COGNITIVE AND SOCIO-COGNITIVE PROCESSES UNDERLYING THE DEVELOPMENT OF ROLE TAKING AND REFERENTIAL COMMUNICÁTION

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by

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Abstract

The present research addressed, three major role-taking issues: 1) its developmental nature, 2) its underlying variables, and 3) its status within social cognition. Children between 6 and 11 years were tested. Study 1 examined the development of 3 role-taking tasks. Study 2 compared role taking to nonsocial word-pair comparison to determine whether the self's involvement demanded additional skills. Using original tasks, Studies 3 and 4 related role taking and comparison to referential communication. Study 4 also examined the effects on these behaviours of a direct attentional decentration manipulation and their relation to integration as measured by a modified Gergen-Morse Perceived Self-Consistency Scale. Major results indicated that: most children developed role taking around age 6 and mastered it by 11; nonsocial decentration (comparison) was related to role taking, with comparison developing first; and integration related to role taking but not to comparison. Finally, comparison and role taking were necessary but insufficient for referential communication; integration was also related to communication. The implications of these findings for a theory of role taking were discussed.

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Sommaire

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Cette recherche examine trois aspects important's de l'assomption de rôle chez les enfants de 6 à 11 ans: 1) son développement, 2) ces facteurs sous-jacents et 3) sa place dans le contexte de la connaissance sociale. La première expérience étudie le développement de 3 épreuves d'assomption de rôle. l'aide d'un parallèle entre l'assomption de rôle et la comparaison non-sociale, une seconde expérience vise à établir si l'implication du "sois" requiert des capacités additionnelles. Les expériences 3 et 4 se basent sur des épreuves originales pour examiner ce qui relie la comparaison et l'assomption de rôle à la communication référencielle. L'expérience 4 se penche également sur deux aspects supplémentaires: a) les effets qu'une manipulation directe visant à décentrer l'attention peut avoir sur ces comportements; b) la relation de ces comportements au phénomène d'intégration tel qu'évalué à l'aide de l'échelle modifiée "Gergen-Morse Perceived Self-Consistency". Les résultats principaux peuvent être résumés ainsi: la plupart des enfants acquiert l'assomption de rôle vers 6 ans et la maîtrise vers 11 ans; la comparaison non-sociale est reliée à l'assomption de rôle et se manifeste la première; l'intégration est reliée à l'assomption de rôle mais pas à la comparaison. Enfín, la comparaison et l'assomption de rôle sont nécessaires mais insuffisantes à la communication référencielle et l'intégration se trouve également reliée à la communication. Les implications et la portée, de ces résultats sont discutés enfonction d'une théorie de l'assomption de rôle.

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INTRODUCTION

The vitality of the activity within the field of social cognition during the last ten years or so has led to the recognition that there is much to be learned about children by understanding their intuitive or logical representations of others. Kohlberg (1969) has suggested that the prototype for all socialcognitive developments is role taking. It seems reasonable to accord role taking this status when one considers that in role taking both the social and cognitive aspects of the situation are present and yet are separable. To grasp the concept of role taking one cannot consider it only as the differentiation of two objects (here two viewpoints) without also minding the particular role of the social other, and vice versa. Although both cognitive and social skills must be included simultaneously to perform role taking, it is possible to separate these components in order to study and understand them.

The status of role taking has been central to social-cognitive development in that it is used to explain the development of other areas within social cognition. To cite some examples, it has been related to moral development (Ambron & Irwin, 1975; Kurdek, 1978; Moir, 1974; Selman, 1971), prosocial behaviour (Iannotti, 1978; Krebs & Russell, 1981), popularity (Rubin, 1973; Shantz, 1975), cooperativeness (Johnson, 1975), communication (Chandler, Greenspan & Barenboim, 1974; Feffer, 1970; Rubin,

1973), aggression (Iannotti, 1978; Kurdek, 1978), and to the self-concept and self-identity (Duval & Wicklund, 1972; Leahy & Huard, 1976; Mead, 1934). For reasons to be described below, the strengths of the outcomes of the above studies for the most part appears anemic compared to the strength of the logic in the hypothesized relationships between role taking and these other areas of social-cognitive development. Rather than attributing these results to undetected faults in the logic of the researchers, a more likely explanation of the poor results is that role taking as a construct has been used prematurely to explain complex phenomena before its own complexity was recognized, let alone understood. Nonetheless, the importance of role taking can be seen both in its own right as a fundamental social-cognitive process and also in its potential to help explain the development of other areas of social cognition.

An appreciation of the necessity of studying social and cognitive development together to account for role taking and its involvement in other behaviours has emerged relatively recently and, as will be demonstrated below, this newness is reflected in the state of confusion in the research. The area of social cognition evolved as a synthesis of the two previously established approaches to child development: the socialization theory and the cognitive developmental theory (Damon, 1978; Shantz, 1975). It became apparent that each of these approaches in some sense imposed an upper limit on the extent to which it

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could explain child development; one cannot view social and cognitive (nonsocial) development in isolation from one another. A more integrated orientation emerged therefore in which children's social development was viewed not only in light of their level of cognitive maturation, that is, the skills or operations they possessed, but also in terms of the influences upon them of social and significant others. Within this integrated social-cognitive framework role taking has been perhaps the most extensively studied behaviour. Given that it has received the lion's share of both theoretical and empirical attention within social cognition, it will be necessary to evaluate criticallý what is known to date about role taking before describing the present research. The following is an outline of the direction this thesis will take.

The first section will describe the original definition of role taking and the various ways in which this has been operationalized. A critical evaluation of these empirical tests will identify some of the sources of our lack of understanding of role taking. Since it was from this original definition and the empirical tests that role-taking theories emerged, a review and evaluation of the two major role-taking theories will highlight what we do know about role taking and what we do not yet know. Following this critical review, the present framework for studying role taking in terms of a three-component definition is discussed. Four role-taking studies are then reported. The studies were designed to address the following three aims: to demonstrate role-taking development using adequate tests, to identify and examine the variables underlying its development, and to show how role taking may help to explain the development of more complex social behaviours like communication.

The Original Role-Taking Definition and Tasks

Initially role taking was conceived simply as the cognitive ability to infer another person's perspective or attitude (Flavell, Botkin, Fry, Wright & Jarvis, 1968). Metaphorically speaking, it referred to the ability to put oneself in someone else's shoes. Flavell et al. (1968) proposed that the motive for role taking was to understand the other, either simply for the sake of understanding, or to help one plan and guide one's own actions. This would be useful in situations such as communication, in which one's own future behaviours depend to some extent on the other's probable reactions.

The first empirical test of role taking was the Three Mountain Task developed by Piaget and Inhelder (1956). In this task children were shown a three-dimensional fixed-array model of three mountains which differed in colour, height, and in the landmarks atop each mountain. They were also shown a small doll which could be placed at any position around the array. In one of the procedures to test role taking, ten pictures portraying the array from different angles were shown to the children. The

experimenter then placed the doll in various locations around the array and asked children to select the picture that represented the doll's perspective of the mountains. A second procedure involved showing the children one of the pictures and having them place the doll around the three-mountain array so that the doll would have the same perspective portrayed in the pic-In a third procedure children were asked to reconstruct ture. the doll's perspective of the array with another set of models of the three mountains. Piaget and Inhelder found with these methods that it was not until approximately 7 or 8 years of age that children began to infer accurately the doll's perspective; before this they attributed their own perspective to the doll; and, below age 6 children simply did not understand what was, be-Mastery of these tasks was not complete until aping asked. proximately 9 or 10 years of age.

Since the Three Mountain Task was developed, countless other tests have been devised all purporting to assess role taking. It is important to describe and then examine the limitations of these tests because in part the cause of the present state of confusion in the role-taking literature can be traced to these and similar tests. It was these tests that led some to develop the current limited theories of role taking and consequently others to abandon altogether role taking as an important construct (Dickson, 1981).

One test which has been widely used to assess children's.

-taking skills is Flavell et al.'s (1968) 7-picture story. This task requires that 'children first attend to a story depicted in seven pictures; they then tell the story from the perspective of a newcomer who sees only a subset of the original pictures. Since the subset of pictures effectively eliminates one key element in the original story, the degree of intrusion of this privileged information in the child's story from the newcomer's point of view is used as the index of the child's ability to role take. For example, children first see seven pictures portraying a boy being chased up an apple tree by a dog and then sitting in the tree eating an apple. All pictures pertaining to the dog chasing the boy are then removed, effectively reducing the story to one in which a boy climbs a tree and eats an apple. When children are asked to describe what a newcomer would say only seeing this subset of pictures, the extent to which their own privileged knowledge of the dog intrudes on their story is used as the measure of their role-taking ability. Flavell et al. (1968) found that younger children between 7 and 9 years of age allowed privileged information to enter their stories more than older children and that by the ages of 9 and 10 most children could perform this task successfully.

One of the early role-taking tasks used in the social domain was designed by Feffer (1959). The critical role-taking feature in this task involved describing a situation from the different perspectives of the people involved. To obtain the

maximum score, subjects had to distinguish each character's viewpoint from the others', while coordinating this perspective with the other characters'. Not until age 10 or 11 could most children perform this task successfully (Feffer & Gourevitch, 1960). The measure developed by Selman and Byrne (1974) assesses various combinations of the ability to differentiate one's own and another's perspective toward some event and the capacity to entertain these multiple perspectives simultaneously from the point of view of a third person. They found that whereas 4-yearolds were unable to consider another's perspective, 6-year-olds could conceive that others in different situations have different perspectives; by 12 years of age some children could consider their own and another person's different perspective from a third person's viewpoint.

Besides the above tasks, many other tasks have been designed which have claimed to show role-taking skills in children younger than in the above studies. Borke (1971), for example, simply asked children, how another child would feel if eating a favourite snack, or if being chased by a tiger. She found that children could perform this task successfully by age 4. Others have used a gift-selection task in which children are asked to select appropriate gifts for their father, mother, and for an opposite-sexed peer (Zahn-Waxler, Radke-Yarrow & Brady-Smith, 1977). Five- and 6-year-olds were able to perform well on this type of task. To test perceptual role-taking skills, Liben

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(1978) had children and the experimenter wear different coloured eyeglasses; children were then asked to describe how a piece of cardboard looked to the experimenter. Four-year-old children were able to describe correctly how the cardboard looked through the experimenter's eyeglasses. An examination of the structures measured in these tasks reveals differences and limitations which partially explain why such vast variability has been re-

Limitation's of Role-Taking Tasks

The above tasks are representative of the majority of tasks that have been used to assess children's role-taking ability. A 'number of limitations of these tasks have been pointed out, however, which merit attention here since, as was previously mentioned, it is based on these tasks that theoretical interpretations have been formulated. First, some of the tasks do not even measure role taking as it was originally defined. Thus, the first locus of blame for our present lack of understanding of role taking can be traced to a definition which may be too general thereby leading to different interpretations. This has led to the study of many different constructs all bearing the term role taking, and consequently to much difficulty in integrating the data. To role take is to infer someone else's perspective; some researchers have not regarded inferences as necessary features of role-taking tasks, however. In Borke's

(1971) task, for example, a correct response would be that a child eating a favourite snack would feel happy, or that a child being chased by a tiger would feel afraid. To answer these questions correctly, one only need know that in the given category "children" most members feel happy eating snacks and afraid of uncaged tigers. In other words, the information needed to respond correctly to the questions is stored in memory in association with the category "children" and not inferred on the basis of information about the characteristics of the particular child, eating the snack or being chased. Another example of a task claiming to assess role taking but not requiring an inference is found in the Zahn-Waxler et al.(1977) task described earlier. Higgins (1981) has discussed this type of gift-selection task in terms of children's increasing differentiation among social categories. Since making an inference is unnecessary for these tasks, they cannot be considered good measures of role taking. Thus, to be considered an indication of role taking, the subject's response must have gone beyond the information given in the situation by understanding or predicting the other's needs, intentions, or future behaviour.

Another problem with many of the present role-taking tasks is that they do not seem to reflect a unitary construct. One is faced here with the situation where tasks which claim to be measuring the same ability are not strongly related to one another (Ford, 1979). Kurdek (1977), for example, using a princi-

pal components analysis to examine the correlations among four cognitive role-taking tasks, found two factors labelled as a) the use of social category information, and b) the use of simultaneous coordination of perspectives. As role taking has been described here, only the latter of these two factors really involves role taking. Using a similar method to test for the unitariness of role taking across domains, O'Connor (Note 1) factor analysed data from several perceptual and cognitive tasks. Generally, she found that the cognitive tasks loaded on one factor and the perceptual tasks loaded on another, with one other perceptual task emerging alone on a third factor. Others, too, have found low correlations among role-taking tests (Hudson, 1978; Kurdek & Rodgon, 1975; Rubin, 1978).

This overwhelming failure to find one underlying factor that accounts for role-taking performance on different tasks can be explained in several ways. There may be low test-retest reliability (Rubin, 1978), an interpretation supported by more recent studies and comparisons of task reliability (Ford, 1979; Kurdek, Note 2). Second, there may be low reliability across tests. One potential reason for this was discussed earlier, namely, that some tasks do not really measure role taking as it has been defined. A second reason is that the role-taking tests used may require abilities other than role taking and these extraneous abilities may vary from task to task. For example, some tasks may require more verbal ability than others, or some

may require more memory skills than others. Such task differen-.ces could lead to low inter-task correlations but only because of the inclusion of diverse non role-taking components. A third reason for low inter-task reliability is that tasks may differ in the level of role taking they are assessing (Rubin, 1978; Urberg & Docherty, 1976); this is possible if role taking is an ability acquired in degrees or expressed in degrees as a function of task difficulty. For example, the number of perspectives to be inferred can affect task difficulty and may have contributed to the low inter-task correlations. Finally, others have suggested (Kurdek & Rodgon, 1975; O'Connor, Note 1) that the failure to identify strong relations among role-taking tasks attests . to the multidimensional nature of role taking, a notion more in 'keeping with the framework proposed later. That role taking may be multidimensional, that is, an ability dependent upon more than one process or ability, suggests that the present theoretical framework, which dictates looking for one ability underlying role taking, may be naive and simplistic. Before presenting a new alternate framework for studying role taking, it is important to review critically the two major theories of role taking that have dominated the thinking about role taking for many Such a réview will underscore the limitations of such a yeárs. theoretical framework and created the necessity of a different approach to role taking.

