children are the complexity of task materials and the cognitive difficulty of the required response. One relevant dimension of task complexity appears to be the explicitness with which the various perspectives are presented to the child. The research on perceptual role-taking indicates that preschool children are most successful on tasks in which the different perspectives are clearly differentiated (Fishbein et al., 1972; Masangkay et al., 1974). A relevant dimension of response difficulty appears to be the number of cognitive operations the child must perform. The more difficult role-taking tasks required the child to spontaneously retrieve the information relevant to the various perspectives, and to hold this information in mind while constructing an appropriate (sometimes hypothetical) response for the other. In contrast, the tasks on which younger children were successful asked the child to make a specific response to a direct question ("What do I see?") or to choose between two concrete alternatives ("Do I see a blue spot or an orange spot?"). These two variables -- explicitness of task presentation and level of response difficulty -- are explored in the present study. A more detailed discussion of these variables is presented in Chapter 1.

It should be pointed out in closing this review that virtually no sex differences have been found in studies of role-taking. Only three

of the studies reviewed in this section reported significant sex differences. Ambron (1973) found the boys in her sample performing significantly better than the girls on the perceptual role-taking tasks. Borke (1973) found some sex differences in her study of affect identification. Gollin found that the girls in the oldest group of his sample made more attempts than the boys to synthesize the inconsistent behaviors of the boy in the film into an overall concept. Such findings, however, are rare. Although Maccoby and Jacklin (1974) do not report specific data for studies of role-taking, they report essentially no sex differences for studies of related abilities, such as performance on Piagetian tasks, Kohlberg's moral jugement tasks, or on empathy (pp. 106, 116, 212). On the basis of this evidence, it was decided not to include sex as an independent variable in the present study.

CHAPTER III

METHOD

Overview of the Design

The present study used a two factor design, with four primary dependent measures of cognitive role-taking ability. The two independent variables were Age (three levels) and Explicitness of Task Presentation (two levels). Because sex differences have generally not been found in previous studies of role-taking (see Chapter II), sex was not specifically included as an independent variable. However, an equal number of boys and girls was included in each experimental group at each age level, and the data were examined for sex differences.

Each child was presented with two cognitive role-taking tasks: a "droodles" task (Task A), developed by Chandler, Helm, and Smith (1974); and a story task (Task B), developed by Ambron and Irwin (1974). Both tasks required the child to differentiate his own privileged perspective from the perspective of a less-informed "other." Both tasks are described in detail in Chapter I and later in the present chapter. The independent variable, Explicitness of Task Presentation, was manipulated by varying the instructions given to the child during the presentation of the task materials. Children in the Non-Explicit condition were presented with both tasks according to Procedure I, while children in the Explicit condition received Procedure II. Details of the two procedures are described later in the chapter.

Following the presentation of each item for each of the two tasks, the child was asked three questions. All three questions required him to interpret the task materials from the point of view of the less-informed "other." The questions differed, however, in hypothesized level of cognitive difficulty. The three types of questions are described more fully later in the chapter. The specific questions asked for each item on each task are presented in Appendix C. The responses to each item for each task were recorded on a response form and scored according to the procedures described later in the chapter. The scoring procedures yielded four primary dependent measures for each task: a Level 3 response score, a Level 3 subject classification (Egocentric or Non-Egocentric), a Level 2 subject classification, and a Level 1 subject classification.

Subjects

The subjects were 120 children in nursery school and grades one and three. The nursery school children were obtained from two laboratory nursery schools and one day care center on the University of Maine at Orono campus. All four-year-old children in the three centers constituted the sample pool. Several children with physical or hearing handicaps were eliminated. From the remaining group of approximately 45 children, 20 boys and 20 girls were randomly selected. The first- and third-grade children were obtained from two elementary schools in small towns near Bangor, Maine. All first- and third-grade children in the two schools constituted the subject pool, from which 20 boys and 20 girls at each grade level were randomly selected. Several children at each grade level were eliminated prior to sample selection,

because they were judged by the principal to be retarded or to have a learning disability. Because of the uneven sex distribution in the limited subject pool, four third-grade girls from another small-town school were included in the sample.

All subjects were Caucasian, with the exception of one nursery school girl who was Korean (but whose native language was English). At all three age levels, the sample included children from the wide range of socio-economic backgrounds represented in the Bangor area. The average socio-economic level of the nursery school group was somewhat higher than that of the older age groups, with approximately 50% of the fathers employed in professional positions (e.g., professor, attorney, accountant) and the remaining 50% employed in clerical, skilled and unskilled jobs (e.g., unskilled laborer, janitor, foreman, baker). In the first- and third-grade groups, approximately 25% of the fathers were professionally employed. The average socio-economic level of one of the elementary schools was higher than that of the other. However, the children in the two schools were evenly distributed between the two age groups and experimental conditions.

Ages of the nursery school children ranged from 47 months to 60 months, with a mean age of 52.73 months (4 years, 5 months) and a standard deviation of 3.62 months. The mean ages of subjects in each sex group and experimental condition varied by less than two months. The ages of the first-grade children ranged from 73 months to 91 months, with a mean age of 80.28 months (6 years, 8 months), and a standard deviation of 4.15 months. The mean age of subjects in each sex group and experimental condition again varied by less than two months. The

ages of the third-graders ranged from 98 months to 115 months, with a mean age of 104.25 months (8 years, 8 months), and a standard deviation of 4.52 months. Again, the ages of each sex and treatment group varied by less than two months.

All children in each of the classes selected (except nursery school) were tested. The 120 children who comprised the sample were randomly assigned by grade, sex, and school to one of the two experimental groups (described below). The data from children not included in the sample were used to train the response form raters. The order of testing for the children in each class was randomly determined, and all children in one class were tested consecutively.

The choice of sample size was based on considerations of the power of the statistical analysis presented by Cohen (1969). If a moderate effect size is hypothesized (approximately .50), the power of the analysis for the two-way interactions of an analysis of variance with one degree of freedom in the numerator is approximately .80.

Tasks

Droodles Task. Task A used the droodles technique devised by Chandler, Helm, and Smith (1974). Each droodle consisted of a schematized line drawing which represented only a small part of a much larger scene. Viewed in isolation, the droodle was essentially uninterpretable. But after seeing the whole picture, one could appreciate the droodle as a highly selective representation of a much larger scene. The child's task was to interpret the droodle from the perspective of a naive other, who had presumably seen only the selective detail. He had to do this even though he himself had seen the entire picture and thus had a "privileged" perspective.

The report of the droodles task by Chandler et al. (1974) gave little information regarding the reliability and validity of the task. Only the interrater reliability (r=.98) for the scoring of the responses was reported. No information was given on the internal consistency of the five items of the task, or on test-retest reliability. The validity of the droodles task is primarily face validity, based on the logical relation between the task requirements and the cognitive processes being studied. The construct validity of the task is supported, however, by the fact that theoretically predicted patterns of response were found by Chandler et al. (1974), using two different manipulations of task presentation.

Story Task. Task B used the story task developed by Ambron and Irwin (1974), which was adapted from the earlier work of Flavell and his associates (1968). Each story consisted of four pictures accompanied by a narrative. The task required the child to take the perspective of a character in the story who did not have all the information that the child himself had. The character was introduced at the beginning of the story (picture 1), temporarily disappeared (pictures 2 and 3), and reappeared in the final scene (picture 4). After being told the complete story, the child was asked to interpret the final scene from the point of view of the character who had just reappeared. In order to do this, he had to discount important information which was presented during the absence of the character from the story scene.

The report describing the story task by Ambron and Irwin (1974) does not give the interrater reliability for scoring of responses. However, since the stories provided only two logical response

alternatives (an egocentric one and a non-egocentric one), agreement on the assignment of a score of 0 or 1 would be expected to be virtually perfect. Interrater reliability was computed for the scoring system used with the story task in the present study. Information on the internal consistency of the four stories was obtained by examining the difficulty levels reported by Ambron (1973). The percent of correct responses on the stories ranged from 38% to 79% for the five-year-olds and from 55% to 100% for the seven-year-olds. These figures indicate only a moderate degree of internal consistency among items. The test-retest reliability coefficient reported by Ambron (based on half the sample) was .84 for a total role-taking score, but was only .47 for the story task alone. The validity of the story task is also primarily face validity, based on the logical relation between the task requirements and the cognitive role-taking process. Construct validity is again supported by the fact that theoretically predicted patterns of response were found.

Experimental Setting and Materials

Each child was tested individually in a small room or area near his regular classroom. The experimental settings varied somewhat in the different schools from which the children were selected. The com-com criteria of all experimental settings were that they 1) provided adequate lighting, 2) were relatively free of visual distractions (e.g., unusual equipment or interesting displays), and 3) were relatively free of noise and traffic.

The experimental setting contained a small table and three child-sized chairs. Two chairs were placed along one side of the table and

the other was placed at the end of the table. The child and the experimenter sat side by side, with the E to the child's right. The task materials were kept in a box placed on the chair at the end of the table, within easy reach of the E, but out of sight and reach of the child.

The five pictures of the droodles task (Task A) were black line drawings(see Appendix A), drawn on 8" X 11" pieces of light blue posterboard. An 8" X 11" blue posterboard frame fit over each picture. The cut-out "window" in each frame revealed the abbreviated droodle version of the picture. The frame for each picture was attached to the posterboard in such a way that it could be flipped up to reveal the total picture. Each of the pictures was numbered on the back.

The four pictures for each of the four story items were colored drawings representing the main events in each story. Each picture was drawn on a 4" X 5½" piece of posterboard which was then laminated. The four pictures for each story were stacked in sequential order and numbered on the back of the bottom picture. Each packet was kept together with a rubber band.

The order of presentation of the five pictures and four stories was indicated on the response form prepared for each subject (described below). The task materials were arranged in the proper order before the E and the child entered the experimental setting.

Experimenter

The experimenter was a female graduate student in the School of Human Development at the University of Maine at Orono. She was a recent psychology graduate and had had experience testing young

children. The E was thoroughly trained in the administration of the various task procedures. Since the hypotheses of the study might have been apparent to a student of child development, the hypotheses were specifically discussed, as were the possible effects of experimenter bias (Rosenthal, 1969). When the E was thoroughly familiar with the task procedures, she administered the tasks to several children at each age, until she felt she could administer all versions smoothly and uniformly.

The E also became acquainted with the children to be tested. She visited each of the classes prior to data collection. On each visit, she spent time interacting with the children during their regular classroom activities. An attempt was made by the E to converse individually with as many children as possible.

Procedure

Task A was presented in two different ways, providing two variations in the explicitness with which the two perspectives were differentiated. Procedure I (Non-Explicit condition) was essentially identical to one of the presentations used by Chandler et al. (referred to in their study as Procedure II). When each picture was first shown to the child, it was covered with the cardboard frame which exposed only the abbreviated droodle. After being asked to guess what the droodle represented, the child was shown the complete drawing. After the child had described and labeled the complete drawing, the frame was replaced. The child was then asked to anticipate how his classmate (specified by name) would interpret the abbreviated droodle if the classmate saw only that small part. Procedure I served both as

a partial replication of the study by Chandler et al. (1974) and as an experimental contrast to Procedure II of the present study.

Procedure II (Explicit condition) presented the droodles in a manner very similar to Procedure I, but attempted to make the differentiation between the privileged perspective and the naive perpsective quite explicit. It was this explicitness of presentation which constituted the experimental manipulation or second level of the independent variable. After the child had been shown the abbreviated droodle and asked to guess what it was, the E said that she was going to show the child a "secret As in Procedure I, the child was shown the complete picture and described and labeled it. After the frame had been replaced, the child was reminded that, while he and the E knew what was underneath the frame, it was their secret. The child was then asked to anticipate the response of a classmate to the abbreviated droodle. The specific dialogue between the E and the child for each picture is presented in Appendix C.