Theoretical Approaches to Role Taking

Role-taking development, as mentioned above, has been explained from two major theoretical orientations. First, it has been discussed in terms of the development of the child's ability to decenter, that is, to deploy attention over more than one stimulus. This theory suggests that it is the child's ability to decenter, a strictly nonsocial achievement manifested throughout the cognitive system, that allows the child to role take. Second, role taking has been discussed in terms of children's declining egocentrism, that is, the child's increasing ability to decenter from the self when the self is particularly salient. This theory views role taking as a relatively social accomplishment.

These two interpretations of role taking may to some extent overlap; for example, egocentrism can be viewed as a special case of centration where the self is concerned and nonegocentrism as the ability to decenter from a salient response experienced by oneself. What is more interesting, however, is that the theories are separable and therefore interrelatable. Since decentration and nonegocentrism are separable, I am presenting the two approaches individually; treating nonegocentrism as separate from decentration is potentially more fruitful in terms of our future understanding of the social and nonsocial aspects of role taking and perhaps their interaction. Toward this end, these theoretical interpretations are now considered in some de-

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tail, followed by a discussion of their limitations. From Centration to Decentration

According to Piaget (1967) the most fundamental process in cognitive development is from centration to decentration. Centration refers to the inability to shift attention from one aspect of a situation to another, and the belief that this one aspect completely describes the entire situation. Such an error is the result of distortions caused by a primarily assimilating organism; when the necessary accommodations are introduced into the situation and some measure of equilibrium is restored, decentration has been mastered.

Decentration is most commonly assessed by means of Piaget's classic conservation tasks. For example, in the conservation of liquid task, children are shown two identical containers of liquid with the same amount in each. The contents of one container are poured into a third container which may be taller and narrower than the others. Children are asked if one container has more liquid or if they contain identical amounts. Typically, preoperational children (under 7 years of age) err by saying that one glass now has more liquid than the other. One way of describing the underlying problem is to say that the preoperational child relies on perceptual rather than conceptual cues (Elavell, 1977). Others see the problem as one of centration; the younger child centers on only one of the perceptual features of the stimulus such as height without accounting for the width

of the two containers. This error of centration leads the child to conclude that the taller of the two containers has more liquid. Some children may center on width, concluding that the shorter, wider glass has more liquid. What is important here is that the younger children choose only one dimension and cannot shift their attention from this dimension to consider the compensation made in the other dimension. Recordings of children's eye movements during conservation tasks support this claim that nonconservers focus on one aspect of the stimulus whereas conservers demonstrate more visual exploration of the stimulus (Boersma & Wilton, 1974; O'Bryan & Boersma, 1971).

In terms of decentration, role taking can be seen as the child's acquisition or demonstration of the ability to consider at least two mental elements, mental elements in this case being the perspectives the child must coordinate in role-taking tasks. The empirical evidence relating role taking to decentration will be presented later but at this point decentration seems at least at face value to be a reasonable theory with which to explain role taking, given the nature of the role-taking tests in which two different perspectives must be considered. Rather than relating two independent measures of role taking and decentration, several authors (eg., Feffer, 1959, 1970; Looft, 1972; Selman & Byrne, 1974) simply designed tasks to measure this component. For example, Feffer's Role-Taking Task (1959) was interpreted as a measure of social decentering ability in which subjects must

differentiate among the characters' viewpoints while coordinating them. The measure developed by Selman and Byrne (1974) mentioned earlier also assesses various levels of the ability to differentiate perspectives and to entertain these perspectives simultaneously. The ability to decenter as it has been operationalized here is certainly consistent with the definition of role taking given earlier. Therefore, to the extent that role taking is a cognitive process, performance on tasks such as Feffer's or Selman and Byrne's should correlate with nonsocial measures of decentration such as conservation.

Empirical evidence to support the decentration explanation of role taking is found in several studies which did independently measure each ability. Significant relations have been found, for example, between various tests of both perceptual and cognitive role taking and some indices of decentration, including conservation and the Alternate Uses task (Feffer & Gourevitch, 1960; Rubin, 1973; Shantz, Note 3). By contrast, one study (Kurdek, 1979) found little evidence for a relation between cognitive role taking and decentration as measured by conservation of liquid. The bulk of evidence, however, does suggest that there is a relation between role taking and nonsocial measures of decentration. What is not known from these studies is to what extent decentration explains role taking and what is specifically involved in decentration that does pertain to roletaking. This issue will be investigated empirically in the pre-

sent thesis by isolating the social from nonsocial components of role taking and experimentally manipulating social and nonsocial decentration independently; the effects on role taking and comparable cognitive processes will be examined. This approach is discussed in more depth later.

The above review suggests that decentration is important to role taking. There is nothing inherently social about decentration itself, however; it is a cognitive process for which the mental elements can be either nonsocial or social objects or concepts. Therefore, to the extent that role taking is also a social phenomenon, decentration alone will be inadequate to explain fully the dynamics involved in the role-taking process. The search for other factors or processes necessary to understand role taking leads one to the second major theoretical account of role taking, the child's declining egocentrism.

From Egocentrism to Nonegocentrism

The more common interpretation of role-taking development has been in terms of Piaget's (1926) theory of declining egocentrism. Generally speaking, egocentrism can be seen as a lack of differentiation between the subject and an object (Piaget,1926). Manifesting itself in different forms, egocentrism is thought to continue from infancy through adulthood (Elkind, 1967; Looft, [972]. Our concern here is with preoperational egocentrism in particular, defined as an embeddedness in one's own view (Looft, 1972; Rubin, 1973). This lack of awareness of others' subjectivities, or of their content, leads young children to assume that their perspective is the only perspective. Consequently, preoperational children fail to infer another's thoughts, feelings, or visual perspective and instead think that their own view describes the other's view equally well. According to this theoretical orientation, the important process underlying the development of role taking is the ability to differentiate the self's view from the other's view.

On an abstract level nonegocentrism would seem a good explanation of role-taking development. Empirical evidence of the type found for the decentration theory is difficult to find, however. There are few studies which attempt to correlate an independent measure of nonegocentrism with role taking. One exception is a study by Weinheimer (1972) which found a significant correlation between role taking using Feffer's Role Taking Task (1959) and nonegocentrism measured by children's ability to reconcile the self's and another's different opinions. Typically when an age-related change in role taking is found it is simply assumed that declining egocentrism explains the phenomenon; most researchers have felt it was unnecessary to establish the relationship independently. If an embeddedness in one's own view does explain role taking, then one would expect role-taking performance to suffer when the self's view is particularly sal-In support of this, Chandler (Note 4) found in his Drooient. dle Task that if young children were exposed to the whole pic-

ture, that is, to the privileged information before being shown the smaller ambiguous segment then the privileged information interfered with their making plausible interpretations of this smaller picture from a naive observer's perspective; if children were first exposed to the smaller picture and then allowed to see the complete drawing, their own view, complete with privileged information, interfered less. Thus, when their own perspective of the whole picture was made salient by being experienced first it was difficult for children to inhibit or control this competing information to infer the other's perspective; when they saw the smaller picture first they may have been able to inhibit their own -subsequent perspective and then have relied on memory of the smaller ambiguous picture to imagine what they themselves might have thought the picture represented. It seems then that the salience of the self's perspective does interfere with the ability to infer someone else's viewpoint.

To summarize briefly what has been said so far, two theoretical approaches have been presented which attempt to explain the development of role taking in children. The first is based on the child's emerging ability to decenter from one aspect of a stimulus or situation to consider more than one aspect or mental element. This theoretical stance highlights cognitive requirements of role taking. The second theoretical approach, the shift from egocentrism to nonegocentrism, addresses the child's ability to inhibit or control his/her own salient subjective

perspective to consider another's subjective perspective, and therefore highlights social requirements of role taking.

Limitations of the Theoretical Framework of Role Taking

Having described the theoretical framework in which role taking has been studied and the types of tasks used to measure role taking, a consideration of the limitations of this framework is now possible. The first fault in this framework stems from a problem mentioned earlier, namely that defining role taking as the ability to infer another's viewpoint is too general. That different researchers have operationalized role taking in different ways with different requirements attests to the results of the definition being too broad. Some researchers such as Feffer (1959) focused on the differentiation and coordination of perspectives; others (Chandler, Note 4; Urberg & Docherty, 1976) focused more on the salience of the child's perspective when inferring the other's perspective. This has led to a situation in which tests have been designed around a particular theory rather than around a conceptual definition of role taking, thus preventing any independent tests of the theories. Consequently, under the current theoretical framework and with the current tests one is faced with the self-perpetuating situation of proposing that one process underlies role taking and then using tasks which have been designed to test only this particular component.' In other words, since the theory determined the nature of the tasks, it is difficult to test the theory, As a result, the development of both theory and tasks was stifled. What is needed is a complete conceptual definition of role taking and then role-taking tasks which measure all the components of this definition. In conclusion, it seems that both the current theories and tests are inadequate to pursue the issues that are important to role taking, such as the nature of role-taking development, its underlying abilities, and how it is related or involved in other social behaviour such as communication.

The present thesis was conceived and developed to overcome the limitations described above in the current role-taking framework so that the above three issues could be properly addressed and the understanding of role taking thereby enhanced. From the above discussion, it is obvious that a redefinition of role taking in terms of its critical components was essential. The three-component definition of role taking developed by Higgins (1981) and described below provided a very suitable beginning. Using this clearer and more precise conceptual definition, the present thesis was developed with three particular. aims in mind. The first objective was straightforward: to design adequate role-taking tasks that would fulfill the threecomponent definition, and then to document role-taking development in children. Achieving this first aim would allow the pursuit of the other two aims. The second aim of this thesis, was to investigate underlying abilities of role taking; for example,

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role taking could be compared to a similar nonsocial process, namely one that would require decentration but not nonegocentrism. Finally, the third aim of this thesis was to address the issue of the relation of role taking to other social behaviour. Some researchers such as Kohlberg (1969) contend that role taking is crucial in explaining the development of other social behaviours such as communication, though to date the empirical evidence on this matter has been inconsistent. These carly studies are subject to criticism since many of the role-taking tasks used have been described here as being inadequate. Once a complete definition of role taking is used and adequate tasks have been designed to test the development of this ability, however, an empirical test of this issue is more meaningful. These three aims will now be discussed in detail followed by an outline of the present strategy to achieve them.

The Development of Three-Component Role Taking'

The first aim of this thesis was to describe role-taking development using tasks which adequately tested the construct. To devise such tasks necessitated a comprehensive conceptual definition of role taking. According to Higgins (1981) role taking, or the ability to infer another person's perspective, embodies three critical components. It was the specificity of these components which made possible the construction of the tasks used in the present research; thus, these three components

will now be described,

First, role taking involves making an inference about another person's psychological state. In such a role-taking context, an inference refers to going beyond the information given in a situation to make judgments about the unobservable dispositional attributes (needs, feelings, etc.) of someone else (Higgins, 1981; Ross, 1977, 1981). As has been mentioned earlier, rather than requiring social inferences, the tasks devised by some researchers seem to require only social knowledge and therefore do not measure role taking as they have claimed (Borke, 1971; Zahn-Waxler et al., 1977). Only tasks in which inferences are necessary can be considered as role-taking tests.

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Another component of role taking implicit in the definition and discussed explicitly by Higgins (1981) is the interrelation or coordination of two or more mental elements. That at least two mental elements or perspectives are involved implies that the subject can differentiate among elements. These differentiated perspectives or elements must be interrelated or coordinated in some fachion before one can say role taking has occurred. The abilities of differentiating aspects of a situation (here perspectives) and then integrating or considering them together, encompass the two essential features of decentration. It will be recalled that Piaget's (1967) decentration theory and the tasks used to support it had tested only this component. The interrelation of different perspectives may take the form simply

of considering the perspectives sequentially, or it may be more complex by requiring the mental elements to be considered simultaneously. Tasks measuring both types of coordination have been used in role-taking research and will therefore be examined here briefly.

Role-taking tasks in which the different perspectives may be coordinated sequentially allow children to inhibit one perspective while inferring the other. Such tasks can be found in the perceptual, cognitive, and affective domains. Perceptual tasks modelled after Piaget and Inhelder's (1956) original Three Mountain Task, for example, meet the requirements for role taking and may be performed by an inhibition of the self's view. In such tasks a subject and another person view the same stimulus array from different spatial orientations; the subject must infer how the array appears to the other. The child may disregard his/her own view and then consider the array from the other's viewpoint. That is, the child can perform this type of ... task successfully by inferring how the array would look to himself/herself if in the other's spatial location. Flavell's cartoon sequence task (Flavell et al., 1968) is a cognitive role-taking task in which, to infer another's thoughts about the briefer picture sequence, it is sufficient for children to inhibit knowledge of the extracted events and in this way consider the two viewpoints sequentially. In the affective domain, is Urberg and Docherty's (1976) Task II in which children are told

a story involving themselves and another person. The story has different outcomes for each of them and the children are then asked how each person feels. When answering how the other feels, it is again sufficient for children to inhibit completely their own feelings and then infer the other's.

Other role-taking tasks such as Feffer's (1959) seem to require the differentiation and the simultaneous coordination or integration of at least two mental elements, in that subjects are required to infer more than one perspective in a given situation while maintaining some consistency among the perspectives. Controlling rather than inhibiting the self is necessary when the situation requires some simultaneous coordination or integration of information involving the self and another; an understanding of the situation requires that this information pertaining to both the self and the other be considered. For example, in the higher levels of Selman and Byrne's (1974) model the subject must maintain his/her own view but coordinate this with the view that another person would have of him/her. Both De Vries (1970) and Miller, Kessel, and Flavell (1970) have found it more difficult for subjects to think of someone thinking of their view than simply thinking of someone's view of something else. The self's view is inextricably involved in this more complex recursive process and cannot simply be inhibited if one is to perform the task successfully.

Thus, a role-taking task must involve at least two differ-

ent perspectives that subjects can interrelate either in a sequential fashion by inhibiting one viewpoint or in a simultaneous fashion in which both perspectives are considered at the same time.

The third component of role taking, which is implied by the second, but which may be separated from it, is the control or inhibition of information that is competing with the role-taking This competing information is the subject's own perjudgment. spective of the object toward which he/she is inferring someone else's view. The second component emphasizes the interrelation of different perspectives; this third component stresses the importance of the subject's own perspective in the role-taking process. Therefore role taking can only be ascertained not only when the other's view is different (as implied in decentration) from the subject's, but also when the subject's view is salient enough to compete with the other's. These requirements would exclude as good role-taking tests those in which social inferences are assessed toward something with which the subject has no immediate experience or about which the subject has no opinion. This particular ability to control or inhibit the self's view, described here as critical to role taking, was the component tested in role-taking tasks interpreted according to Piaget's (1926) theory of nonegocentrism.

To the extent that any task used to measure role taking disregards one or more of these three critical components, it is

inappropriate to test the development of role taking. The previous description of several common role-taking tasks shows that most of them are in fact inadequate. I developed tasks for the present research that fulfilled all three conceptual requirements. I then sought to chart the course of role-taking development. Since previous tasks measuring either the second or third component of role taking found that performance was not accurate until approximately the seventh year and was completely or nearly completely developed by age 11 or 12, this was the age range I chose to study in the present thesis. A demonstration of the developmental nature of role taking permitted the remaining two aims to be pursued.

Abilities Underlying Role Taking

The issue concerning the fundamental abilities underlying role taking is an important one and vital to a comprehensive understanding of role taking. It will be recalled from an earlier discussion that researchers had tried, and largely failed, to demonstrate that performance on role-taking tasks was accounted for by a single variable (Kurdek, 1977; O'Connor, Note 1; Rubin, 1978). With the three-component definition proposed by Higgins (1981), it would seem naive to expect that only one ability underlay all three components. Thus, the present research involves looking for the various underlying abilities of role taking. The two abilities that will be stud-
ied in the present thesis are decentration and integration.

One strategy that has been used to identify processes or abilities relevant to role taking has been to correlate performance on role-taking tasks with performance on measures of the hypothesized underlying process. This was the method, it will be recalled, used to support the decentration theory of role tak-Significant relations between various role-taking tests ing. and measures of decentration such as conservation and creativity were found in several studies (Feffer & Gourevitch, 1960; Rubin, 1973; Shantz, Note 3). It should be noted that some of these studies used tasks which do not fulfill the present three-component definition of role taking. In addition, the role-taking tasks differed greatly from the decentration tasks in terms of the level of verbal and other skills necessary to perform the tasks and may have shared other skills besides decentration. Unless the two tasks can be made equally difficult, and other shared commonalities identified and controlled, the results of such studies are difficult to interpret.

• To test the importance of decentration to role taking it would be better if the test of decentration had a format similar to the test of role taking, but where the two elements to be attended were nonsocial stimuli rather than people's views. Such a test has been used to study comparison processes (Asher, 1976; Cohen & Klein, 1968). Comparison refers to the ability to iden-

tify a dimension or attribute that can reliably distinguish between two similar objects. For example, if one is given a red pencil and a yellow pencil and is asked to think of a clue to help oneself remember the red pencil then one has to compare the attributes of the red pencil to those of the yellow one; otherwise one may select a clue which does not discriminate between the two objects. Obviously in this case, remembering that the object was a pencil will be of little value since both objects were pencils; one must realize that the colour red describes only the pencil to be remembered. By closely examining the skill involved in comparison, one can make the case that comparison requires a nonsocial form of decentration analogous to the social form of decentration manifested in role taking. That is, comparison requires decentration from one stimulus to another; role taking requires decentration from the self's perspective to the other's. Studying the relation between these two processes would reveal whether the involvement of the self in role taking makes it a different process or whether it requires nothing other than nonsocial decentration.

To examine whether role taking requires nothing other than or something more than nonsocial decentration, I took a developmental approach, asking the question: Is there a developmental ordering of comparison and role-taking skills or are they manifested synchronously? If they were the same, then role taking would develop at the same time as comparison; if role taking re-

quired something additional, then it would develop later. Role taking has been defined as comprising three components, an inference, the coordination of two or more mental elements, and the inhibition or control of the self's perspective. Comparison, by contrast, was defined as isolating a reliably discriminable attribute to identify one stimulus among similar stimuli. Essentially this ability requires the coordination of two or more mental elements and thus is comparable to the second of the three role-taking requirements. This suggests that comparison may develop first, followed by the more complex role taking. On the other hand, if all the components of role taking are basically reducible to cognitive decentration, or if decentration is the final role-taking component to be acquired, then once it does emerge it may be seen at the same time in both comparison and role-taking performance.

Integration

Integration is an ability related to decentration but which has not yet been studied independently with regards to role taking; yet it seems that integration might be important for roletaking development. According to Werner (Langer, 1970) integration is the ability to combine differentiated parts to form a whole; that is, it organizes differentiated concepts into a coherent part-whole structure. A well integrated system of thought is one in which all the different elements fit together conceptually, that is, relate to one another in some fashion,

and to which new information can be added and interrelated. This notion of integration implies that one has observed or imposed some degree of compatibility or interrelatability among different elements within some domain. With respect to role taking, integration may be important because of its implication in the second component, decentration. In the sense that one must shift attention from one stimulus to another and consider both, decentration involves both differentiation and integration. This latter integrative function may be particularly important for being able to consider another's perspective when it differs from one's own salient viewpoint.

Integration has been a difficult construct to operationalize (Kagan & Kogan, 1970). One way it has been measured in the developmental literature has been in terms of children's shift from concrete to abstract conceptual systems (Scarlett, Press & Crockett, 1971). Scott (1974) has discussed integration in adults in some detail in terms of four strategies: affective balance, affective-evaluative consistency, centralization, and image comparability. Another measure of integration, easily adapted for use with children, is the Gergen-Morse Perceived Self-Consistency Scale (Morse & Gergen, 1970) in which subjects rate the degree of compatibility they perceive between differentiated aspects of themselves.

Thus, integration may be related to role-taking performance in that the second component of role taking involves the coordi-

nation or interrelation of two perspectives. Having differentiated between one's own and another's informational needs, one must be able to integrate or interrelate this information to arrive at a correct inference, particularly when the self's perspective is salient and must be controlled rather than inhibited.

In summary, the second aim of this thesis was to address the issue pertaining to the identification of the abilities or processes that might be relevant to role-taking development. Two abilities, decentration and integration, were proposed. Α method of testing the role of decentration was proposed in which role taking is compared to the nonsocial comparison process. The relation of integration to role taking has not been studied to date, but it seems a plausible variable to pursue in light of the coordination aspect of the second role-taking requirement. Such a study of the variables underlying role taking would greatly enhance our understanding of role taking. In addition, it would provide greater depth to the issue of whether or how role taking may be involved in other social behaviours, the third issue dealt with in the present thesis.

The Relation of Role Taking to Social Behaviour.

The final aim of the present thesis pertains to the centrality of role taking in the larger context of social-cognitive behaviours. According to Kohlberg's (1969) and Flavell's (1977). frameworks for social development, role taking is fundamental to

most social activity. There is some empirical evidence to substantiate this claim in that role taking correlates with other measures. One such social behaviour is communication (eg., Rubin, 1973). Despite all the research on communication, the importance of role taking is still unclear (Shantz, 1981). For this reason the relation between role taking and communication will be studied here. Also, communication provides a good context in which to study both social and cognitive aspects of a situation and may therefore be particularly suited to the pursuit here of the social and nonsocial aspects of role taking.

One type of communication, referential communication, refers to the situation that occurs when a speaker directs a listener's attention to one stimulus (an object or concept) among several similar stimuli (Rosenberg & Cohen, 1966). The abilities to provide coherent and unambiguous messages to others and to understand or decode others' messages are critical if one is to function adequately in a social world. Children younger than 7 years of age have been found to perform relatively poorly on such tasks (Asher & Parke, 1975; Cohen & Klein, 1968; Glucksberg, Krauss & Weisberg, 1966; Hoy, 1975; Krauss & Glucksberg, 1969; Saltzman & Townsend, 1980). Although this poor performance is partly attributable to poor listening skills (Cohen & Klein, 1968; Patterson & Kister, 1981), I will be concentrating here on the problems of the speaker.

There has been much debate and controversy concerning the

necessary skills for a speaker in a referential communication situation (Asher & Oden, 1976; Dickson, 1981; Shantz, 1981; Shatz, 1978). Most of the debate in the early literature can be found between two camps; researchers in the task-analytic camp believe that comparison skills are essential for referential communication; those in the other camp hold that the important underlying skill is role taking. In order to gain some perspective on how nonsocial and social decentration might contribute to communication, the next two subsections present a critical review of the research on referential communication, first in support of the comparison argument, and then in support of the role-taking argument. Finally, an integration of the two positions is presented. Studying referential communication by systematically isolating and examining both comparison and roletaking skills offers a unique vantage point to see to what extent both nonsocial and social decentration (nonegocentrism) contribute to social behaviour. This strategy also takes into account the complex components of both role taking and a social behaviour which tended to be masked in studies that simply correlated the two. Although not to the extent found in the roletaking literature, the theoretical assertions regarding referential communication tend to outweigh the instruments designed to test them. Like the role-taking literature, however, the literature here does provide the necessary information to construct adequate tests of the theories.

Comparison Argument

Some authors have claimed that young children's difficulty in referential communication tasks results from their failure to compare their messages with both the referent and nonreferent. The product is an inadequate message because it does not discriminate the referent from other stimuli (Asher, 1976; Cohen & Klein, 1968; Rosenberg & Cohen, 1966). The procedure used to test this hypothesis was the word-pair task developed by Rosenberg and Cohen (1966). Speakers and ligteners were presented with pairs of words. One word in each pair (the referent) was underlined for the speaker but not for the listener. The speaker's task was to generate a one-word clue to help the listener identify the referent in each pair. Using this method, Cohen and Klein (1968) found that communication accuracy increased with age. Young children gave poor clues perhaps because they could not easily access word associations specific to the referent. The children's failure to produce effective clues reflected their failure to compare the associative strengths of their clues to the nonreferent as well as to the referent. This is particularly critical when the referent and nonreferent are similar but not when they are dissimilar (Asher & Parke, 1975).

If comparison is necessary for effective referential communication, then training children on comparison skills should increase their communication accuracy. Although Asher and Parke (1975) failed in their attempt to improve children's communication accuracy, Saltzman and Townsend (1980) succeeded by giving children not only instructions but also practice on 15 word pairs with experimenter feedback after each trial. This lends further support to the view that comparison is an important component of referential communication, but that it must be a thoroughly acquired skill before it can function adequately. Role-Taking Argument

The notion that role taking is the critical skill underlying referential communication stemmed from Piaget's (1926) suggestion that children's speech develops from an egocentric to a socialized form. According to Piaget, socialized speech emerges at approximately 7 years of age when children consider a listener's informational needs and modify their messages accordingly.

Studies on the importance of role taking to referential. communication have generally involved tasks in which the speaker describes for the listener referents consisting of novel visual stimuli without also seeing the nonreferents to which the listener is exposed. Glucksberg et al. (1966), for example, gave the listener six blocks each stamped with a novel form. The speaker was given one block at a time from an identical set and was required to describe it so the listener could select the same form from the set of six. Neither 4- nor 5-year-olds could perform this task; they tended to use idiosyncratic object names, such as "Mommy's hat", to describe the novel forms.

Communication accuracy due to the adequacy of clues typically increased with age on this type of task (Krauss & Glucksberg, 1969). Development probably continues during adolescence since. at 10, years of age children had not yet reached an adult-level competency as speakers. One interpretation offered by Glucksberg et al. (1966) for the low communication accuracy of 4- to 5year-olds is that young children fail to adopt the listener's perspective. This was supported by the finding that the speakers themselves could use their own idiosyncratic clues to select the correct blocks when tested immediately following the task. However, data from Asher and Oden's (1976) experiment which included an immediate and a two-week delay test condition suggest that Glucksberg et al.'s subjects may simply have remembered the referents since they were tested immediately after they had generated the clues. Thus, from these studies it seems that role taking may underlie referential communication, but alternate explanations in terms of a memory factor have not been adequately controlled.

One study that attempted to test whether role taking is related to referential communication using a procedure similar to the Glucksberg et al. (1966) task found low correlations between several measures of role taking and referential communication (Piché, Michlin, Rubin & Johnson, 1975). Piché et al. concluded that rather than a common centration factor underlying both tasks, role taking might be a necessary but insuffi-

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cient skill for communication accuracy. Others have suggested this possibility as well (Chandler et al., 1974; Flavell et al. 1968; Shantz, 1981).

Intégration of Comparison and Role-Taking Arguments

Higgins (1981) claimed that role taking is not even necessary for many referential communication tasks. A far more serious criticism than this, however, is that these typical referential communication tasks do not in fact measure communication as it was conceptually defined earlier. These claims warrant a detailed examination as they raise many of the methodological and conceptual problems central to the study of role taking and its relation to social behaviour. To this end, the two types of tasks most frequently used to measure referential communication and the skills they involve will be examined.

One of the types of tasks which Higgins judged not to require role taking and which does not satisfy the referential communication definition was used by Ford and Olson (1975). Briefly, their task consisted of presenting children with a referent and various nonreferents. To distinguish the referent from its nonreferents for another child, children had to mention one or more features of the referent. Ford and Olson claimed their task was similar to the Krauss and Glucksberg (1969) task. In that both use visual and nonverbal stimuli this claim is true, but conceptually the task is more similar to the wordpair task of Cohen and Klein (1968) in that it seems to require

a comparison process. The nonreferents served to provide a context in contrast with which the speaker could describe the ref-This context is considered to be the essential component erent. of a comparison task; the subject is required to consider the referent together with its nonreferents to isolate its unique feature. This task does require the subject to direct his/her own attention from one stimulus to other similar stimuli and as such, fulfills part of the requirements for referential communication as defined previously. What is unclear is to what extent this task involves the other aspect of referential communication, namely the communication with, or directing the listener's attention to this referent stimulus. Subjects could treat the task as a purely cognitive one, disregarding entirely the other and simply trying to discriminate for themselves the referent from the nonreferents. When the listener is similar to the speaker, insofar as he/she needs no special information, then this is a poor test of the communication component of referential communication.