Task A included five pictures which were presented in random order. Three questions were asked for each picture. These questions represented three hypothesized levels of cognitive difficulty. The first question required the child to predict the response of the other ("What will he think?"). In this case, the child had to produce spontaneously an appropriate, non-egocentric response. This question was hypothesized to be the most cognitively demanding. It was also the type of response required in the original study by Chandler et al. (1974). The Level 2 question required the child to choose between two structured alternatives in predicting the response of the other. One

of the alternatives represented the S's own privileged (egocentric) perspective, and the other represented a non-egocentric alternative. The order of presentation of the alternatives was randomized for each item. The Level 2 question was hypothesized to be less difficult than the Level 3 question. The Level 1 question required the child only to respond "yes" or "no" to a direct question about whether or not the other person possessed the privileged information. This question was hypothesized to be the least difficult. The questions were always asked in the same order -- Level 3 first, then Level 2, and finally Level 1. All responses were recorded on the response forms described below.

Task B was also presented in two different ways, providing variation in the explicitness with which the perspectives were differentiated. Procedure I (Non-Explicit condition) was identical to the procedure used by Ambron and Irwin (1974). The child was first told the complete story, as he looked at the series of four pictures. He was then asked to interpret the last scene from the point of view of the character who had reappeared. As for Task A, Procedure I for Task B served as a partial replication of the study which originally used the task (with slightly different age groups). It also served as an experimental contrast to Procedure II of the present study.

Procedure II (Explicit condition) presented the stories in a manner similar to Procedure I, but again attempted to make the differentiation between the privileged perspective of the child and the less-informed perspective of the character in the story quite explicit. The E described the first picture in the series, in which the character in

the story was introduced and then left the scene. The E then told the child that he was going to show him a secret about what happened while the character was gone. After describing the second and third pictures (in which the privileged information was presented), the E reminded the child that, while he and the E knew what happened, it was their secret. The fourth picture was then described, and the child was asked to predict the reaction of the character who had just reentered the story scene. The specific dialogue between the E and the child for each procedure is presented in Appendix C.

Task B included four stories, which were presented in random order. As for Task A, three questions were asked in a standard order for each story. The questions represented hypothesized levels of difficulty comparable to those for Task A. The Level 3 question required the child to predict the response of the character without the benefit of structured alternatives. The Level 2 question required the child to choose between two alternative responses, and the Level 1 question required the child to respond to a direct question about whether or not the character in the story possessed the privileged information. As for Task A, the presentation of the egocentric and non-egocentric alternatives for Level 2 was randomized for each of the four story items for each subject. All responses were recorded on the response forms described below.

The distinction between the Non-Explicit condition (Procedure I) and the Explicit condition (Procedure II) was intended to be comparable for both Task A and Task B. That is, the two procedures (for each task) were intended to represent the same two levels of the independent

variable. The three levels of response were also intended to represent comparable levels of hypothesized difficulty for the two tasks. There was no basis for assuming, however, that the two tasks themselves were equally difficult. Each subject was given both tasks. The order of presentation of Task A and Task B was counterbalanced within each Age x Treatment group. Subjects who had been assigned to the Non-Explicit condition were given Procedure I for both tasks, while those assigned to the Explicit condition were given Procedure II for both tasks.

Response Forms

A response form was prepared in advance for each subject. The form served both as a record of the child's responses (recorded verbatim) and as a guide to the E in presenting the tasks in the correct predetermined order (as determined by the various randomization procedures). A sample of the response form is presented in Appendix D. The first page of the form was for the task which was to be presented first (A or B). The page for Task A listed the numbers of the five pictures in the predetermined random order. Under each picture number was space for recording the child's naive response (prior to his seeing the whole picture), his Level 3 response (after seeing the total picture), and his Level 2 and Level 1 responses. The heading "Level 2" was also followed by one of two symbols: "(NE-E)," indicating that the non-egocentric alternative was to be mentioned before the egocentric alternative; or "(E-NE)," indicating that the response alternatives were to be presented in the opposite order. The page for Task B listed the numbers of the four stories in the predetermined random order. Under each story number was space for recording the Level 3, Level 2, and

Level 1 responses. The order of presentation of response alternatives for the Level 2 questions was indicated in the same manner as for Task A.

Attached to each response form was a cover sheet, including the following information: the child's name, sex, birthdate, and the experimental condition to which he was assigned. Also recorded on the cover sheet were the name of the school, the classroom teacher, and the date and time of testing. When all the data were collected, the response forms for all subjects in the study were shuffled and numbered from one to 120. The identification number was placed on the cover sheet and on both pages of the response form. The subject identification number was the only source of identification on the response forms. This procedure was followed so that the raters who scored the responses would not know either the age of the child or the experimental condition to which he had been assigned. Because the response forms were shuffled before they were numbered, the numbering system provided no clues to age or treatment.

Scoring the Responses

Task A. The Level 3 responses of the droodles task were scored using a three-point scoring system developed by Chandler et al. (1974). Responses were given a score of 0, 1, or 2, depending on whether they were clearly egocentric, included some egocentric contamination or confusion, or were quite clearly non-egocentric. Specific criteria for the assignment of each score are given in Appendix E. Although Chandler does not mention the "I don't know" response, it was decided to give this response a score of 1, since the score of 1 represents a

transitional level between clear egocentrism and non-egocentrism. This decision was based on the work of Selman (1971b), who found that inability or refusal to predict the response of another represented a developmental level between clear egocentrism and the ability to use one's own response as a basis for predicting the response of another.

The scores used by Chandler et al. represented the amount of egocentric error, with a score of 0 indicating a non-egocentric response. In the present study, the scoring system was reversed, with a score of 2 representing a non-egocentric response. Thus, higher scores in the present study indicate higher levels of role-taking ability. Scores for Level 3 responses on Task A have a range of 0-10. Level 3 responses were also classified as either egocentric (score of 0 or 1 according to the above criteria) or non-egocentric (score of 2 according to the above criteria). If the child gave non-egocentric Level 3 responses on at least four out of five pictures, he was given a summary classification of "Non-Egocentric" for Level 3.

Level 2 responses were given a score of 0 for choice of the egocentric alternative, a score of 2 for choice of the non-egocentric alternative, and a score of 1 for responses which appeared to be transitional (e.g., selection of both alternatives, vascillation between the two alternatives, or "I don't know" responses). Level 1 responses were given a score of 0 for "yes" (the other <u>does</u> know what the complete picture portrays), a score of 2 for "no" (the other does <u>not</u> know the privileged information), and a score of 1 for answers which showed confusion or uncertainty. Level 2 and Level 1 scores also have a range of 0-10 for Task A. Four out of five non-egocentric responses (scores of

2) also resulted in an overall subject classification of Non-Egocentric for Level 2 and Level 1 responses.

Task B. The story items in the original Ambron and Irwin study were given a score of "1 point if the subject discounted the extra information he had and took the perspective of the character in the story and 0 points if he did not discount the extra information" (Ambron & Irwin, 1974, p. 5). The Level 3 responses were scored using a three-point scoring system derived (by the present investigator) from the criteria used by Chandler et al. (1974). Each Level 3 response was given a score of 0, 1, or 2, depending on whether the response was clearly egocentric, reflected some awareness of the different perspectives, or was clearly non-egocentric. As for Task A, higher scores indicated higher levels of role-taking ability. The scores for Level 3 responses on Task B have a range of 0-8. Specific criteria for the assignment of each score are given in Appendix E. Inclusion of "I don't know" responses in the intermediate scoring category was based on the same reasoning used for the scoring of responses on Task A. The scoring system for Levels 2 and 1 was the same for Task B as for Task A. The range of scores for Level 2 and Level 1 responses for Task B is also 0-8. Each response to Level 3, Level 2, and Level 1 questions was classified as egocentric if it had been assigned a score of 0 or 1, and as non-egocentric if it had been assigned a score of 2. The criterion for overall classification of each subject as "Non-Egocentric" for each level of response on Task B was three out of four non-egocentric responses.

When data collection was completed, the cover sheets (containing identifying information about the subjects) were removed from the

response forms, and the forms for Task A were separated from the forms for Task B. The response forms were scored by two independent raters, one of whom was not familiar with the nature or purposes of the study. Data from pre-data-collection practice sessions and from extra children tested were used to train the raters.

CHAPTER IV

RESULTS

The scoring of responses for each task yielded a Level 3 score, a Level 2 score, and a Level 1 score, based on the responses to Level 3, Level 2, and Level 1 questions. From these scores were derived a Level 3 subject classification (Egocentric or Non-Egocentric), a Level 2 subject classification, and a Level 1 subject classification, as described in Chapter III.

Interrater reliability for the three scores for each task was computed, based on the scoring of all response forms by two independent raters. The reliability coefficients, based on the ratio of disagreements to total number of ratings, ranged from .90 to .99, with an overall reliability of .95 for Task A and .98 for Task B (Table 2). Since the subject classifications for each task were based directly on the scores, no reliability for these measures was computed.

Effects of Task Presentation and Age

Task A. It was hypothesized that there would be a significant effect of age (H_1), a significant effect of experimental treatment (H_2), and a significant interaction between age and treatment (H_3) with respect to Level 3 scores on Task A. The Level 3 scores for Task A are summarized in Table 3. Preliminary *t*-tests for sex differences indicated no significant differences for the total sample, within age groups, or within treatment groups. Therefore, the data for boys and girls were combined. The scores for the six age x treatment groups were tested for

Table 2

Interrater Reliability for Role-Taking Scores[a]

Score	Interrater Reliability
Task A	
Level 3	.90
Level 2	.95
Level 1	.99
Total	.95
Task B	
Level 3	.96
Level 2	.98
Level 1	.99
Total	.98

[a] Based on two independent ratings of all response forms (n = 120).

Table 3

Mean Level 3 Scores on Task A for Children

in Different Age and Treatment Groups

Experimental Condition	Age Groups		
	Nursery School	First Grade	Third Grade
Explicit	Mean = 4.60[a,b]	Mean = 8.25	Mean = 8.25
	SD = 3.12	SD = 1.83	SD = 1.59
Non-Explicit	Mean = 5.00	Mean = 7.55	Mean = 8.00
	SD = 2.85	SD = 1.96	SD = 1.62

[a] n = 20 for each age x treatment group.

[b] The range of scores is 0-10.

homogeneity of variance, using the F-max procedure (Winer, 1971). The result indicated that the variances were not homogeneous, F-max (6, 19) = 3.87, $p < .05$. However, since the critical value of the test at the .05 level of significance was 3.76, the violation of the homogeneity of variance assumption was not severe. Since the analysis of variance procedure used has been found to be relatively robust to violations of the homogeneity assumption, this violation was disregarded (Glass, Peckham, & Sanders, 1972; Lindquist, 1953).

The hypotheses regarding Level 3 scores on Task A were tested with a factorial analysis of variance for randomized groups with equal numbers of subjects per cell (Winer, 1971). The factors were age and experimental treatment. The results indicated only a main effect for age, F (2, 114) = 27.47, $p < .001$ (Table 4). Thus, hypothesis H_1 was supported, while hypotheses H_2 and H_3 were not. Differences among the means for the three age groups were tested, using the Newman-Keuls procedure (Winer, 1971). The results indicated that the mean for the nursery school group differed significantly from the mean for the first-grade group ($p < .01$) and from the mean for the third-grade group ($p < .01$). The means for the first- and third-grade groups did not differ. The proportion of the variance in Level 3 scores on Task A which can be predicted on the basis of variability in age was estimated by calculating the E^2 statistic (Kerlinger, 1973). The result indicated the strength of the relationship to be .32.

No specific hypotheses were made regarding age and treatment effects on Level 2 and Level 1 scores for Task A. These scores were summarized, however, and tested for homogeneity of variance. Since the homogeneity

Table 4

Analysis of Variance of Level 3 Scores on Task A

Source	df	SS	MS	F
Age	2	276.22	138.11	27.47***
Treatment	1	1.01	1.01	.20
Age x Treatment	2	6.12	3.06	.61
Within	114	573.25	5.03	

*** $p < .001$.

assumption was not violated with respect to the Level 2 scores, a factorial analysis of variance was performed, with age and treatment as the factors. As for the Level 3 scores, results indicated only a main effect for age, F (2, 114) = 15.79, $p < .001$. Again, the Newman-Keuls analysis of the three age group means showed that the youngest group differed significantly from each of the older groups ($p < .01$), while the two older groups did not differ from each other. The strength of the relationship between age and Level 2 scores on Task A was .22. The test for homogeneity of variance of the Level 1 scores for Task A showed such severe violation of the homogeneity assumption, that analysis of variance was not performed. Analysis of the Level 1 responses with nonparametric procedures is reported below.