The second type of referential communication task discussed by Higgins (1981) is the one used by Krauss and Glucksberg (1969), the Stack the Blocks task. The problem with this task is that it does not adequately test the second feature of referential communication, namely that the referent must be reliably discriminated by the speaker from similar nonreferents. Typically in this task the listener sees both the referent and non-

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referent's but the speaker sees only the referent. Thus, the speaker cannot easily describe the referent adequately for the listener since the speaker does not have the nonreferent blocks available.

Based on the above analysis of the two typical paradigms in the referential communication literature, it seems that the word-pair task fails to test whether the speaker's clues are directed to the listener, and the Stack the Blocks task fails to provide the speaker with the appropriate referent plus nonreferent context within which the speaker can select clues that reliably discriminate the referent from the similar nonreferents. Therefore it is impossible to determine at this point the roles that comparison and role taking play in referential communication; both may be necessary skills for effective referential communication but the inadequacy in the referential communication tasks may have occluded this fact. In light of the present critical reviews of both role taking and referential communication, it seems premature to conclude, as Shatz (1978) has, that the "egocentrism, or centration, argument is inadequate to the task of explaining variation in performance on complex cognitive tasks like communication" (p.32). The tasks upon which her argument was based consisted of role-taking tasks which lacked theoretical and methodological soundness, and referential communication tasks in which it was difficult to identify all of the required processes. Thus, rather than throwing out the

baby with the bathwater, as Shatz may well have done with the above comment, a reexamination of the issue is in order. Certainly abandoning many of the present role-taking and referential communication tasks is justified; what is not justified is abandoning, as Shatz has, a theoretical explanation simply because the operational counterparts of the constructs with which it is being linked have proven inadequate. I propose an alternate solution to study the relation between role taking and referential communication.

The first step in showing the relation between role taking and referential communication involves considering exactly what -would be demanded of a referential communication task and then hypothesizing the skills that might underlie such a task. Referring back to the definition of referential communication we again consider the speaker who is attempting to draw the listener's attention to a particular stimulus so that the listener will not confuse it with other similar stimuli. It will be essential to consider the possibilities of both social and nonsocial features of communication. These are discussed in turn. First, verbal communication is one means of social interaction; when speakers and listeners are very similar, however, one cannot be sure of how much of the speaker's message is social, that is, other directed versus how much of it is serving a nonsocial function, that is, self-directed (Shantz, 1981). Insofar as a referential communication task does not require subjects .

to make any inferences specific to their listener, the task fails to measure the social component of communication. This is not to say that referential communication between two similar people is never social; rather, it is simply a poor situation in which to test communication skills because they are not required in such a situation. To assess a speaker's ability to infer a listener's needs, the two will have to differ in terms of informational needs.

Considerations of the nonsocial aspects of communication is equally important. When directing a listener's attention to a particular referent, a speaker must provide enough information so that the listener does not confuse the referent with other similar stimuli. Variables that underlie one's ability to assess the critical difference between a referent and its nonreferent(s) would seem as important as variables that underlie one's ability to assess the needs of one's listener. Consequently, just as it is necessary in studying the social component of communication, that is, the speaker-listener interaction, to confront the speaker with a listener whose needs differ from his/her own, it is necessary in studying the nonsocial component of communication, that is, the message itself, to confront the speaker with a referent in the context of similar but not identical nonreferents.

In light of the above discussion of what referential communication entails, both comparison and role taking would seem

to be necessary processes for successful referential communication. Both role taking and referential communication require one to differentiate one's own perspective from another person's perspective whereas both comparison and referential communication require one to differentiate one stimulus from at least one other similar stimulus. According to Kohlberg (1969), the development of these two social and nonsocial forms of differentiation with their integration may represent a prototype of other social-cognitive developments. It seems worthwhile then to consider both these social and nonsocial processes independently and as they relate to referential communication.

Regarding this third aim there are really two important questions one can ask: First, can referential communication be accounted for by one of comparison or role taking, or does it require both? This could be determined by looking at the developmental ordering among comparison, role taking, and referential communication. Based on the previous discussion of comparison and role taking, the task ordering may be comparison, then role taking, and finally referential communication, indicating that both the former skills are required for referential communication. The second important question to be asked is, What are the variables underlying role taking and comparison which might account for this relation to referential communication? Two variables have been suggested as being important; decentration and integration. Decentration would be an important

variable to study with respect to comparison as well as to roletaking development since it was suggested in theory that a nonsocial form of this ability might underlie both processes, or alternatively, that a nonsocial form might underlie comparison and a social form with the added problem of controlling a particularly salient element, that is, the self, might underlie role taking. Integration was considered important to role taking and perhaps to comparison development as well because these processes may require that at least two mental elements, be they perspectives or referents and nonreferents, be considered simultaneously; integration specifically involves this ability of seeing the compatibility between different objects or concepts. To the extent that comparison and role taking are involved in referential communication, then these variables may also be important for the development of this behaviour.

Thus, the third aim of this thesis was to describe the particular role that role taking may play in referential communication. The uniqueness of the relation of role taking to referential communication was investigated by studying both comparison and role taking in relation to the more complex communication behaviour. The aim was also concerned with the specific variables that might be important to the relation among these behaviours. In the following section I will present an outline of the research strategy adopted to address all three aims of this thesis.

The Present Research Strategy

As mentioned earlier, this research thesis had three aims. These aims were addressed in a series of four developmental studies. The first aim was to design tests that included three components of role taking, and with these to demonstrate roletaking development. This first aim was addressed in all four studies since in each study task's were used which met the threecomponent definition of role taking and these tests were administered to children from different age groups. The second aim of the thesis was to identify variables that might underlie role-taking development. Two variables in particular were examined, decentration and integration as they pertain to the second and third role-taking components, respectively. This aim was addressed by Studies 2, 3, and 4. Study 2 first addressed this second aim by introducing comparison and examining its relation to role taking. The purpose of this was to examine the role of nonsocial decentration versus social decentration (nonegocentrism): This would tell us whether the social and nonsocial processes follow identical developmental paths, that is, whether the skills or abilities involved in nonsocial processes like comparison are different from those involved in a comparable process but where the self is involved. Studies 3 and 4 used new comparison and role-taking tests that allowed a better study of this aim. In addition, Study 4 introduced a direct manipulation of decentration and examined the effects on both comparison and role taking. Integration and its relation to

role taking was also investigated in Study 4. The third aim of this thesis was to determine how role taking is involved in a more complex social behaviour, namely referential communication, This aim was pursued in Studies 3 and 4 in which both comparison and role taking were studied with respect to referential communication in order to determine the role of social and/or nonsocial components of role taking in the more complex social behaviour. This would tell us whether role taking itself is . central to social behaviour, or whether success on referential communication is due strictly to cognitive processes. Thus. the focus here is on the development of role taking and its importance for referential communication; the simpler skills associated with it such as comparison, decentration, and integration will be examined as they bear on this development and on the relation between role taking and referential communication. These four studies and the specific hypotheses each addressed will be presented next, followed by a more general discussion.

STUDY 1: PERCEPTUAL AND AFFECTIVE ROLE-TAKING DEVELOPMENT IN CHILDREN

Study 1 was conducted with two purposes in mind: First, I sought to develop and administer tests that would fulfill the conceptual definition of role taking. Second, I attempted to identify some of the processes common to these measures of role taking. Two domains of role taking were examined: the perceptual and affective domains. How the particular tests for these two domains were selected will now be discussed.

Perceptual Role Taking

To qualify as a test of perceptual role taking, a subject must make an inference about how another person is perceiving. some stimulus array at which they are both looking from different orientations. That is, the test should be constructed such that the child cannot simply rely on memory of his/her own past experience to indicate how the array appears from the orientation of the other. To ensure that the response does involve an inference of the other's relative orientation toward the array, there must be a minimum of two stimuli in the array. In addition, the subject must be continuously exposed to his/her own perspective of the array while inferring the other's; this ensures that the subject must inhibit or control his/her own and the other's different views with respect to the array.

A task with the above features fulfills the conceptual definition of perceptual role taking. Other task features should also be considered, however, in choosing or designing a perceptual role-taking task, not because they relate to role taking per se, but because they are features of the task that can influence performance. For example, the objects in the stimulus array should be easily discriminable from one another (Borke, 1975). The other whose perspective the child is to infer should be a real person rather than an imaginary other if one is studying very young children (Cox, 1975). The response measure is also important to consider with the turning or reconstruction responses being preferable (easier) to subjects than pointing to photographs depicting the other's perspective (Fishbein, Lewis & Keiffer, 1972, experiment 2; Hoy, 1974); and with the reconstruction task being the best response in terms of providing the most information about children's perceptual role-taking abilities and the nature of their errors (Hoy, 1974; Nigl & Fishbein, 1974). Finally, the dimensionality of the stimuli and response alternatives should be consistent to eliminate the possibility of errors due to the inability to convert three-dimensional input into two-dimensional representations (Nigl & Fishbein, 1974, experiment 3). These aspects are especially important to keep in mind if one is concerned with identifying the age of onset of role taking; one would want to rule out the possibility of performance deficits due to any other

lack but of role-taking skills. When one is studying role taking in older children, some of the above methodological points are not so critical, since these processes are already well developed in such children. The present tests of role taking, to be described in the method section, were designed in light of the above considerations.

Affective Role Taking

The following can be said to be important features of an affective role-taking test. First, it must involve making an inference about another's emotional reactions. This excludes several of the tasks previously regarded as role-taking measures such as Borke's (1971) which did not require subjects to go beyond the information given to infer the other's feelings and was therefore subject to the alternate explanations of social knowledge or projection. Kurdek and Rodgon's (1975) use of Burns and Cavey's (1957) incongruous picture task was also rejected; it seems to measure the kind of environmental cues to which subjects attend, that is, target cues or situational cues, more than it measures affective role taking. Second, the task must involve a subject interrelating at least two mental elements such as his/her own reaction and the other's affective reaction. Third, the subject must be required to inhibit or control competing information, namely, the interference of his/her own affective response which must be salient at the time. A task incorporating these features would be faithful to the defini-

tion of affective role taking.

Other features of an affective role-taking task that do not relate to role taking but that do relate to its measurement are also worth mentioning here since they, too, must be considered in the design of a good task. First, it is important toassess the extent to which young children discriminate among the affects being used in the task since young children, for example, have only a broad discrimination between positive and negative affects (Borke, 1971) and therefore do not differentiate between events that cause anger or sadness (Glasberg & Aboud, 1981, 1982). Second, minimizing the verbal demands upon 'subjects, is important since young children may not be able to label emotions very well but know which emotion they think appropriate for a given event (Borke, 1971). Minimizing verbal demands extends to the giving of instructions and to the presentation of the stimulus situation itself when studying role taking in young children. Virtually all affective role-taking tasks involve telling a story to children; tasks which involve remembering relatively long stories may be biased in favour of older children who possess better memory skills (Niemark, Slotnick & Ulrich, 1971). Finally, one must consider that if response alternatives are to be presented to children there should be at least three of these, one to reflect accurate role taking, one to reflect egocentric responding, and a third to reflect other incorrect but nonegocentric responses. This

would prevent the problem found in forced-choice tasks with two alternatives in which all incorrect responses, whatever their underlying causes, are scored as egocentric.

Hypotheses

Study 1 was largely exploratory in nature. As a result, the hypotheses are general. First, it was hypothesized that performance on both perceptual role-taking tasks and on the affective role-taking task would increase with age. To test this, children from grades 1, 3, and 5 were administered all three role-taking tasks. This age range was chosen because although there have been no role-taking tests designed to fulfill the three-component definition as well as to minimize the involvement of skills unrelated to role taking, those which measure some of the components (Piaget & Inhelder, 1956; Selman & Byrne, 1974) have found that these components develop between 6 and 11 years of age.

The second aim of this study was to identify any common abilities or processes shared among the three role-taking tasks to find whether role taking is a unitary construct when tasks meet the three role-taking requirements.

Method

Subjects

Seventy-three children participated in the present study: 32 first graders (16 boys and 16 girls, mean age 6.7 years,

range 6 - 7 years); 25 third graders (13 boys and 12 girls, mean age 8.6 years, range 8 - 9 years); and 16 fifth graders (9 boys and 7 girls, mean age 10.5 years, range 10 - 11 years). All subjects were Jewish and attended a Hebrew day school in which classes were conducted in both Hebrew and French. Subjects came from a middle to upper-middle class suburb of Montreal. English was spoken in the children's homes so the present study was conducted in English. Subjects were tested individually by a White female adult.

Experimental Tasks

Perceptual role-taking tests and scoring procedures. All children received the two perceptual tasks before the affective The first perceptual task was a three-object, two-dimentask. sional turning task. The test materials consisted of two 22,5 cm square sheets of construction paper. One was designated as the experimenter's board, the other as the subject's. Identical sets of three brightly coloured geometrical shapes (circle, square, triangle) were glued on each of the boards in corresponding positions. Thus, the three stimuli were easily discriminable from one another both in shape and in colour. The circle was placed in the middle of the upper half of the board; the square was placed in the lower left guadrant; and the triangle was placed in the lower right quadrant.

This test required the experimenter and subject to sit facing one another (180°) at a table. There were four trials.

Relative to her sitting position, the experimenter placed her board on the four trials in each of the following orientations: circle-front, circle-right, circle-left, and circle-back. То prevent subjects from using other cues such as the experimenter's arm movements, for example, the experimenter removed both boards from the table after each trial. She rotated the boards several times with the geometrical shapes facing away from the subject before placing her own board on the table again. Sub-, jects were then given their boards with the following instructions, "This is my board and this is your board. I am going to look at my board like this. I would like you to turn your board so that you can see your board the same way I can see my , board right now." The orientation of the subject's board was recorded after each trial. No corrective feedback was given at any time during the session but the instructions were repeated quite often.

Subjects were assigned to one of three levels of role taking depending upon which dimensions they could infer. The particular order of levels used was based on previous findings that inferring a left-right perspective is more difficult than inferring front-back relationships (Cox, 1978; Hoy, 1974). Level 1 - Egocentric: Subjects failed to role take; they turned their boards to match their perception of the experimenter's board rather than to match the experimenter's perception of her own board. Level 2 - Before-Behind: Subjects could

correctly infer the experimenter's view when she placed her board in the circle-front or circle-back positions. <u>Level 3 -</u> <u>Left-Right</u>: Subjects could infer the experimenter's perspective of her board when it was placed in either the circle-right or circle-left positions.