A series of chi square tests was also performed to assess the relation between age and subject classification for each level of response on each task. In contrast to the analyses of variance of scores reported above, this analysis contrasted children whose overall performance was classified as Non-Egocentric (according to scoring criteria) with those whose performance was classified as Egocentric. Because of the consistent absence of treatment effects for all levels of response on both tasks, responses for subjects in both experimental conditions were combined. The results of the tests are summarized in Table 5. The contingency coefficients indicate the strength of the relationship between age and subject classification for each measure.

The chi square statistics for Level 3 and Level 2 responses on Task A indicated significant relationships between age and classification of subject. Although these tests were not independent of the

Table 5

Chi Square Tests of Independence Between Age and Subject Classification[a] for Three Levels of Response on Task A and Task B

Dependent Measure	χ^2	Contingency Coefficient
Task A		
Level 3	9.90**	.28
Level 2	22.63***	.40
Level 1	42.88***	.51
Task B		
Level 3	49.90***	.54
Level 2	23.66***	.41
Level 1	42.44***	.51

[a] Subject classification refers to overall rating of Egocentric or Non-Egocentric. Criteria for classification are given in Chapter III.

** $p < .01$.

*** $p < .001$

analyses of variance for the Level 3 and Level 2 scores, the strength of the relationships found and the consistency of the results support their validity. The chi square statistic for Level 1 responses on Task A showed a highly significant relation between age and subject classification, χ^2 (2) = 42.88, $p < .001$. The strength of the relation, indicated by the contingency coefficient, was .51. The relation between age and Level 1 scores on Task A was not previously tested with analysis of variance procedures, due to the violation of the homogeneity of variance assumption.

Task B. It was also hypothesized that there would be a significant effect of age (H_4), of experimental treatment (H_5), and of the interaction of age and treatment (H_6) with respect to Level 3 scores on Task B. These scores are summarized in Table 6. Again, preliminary *t*-tests indicated no sex differences for the total sample, or within age or treatment groups. Therefore, data for boys and girls were combined. The *F*-max test for homogeneity of variance within the six age x treatment groups indicated that the assumption of homogeneity was not violated.

The hypotheses regarding Level 3 scores on Task B were tested with a factorial analysis of variance for randomized groups, with age and treatment as the factors. Results indicated only a main effect for age, F (2, 114) = 45.63, $p < .001$ (Table 7). Thus, hypothesis H_4 was supported, while hypotheses H_5 and H_6 were not. The Newman-Keuls analysis of the means for the three age groups indicated that the nursery school group differed from the first-grade group ($p < .01$) and from the third grade group ($p < .01$). The means for the first- and

Table 6

Mean Level 3 Scores on Task B for Children

in Different Age and Treatment Groups

Experimental Condition	Age Groups		
	Nursery School	First Grade	Third Grade
Explicit	Mean = 3.35[a,b]	Mean = 6.15	Mean = 6.80
	SD = 1.84	SD = 1.93	SD = 1.32
Non-Explicit	Mean = 2.90	Mean = 5.15	Mean = 6.85
	SD = 2.13	SD = 1.98	SD = 1.23

[a] n = 20 for each age x treatment group.

[b] The range of scores is 0-8.

Table 7

Analysis of Variance of Level 3 Scores on Task B

Source	df	SS	MS	F
Age	2	285.95	142.98	45.63***
Treatment	1	6.53	6.53	2.09
Age x Treatment	2	5.52	2.76	.88
Within	114	357.20	3.13	

*** $p < .001$.

third-grade groups were also significantly different ($p < .01$). As indicated by the E^2 statistic, the strength of the relationship between age and Level 3 scores on Task B was .44.

No specific hypotheses were made regarding age and treatment effects on Level 2 and Level 1 scores for Task B. These scores were summarized, however, and tested for homogeneity of variance. Since the homogeneity assumption was not violated with respect to the Level 2 scores, a factorial analysis of variance was performed, with age and treatment as the factors. As for the Level 3 scores, results indicated only a main effect for age, F (2, 114) = 20.81, $p < .001$. Again, the Newman-Keuls analysis of the three age group means showed that the youngest group differed from each of the older groups ($p < .01$), and the two older groups differed from each other ($p < .01$). The strength of the relationship between age and Level 2 responses on Task B was .26. The test for homogeneity of variance of the Level 1 scores for Task B showed such severe violation of the homogeneity assumption that analysis of variance was not performed. Analysis of the Level 1 responses with nonparametric procedures is reported below.

The chi square analysis of the relationship between age and subject classification for Task B is summarized in Table 5. The chi square statistics for Level 3 and Level 2 responses indicated significant relationships between age and subject classification. Again, these results were not independent of, but were consistent with, the analyses of variance of the Level 3 and Level 2 scores. The chi square statistic for Level 1 responses on Task B indicated a highly significant relation between age and subject classification, χ^2 (2) = 42.44, $p < .001$. The

strength of the relation, indicated by the contingency coefficient, was .51. As for Task A, the relation between age and Level 1 scores on Task B was not previously tested with analysis of variance procedures, due to violation of the homogeneity of variance assumption.

Effects of Response Format

It was also hypothesized that there would be a significant relation between the level of response (based on Questions 1, 2, and 3) and the overall classification of the subject as Egocentric or Non-Egocentric. This relation was hypothesized for Task A (H_7) and for Task B (H_8). The percent of subjects classified as Non-Egocentric for each response level on each task is presented in Table 8. Hypotheses H_7 and H_8 were tested with the Cochran Q test (Siegel, 1956). This test, rather than the chi square test, was used, because the data for the three response levels were repeated measures rather than independent responses.

The Cochran Q test for Task A indicated that, for the total sample, level of response was significantly related to classification of subject, Q (2) = 28.37, $p < .001$. Thus, hypothesis H_7 was supported. When Cochran Q statistics were computed for each age group separately, the relationship between response level and subject classification was found to be significant within the first-grade group ($p < .01$) and third-grade group ($p < .001$), but not within the nursery school group. Because of the consistent lack of treatment effects for all response levels on Task A, the relation between response level and subject classification within experimental conditions was not examined.

The Cochran Q test for Task B also indicated that, for the total sample, level of response was significantly related to classification

Table 8

Percent of Subjects Classified as Non-Egocentric[a] for Three Response Levels on Task A and Task B

Group	Response Level		
	Level 3	Level 2	Level 1
Task A			
Total Sample	45.0	55.0	72.5
Nursery School	25.0	25.0	35.0
First Grade	57.5	65.0	87.5
Third Grade	52.5	75.0	95.0
Task B			
Total Sample	55.0	41.0	77.5
Nursery School	12.5	17.5	42.5
First Grade	62.5	35.0	92.5
Third Grade	90.0	70.0	97.5

[a] Criteria for classification of subjects are given in Chapter III.

of subject, Q (2) = 51.82, $p < .001$. Thus, hypothesis H_8 was supported. Tests within age groups indicated the relationship to be significant at all three ages ($p < .001$). Because of the consistent lack of treatment effects for all response levels on Task B, no tests within experimental conditions were performed.

Hypothesis H_9 stated that there would be an ordered relation between the proportion of subjects classified as Non-Egocentric and the level of response; i.e., the highest proportion of Non-Egocentric subjects would be found for Level 1 responses, a lower proportion for Level 2, and the lowest proportion for Level 3 responses. This hypothesis was tested by comparing the actual pattern of classification in Table 8 to the expected pattern.

For Task A, the expected pattern of classification was obtained for the total group and for each age group. According to the proportion of subjects classified as Non-Egocentric for the total sample, the Level 1 questions were the easiest, Level 2 questions were more difficult, and Level 3 questions were the most difficult. Thus, hypothesis H_9 was supported for Task A. The relative difficulty of the three response levels differed with age. For the nursery school group, all three levels were quite difficult, with Level 1 only slightly easier than the other two levels. For first-graders, Levels 3 and 2 were both moderately difficult, while Level 1 was considerably easier. For third-graders, Level 3 was moderately difficult, Level 2 was considerably easier than Level 3, and Level 1 was considerably easier than Level 2.

For Task B, the expected pattern of classification was not

obtained (Table 8). According to the proportion of subjects classified as Non-Egocentric for the total sample, the Level 1 questions again were the easiest, but the Level 2 questions were more difficult than the Level 3 questions. This pattern of classification was consistent for the first- and third-grade groups, as well as for the total sample. Thus, hypothesis H_9 was not supported for Task B. The nursery school children showed low levels of Non-Egocentric responding on Levels 3 and 2, with considerable improvement on Level 1 questions. For first-graders, the Level 2 questions were considerably more difficult than the Level 3 questions, which in turn were considerably more difficult than the Level 1 questions. For third-graders, the Level 1 and 3 questions were both quite easy, while the Level 2 questions were more difficult.

Comparison of Task A and Task B

The relation between performance on Task A and performance on Task B was assessed in two ways. Pearson product-moment correlations between Tasks A and B were computed, using the Level 3 and Level 2 scores. The correlation coefficients for the total sample and for each age group are presented in Table 9. While the correlations for the total sample were significant for the Level 3 scores ($p < .001$) and the Level 2 scores ($p < .05$), none of the within-group correlations was significant.

The relation between task and subject classification was tested with the Cochran Q procedure. The percent of subjects classified as Non-Egocentric on Task A and on Task B for each level of response can be found in Table 8. The Cochran Q statistics for each level of

Table 9

Pearson Product-Moment Correlations Between Scores on Task A and Task B

Group	Level 3 Scores	Level 2 Scores
Total Sample	$r = .49^{***}$	$r = .21^{*}$
Nursery School	$r = .24$	$r = -.22$
First Grade	$r = .15$	$r = .01$
Third Grade	$r = .19$	$r = .30$

* $p < .05$.

*** $p < .001$.

response for the total sample and for each age group are presented in Table 10. Only three of the twelve statistics were significant. With respect to Level 2 responses, Task B was more difficult (i.e., elicited fewer Non-Egocentric responses) than Task A, for the total sample ($p < .02$) and for first-graders ($p < .001$). With respect to Level 3 responses, Task A was more difficult than Task B for third graders ($p < .001$).

To assess further the consistency both within and between the two tasks, the difficulty level of each item within the tasks was computed. The difficulty levels for Task A are presented in Table 11, and those for Task B are presented in Table 12. The pattern of difficulty levels for Task A reflected the same effects of age and response level which were indicated by previous analyses. The difficulty levels also indicated relatively high internal consistency among the five items of Task A. This consistency was greater for Level 1 responses than for Levels 2 and 3, and was greater for third-grade children than for first-grade and nursery school children. There were no particular items on the task that were strikingly different in difficulty level than the others.

The pattern of difficulty levels for Task B again reflected the effects of age and response levels indicated by previous analyses. However, the difficulty levels indicated considerably less internal consistency among the four items on Task B than was found for items on Task A. For Task A, the maximum difference in difficulty levels within any subgroup (age x response level) was .25, with the average discrepancy for the nine subgroups equalling .12. In contrast, the

Table 10

Cochran Q Test of Independence Between Task[a] and Subject Classification[b] for Three Levels of Response

Group	Level 3	Level 2	Level 1
Total Sample	$Q = 3.43$	$Q = 6.15^{*}$	$Q = 3.60$
Nursery School	$Q = 2.78$	$Q = .69$	$Q = 1.80$
First Grade	$Q = .25$	$Q = 7.20^{**}$	$Q = 1.00$
Third Grade	$Q = 13.24^{***}$	$Q = .29$	$Q = 1.00$

[a] Task A vs. Task B.