The second perceptual role-taking task was a three-object, three-dimensional reconstruction task. The procedure was quite similar to that of the turning task but different stimulus materials were employed. The boards were turned over to reveal their plain sides and two identical sets of wooden blocks were used, one for the experimenter and the other for the child. Each set consisted of a large red rectangle, a small purple . rectangle, and a large green cylinder. There were five trials. Both the before-behind and the left-right dimensions were manipulated simultaneously in three of the trial's. The other two trials manipulated either the before-behind or the leftright dimensions singly. All blocks were removed from both boards before each trial began. Children were requested to arrange their blocks so that they could see them in the same way the experimenter was viewing her own blocks. The arrangement of the subject's three blocks was recorded following each trial. '

Subjects were assigned to one of four levels of role taking, again depending upon which dimensions they successfully inferred. Level 1 - Egocentric: Subjects arranged their

blocks to match their perception of the experimenter's blocks. <u>Level 2 - Before-Behind</u>: Subjects correctly inferred this dimension on at least one trial but did not correctly infer the left-right dimension. <u>Level 3 - Left-Right</u>: Subjects accurately inferred this dimension on at least one trial. Subjects at this level were also able to infer the before-behind dimension on at least one trial but the two dimensions were never correctly inferred on the same trial. <u>Level 4 - Correct</u>: Subjects arranged their blocks on at least one trial such that the experimenter's view of both the before-behind and left-right perspectives were accurately inferred.

Affective role-taking test and scoring procedure. The subject and experimenter sat beside one another. Subjects were shown a piece of cardboard upon which had been sketched 8.faces depicting the following expressions: (1) happy, (2) sad, (3) angry, (4) surprised, (5) asleep, (6) afraid, and two neutral expressions, (7) and (8) (See Appendix A.). The neutral expressions were included so that subjects would have some response alternatives other than ones which might be considered egocentric when they were unsure of the correct response or were incorrect for reasons other than egocentrism. To ensure subjects knew the correct labels for these expressions, they were asked to point to the face which represented each of the emotions used in the test. When subjects mismatched a face to a label, the experimenter pointed to the correct face and said,

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"I think this face looks even more____. Let's call <u>this</u> the ______face." The matching face-to-label procedure was conducted twice for all subjects. Subjects were asked following each correct response during the second matching face-to-label trial, "What makes you____?" Testing continued when the experimenter was confident that subjects both knew the labels and had an adequate understanding of the emotions used in the study.

Subjects were then shown two identical sets of 8 pictures of faceless stick figures performing 8 different activities. They were then asked (and assisted when necessary) to label each activity. These activities included swimming, skiing, dancing, sleeping, walking a dog, reading, being alone, and making a bed. The children's set of activity pictures were spread out on the table in front of them and the experimenter's set was laid out before her. Subjects were requested to order their set of activities by preference by placing the favourite activity closest to them, the next favourite a little farther away and so on until the least favourite activity was placed farthest away at the end of the line-up. The experimenter then stated that she would arrange her own set of activities in her order of preference. In fact, she ordered her pictures opposite to each subject's arrangement; whatever was the child's most favourite activity was placed at the end of her line-up, . the child's least favourite activity was placed closest to her and so on. Only pictures in the fourth and fifth positions

were not reversed from the subject's own preferences. This was done to attenuate suspicion in subjects. The two sets of pictures were approximately 30 cm apart so that they could be seen from the same position.

The board with the facial expressions was then placed between the two rows of activity pictures. Subjects were asked in a series of 10 questions to make judgments about their own and the experimenter's emotional reactions to the 8 various activities. They responded nonverbally by pointing to one of the 8 faces sketched on the cardboard and this was recorded after each question. Five of the questions were of the form, "What face would you have, or how would you feel, if you were ?" Two of these inserted the name of the subject's most and least favourite activities; these questions were used to check the validity of the activity heirarchy and the use of the emotion faces. The other five questions were of the form, "What face would I have, or how would I feel, if I were ____ ?" Two of these questions asked subjects how the experimenter would feel if she were performing her most and least favourite activities (the child's least and most favourite activities, respectively).

Responses to the above two questions pertaining to the experimenter's feelings were scored as Correct, Egocentric, or Other. A response was classified as Correct if it proposed a positive affect for the experimenter if she were performing the

activity first in her line-up or a negative affect for the experimenter if she were performing the last activity in her line-up. Egocentric responses ascribed to the experimenter either a negative emotion if performing her first activity or a positive emotion if performing her last activity. When either of the neutral faces was selected the response was coded as Other. The surprise face was also coded as Other because it was interpreted as positive by some children and as negative by others.

Five levels of affective role taking were used to categorize responses to the two important questions. Level 1 - Egocentric-Egocentric: Subjects gave egocentric responses to both questions. They indicated that the experimenter would feel happy if performing the last activity in her line-up and would feel sad, angry, or frightened if performing her first activity. Level 2 - Egocentric-Other: Subjects gave an egocentric response to one of the two questions and for the other question they selected either the surprised face or one of the two Level 3 - Correct-Egocentric: Subjects gave neutral faces. one correct response and one egocentric response. For example, they said she would feel happy if performing the activity first, in her row (Correct), and that she would feel happy if performing the last activity in her line-up (Egocentric), or vice Level 4 - Correct-Other: Subjects responded to one versa. question correctly and to the other with the surprised face or

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with one of the neutral faces. <u>Level 5 - Correct-Correct</u>. Subjects answered both questions correctly. They ascribed a positive affect to the experimenter if performing her first activity and a negative affect if performing the last activity in her line-up.

<u>Results and Discussion</u>

The results of the present study will be presented in the following order. First, the developmental data for the two perceptual and the affective tests will be described individually. Secondly, the common factors emerging from a comparison of the relations among these tasks will be presented and discussed. Development of Role Taking

Considering first the perceptual tasks, a Pearson correlational analysis revealed a significant positive correlation between age and level of perceptual role taking on the turning task, $\underline{r}(72)$ = .42, $\underline{p} < .001$. Table 1 presents the frequency of subjects at each grade and role-taking level. Percentages of subjects in each grade who responded egocentrically (Level 1) and nonegocentrically (Level 3) strikingly demonstrate the development of role taking: for Egocentric they were 18.8%, 4%, and 0%, for grades 1, 3, and 5, respectively; and for Nonegocentric they were 12.5%, 40%, and 62.5%. There were no sex differences. Percent Frequency Distribution of Perceptual and Affective Role-Taking Scores by Grade

<u>Task</u>	Role-Taking Level	· • •	Grade	
		<u>, 1</u>	.3.	5
	1 (Egocentric)	19%	.4%	0%
Turning	2 (Before-Behind)	- 69%	. 56% .	38%
	3 (Left-Right)	1,3%	40%	63%
	۱N	32	25	16
· · · · · · · · · · · · · · · · · · ·	1 (Egocențric)	19%	4%	6%
	2 (Before-Behind)	.50 %	48%	· 38%
Reconstruction	3 (Left-Right)	· 6% .	4%	, 0%
· · ·	4 (Correct)	25%	'44 % '	56%
· /	N	32	25 ,	16
	1 (Egocentric-Egocentric)	23%	8%	6%
	2 (Egocentric-Other)	- 6%	21%	0%
Affective —	3 (Correct-Egocentric)	23%	0%	0%
	4 (Correct-Other)	16%	2.5%	s 19%
	5 (Correct-Correct)	32%	46%	7 5%
	N	31	24	16

Table 1

(____

Performance on the reconstruction task also significantly improved with age, $\underline{r}(72) = .26$, $\underline{p} < .05$. From the frequencies of subjects in each grade level responding at the four role-taking levels (table 1), one can see a developmental shift in this task as,well, with the percentages of subjects responding egocentrically (Level 1) being 18.8%, 4%, and 6.3%, for grades 1, 3, and 5, respectively; and nonegocentrically (Level 4) 25%, 44%, and 56.3%. As on the turning task, there were no sex

A combined score of the two role-taking questions pertaining to the experimenter's feelings was used for the data ... analysis of affective role taking. Two subjects (one first grader and one third grader) who obtained responses coded as Other on both questions were dropped from the analysis because this category did not represent a sufficient number of subjects. A significant positive correlation was found between age and level of affective role taking using this scale, $\underline{r}(70)$ = .36, $\underline{p} < .001$. Table 1 shows this developmental shift in terms of the frequency distribution of responses by category. Percentages of subjects in grades 1, 3, and 5 who responded egocentrically (Level 1) were 22.6%, 8.3%, and 6.3%, respectively; and who responded nonegocentrically (Level 5) were 32.3%, 45.8%, and 75%. As on the perceptual tasks, there were no sex differences on this task.

Thus, the first hypothesis of this study, that tests

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designed to meet all three conceptual criteria of role taking would show a developmental pattern within the 6 - 11 year age range was supported. For example, approximately 22.6% of first graders attributed their own feelings to another despite having currently available information as to the other's correct feelings in the various situations. When selecting their own emotions children tended first to look where that activity lay in their line-up, and then select the corresponding appropriate emotion. When they were responding for the experimenter, it seemed rather that their own affect toward the activities were more salient to them; this saliency may have led them to assume that the experimenter (or anyone) would feel similarly during these activities, and as a result they often did not even look at the experimenter's ranking. Such egocentrism had markedly decreased by the third and fifth grades such that a full 75% of fifth graders could infer the experimenter's affective reactions to the various activities.

Relations among Role-Taking Tests

The remaining analyses were conducted to uncover any commonalities among the role-taking tasks. Specifically, the analyses were intended to test Ford's (1979) assertion that few or no common factors relate different role-taking tests and therefore that role taking lacks construct validity. Intertask correlational analyses (see table 2) showed that each role-taking task significantly correlated with the other two. Correlations Between the Turning, Reconstruction, and Affective Role-Taking Tasks

Table 2

Type of Correlation		Task		
	Task	Turning	Reconstruction	Affective
	Turning		. 50***	• 37***
Zero-order	Reconstruction			• 50***
	Affective			
• • •		Turning	Reconstruction	Affective
First-order	Turning	· · ·	.44***	.26*
(Controlling for age)	Reconstruction		,	44***
- r	Affective	••••••		
		Turning	Reconstruction	Affective
First-order	Turning		•39***	.16 -
(Controlling for	Reconstruction			• 39***
the. third task)	Affective			· · ·

*p<.05. ***p<.001.
The next step, therefore, was to determine if the relations among the tasks were entirely attributable to the relation of each task to age. When age was partialled out as a factor, the correlations among all the tasks remained significant, indicating that other common factors were involved. This finding contradicted Ford's report of low inter-task correlations.

The next step was an attempt to locate these common fàctors. Partial correlations were computed which controlled for the effects of one role-taking task while examining the relation between the remaining two. Table 2 shows that controlling for the performance on the affective role-taking task, there was still a significant relation between the two perceptual role-taking tests, r(67) = .39, p < .001. When the effects of the performance on the turning task were removed, there was a significant correlation between the affective task and the reconstruction task, r(67) = .39, p<.001. When the effects of the reconstruction task were partialled out, however, the relation between the turning task and the affective task was nonsignificant. This pattern of correlations suggests one of two things: perhaps role taking as defined and measured here is not a unitary construct and one common ability underlies perceptual tasks and another underlies the reconstruction and affective tasks. An explanation more parsimonious with the present definition and conceptual requirements of role taking suggests that one ability necessary to role taking was located

and that other abilities also emerged which were associated with the perceptual domain and with the turning task in par-, ticular, but which are not part of role taking.

The ability common to the turning and reconstruction tasks might be the ability to represent spatial relations internally and to rotate them mentally in an attempt to infer the other's perspective. There is evidence suggesting that people can mentally rotate two- and three-dimensional objects (Shepard & Judd, 1976; Shepard & Metzler, 1971); perhaps this is one process involved in perceptual role-taking tasks, but not in role taking per se.

The other ability, common to the reconstruction task and the affective task, may be the ability to inhibit or control more than one piece of information competing with the roletaking judgment, and thus represents one of the components of role taking. Unlike the turning task, the reconstruction task consisted of trials in which children had to infer the relative. orientation to the array of themselves and the experimenter. In the turning task subjects may simply have attended to one stimulus in the array, reducing the need to consider relative orientations. Thus, in the reconstruction task they were required to coordinate these perspectives to perform correctly; neither perspective could be ignored or disregarded, though it was possible to attend to one and then the other rather than to both simultaneously. This requirement is less explicit and may perhaps be ignored in the turning task with its fixed stimulus

array. The affective task also required some coordination of perspectives that were different. To infer the experimenter's view accurately, subjects would have had to control their own emotional reactions to the activities. In other words, some level of coordination of perspectives was involved. Thus, perhaps the ability common to the reconstruction and affective task is the capacity to coordinate attended perspectives sequentially, and possibly simultaneously.

To conclude, the present study has demonstrated that perceptual and affective role taking are developmental phenomena which are not fully developed even by fifth grade. The data also suggested that abilities such as mentally representing and rotating relations, while not essential to role taking, are essential to perceptual role-taking tasks. Finally, having used simple tasks which met the conceptual definition of role taking but which minimized the involvement of skills unrelated to role . taking, it was suggested that the ability common to the reconstruction and affective tasks was the ability to coordinate perspectives sequentially, or simultaneously. This finding argues against Ford's (1979) conclusion that role taking lacks construct validity. That the coordination of views, that is, decentration, was the common factor was only a possibility, however, based on the knowledge of how the tests were constructed given the present conceptual definition of role taking. Whether decentration was in fact important to role taking merited more empirical study and Study 2 was undertaken with this in mind.

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STUDY 2: THE RELATION OF ROLE TAKING TO COMPARISON

The aims of this thesis, as discussed previously, included the study of role-taking development in terms of its underlying processes one of which, it was suggested, is decentration. Some support for this was found in Study 1 in that one of the common factors underlying the perceptual (especially reconstruction) and affective role-taking tasks was best interpreted as the ability to coordinate two perspectives simultaneously or at least sequentially. Study 2 was undertaken to study decentration as it was manifested in another ability, often contrasted with but never related to role taking, namely the cognitive comparison process. The purpose of relating role taking to comparison was to note the commonalities and differences which would indicate whether decentration from the self is different from decentration from a referent.