[b] Subject classification refers to overall rating of Egocentric or Non-Egocentric. Criteria for classification are given in Chapter III.

* $p < .05$.

** $p < .01$

*** $p < .001$.

Table 11

Difficulty Levels of Role-Taking Items on Task A for Three Levels of Response and Three Age Groups

Response Level	Item	Nursery School	First Grade	Third Grade
Level 3	1	.43	.58	.65
	2	.48	.70	.68
	3	.45	.75	.70
	4	.30	.60	.70
	5	.35	.75	.68
Level 2	1	.60	.75	.75
	2	.35	.85	.85
	3	.58	.73	.80
	4	.45	.65	.85
	5	.43	.68	.75
Level 1	1	.43	.93	.95
	2	.45	.93	.95
	3	.43	.88	.90
	4	.40	.88	.93
	5	.45	.88	.95

Table 12

Difficulty Levels of Role-Taking Items on Task B for Three Levels of Response and Three Age Groups

Response Level	Item	Nursery School	First Grade		Third Grade	
Level 3	1	.28	(.79)[a]	.95	(1.00)[b]	.98
	2	.13	(.38)	.45	(.55)	.60
	3	.40	(.59)	.68	(1.00)	.83
	4	.25	(.76)	.68	(.97)	.95
Level 2	1	.40		.83		.93
	2	.35		.38		.53
	3	.23		.40		.70
	4	.33		.50		.85
Level 1	1	.53		1.00		1.00
	2	.50		.83		.88
	3	.45		.93		.98
	4	.43		.88		.95

[a] Numbers in parentheses in the First Grade column indicate difficulty levels reported by Ambron (1973) for kindergarten children on the same items.

[b] Numbers in parentheses in the Third Grade column indicate difficulty levels reported by Ambron (1973) for second grade children on the same items.

maximum difference in difficulty levels within a subgroup for Task B was .50, with an average discrepancy of .28. As was found for Task A, greater internal consistency was found for Level 1 responses than for Levels 2 and 3. The internal consistency was not greater, however, for third-grade children than for the other age groups. Much of the discrepancy in difficulty levels on Task B was due to one particular item (item 2), which was consistently more difficult than the others.

Table 13 presents the average difficulty levels for the role-taking items on Task A and on Task B, for each age group and each level of response. With respect to Level 3 responses, the average difficulty levels suggest that Task B was more difficult than Task A for the nursery school children, the two tasks were equally difficult for first-graders, and Task B was easier for third-graders. With respect to Level 2 responses, Task B was more difficult for the nursery school and first-grade children, while the two tasks were equally difficult for third-graders. With respect to Level 1 responses, the two tasks were equally difficult for all three age levels.

Table 13

Average Difficulty Levels of Role-Taking Items on Task A[a] and Task B[b] for Three Levels of Response and Three Age Groups

Response Level and Age	Task A	Task B
Level 3		
Nursery School	.40	.20
First Grade	.68	.69 (.63)[c]
Third Grade	.68	.84 (.88)[d]
Level 2		
Nursery School	.48	.33
First Grade	.73	.53
Third Grade	.80	.75
Level 1		
Nursery School	.43	.48
First Grade	.90	.91
Third Grade	.94	.95

[a] Average difficulty level is based on five items.

[b] Average difficulty level is based on four items.

[c,d] Numbers in parentheses are the average difficulty levels of the four story items reported by Ambron (1973) for five- and seven-year-olds respectively.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The purpose of the present study was to assess the relation between cognitive role-taking ability and three independent variables: 1) age, 2) the explicitness with which the cognitive perspectives were differentiated in the presentation of the task, and 3) the type of response required of the child. A picture task (Task A) and a story task (Task B) were presented to a total of 120 children in nursery school, first grade, and third grade. Both tasks required the child to interpret a situation from the point of view of another person who had less information about the situation than the child himself had. Half the children in each age group received a task presentation procedure which emphasized the difference between the child's privileged perspective (referred to as a "secret") and the perspective of the other person. The remaining children received a task presentation procedure which made no explicit reference to the difference in perspectives. For each item on each task, the child was asked three questions, all of which required him to take the role of the other, but which differed in the hypothesized difficulty of the response required.

The results indicated a significant relation between age and role-taking performance. This relation held for both the picture and story tasks, and for all three levels of response on each task. No relation was found between explicitness of task presentation and role-taking

performance. Emphasizing the difference between the cognitive perspectives did not facilitate role-taking for any level of response on either task. A significant relation was also found between role-taking performance and level of response. The Level 1 questions, which were hypothesized to be the easiest, elicited the highest number of non-egocentric responses on both tasks. For Task A, the Level 3 questions were more difficult than the Level 2 questions, as expected. For Task B, however, the Level 2 questions were more difficult than the Level 3 questions.

Scores on Task A and Task B were found to be correlated for the total sample, but not within age groups. There were no systematic differences in difficulty between Task A and Task B. There was, however, more internal consistency among the items on Task A than among the items on Task B.

Discussion of Results

Relation of age to role-taking. The significant relation of age to role-taking performance found in the present study is consistent with the many other studies which have found developmental differences in cognitive role-taking ability (e.g., Ambron, 1973; Chandler et al., 1974; Flavell et al., 1968; Selman, 1971b; Yarrow & Waxler, 1975). Comparison of the $\underline{E}^2$ coefficients associated with the Level 3 scores on Task A ($\underline{E}^2$ = .32) and Task B ($\underline{E}^2$ = .44) suggests that Task B was the more discriminating task over the age range studied. When Level 3 subject classifications, rather than Level 3 scores, are considered, the difference in discriminability is even more clear. While the contingency coefficient for the relation of age and Level 3 subject

classification for Task A was .28, the comparable coefficient for Task B was .54. The average difficulty levels for the Level 3 questions on Tasks A and B indicated that Task B was more difficult than Task A for nursery school children but much easier for third-graders.

It is interesting to compare the results of the present study, with respect to Level 3 scores on Task A, to the findings reported by Chandler et al. (1974), who used the same task and procedure. Chandler et al. found the most marked improvement in performance between ages four and seven, but found further significant improvement between ages seven and eleven. These findings are consistent with those of the present study. Level 3 performance on Task A in the present study showed marked improvement between ages four and eight (Table 3). However, the performance of the eight-year-olds was far from perfect. For the eight-year-old group, the average difficulty level for Level 3 questions on Task A was .68, and only 52.5% of this group were classified as consistently non-egocentric (see Tables 7 and 13). For the present sample, the major improvement occurred between ages four and six, with no further improvement between ages six and eight.

It is also interesting to compare the results of Task B (Level 3) to those reported by Ambron (1973), who used the same task. Ambron found significant improvement in cognitive role-taking performance between ages five and seven, while the present study found significant improvement between ages four and six and between ages six and eight (Table 6). A comparison of the average difficulty levels of the items in the story task helps to clarify the pattern of age changes. The average difficulty level of the Level 3 questions for the four-year-olds

in the present sample was .20. The average difficulty levels for the five-year-olds in the Ambron sample and the six-year-olds in the present sample were .63 and .69 respectively. The average difficulty levels for the seven-year-olds in the Ambron sample and the eight-year-olds in the present sample were .88 and .84 respectively. This comparison indicates that the major improvements in performance on this task occur between four and five years and between six and seven years.

The results of the present study, in conjunction with those of Chandler et al. (1974) and Ambron (1973), suggest that a major development in role-taking ability occurs between ages four and five years. This conclusion is consistent with several recent reports by Mossler et al. (1976), Selman (1971b), and Yarrow and Waxler (1975). Although another significant improvement on the story task (Task B) was found between ages six and seven, no further improvement on the picture task (Task A) occurred.

Careful examination of the Level 3 responses to the two tasks suggests a reason for the greater apparent discriminability over age of Task B, and for the poorer performance of the third-graders on Task A than on Task B. This reason is that children said they did not know what the other person would say much more frequently when responding to the pictures than when responding to the stories. Out of a total of 600 responses to the picture items, 13.5% were "I don't know," while only 6% of the 480 responses to the story items were "I don't know." In addition, the relation of age to "I don't know" responses was different for the two tasks. On the picture task, 50% of the "I don't know" responses were given by the third-graders, 25% by the

first-graders, and 25% by the nursery school children. On the story task, only 7% of the "I don't know" responses were given by the third-graders, 14% by the first-graders, and 79% by the nursery school children.

Examination of the cognitive requirements of the two tasks suggests that the "I don't know" response was more likely to be elicited on the picture task than on the story task. When predicting the response of another to one of the droodles, the number of possible responses is very large, and the child may be quite accurate in saying that he does not know what the other person will say. In fact, several children (all third-graders) followed their "I don't know" response with a comment such as, "Ask him," or "Different people say different things," or "I'm not a mind reader." Such comments clearly suggest an awareness of the other's different perspective. Selman (1971b) did find that "I don't know" responses developmentally preceded the ability to use one's own response as a basis for prediction. However, the number of possible responses in Selman's study was not as great as for Task A in the present study. The higher proportion of "I don't know" responses on the picture task would have two effects on the overall results. Since this response was given a score of 1, there would be more scores in the intermediate range on the picture task than on the story task. The higher number of scores in the middle range would reduce the apparent discriminability of the task. Since the score of 1 was considered egocentric in terms of subject classification, the role-taking ability of some children was probably underestimated. This was particularly true of the third-graders, because of the large number of "I don't know" responses in this age group.

In the story task, there were only two logical response alternatives to the Level 3 questions asked. This implicit limitation of alternatives probably served to reduce the number of "I don't know" responses. The "I don't know" response was also more likely to indicate true role-taking confusion on this task, since this response was not as reasonable for the story task as for the picture task. Consistent with this interpretation, it was the youngest age group that gave the largest proportion of "I don't know" responses on Task B. The smaller proportion of "I don't know" responses on this task indicates that children were more frequently committing themselves to either an egocentric or a non-egocentric response. This polarization of responses would serve to increase the discriminability of the task.

As indicated by the above results, the timing of developmental changes in role-taking ability varies with the nature and complexity of the task used to assess role-taking. The story task used in the present study was a simplified version of the story task developed by Flavell et al. (1968). Flavell's task consisted of a seven-picture story which the child had to retell, from the point of view of another person after three pictures had been removed. Flavell et al. (1968) and Selman (1971a) found the major improvements on this task to occur between ages eight and ten. Kurdek (1975) found some improvement between grades two and three, but none between kindergarten and second grade. Layton (1975) found low levels of performance in five- and six-year-olds on a very similar task, with no improvement between the two ages. Thus, even tasks that seem to require very similar role-taking abilities show improvements in role-taking performance at different ages.

These results lend support to the position of Watson (1975) that developmental changes in role-taking performance may be due to increasing complexity of cognitive structures, rather than to a shift from egocentrism to sociocentrism. Or, as seems more likely, the simplicity of the young child's cognitive structures may severely limit his ability to understand the points of view of others. As his cognitive structures become more complex, he may be able to take the role of the other in more complex and subtle situations. Perhaps if future studies approached role-taking from this position, it would be possible to define the important dimensions of task complexity and cognitive structure. Such dimensions of existing role-taking tasks have rarely been specified.

Relation of explicitness of task presentation to role-taking. As indicated above, emphasizing to the child the "secret" nature of his privileged perspective did not have the expected facilitating effect on role-taking performance. The variation in task presentation which constituted the Explicit condition in the present study was derived from the study by Marvin et al. (1975). These authors used a "secret game" with preschool children and found the major increase in role-taking performance to occur between ages three and four years. One characteristic of a secret, of course, is that it contains information explicitly denied to another person. Thus, use of the term "secret" clearly differentiates the privileged perspective from the other perspective.

Reexamination of the Marvin et al. study (1975) and a study by Mossler et al. (1976) suggests several possible reasons for the failure

of the Explicit condition in the present study to elicit higher levels of role-taking performance, especially in the younger children. In the Marvin et al. study, the difference in perspectives was emphasized by one person hiding his eyes. In the Mossler et al. study, the differentiation was achieved by the "other" (the child's mother) leaving the room. However, in both of these studies, the child was only required to give a "yes" or "no" response to a direct question about whether or not the "other" possessed the priviledged information. Thus, the successful performance of the preschool children may have been due to the direct question response format, rather than to the explicit differentiation of perspectives. This interpretation receives some support from the results of the present study, which assessed the effects of each of these variables separately. The results showed no effect of explicitness of task presentation, but a significant effect of response format. However, even the direct question format in the present study (Level 1 questions) did not produce the high level of non-egocentric responding reported for the preschoolers in the Marvin et al. and Mossler et al. studies.

Another difference between the present study and the studies by Marvin et al. and Mossler et al. is that the difference in perspectives in the latter studies was signalled by a concrete, visible action (hiding eyes, leaving the room). In contrast, in the present study, the difference in perspectives was emphasized only verbally, by use of the word "secret." In addition, the verbal term ("It is our secret") was used in relation to a symbolic "other" in the story task (the story character) and to a hypothetical "other" in the picture task (a

classmate who was mentioned by name, but who was not physically present). Perhaps the concrete, visible actions in the Marvin et al. and Mossler et al. studies were more effective in emphasizing the difference in perspectives than was the more symbolic emphasis used in the present study.

According to Piaget (1928), preschool children tend to center their attention on the most salient aspect of a situation. It was pointed out in Chapter I that in both the story task and the picture task, the privileged information was quite surprising and unexpected. Because of this, the privileged information was probably the most salient aspect of the task situation. In the present study, the attempt to make the difference in perspectives more salient was clearly not effective. In contrast, the visible actions used in the Marvin et al. and Mossler et al. studies appeared to have been effective in making the difference in perspectives a salient aspect of the situation. In addition to these considerations, it is possible that there are still other features of the tasks discussed that make them more or less difficult for preschool children.

Relation of response format to role-taking. Perhaps the most interesting finding in the present study is the relation between response format and children's role-taking performance. Although other studies of role-taking have used tasks that varied in the type of response required, there has been little attempt to vary the response format systematically (exceptions include Fishbein et al., 1972, and Masangkay et al., 1974, using perceptual role-taking tasks). The present study used the type of response format originally used with the

story task (Ambron, 1973) and the picture task (Chandler et al., 1974). This type of response required the child to reconstruct spontaneously the perspective of the other ("What will he think?"), requiring him to consider simultaneously his own and the other perspective. Of most interest in the present study was the comparison of this type of response to a response format that asked the child a direct question about whether or not the "other" knew the privileged information. The possible effect of this response format was suggested by the Marvin et al. (1975) study. However, by comparing the response formats within the same task, and by making the same comparison on two different tasks, the effect of response format could be assessed, independent of the other features of the Marvin et al. task.

The results indicated that the direct question format markedly improved role-taking performance on both tasks. For nursery school children on the picture task, the effect was only slight and non-significant; and for third-graders on the story task, the effect was slight, due to the high level of non-egocentric responding to Level 3 questions. However, for each of the other groups on both tasks, at least 30% more of the children were classified as Non-Egocentric for Level 1 responses than for Level 3 responses. The direct question format was expected to have the greatest effect on the performance of the youngest children. It is interesting to note, however, that it also had a marked effect on the performance of the first-graders on both tasks, and on the performance of the third-graders on the picture task. Thus it appears that answering a direct question about what another person knows is easier for young children than describing a situation from that other person's

point of view. This conclusion is consistent with the writings of Piaget and Inhelder (1956), Flavell et al. (1968), and Selman (1971b), all of whom state that the simple awareness of different perspectives precedes the ability to reconstruct another perspective.

The Level 2 questions required the child to choose one of two response alternatives, an egocentric response or a non-egocentric response. This response format was expected to be more difficult than the direct question format, because it required simultaneous consideration of two perspectives. It was expected to be easier than the Level 3 format, however, because the child did not have to produce spontaneously the non-egocentric response. As expected, the Level 2 questions were more difficult than the Level 1 questions for all age groups on both tasks, although the difference was slight for the nursery school children on the picture task. Also as expected, the Level 2 questions were easier than the Level 3 questions on Task A, except for the youngest group. However, for Task B, the Level 2 questions were more difficult than the Level 3 questions, especially for the first- and third-graders.

The different cognitive requirements of the Level 3 responses on the two tasks (discussed in relation to age changes in performance) help explain the discrepant results. The Level 3 questions on the picture task might produce a considerable amount of uncertainty, due to the large number of possible response alternatives. In this case, the Level 2 questions would narrow these alternatives to two. In addition, they would remind the child of his own naive responses to the droodles. This reminder would serve to emphasize to the child the similarity of

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if Jack had fallen, he probably had blood on his pants, and the mailman would figure out that he had fallen. These examples remind us of the complexity of children's thought processes and the oversimplification of classificatory terms such as "egocentric." These examples also lend support to the value of Piaget's interview methods, which attempt to probe some of the subtleties of children's thinking.

Relation of Task A to Task B. Several differences between the two tasks have already been pointed out in previous sections of the discussion. These include the different cognitive requirements of the Level 3 questions, and the different effect of the Level 2 questions for the two tasks. Comparison of the tasks in terms of the Cochran Q analysis (Table 10) and the average difficulty levels of the items (Table 13), indicated no overall difference between the two tasks. The comparisons did, however, reflect the specific effects of age and response level previously discussed. It is interesting to note that, in contrast to the Level 3 and Level 2 responses, the difficulty levels of the Level 1 responses at every age were almost identical for the two tasks. Thus, neither task appears to be consistently more difficult than the other for children between four and eight years. However, the cognitive requirements of the two tasks appear to be most similar when Level 1 questions are asked than when Level 2 or Level 3 questions are asked.

One assumption of the present study was that both tasks were measures of cognitive role-taking ability. Thus, the picture task and the story task were assumed to assess performance on the same cognitive dimension. If this is true, then performance on the two measures should be correlated, especially if there are no systematic differences

in difficulty between the two tasks. The results showed that the two measures were, in fact, correlated for the total sample. The correlation was considerably higher for the Level 3 scores (r = .49, p < .001) than for the Level 2 scores (r = .21, p < .05). Because of the violation of parametric assumptions, correlations for Level 1 scores were not calculated. Performance on the two tasks, however, was not correlated within any of the age groups. These results suggest that the two tasks were assessing the same general cognitive ability and thus reflected the same major developmental changes. This appeared to be especially true of the Level 3 responses. However, the tasks did not appear to be similar enough to reflect similar variations in performance within a narrower age range.

It was also noted that there was greater internal consistency among the items on Task A than on Task B. The lower internal consistency on Task B was due largely to one of the stories, which was considerably more difficult than the others at all age levels. The variation in difficulty levels was generally greater, however, for the stories on Task B than for the pictures on Task A. This result suggests another difference between the two tasks. The picture task presents a rather clear distinction between one perspective (the droodle) and the other (the complete picture). Understanding of this distinction requires role-taking ability. However, there seems to be little chance of a misunderstanding or different interpretation of the stimulus materials themselves. In contrast, each of the stories presents a sequence of events involving interrelationships among people. Thus, a prerequisite to role-taking on this task is accurate comprehension of the story content.

The relatively high internal consistency of the picture task suggests that differences in the content of the pictures do not affect the difficulty of the items. The lower internal consistency on the story task indicates that the different content of the stories does affect the difficulty of the items. This result suggests that if stories are used to assess role-taking, the content of the stories should be carefully examined, so that role-taking per se is not confounded with comprehension or interpretation of the story content. It is interesting to note, however, that despite the lower internal consistency, the story task was more discriminating across ages than was the picture task.

Conclusions

Several conclusions can be drawn from the present study. First, cognitive role-taking performance on the tasks used in this study improves between ages four and eight years. Furthermore, more improvement seems to occur between ages four and six years than between six and eight years (see Tables 3 and 6). Although this conclusion is not surprising, it does indicate that the results of previous studies using the same instruments are reproducible (Ambron, 1973; Chandler et al., 1974). Results of the present study also help clarify the timing of developmental changes within the four- to eight-year period.

A second conclusion is that the type of response required of the child significantly affects his role-taking performance in the same task situation. Asking a child whether or not another person knows something elicits higher levels of accurate role-taking than asking him to predict the response of the other on the basis of what the other knows.

Although this conclusion has been implied in several studies of perceptual role-taking, the relation had not been previously tested with respect to cognitive role-taking. A third conclusion is that differentiating the cognitive perspectives of the child and the other by verbally emphasizing the difference does not seem to be effective. If a clear differentiation of perspectives can assist role-taking in young children, this differentiation must be achieved in a more effective way.

The above generalizations are, of course, limited to populations similar to the sample in the present study. The inclusion of a wide range of socio-economic levels, of both sexes, and of children from public schools in grades one and three, makes the results more widely applicable than if a more selective sample had been used. The conclusions might, however, be affected by regional or ethnic differences. The conclusions are also limited to the two tasks used to assess role-taking ability. Comparison of the performance of the same subjects on these two tasks suggests that this limitation is an important one. Even tasks that appear to require similar role-taking abilities may vary in the information processing requirements of the stimulus materials and in the cognitive abilities needed to produce a correct response. These dimensions of role-taking tasks have not been defined clearly enough to permit much generalization across tasks. The conclusions regarding response format are also limited to the specific questions asked in the study. The distinction between a direct "does he know" question and a question requiring prediction of the response of another seems to be an important dimension of response format.

The distinction seems to apply to both tasks used in the present study and should be investigated further. Finally, the "no-effect" conclusion regarding explicit differentiation of perspectives applies only to the variation in task presentation used in the present study. This variable might, in fact, be an important one, if it were operationalized in a different way.

Suggestions for Future Research

It has been suggested that "role-taking" be considered a multidimensional construct, including several types of perspective-taking ability (Ambron & Irwin, 1974; Yarrow & Waxler, 1975). On the basis of this suggestion, a number of recent studies have made the distinction among perceptual, cognitive, and affective role-taking (Ambron & Irwin, 1974; Kurdek, 1975; Yarrow & Waxler, 1975). The results of the present study, in conjunction with other studies, suggest that even the narrower dimension of "cognitive role-taking" is a complex phenomenon. The increasing ability to understand the cognitive perspective of the other seems to be closely related to other aspects of the child's cognitive functioning. This is suggested by the fact that the age at which children can successfully take the role of the other varies considerably with the type of role-taking performance required. Watson (1975) suggests that improvements in role-taking may, in fact, be due more to increasing complexity of cognitive structures than to an actual shift from an egocentric to a sociocentric orientation. Moir (1974) suggests that different aspects of role-taking, such as moral and non-moral role-taking may be part of a "structure d'ensemble", which is "an identifiable whole defined by intrinsic structural connections"

(p. 304). Research, however, has hardly begun to explore such structural connections among various aspects of role-taking and between role-taking and other cognitive dimensions.

The results of the present study and the above considerations suggest several directions for future research. Although much of the previous work in role-taking has been descriptive rather than experimental, we are far from a comprehensive understanding of the developmental course of role-taking. In order to achieve a meaningful description of the development of role-taking, it is important to examine the cognitive requirements of various role-taking tasks. This would include defining the cognitive skills needed to interpret the task materials themselves, the type of role-taking ability required to understand the other perspective, and the type of response required. In attempting to define the important dimensions of role-taking tasks, we need to compare the performance of the same children on various tasks that have already been developed. In addition, we need to vary the cognitive requirements of these same tasks in theoretically meaningful ways. The present study attempted to do this with respect to response format and to the explicit differentiation of perspectives. Such a plan of research would hopefully provide a description of role-taking development that is theoretically meaningful rather than merely functional (i.e., descriptions of success or failure on isolated tasks). It is also important for studies using role-taking tasks to examine the reliability and validity of the tasks more carefully. Thus, we need studies that are at the same time descriptive, theoretical-experimental, and methodological.