The measure of comparison processes selected for the present study was a word-pair task similar to that developed by Rosenberg and Cohen (1966). This particular task was chosen primarily because it requires a referent/nonreferent comparison process in order for subjects to select a clue that best describes the referent. Although the clue is given by a speaker to a listener, the situation does not seem to require the speaker to direct the message to the listener. In other words,

the social communication function is minimized. This wordpair task then seems to require nonsocial decentration between a referent and nonreferent but in a social setting. Examining the relation between the word-pair task and .role taking would -tell us something about the commonalities and differences between the two forms of decentration. Asher and Oden (1976) concluded that performance on the two tasks was unrelated. They showed that failures on the word-pair task were due to the lack of comparison skills, not to egocentrism, since poor clues were poor for the speaker as well as for the listener. We are led to believe from this evidence that comparison processes develop after subjects have become role takers and are no longer egocentric, or that the situation is so unsocial that taking the role of the listener is irrelevant here. On the other hand, comparison processes may develop before subjects drop their egocentrism if the referent form of decentration measured in the word-pair task is a prerequisite for the social decentration measured by role-taking tasks. It is possible then that even though poor clue givers do not give egocentric clues, they may be egocentric in other ways. Giving poor clues and being egocentric in other situations may both reflect the inability to decenter but be manifested in different ways. Determining whether this word-pair task is related to role taking would provide information as to whether the fact that the self is one of the elements to be decentered from in role

taking makes it a different task from other nonsocial decentra-

Thus, in the present study an affective role-taking task similar to that used in Study 1, and a word-pair task were presented to a group of first and second graders and to fifth graders. Performance on both tasks was predicted to improve developmentally. In addition, it was predicted that comparison and role taking would be related to one another because of a common factor of decentration. A strong prediction was not possible, however, regarding any developmental ordering between the tasks since one line of reasoning would predict the prior development of role taking, and another would predict the prior development of referent comparison.

<u>Method</u>

Subjects

Twelve first and second graders (4 girls and 8 boys) with a mean age of 7.3 years and a range from 6 - 8 years, comprised the younger group; 5 of the children were White, 5 were Black, and 2 were from other ethnic groups. One boy was absent from the second session; thus, for the role-taking test there were only 11 subjects in the younger group. Twenty-two fifth graders (10 girls and 12 boys) with a mean age of 10.8 years and a range from 10 - 12 years comprised the older group; 12 of the children were White, 4 were Black, and the other 6 were of other ethnicities. All subjects were testéd by the same White female adult.

Tasks, Procedure, and Scoring

Children received an affective role-taking test and a word-pair test. All subjects were seen in two 30-minute sessions approximately one week apart, with a range from 5 - 9 days. During the first session same-sex pairs of classmates received the word-pair task. They received the role-taking task individually during the second session.

Role-taking test. The affective role-taking test used in Study 1 was modified such that the particular stimuli were changed but the procedure remained essentially the same. Children's ability to infer the experimenter's feelings were assessed with respect to two emotions: sadness and fear. Ι will describe the test using the sadness stimuli. Similar to Study 1, children were introduced to five sketched faces ranging from slightly positive to very sad (see Appendix B). Children were told, "Here are some pictures of someone who feels sad. Here (pointing to first face) he's not sad, is he? But he starts to get sad (pointing to second and third faces). Here he's sad (fourth face) and here he's really sad (fifth face), isn't he? Some things make you feel a little bit sad, don't they, but other things make you really really sad." All children agreed with this last statement and some earlier testing had shown that even children of the youngest age tested

here can produce examples of different things that make them feel mildly and extremely sad.

The Face Board was then put aside while the child was shown two identical sets of six pictures, one set for himself/ herself and one for the experimenter. The experimenter labelled each picture as she placed the child's set directly in front of him/her and her own set directly in front of her. The six pictures included faceless stick figures in various situations with the following printed labels at the bottom of each picture: "just sitting around", "breaking a toy", "getting punished", "staying home with a cold", "being alone", and "falling down". The particular situations were chosen on the basis of responses in Study 1 in which children were asked for things that made them feel sad. Each subject then ranked his/ her set of pictures from most to least sad. The saddest picture was placed farthest away from the child and so on with the child's least sad picture being put closest to him/her. Most children commented that the last picture did not make them at all sad.

After the child finished ranking his/her set of pictures, the experimenter said that she was going to put her pictures 'in the order that they made her feel sad. She began by putting her copy of the child's least sad picture farthest away, then randomly placing the next four pictures, and finally putting the child's saddest picture closest to her. The experimenter

pretended to consider her choices carefully while unobtrusively checking the child's ranking of pictures. All subjects watched as the experimenter ranked her pictures.

The Face Board was then placed between the two columns of pictures. Children were asked four questions, two concerning their own feelings and two concerning the experimenter's. To ensure children had understood the ranking task, they were asked how they would feel doing the first and then the last thing in their list. The number of the facial sketch pointed to on the Face Board was recorded. All children responded correctly by pointing to a sadder face on the Face Board in response to the second question. The two role-taking questions followed. Inserting the appropriate picture labels, the experimenter asked children how she would feel if she were doing the first and then last things in her line-up. Thus. children were asked to infer how sad the experimenter would feel if doing the very things that made them least and most sad when they had information available to indicate that the experimenter's responses would be different.

Accurate role taking was reflected in children's choice of a less sad face (low score) when responding how the experimenter would feel toward the first situation in her list, and a sadder face (a high score) for the last picture in her list. Scores on the two questions were then converted such that high scores (the highest score on any given question being 5)

consistently reflected nonegocentric responses and low scores reflected egocentric responding.

This procedure was repeated with the emotion of fear. The five facial sketches ranged from slightly positive to very afraid (Appendix B), and the six pictures, also taken from responses in Study 1, were labelled: "a robber", "snakes", "lightening", "a bug", "dog", and, "nightmares". Half the subjects received the sad picture set first; the others saw the afraid picture set first. Partners in the word-pair task received the same order of the sad and afraid sets in this task. Responses from the two questions on each of the sad and " afraid picture sets were combined to give one role-taking score per subject. Total scores in this role-taking task could range from 4, reflecting completely egocentric responding, that is, attributing one's own feelings to the experimenter, to a score of 20, deflecting accurate social inferences on all four roletaking questions. Subjects with a score of 20 chose either the first or fifth face on every question so that when scores were converted to make high scores indicate nonegocentric responding, they received the maximum value.

<u>Word-pair test.</u> Children were tested with a same-sex classmate. They were seated back-to-back and were told they would play a game. The experimenter then explained that each child would get a card with two pictures on it and that they would both see the same two pictures. She then explained that

one child but not the other would have a big circle around one of his/her pictures. They were told the picture with the circle would be the "right one", but that only one of them would know which one this was; it would be that person's job to think of a clue to help his/her partner guess the right one. Subjects were told that the clue could only be one word and it could not be a rhyming word. They were also told that when the person doing the guessing was ready to answer, he/she was to point to that picture rather than saying it aloud.

Children were given two practice trials alternating roles as speaker (clue giver) and listener (clue receiver). When it was clear subjects understood the procedure, the experimenter reminded them of the rules and then proceeded to administer the 30 experimental trials. Children alternated roles as speaker and listener after each trial. Thus, each child delivered 15 The 30 word pairs describing the picture pairs can be clues. found in Appendix C. Incidentally, that children alternated roles as speaker and listener probably had little or no effect on making children better speakers. There are no studies examining this role reversal alone but studies have found that with role reversal plus feedback there may be no improvement (Fry, 1966) or little improvement (Shantz & Wilson, 1972); any improvement is likely due to the feedback and not to the role reversal since studies with feedback and no role reversal show improvement (Whitehurst & Sonnenschein, 1981

Two adult judges independently rated the effectiveness of each clue in terms of its ability to discriminate the referent (the "right one") from the nonreferent. Each clue was given a rating from 0 to 3: 0 if the clue was more associated to the nonreferent or if the association was unclear; 1 if the clue was ambiguous, that is, associated equally to the referent and nonreferent; 2 if the clue was adequate in that it was associated in some way to both the referent and nonreferent but was slightly more associated to the referent; and 3 if the clue was very good, making it easy to select the referent. Inter-judge agreement was 85.6% and the discrepancies were resolved by a third judge.

Results and Discussion

It had been hypothesized that role-taking performance would increase from the younger to older children. Role-taking development was tested with a one-tailed <u>t</u>-test: results showed that, as expected, role-taking scores increased significantly from the first and second grades (G1/2) to the fifth grade (G5), $\underline{t}(31) = 2.88$, p<.01, with means for the two groups of 2.2 and 3.3, respectively. Thus the results of Study 1 were replicated with this modified task. The older children were better able to infer that the experimenter was neither saddened nor frightened by things that saddened and frightened them, but

that she was saddened and frightened by things toward which they felt somewhat positive.

A one-tailed <u>t</u>-test was performed on the word-pair data with the clue effectiveness ratings as the dependent variable. The results provided support for the hypothesis that the comparison ability, as measured by the word-pair task, improves with age, $\underline{t}(31) = 2.52$, $\underline{p} < .01$, with means for the G1/2 and G5 children of 31.3 and 37.4, respectively. These data support previous developmental studies using a similar task within this age (Asher & Parke, 1975; Saltzman & Townsend, 1980).

Having investigated the developmental aspects of the two tasks independently, the next step was to examine the relation between the tasks. First, a simple correlation showed that, as predicted, these two tasks were significantly related to each other, $\underline{r}(33) = .31$, $\underline{p} \lt .05$. Thus, the two tasks were measuring something in common. Since the correlation was only .31, however, the two tasks were not measuring exactly the same thing. A Guttman scalogram analysis (Nie, Hull, Jenkins, Steinbrenner & Bent, 1975) was then performed to determine whether comparison or role taking was consistently easier or developed before the other. This Guttman scalogram (see table 3) was performed with the medians for the two tasks (2.8 for role taking and 38 for comparison) serving as the cut-off points. Results showed that the coefficient of reproducibility was .79 indicating that role taking did not consistently precede word-pair comparison, and the coefficient

Frequency of Children Evidencing Success (+) and Failure (-) . on the Role-Taking and Word-Pair Tasks

<u>Response Patterns</u>	Role Taking	Word Pairs	Frequency
1	-	-	9
2	+	-	7
3,	-	• •	8\
4	+	<i>/</i> +	9

Note. Coefficient of reproducibility = .79. Coefficient of scalability = .56.

of scalability was .56 indicating that the scale was only , somewhat unidimensional and cumulative. The data as displayed in table 3 indicate that half the children had mastered neither task or both tasks; if only one was performed correctly it could be either task. These results are inconsistent with Asher and Oden's (1976) interpretation of performance on the word-pair task, that is that comparison is unrelated to role taking or that it developed after the child loses his/her egocentrism.

In conclusion, the two tasks were related to each other but one was not dependent on the other. This offers some support to the earlier suggestion that comparison and role taking require different forms of decentration, nonsocial and social respectively, and that since the two tasks were equally difficult, perhaps the coordination of two or more different elements is the last component of role taking to develop. The next study was designed to pursue this issue further by examining the relation of both comparison and role taking to a more complex behaviour, namely communication.

STUDY 3: COMPARISON AND ROLE TAKING AS PREREQUISITES FOR'REFERENTIAL COMMUNICATION

Two of the main objectives of this thesis were to study the variables underlying role-taking development and to test the notion that role taking is central to the development of other social-cognitive behaviours, and in particular to communication. This study was designed to address these two aims by studying the nature of the relation between role taking and a solely cognitive measure of comparison, and then by examining the relation of these two skills to referential communication. These two aims and how they were addressed in the present study will be discussed in turn.

The purpose of studying the relation between role taking and nonsocial comparison was to determine whether they completely overlap or whether one assesses abilities not required by the other. This would provide valuable information concerning the abilities underlying role taking. For example, if role taking and comparison were highly correlated, this would suggest that decentering from the self is the same as decentering from a referent. On the other hand, role taking, by involving the self and social others, may require more than the basic cognitive decentration found in comparison tasks or in conservation tasks. Both the third role-taking component and the nonegocentrism theory of role taking suggest that this involvement of the self makes role taking a more difficult task than otherwise popparable cognitive tasks.

The clation between comparison and role taking was first examined in Study 2. Using a role-taking task which had been designed to fulfill the three-component definition and a wordpair comparison task, Study 2 concluded that there was some overlap in the abilities required by the two tasks, but that one task did not follow the other in development. Neither role taking nor comparison totally incorporated the skills of the other but each involved something more than the other. Thus, the notion that role taking involves cognitive decentration plus some additional ability related to the self was not supported in Study 2; otherwise the performance on the word-pair task, as a measure of nonsocial decentration, would have been acquired before role taking.

A problem with Study 2, and with all previous attempts to relate role taking to other measures of cognitive decentration such as conservation and creativity (Rubin, 1973; Shantz, Note 1), renders these earlier conclusions tentative. The problem is that none of these decentration tasks was comparable to role taking; they therefore included extraneous variables. For example, the word-pair task developed by Cohen and Klein (1968) and used in Study 2 differed greatly in content from the role-taking task. This makes it difficult to interpret the results of their correlation and developmental ordering.

Specifically, the role-taking task used in Study 2 involved emotionally charged stimuli whereas the comparison task used stimuli that were more neutral and more verbal in nature. In addition this word-pair task measured comparison in a social context and thus was not strictly a measure of comparison alone. The present study was designed to test in a more controlled and systematic way the relation of role taking to comparison.

In Study 3 therefore, a more strictly cognitive comparison task was designed in order to study its relation to role taking. Several conditions had to be kept in mind as comparison was operationalized so that it could be compared to role taking adequately: First, the distinction between nonsocial decentration and social decentration, that is, centration versus egocentrism, had to differentiate clearly the two tasks. Second, to ensure that the tasks were comparable in all regards excepting the process being assessed, the tasks were designed to be as similar as possible in terms of the type of stimuli and response measure used. Finally, the tasks and response measures had to eliminate any reliance on verbal skills or memory so that children's responses would reflect their comparison and role-taking abilities rather than these other abilities.