More studies are also needed which attempt to interrelate the various aspects of the multidimensional construct "role-taking Some attempt has already been made to relate performance on perceptual, cognitive, and affective role-taking tasks (Ambron & Irwin, 1974; Kurdek, 1975; Yarrow & Waxler, 1975). In such studies, however, it is important to make the cognitive and role-taking requirements of the tasks as comparable as possible. For example, in the Ambron and Irwin (1974) study, the affective role-taking task was actually an affect identification task, involving matching affects to situations and situations to affects. Such a task does not seem to require role-taking in the sense of a differentiation of one's own affective state from that of another. Kurdek (1975) compared the performance of children on perceptual, conceptual and affective tasks, and found no significant relationships. He concluded, however, that the information-processing requirements of the three tasks were quite different.

Role-taking appears to be related to and to some degree dependent upon other cognitive abilities. We therefore need more studies relating performance on role-taking tasks and other cognitive tasks. There is already evidence for the relation of role-taking and general intelligence (Ambron & Irwin, 1974; Deutsch, 1974). However, role-taking might also be related to success on other Piagetian tasks which reflect understanding of conservation, classification, or relations. Or perhaps it is related to information-processing strategies used by children; or to aspects of cognitive style such as reflection-impulsivity.

Some attempts have been made to relate role-taking to other aspects of behavior, such as moral jugement (Ambron & Irwin, 1974; Moir, 1974;

Selman, 1971a; Stuart, 1967), prosocial behavior (Rubin & Schneider, 1973; Yarrow & Waxler, 1975), delinquent behavior (Chandler, 1972), and emotional disturbance (Chandler, 1973; Chandler et al., 1974). We need more studies such as these, which explore the functional value of role-taking for everyday life. If such studies are largely correlational, it will be important to attempt to determine the direction of influence of the various variables.

As indicated by the review of literature, very little research has examined antecedent conditions related to individual differences in role-taking performance (exceptions are Hollos, 1975; Hollos & Cowan, 1973; West, 1974). It would be most interesting to look at the relation of early socialization experiences and role-taking performance. Is role-taking ability of parents or caregivers related to role-taking in children? Are different organizations of parent-child relations, or different disciplinary patterns related to role-taking? What types of early social experiences seem to facilitate role-taking? This area is almost totally unexplored. Finally, we need experimental work on the modifiability of role-taking skills. Can training programs enhance role-taking skill? If so, what types of programs are effective at what ages? Does training in role-taking affect other aspects of behavior? Some work in this area has already begun with emotionally disturbed and delinquent children (Chandler, 1972; 1973; Chandler et al., 1974).

There is much to be done in the area of role-taking. As we achieve a better understanding of the nature and development of role-taking, we seem to be finding that this ability influences our interactions with others in a great many ways. It thus appears that the study of role-taking will remain an important area of research for quite some time.

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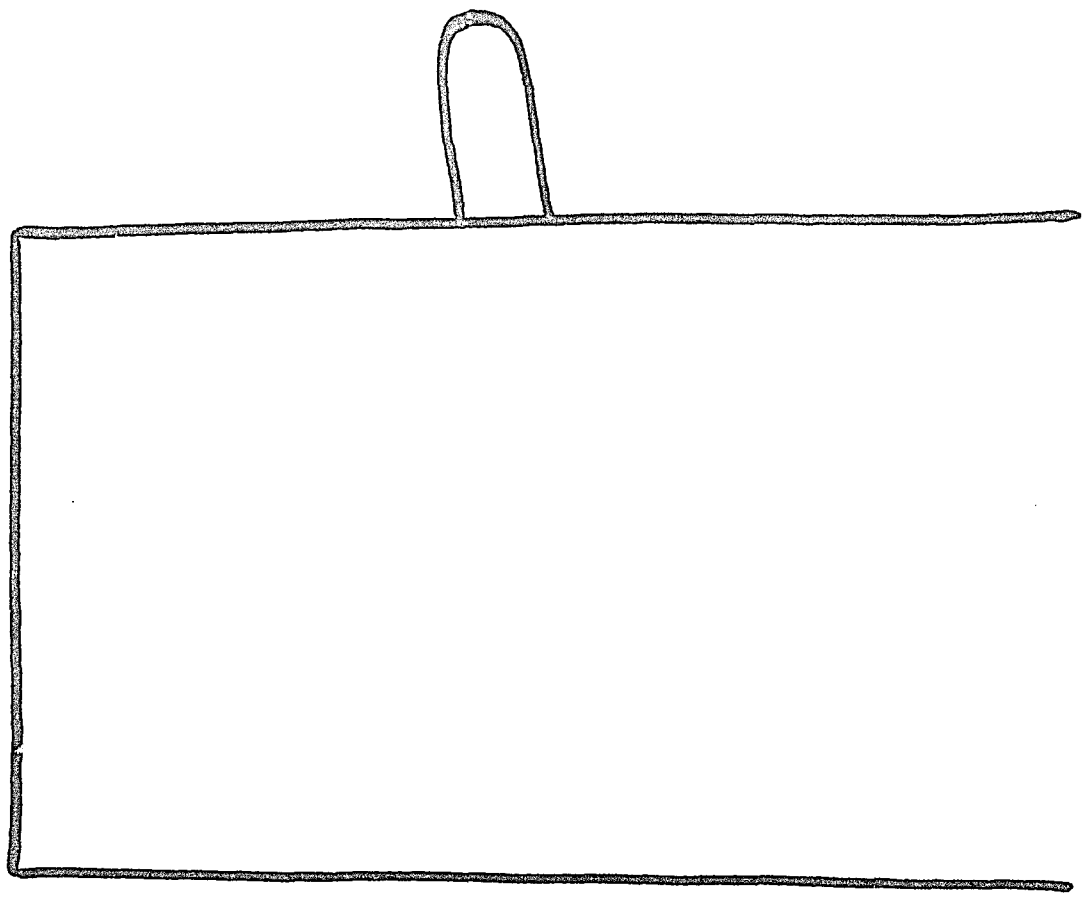
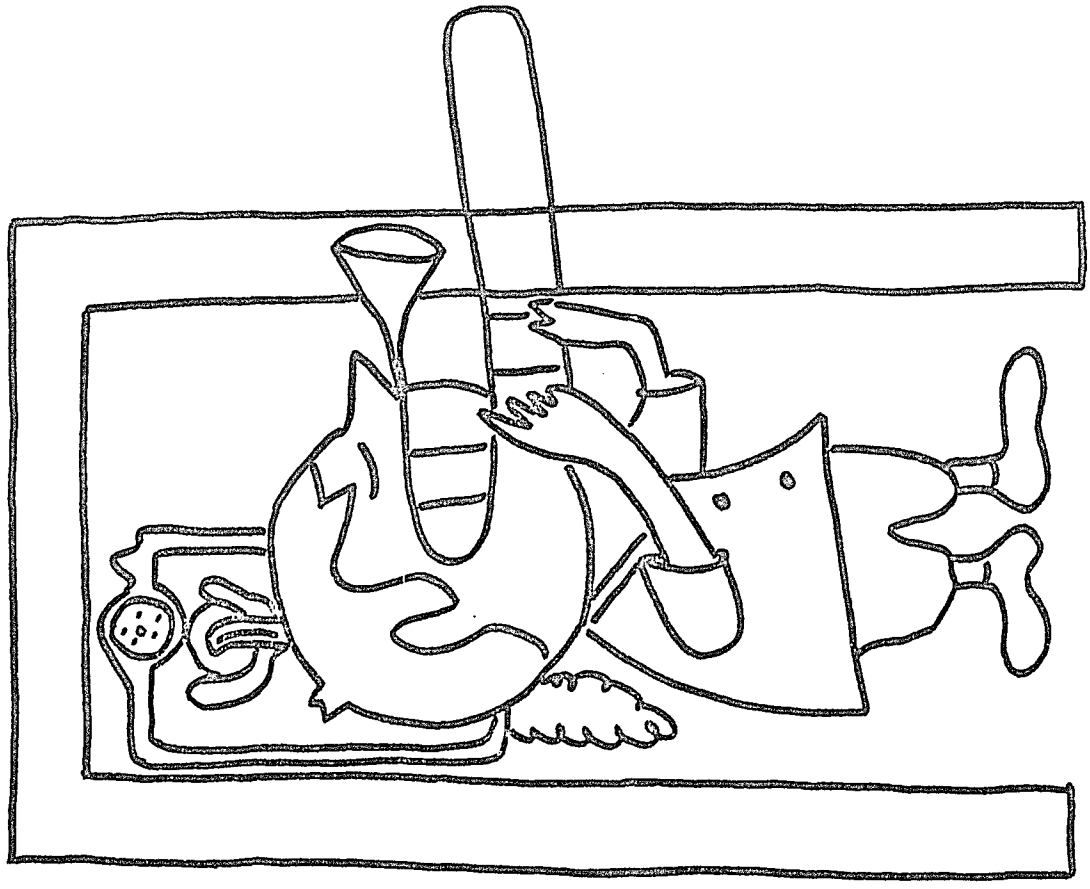
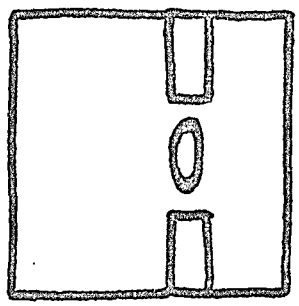
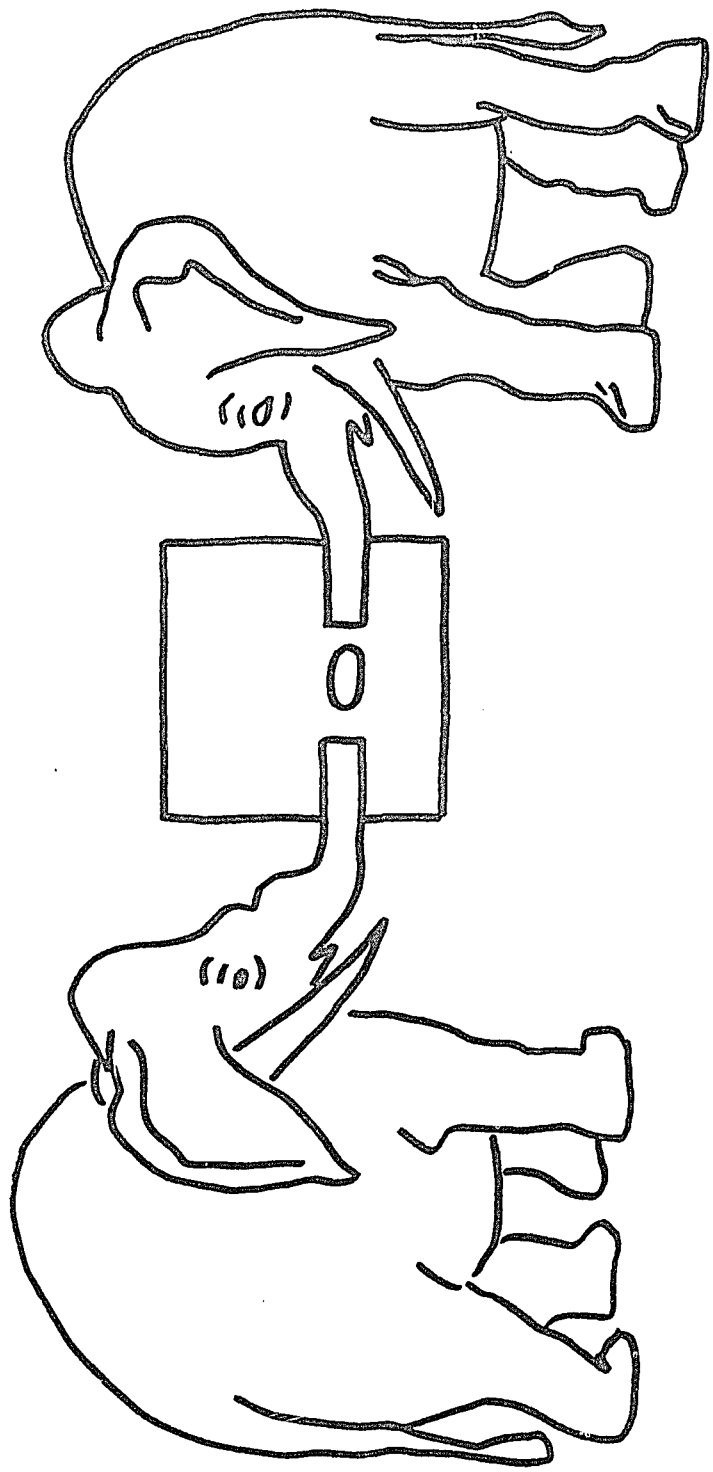
APPENDIX A

PICTURES FOR THE DROODLES TASK (TASK A)





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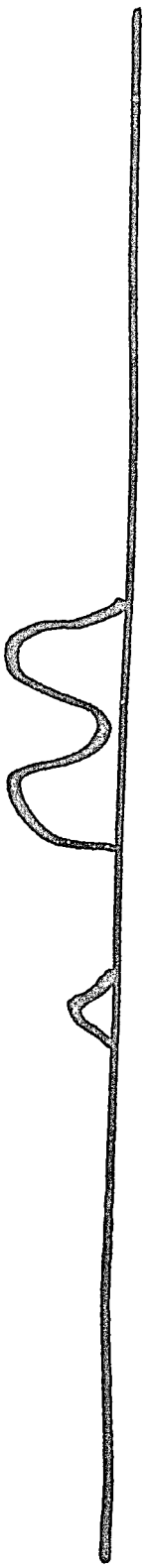

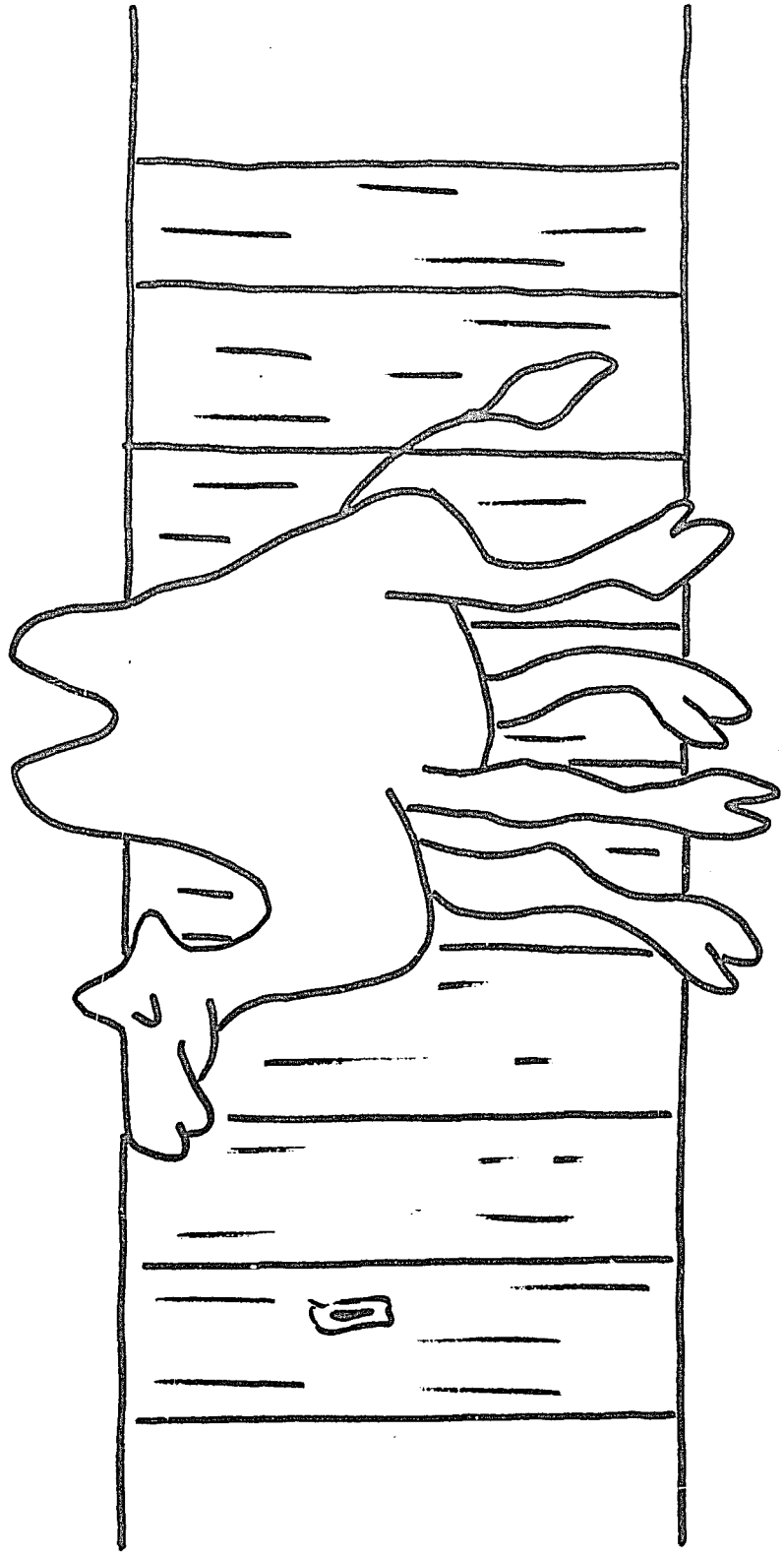

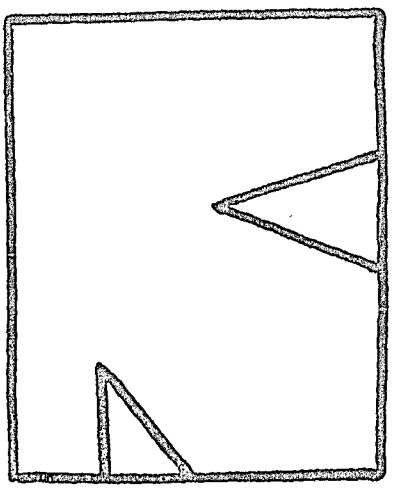

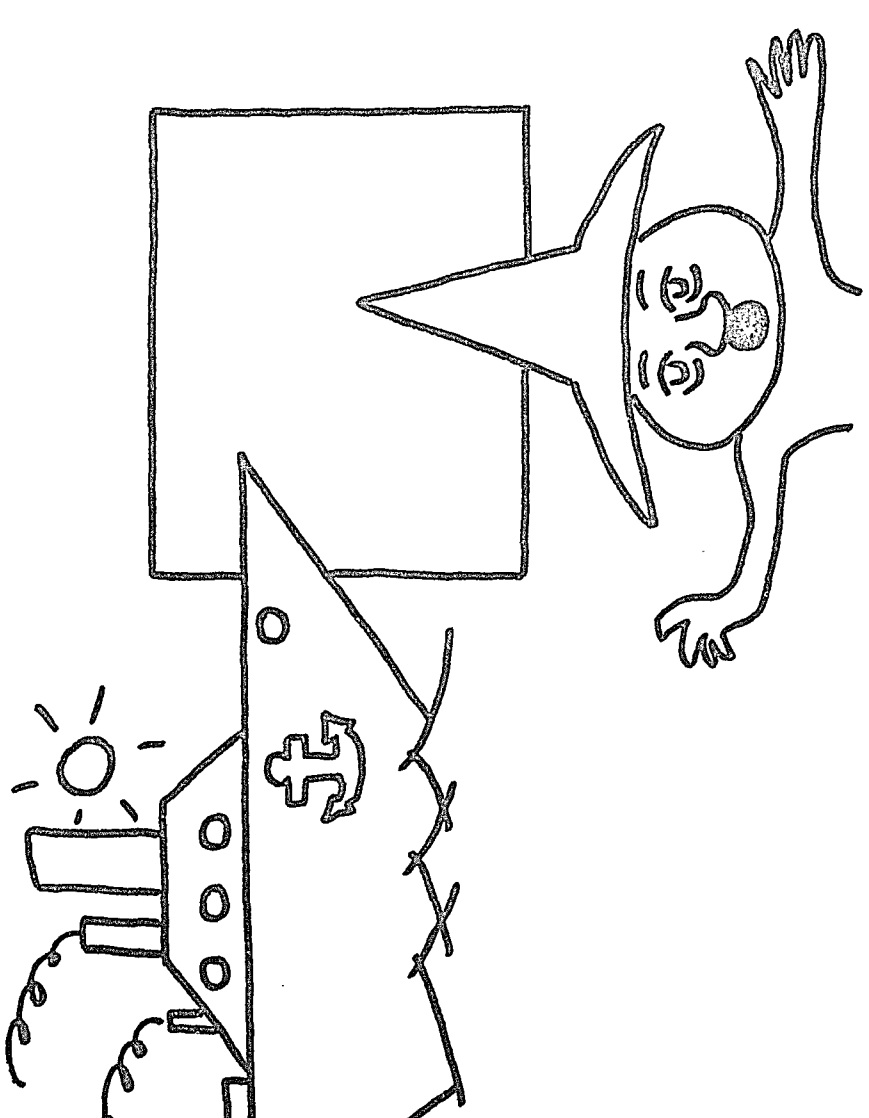

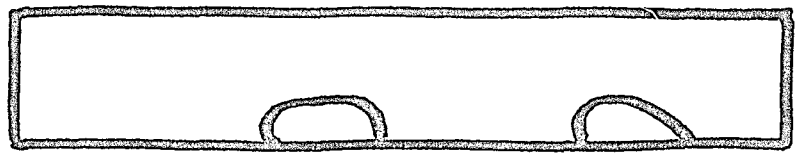

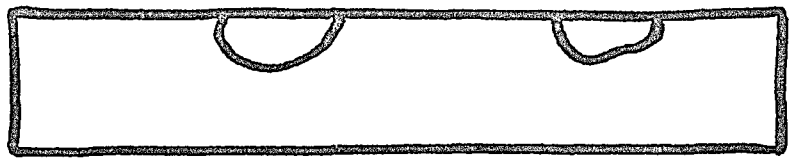

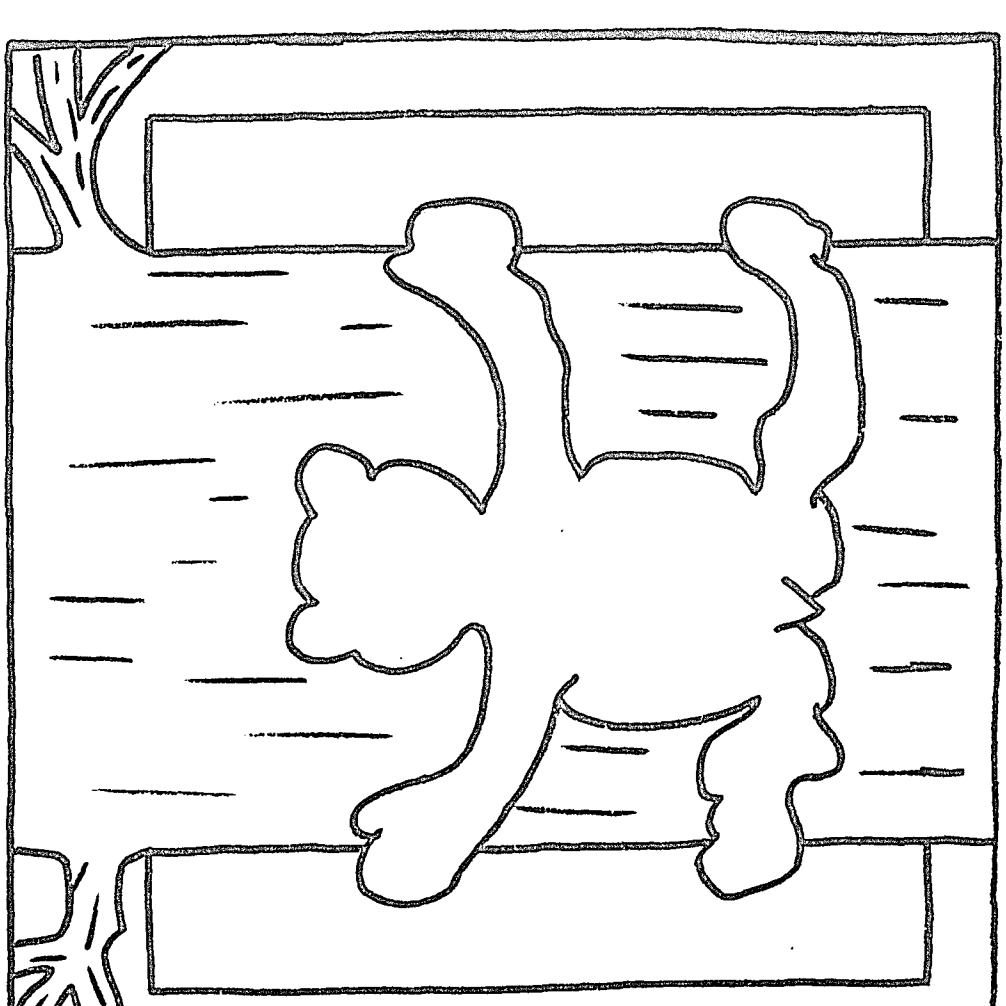

APPENDIX B

COGNITIVE ROLE-TAKING STORIES (TASK B)

Story 1

(a) Marybeth was smelling the beautiful flowers in the park. She had picked two flowers when the policewoman on the corner saw her and said, "Don't pick the flowers, there won't be any for other people to enjoy."