To comply with the above restrictions in the design of the tasks, I decided to use a perceptual role-taking task rather than the affective one used in Study 2. The stimuli in a perceptual role-taking task are more easily adaptable to a

nonsocial comparison task than are the more social stimuli in an affective role-taking task. Although the present perceptual tasks were not similar to those used in Study 1, the results from that study suggested some degree of generalizability to affective tasks. This further supported the present shift in tasks. Thus, comparison and role taking were measured and compared with one another to determine whether cognitive decentration accounted for both abilities or whether role taking involved something more difficult.

This study also addressed the third aim of this thesis, namely to determine the importance of role taking to another social behaviour, communication. Referential communication, as defined earlier, requires a speaker to deliver to a listener a message that will direct the particular listener's attention to one specific stimulus among similar stimuli. Thus, referential communication involves two components, one of which involves directing attention to a particular stimulus among others and therefore highlights the skills used in comparison; and another of which involves addressing oneself to another To be sure that one is addressing someone else and person. not oneself, the other person must be unlike the self. The latter component therefore highlights the skills involved in Because of the similarities between these referrole taking. ential communication components and different aspects of both comparison and role taking, it was suggested that both these

processes are necessary for referential communication. Testing this notion empirically was important for what knowledge it could provide in terms of how nonsocial and social decentration may contribute to referential communication, that is, whether these processes are both necessary and perhaps sufficient for the success of this more complex social behaviour, or whether only one is necessary and sufficient.

To determine the importance of both role taking and comparison to referential communication, all three tasks were administered to children in the present study. I decided to design a new referential communication task that would ensure subjects had to identify a clue that would discriminate the referent from similar nonreferents for a particular listener. It was argued in the general introduction that the two existing tasks used by others to measure referential communication are inadequate, The Glucksberg et al. (1966) Stack the Blocks task emphasizes perhaps the speaker-listener distinction but definitely not the referent-nonreferent differentiation. The other task, the Rosenberg and Cohen (1966) word-pair task, emphasizes the referent-nonreferent distinction but not the differentiation between the speaker and listener. The task used in this study met both requirements of referential communication. In addition, the task was made as similar as possible in content to the comparison and role-taking tasks to ensure that any commonalities or differences were due to the

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required abilities and not to method variance.

Thus, in the present study subjects from grades two and five received a comparison task, a role-taking task, and a referential communication task, each designed to meet the conceptual definition of that process. The following hypotheses were made in this study: First, there would be a developmental increase in performance on all three tasks. Second. based on the results of Study 2, it was predicted that there would be a significant relation between role taking and comparison indicating a partial overlap in the abilities each required. In terms of the order of acquisition, it was predicted that comparison would develop before role taking. These results would provide support for the idea that comparison involves cognitive decentration and that role taking involves this form of decentration in addition to a more difficult ability, namely social decentration. Alternate results would suggest the following: if role taking and comparison were related to one another but one did not develop before the other, then this would suggest that, as in Study 2, even with a solely cognitive comparison task, decentering from the self is not more difficult than decentering from a referent. This would imply that the two forms of decentration, although similar, are not identical but that neither is dependent upon the other. If results showed that the two tasks were related but comparison developed after role taking, then one might conclude that social

decentration is easier than decentering from a referent. Finally, if role taking and comparison were totally unrelated. one might conclude that social and nonsocial form of decentration follow independent developmental paths. The third hypothesis concerned the relation of comparison and role taking to referential communication. The order of development of comparison, role taking, and referential communication would be used to infer the necessity and sufficiency of comparison and role taking for referential communication. The particular hypothesis was that comparison and role taking are both necessary and sufficient for referential communication, that is, that referential communication would be mastered as soon as both comparison and role taking had been acquired. Consequently, the predicted order of development was comparison and then both role taking and referential communication simultaneously.

Method

Subjects

Fifteen second graders with an age range of 7 - 8 years and 15 fifth graders with an age range of 10 - 12 years were tested. All came from lower-middle class families and, in addition to regular school, attended a part-time Greek school where they were tested. Children were tested individually in English by an adult male. The subjects' partner in the roletaking and referential communication tasks was an adult female.

Both the experimenter and the listener were Greek but all participants were proficient in English.

To make the comparison, role-taking, and referential communication tasks comparable, the nature of the stimuli and responses were common to all three. The stimuli consisted of various geometrical shapes (circles, squares, triangles) made of two layers of cardboard. These stimuli varied in colour (eg., green, black, red), texture (smooth or covered with finegrained sandpaper), and weight (light or heavier from a thin layer of plasticene pressed between the two layers of cardboard). These particular dimensions were selected because they are both concrete and simple, ensuring that the younger children would be able to identify and discriminate them. It should be noted that neither the smooth-rough nor the light-heavy tactile dimensions could be visually discriminated.

All three tasks also required children to select rather than generate clues. Thus, any grade difference obtained would not reflect linguistic competence, nor developmental improvements in the sampling process as discussed by Cohen and Klein (1968). The clues consisted of words describing various attributes of the referent and nonreferent. Each word was printed on a 3 x 5 in. (7.62 x 12.70 cm) index card. The position of the correct-clue (right, middle, left) varied from trial to trial. The comparison task and referential communi-

cation task both involved nonsocial decentration in that subjects had to select clues that discriminated referents from similar nonreferents, thereby shifting their attention from referent to nonreferent with respect to a particular clue. The role-taking task did not incorporate this feature. Instead, the role-taking and referential communication tasks both required social decentration in that subjects were required to give clues to a listener with specific perceptual needs, thereby shifting their attention from their own to the other's informational needs.

To test the generality of role taking, two different listener conditions were employed but in both cases the listener was present and her perceptual needs were made salient. 0n half of the trials in this task, and in the referential communication task, subjects were selecting clues for a blindfolded. person seated next to them; on the remaining trials the listener had her hands noticeably tied behind her back preventing her from examining the stimuli manually. The listener's condition was clearly described to the subject by the experimenter during the change in the listener condition. Each listener condition was run as a block; that is, for some subjects all four blindfolded listener trials were conducted first and for others all four tied-hands, or immobile listener trials were run first.

Comparison test. The comparison task required subjects to

choose a word clue that would help them remember at a later time which of two stimuli was the critical one (referent). By having the subject choose a clue for himself/herself, nonsocial decentration, that is, the need to compare the referent with the nonreferent on a particular dimension was assessed unconfounded by a social interaction. There were four simple and two complex trials; simple trials required subjects to consider only one dimension, complex to consider two dimensions. On each of the simple trials children were given two stimuli to handle and they were told which was the "right one" (referent). The two stimuli in each pair were of the same shape but varied on either the visual dimension (different colours), or tactile dimension (smooth-rough or light-heavy). Three clues were presented with each referent-nonreferent pair. After the children read aloud each word, they were asked to choose a clue that would help them remember at a later time which was the referent. Only one of the three clues was specific to the referent; the other two described the irrelevant dimension on that trial and the shape of both stimuli.

Example: simple trial

referent- a brown smooth square nonreferent- a blue smooth square clues- brown, smooth, square

Example: complex trial referent- a green rough circle nonreferent- a green smooth circle nonreferent- a black rough circle clues- green, rough, black, smooth

Children using the comparison process were expected to select the clue "brown" as the only one exclusive to the referent in this simple trial example. The correct clue on two of the simple trials was a visual clue; on the other two trials it was a tactile clue.

Children were presented with three stimuli and four clues on each of the two complex trials. The stimuli varied simultaneously on both the visual and tactile dimensions. Children were again told which was the referent and were asked to select as many clues as they needed to help them later identify the referent. In the above example, the correct response was the selection of both "green" and "rough" since, to distinguish the referent from the two nonreferents, both the visual clue and the tactile clue were necessary. The child's score was the number of correct clues chosen on all six trials.

Role-taking test. The role-taking task required children to select a word clue that either a blindfolded or an immobile other would use to describe a given object. Unlike the previous task, no comparison between geometric objects is required.

There were two blocks of four trials. During one block of trials, the listener who sat beside the children wore a blindfold, and during the other block of trials she had her hands obviously tied behind her back. Children were presented with one stimulus and three clues on each trial. They were told, "Pick the word you think <u>Maria</u> would use to describe this thing now that she cannot see (or cannot use her hands)."

Example: Blindfolded listener condition

• stimulus- a red and blue square which is both rough and light

clues- red, blue, rough

Example: Immobile listener condition

clues- smooth, heavy, yellow

Children with role-taking skills were expected to infer that a blindfolded listener would need a tactile clue (rough, in this example), and that an immobile listener would need a visual clue (yellow, in this example). The child's score was the number of correct clues chosen out of four trials in each of the two listener conditions.

Referential communication test. The referential communication task required subjects to select a word clue that would help either a blindfolded or an immobile listener identify which of two objects was the critical one (referent). In this way the task operationalized both components in the definition of referential communication, the referent-nonreferent differentiation and the speaker-listener differentiation. There were two blocks of four trials in this task, four trials with a blindfolded listener and four with an immobile listener. On each trial children were presented with a pair of same-shaped stimuli and were told which was the referent. The two stimuli differed on one visual and one tactile property and shared one visual and one tactile property. Children were also given four clues, all of which described the referent, but only two of which (one visual and one tactile clue) were specific to the referent. They were instructed to select the clue that would help the <u>listener</u> find the "right one" (referent) now that she could mot see (or use her hands).

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Example: Blindfolded listener condition

referent- a blue and red square which is both heavy and rough

nonreferent- a blue and yellow square which is both light and rough

clues- blue, red, heavy, rough

This task both required children to find the clues specific

to the referent (red and heavy, in this example) and also to define the dimension appropriate for the listener (heavy, in this example). The child's score was the total number of correct clues out of four trials chosen in each listener condition.

Design

Each subject performed all three tasks, a comparison, a role-taking, and a referential communication task. Thus, this study consisted of one between-subjects factor of grade (grades 2 and 5), and the two within-subjects factors of task (comparison, role taking, and referential communication) and listener condition (blindfolded and immobile). The order of the three tasks was randomized across subjects. As well, within each of the role taking and referential communication tasks, half the subjects were assigned to the blindfolded listener condition first, the remaining half first received the immobile listener condition.

Results and Discussion

Development of Comparison, Role Taking, and Referential Communication

The first hypotheses tested concerned the developmental nature of the three tasks measured in this study. Specifically, it was predicted that comparison, role taking, and referential communication would all improve with age. The number of

correct clues selected by a child on each task was the index of accuracy.

The first task analysed was the comparison task. Because of problems with the data analysis (see Footnote 1), the scores for the second graders were dichotomized and children were given a score of 6 if their score was equal to or greater than 3, and a score of 2 if their score was less than 3. A <u>t</u>-test for unequal variances was then performed comparing the dichotomized data for the second graders with the continuous data for the fifth graders. Even with the second graders' data dichotomized so as to bias against the hypothesis, a significan't difference emerged between the two groups, $\underline{t}(14) = 3.71$, p < .05; fifth graders performed better on the comparison task than second graders, with means for the two groups of 5.3 and 3.1, respectively.

These developmental data are consistent with earlier findings that comparison, as measured by the word-pair technique, improves markedly after second grade (Asher, 1976; Asher & Parke, 1975; Cohen & Klein, 1968). In this study, however, the improvement of comparison with age was demonstrated without the confounding effects of the real or imagined presence of a listener. Second graders in the present study failed to compare their clues to both the referent and nonreferent to assess the relative associative strengths of the clues to each stimulus. Almost all fifth grade children (their mean

score was 5.3 out of a possible 6.0) had both the cognitive capacity and an awareness of the need to make the necessary comparisons.

To test whether role-taking performance improved with age, a 2 x 2 (grade x'listener condition) analysis of variance was performed. There were significant main effects for both grade, F(1,28) = 16.32, p < .01, and for listener condition, F(1,28) = 20.02, p < .01. These main effects were qualified, however, by a significant grade x listener condition interaction; since the listener condition was a repeated measure, Satterthwaite's degrees of freedom were used to test the pooled error term (Winer, 1971); revealing the significant interaction, F(1,45) = 11.57, p < .01. Table 4 shows the pattern of means in this interaction. Breaking down this interaction into its simple main effects showed that in the blindfolded listener condition fifth graders were more accurate than second graders, F(1,45) = 31.99, p < .001. There were no grade differences in role-taking performance, however, in the immobile listener condition. Further, second graders performed equally poorly in both the blindfolded and immobile listener conditions; their mean performances in these two conditions of a possible total of 4.0 were 1.5 and 1.1, respectively. Fifth graders, by contrast, performed significantly better in the blindfolded listener condition compared to the immobile listener condition, F(1,28) = 30.63, p < .001; their mean role-taking scores for

Table 4

Mean Number of Correct Trials for Second and Fifth Graders on ... the Role-Taking Task under Both Listener Conditions

	13		2		
	Grade	Listener Condition			
		Blindfolded	Immobile .		
	2	1.5	1.1		
	5	3.6	0.7		
				,	

Note. The maximum score is 4.

these two conditions were 3.6 and 0.7, respectively.

The finding that second graders were deficient in roletaking skills is consistent with Piaget's notion (1967) that the 7-year-old is still egocentric and also with the developmental results of previous studies in which some of the roletaking components were measured (Fishbein et al., 1972; Gove & Keating, 1979; Kurdek & Rodgon, 1975). Fifth graders in this study successfully inferred the viewpoint of the blindfolded listener but not of the immobile listener. Two factors might explain this difference in role-taking performance. First, the blindfold might have been relatively more salient during the interaction than was the tying of the other's hands behind her back. This suggests that perhaps even in fifth grade an immediate, highly visible stimulus pertaining to the listener's This explanation needs is still required for role taking. places a certain limitation on Piaget's theory of role-taking development. Second, children probably had more experience with their own vision being blocked than with their hands being tied, suggesting that perhaps some perceptual learning is required in the specific modality for which one is making the inference.