(b) Then the policewoman walked to a nearby drugstore for a cup of coffee, and Marybeth went to the swings to see if her friends were there.

(c) In a few minutes an old woman came to the flowerbed and picked all the flowers. She put them into a large basket and walked on down the street.

(d) Marybeth didn't find her friends at the swings so she decided to go and look at the flowers again. As Marybeth got near the flowerbed she saw that someone had picked all the flowers. Just then, the policewoman came back from her coffee break and saw the empty flowerbed. Who does the policewoman think picked the flowers?

Story 2

(a) Jack and Timothy were playing with their airplanes one day when they saw the mailman coming down the street. The boys ran over to see him, but while Jack was talking to the mailman, Timothy took his airplane.

(b) Soon Jack was chasing Timothy down the street trying to get back his plane. The mailman watched them for a minute then went down the street to deliver the rest of his mail. Jack ran after Timothy shouting, "Give me back my plane or I'll punch you!" Timothy just shouted back, "You'll have to catch me first."

(c) The chase went on and Jack had almost caught Timothy when he tripped and fell and skinned his knee. It hurt a lot and he started to cry.

(d) Just then the mailman came around the corner from delivering mail to the Jones'. What did the mailman think made Jack cry?

Story 3

(a) Mrs. Rogers was sitting in the living room watching her daughters Jill and Tammy, playing. Soon it was time for her to go to the kitchen to fix dinner.

(b) As soon as she left, Jill grabbed Tammy's doll and tried to take it away from her, but Tammy wouldn't let go of it.

(c) Jill said, "I want your doll," and with that she gave Tammy a shove. Tammy went sailing right into Mrs. Rogers' favorite plant, and the plant and Tammy fell to the floor.

(d) Mrs. Rogers heard the loud crash and came running to see what happened. When she got to the living room she saw Tammy all tangled up in the plant on the floor and Jill at the other side of the room playing with a doll. Whose fault did Mrs. Rogers think it was that the plant got knocked over?

Story 4

(a) Donald was fingerpainting at the kitchen table. On his way outside, Donald's father said, "Be careful with the fingerpaint and don't take it out of the kitchen."

(b) While Donald was washing his hands at the kitchen sink, his dog Laddie jumped on the table and got some of the fingerpaint on his tail.

(c) Laddie went into the living room and brushed his tail up against the door getting bright red paint on it. Then Laddie went down into the basement to chew on his bone.

(d) Donald's father soon came back inside and saw the paint on the living room door. Who did Donald's father think got the fingerpaint on the living room door?

APPENDIX C

PROCEDURES FOR ADMINISTRATION OF TASKS

Procedures for Task A

Non-Explicit Condition. When the child and the E were seated at the table, the E said: "I'm going to show you some pictures" (or "Now I'm going to show you some different pictures without stories," if Task B had been given first). "Look at this first picture and tell me what you think it is, or might be." The child's response was recorded in the space provided for the "Naive Response" on the response form. The E then said: "Now I'm going to show you what's underneath the frame. Now what do you think it is? When the child had responded, the E repeated his response, saying, "Yes, it does look like a . . ." E then replaced the frame and said, "Now, let's put the frame back on. Your classmate (John) is going to come in next and look at this picture just the way it is now. What do you think he will day it is?" The child's response was recorded in the space provided for the Level 3 response on the response form. The E then asked, "Why do you think he will say that?" E then asked, "Will he think it is a (egocentric response based on the child's description of the complete picture) or a (non-egocentric response, based on the child's naive response to the droodle)?" The order of presentation of these alternatives was indicated on the response form. The child's response was recorded under the heading "Level 2" on the response form. E then asked, "Will (John) know that there are (description of picture) under the frame?" The

response was recorded under the heading "Level 1" on the response form. The same procedure was carried out for each of the five pictures.

Explicit Condition. The task was introduced in the same manner as for the Non-Explicit condition. However, after the child had given his naive response to the abbreviated droodle, the E said: "Now I'm going to show you a secret. I'm going to show you what's underneath the frame." The E emphasized the unveiling, and said: "Now what do you think it is?" The procedure continued as above, until E said: "Now let's put the frame back on." E then said: "You and I know what's under the frame, don't we? It's our secret." The procedure then continued as above.

Task B

Non-Explicit Condition. The E said: "To begin with (or "Now"), I'm going to show you some pictures that tell a story". E placed the four pictures of the first story from left to right in front of the child. E then read the narrative that went with the first picture, as she pointed to that picture. E continued with each succeding picture, ending with the question that required the child to interpret the final scene from the story character's point of view (see Appendix B). The child's response was recorded in the space provided for the Level 3 response on the response form for Task B. E then asked: "Why do you think he will think that?" E then asked: "Will he think (egocentric response based on privileged information) or will he think (non-egocentric response, based on logical alternative)?" Again, the order of presentation of these alternatives was indicated on the response form. After this response had been recorded under the heading "Level 2", E

said: "Will (the character) know (the privileged information)?" The response was recorded on the response form under the heading "Level 1". The same procedure was carried out for each of the four stories.

Explicit Condition. The task was introduced in the same manner as for the Non-Explicit condition. However, after the narrative that went with the first picture had been given, the E said: "Now I'm going to show you a secret that (the story character) doesn't know. Look what happened while he was gone." The procedure continued as above through picture three. After the third picture, the E said: "You and I know (repeat privileged information), don't we? It's our secret." The procedure was then completed as above.

After both tasks had been completed, the E thanked the child for his help. The E also asked the child not to discuss the tasks with his classmates, until they had all had a turn. Before returning to the classroom with the child, the E arranged the task materials in the proper order for the next child.

APPENDIX D

SAMPLE RESPONSE FORMS

I.D. # _____

Cognitive Role-Taking Study

Name:	School:
Sex:	Teacher:
Birthdate:	Date of Testing:
Experimental Condition:	Time of Testing:

I.D. # _____

Task A

Picture (3)

Naive Response:

Level 3:

Level 2 (E-NE):

Level 1:

Picture (2)

Naive Response:

Level 3:

Level 2 (NE-E):

Level 1:

Picture (5)

Naive Response:

Level 3:

Level 2 (NE-E):

Level 1:

Picture (1)

Naive Response:

Level 3:

Level 2 (E-NE):

Level 1:

Picture (4)

Naive Response:

Level 3:

Level 2 (E-NE):

Level 1:

I.D. # _____

Task B

Story __(2)__

Level 3:

Level 2 (NE-E):

Level 1:

Story __(4)__

Level 3:

Level 2 (E-NE):

Level 1:

Story __(3)__

Level 3:

Level 2 (E-NE):

Level 1:

Story __(1)__

Level 3:

Level 2 (NE-E):

Level 1:

APPENDIX E

SCORING PROCEDURES

Task A (Droodles)

2 points: "Responses scored as two indicate that a clear distinction has been drawn between the subject's own interpretation of the complete drawing and the interpretation assigned to an onlooker who views only a fractional part of the complete design. Responses in this category include no direct or indirect contaminations or infusions of any privileged denotative or connotative meaning into the attributions provided. Responses of this sort often, but do not necessarily, include editorial remarks in which the subject comments in a reflective fashion on the differences between his own and the target character's interpretation of the stimulus materials" (Chandler, undated, p. 6).

1 point: "Responses scored as one are free of any gross or flagrant egocentric intrusions and evidence a cautious effort on the part of the subject to avoid any frank attribution of privileged information to only partially informed onlookers. At the same time, however, the attributions which are made include reference to processes or content details which contain connotative meanings which overlap with implications inherent in and unique to the content of the complete drawings. Examples of contaminated responses scored in this category include statements describing portion of the camel's hump in drawing #3 as piles of sand in the desert, or the ship's prow and witch's hat of drawing #4 as two sailboats or two shark's fins. Examples of

contaminations which imply similarities in function rather than content include statements that design #5 depicts some object other than a bear climbing some object other than a tree, or describes the elephant trunks of design #2 as objects which are in the process of being fired, shot, blown etc." (Chandler, undated, p. 6). Also included in this category are "attributions which ascribe to target characters an interpretation of the available stimulus details which obviously draw from a knowledge of the completed drawing, yet carefully avoid any direct reference to totally hidden detail. Such responses comment specifically on the visible, fractional parts of the larger drawing and assign meaning to them which would be unreasonable without specific knowledge of the complete drawings. Examples of responses scored in this category include descriptions of the triangles in figure #4 as a witch's hat, the semicircles in drawing #5 as bear's feet, or the looped line in drawing #1 as a trombone" (Chandler, undated, p. 7). The principle distinction between responses scored in this category and those scored in the egocentric response category is that "the subject studiously avoids reference to details completely unavailable to the onlooker, i.e., reference is made to bears' feet, but not to bears, horns but not horn players, or witches' hats without the witch" (Chandler, undated, p. 7). Also included in this scoring category are "I don't know" responses.

0 points: "Responses scored as zero involve flatly egocentric attributions which include direct reference to both partially visible and entirely invisible details and assign interpretations of these materials to target characters which are privileged and wholely unavailable to others" (Chandler, undated, p. 7). Responses will be

scored zero even if "the attributions are qualified and laced with conditional or probabilistic terminology" (Chandler, undated, p. 7).

Task B (Stories)

2 points: Responses scored as two indicate that a clear distinction has been made between the subject's own interpretation of the final scene (based on the complete story) and the interpretation assigned to the character in the story, who has seen only part of the events which have taken place. Responses in this category include no direct or indirect contamination or infusions of any privileged information into the attributions provided. Responses of this sort often, but do not necessarily, include editorial remarks in which the subject comments in a reflective fashion on the differences between his own and the target character's interpretation of the final scene of the story.

1 point: Responses scored as 1 are free of any gross or flagrant egocentric intrusions and evidence a cautious effort on the part of the subject to avoid any frank attribution of privileged information to the character in the story. At the same time, however, the attributions which are made have connotative meanings which overlap with implications inherent in and unique to the content of the complete story. An example of such a response would be to say that the father (in story 4) would think "A cat came in and did it" or "A monster did it." Also included in this category are responses which refer to both egocentric and non-egocentric alternatives -- e.g., "He might think the boy and the dog did it" or "He might think the dog did it, or he might think the boy did it." Also included in this scoring category are "I don't know" responses.

0 points: Responses scored as zero involve flatly egocentric attributions which are based directly on the privileged information in the story. Such responses are scored zero, even if they are phrased in conditional or probabilistic terms, such as, "Maybe he would think the dog did it."