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The developmental hypothesis concerning referential communication performance was tested first with a 2 x 2 (grade x listener condition) analysis of variance. This analysis revealed significant main effects for both grade, F(1,28)= 7.59,

Table 5

Mean Number of Correct Trials for Second and Fifth Graders on the Referential Communication Task under Both Listener Conditions

Grade	Listener Co	Listener Condition	
	Blindfolded	Immobile	
2	1.7 .	0.9	
5	2.9	1.5	

Note. The maximum score is 4.

p < .05, and for listener condition, $\underline{F}(1,28) = 14.12$, p < .01. The two-way interaction was nonsignificant. Table 5 shows these means. Fifth graders performed significantly better than second graders; of a possible total of 4.0, fifth graders had a mean score of 2.2 whereas second graders had a mean score of 1.3. Children in both grades selected better clues for the blindfolded listener than for the immobile listener. Mean scores for the blindfolded and immobile listener conditions were 2.3 and 1.2, respectively.

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This developmental trend evident on the referential communication task is consistent with that found in the earlier studies (Asher & Oden, 1976; Glucksberg et al., 1966). Unlike these earlier studies, however, the present task fulfilled the definition of referential communication by featuring both the referent-nonreferent differentiation and the speaker-listener differentiation requirements. Subjects had to compare referents with nonreferents in order to select an appropriately discriminating clue for a listener who differed from themselves in informational needs.

Relation between Comparison, Role Taking, and Referential

Guttman scalogram analyses were used first to test the hypothesis that comparison develops before role taking and second that the acquisition of both comparison and role taking is not only necessary but also possibly sufficient for referen-

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tial communication. Separate scalograms were performed for the two listener conditions since the previous analyses had revealed significant differences between them. The comparison task data were, of course, the same for each analysis. The passing criteria for each task, that is, the number of correct trials on a task required before the subject was said to have passed that task, were as follows: for the comparison task, at least three of the six trials, and for each listener condition in both the role-taking and referential communication tasks, the criterion was at least three out of the four trials. Unfortunately, it was not possible to set the comparison passing criterion at four out of six trials (which would more closely approximate the 75% criterion of the other tasks) since data for the second graders were split at only the 3 score. 0ne possible alternative, given the way the data had been scored, was to set the passing criterion at five out of six trials; this would have required success on one of the two complex 4 trials and therefore did not seem an appropriate criterion with which to judge comparison ability. Thus, the criterion mentioned above was selected for the comparison task. Using . these criteria for the three tasks, the Guttman analysis for the blindfolded condition (see table 6) revealed a Guttman scale with a coefficient of reproducibility of .87 indicating that the scale was valid. In other words, a subject's scale score was a good predictor of his/her response pattern. The

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Table 6

Frequency of Children Evidencing Success (+) and Failure (-) on the Comparison, Role-Taking and Referential Communication Tasks in the Blindfolded Listener Condition

Response Patterns	Comparison	Role <u>Taking</u>	Referential Communication	Frequency
1	-	-	· •	6
2	· +	, -		. 5 (
3	+ ,- ,	+	- .	4 ·
4	· •	+	• +	9
Error <u>Patterns</u>	· , ·	۰. ۲	· · ·	·
5	- · · ·	· +	` _	1
6	· - ·	-		. 4
7	+ .	-	· +	0 · ,
8		+	+	1

Note. Coefficient of reproducibility = .87. Coefficient of

scalability = .71.

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coefficient of scalability was .71 which indicates that the scale was also cumulative and unidimensional; that is, prior skills are maintained when new ones are acquired and these earlier skills are always learned. before the latter. The analysis revealed that the order of the tasks from least to most difficult was comparison, role taking, and then referential communication. Twenty-four of the 30 subjects showed this response pattern. Since tasks were equated as much as possible on other task demands, these data indicate that the comparison process developed earlier than role taking. Further, 9 out of 14 subjects who passed the referential communication did so having also passed the comparison and role-taking tasks. This supports the hypothesis that comparison develops before role taking and that both types of decentration are necessary for referential communication; nonsocial decentration in the form of comparison is not sufficient without social decentration in the form of role taking. Since 4 subjects passed both comparison and role-taking tasks without also passing the referential communication task, this suggests that though necessary, these two processes are insufficient by themselves to account for this more complex social behaviour.

The scalogram analysis performed on the data for the immobile listener condition (see table 7) yielded a Guttman scale with a coefficient of reproducibility of .89, and a coefficient of scalability of .55. Although overall fewer

Table 7

Frequency of Children Evidencing Success (+) and Failure (-) on the Comparison, Role Taking and Referential Communication. Tasks in the Immobile Listener Condition

Response Patterns	Comparison	Role Taking	Referential Communication	Frequency
1	۰ ۵۰	-	-	10
2	+	, 		-12
3	+	+.	- '	1
4	+	+	+ -	2
Error <u>Patterns</u>		, ,	•	× .
5	-	+ -	} -	· 2
6	-	· <u> </u>	+	<u> </u>
. 7	• + •	· _	+	3
8	· _	+	+	0
		•	۰ *	,

<u>Note.</u> Coefficient of reproducibility = .89. Coefficient of scalability = .55.

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subjects passed these tasks compared to the blindfolded listener condition, the developmental sequence of the three skills was the same: comparison, then role taking, and finally referential communication. Twenty-five out of 30 subjects showed this response pattern.

The present study supports previous studies demonstrating the importance of the comparison process to referential communication (Asher & Oden, 1976; Asher & Parke, 1975) as well as studies demonstrating the importance of role-taking skills for successful referential communication (Glucksberg et al., 1966). This study makes two advances, however. First, it was found that an ordering of the tasks existed: comparison devéloped before role taking, which in turn developed before referential communication. This finding indicates first that " it is more difficult to shift attention from one's own perspective to consider another's viewpoint than it is to shift attention from one object to another to consider both. Because role taking develops after comparison, some skill beyond the cognitive decentration measured in the comparison task is required for role taking. These data support the previous contention that nonegocentrism warrants separate treatment from nonsocial decentration, perhaps because of the salience of the self. This issue will be discussed at length in the general discussion.

Second, and more importantly, the scalograms indicated

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that the presence of these two necessary abilities was not sufficient for successful referential communication. This is important, suggesting either that some other as yet unnamed ability is also an integral component of referential communication, or that besides having comparison and role-taking abilities one must also be able to integrate these processes, or more precisely, to integrate the cognitive requirements of these processes in order to use them simultaneously in a referential communication task. This latter possibility seems very likely when one considers again the definition of referential communication; that is, the identification of a clue that discriminates the referent from similar nonreferents for a particular listener. Two rules, each specifying different requirements of a good clue must be integrated for success on referential communication. If the two requirements are integrated sequentially, then the process is very slow; if they are simultaneously integrated then referential communication is faster and more selective. To be able to select a clue while at the same time being aware of one's listener implies that one has the ability to integrate the requirements of both comparison and role taking.

Study 4 was designed in part to test this proposition that integration, the ability to interrelate differentiated concepts, is important for referential communication. In addition, Study 4 sought to measure directly the role of

decentration in both comparison and role taking. To this point, decentration has been considered a major process underlying comparison and role taking, based in part on the definitions of these skills and in part on the finding that the two are correlated and therefore have something in common. In the final study of this series nonsocial and social decentration were experimentally manipulated to demonstrate their importance to comparison and role taking, respectively, and their combined importance to referential communication.

STUDY 4: THE IMPORTANCE OF DECENTRATION AND INTEGRATION TO ROLE TAKING AND THEIR RELATION TO COMPARISON AND TO REFERENTIAL COMMUNICATION

Study 4 was designed to strengthen and expand what was demonstrated in the previous studies regarding all three aims of this research. Thus, in addition to assessing age-related changes, the effects of decentration and integration on roletaking were examined. Finally, the relation of role taking and comparison to referential communication was studied in terms of their being similarly affected by the underlying abilities of decentration and integration. A more detailed discussion of how these three aims were addressed in this study will be presented in turn.

With respect to age-related changes in role taking. Studies 1, 2, and 3 demonstrated that role taking begins to develop in children around 6 years of age and continues throughout middle childhood with some children reaching proficiency by age 11. This study sought to replicate these developmental findings and then to explain them in terms of the development of underlying abilities.

With respect to this second aim of identifying and examining abilities important to role-taking development, this research has thus far studied the importance to role taking of decentration, that is, the ability to consider and coordi-

nate two or more different elements. Studies 2 and 3 addressed the issue by comparing role-taking development to the development of a strictly nonsocial form of decentration, that is, comparison. Both studies found the two abilities to berelated, with Study 3 showing that comparison was a prerequisite for role taking. One explanation is that comparison may be a necessary but insufficient skill for role taking because besides cognitive decentration, one must further master nonegocentrism in order to role take. The relation to role taking of decentration as an ability has been found not only using comparison as a measure of cognitive decentration, but also with tests of conservation (Feffer & Gourevitch, 1960; Rubin, 1973), and of creativity (Shantz, Note 1). Decentration has also been regarded as an ability which can be trained. Cox (1977), for example, used a training procedure during which children were confronted with the other's visual perspective of an array while they still held their own perspective; that is, while observing an array subjects were told or shown a picture of what the other dould see. Repeated practice with attending to both perspectives improved subsequent role taking.

Decentration can be considered not only as an ability, however, but also as a process which can be facilitated by a situational manipulation. In the present study, I studied decentration as a process by designing a set of instructions to manipulate decentration directly in a role-taking task.

Defining decentration as the ability to shift attention from one object to another and to integrate these differentiated objects, the present decentration manipulation involved directing children's attention equally to both aspects of the roletaking situation that needed to be considered before making an inference, namely to the self's and the other's vantage points. This measure has not typically been used in roletaking studies, but is in keeping with Piaget's (1967) conception of decentration as the shifting of one's attention from one aspect of a situation to another.

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The important issue here is whether children are incapable of focusing on two things at the same time or whether they simply do not see the need to attend to both stimuli in the Both these possibilities lead to role-taking errors; tasks. the concern here is with the basis of these errors. Consequently in the present study children's role-taking abilities were assessed under two conditions: The first was the usual situation wherein the self's perspective is made salient. The second condition drew children's attention equally to the self's and other's orientations in the role-taking task. If children failed to role take under both these instructional sets then their poor performance could be attributed to a lack of the cognitive ability to attend to two stimuli. If children's performance was significantly improved, however, by directing. their attention also to the stimulus not usually salient, then

their usual lack of decentration would be more aptly understood in terms other than strictly ability which one either has pr does not have; rather, decentration might be seen as a process which can be either facilitated or impeded after it has been acquired. Alternatively, it might be seen as an ability which is acquired or mastered gradually and which during its development is used perhaps reluctantly unless facilitated. One of the aims of this study therefore was to determine whether decentration could better be understood and explained either strictly as an ability or as a gradually developing ability that perhaps initially needs facilitating circumstances to be This knowledge would provide insight not only into the used. nature and the development of decentration but also how decentration manifests itself in social (role-taking) situations.

In addition to decentration, this study examined another ability also hypothesized to underlie role taking, namely integration. This was discussed earlier as a part of the second component of role taking, the coordination of mental elements, but one that could be measured independently of decentration. To Werner (Langer, 1970) the function of integration is that it allows one to see differentiated elements in terms of a part-whole structure; that is, one can consider not only each different part of the system but also how all these elements interrelate to form a whole. In a role-taking situation, the subject and the other person hold different perspectives toward the same event; this ability to interrelate concepts, or to

perceive compatibility among different concepts (Morse & Gergen, 1970), may be necessary for role taking if simultaneity is essential to consider the self's and other's perspectives.

Various operational measures of integration have been used with children and adults. For example, when children's descriptions of others shift from concrete to abstract terms, this has been taken as an index of integration since to use an abstract descriptor, presumably they have seen the compatibility or commonalities among different pieces of physical and behavioural evidence (Scarlett et al., 1971). Scott (1974) has used four measures of integration in adults, each of which attempts to demonstrate how subjects use a single principle to organize many elements within a particular domain. The operational measure of integration used in the present study was based on the Gergen-Morse Perceived Self-Consistency Scale (Morse & Gergen, 1970). Essentially, this test assesses the degree of consistency or compatibility a subject perceives between differentiated aspects of himself/herself; the more compatibility a person sees among these different aspects, the more integrated is that person's self-concept. Although used to test integration of the self-concept, this task can be modified and applied to any other target. To experience different qualities of oneself or of any other target as being compatible implies that one has formed some higher cognitive structure which can incorporate these differentiated qualities.

In this respect, this measure most closely captures the essence of the simultaneity of perspectives being studied here. Therefore, it is hypothesized here that integration will increase with age and, more importantly, that it will be significantly related to role taking.

With respect to the third aim, determining the status of role taking in other social-cognitive behaviours, this research has examined referential communication in terms of the way it incorporated both role taking and comparison. The purpose of examining these two skills in relation to referential communication was to determine specifically the roles of social and nonsocial decentration in communication development and thereby gain a fuller understanding of the contribution of role taking than could be provided by a simple correlation between role taking and referential communication. Referential communication was first introduced in this research in Study 3 in which both comparison and role taking were found to be necessary but insufficient skills for referential communication. The present study extended these findings by directly examining the relation to referential communication of the abilities underlying role taking and comparison, namely decentration and integration. Thus it was possible to measure the impact upon referential communication of nonsocial and social decentration. Regarding the role of integration in referential communication, it is suggested that this construct may be important indepen-

dent of its relation to role taking and/or comparison. It will be recalled from Study 3 that although necessary, comparison and role taking were insufficient for referential communication; it was proposed that the further ability to integrate the requirements of these two skills might be important for referential communication. This hypothesis, that integration was related to referential communication, was empirically tested in this study.

Thus, this study attempted to provide information regarding all three aims of this thesis: First, the age-related changes in role taking were examined in children from 6 to 11 years of age. Second, the importance of both decentration and integration were examined in terms of their ability to account for role-taking development. Third, the status of role taking in explaining social behaviour was examined by looking at the relation of role taking and comparison and their underlying abilities to referential communication.

Method

Subjects

Eight children (4 girls and 4 boys) were tested from grades 1, 2, 4, and 5, yielding a total of 32 children. The first and second graders were treated as a single group, as were the fourth and fifth graders. The mean ages for the two groups were as follows: G1/2 had a mean age of 7.2 years and a range from 6 - 8 years; G4/5 had a mean age of 10.2 years and a range from 9 - 11 years. Approximately 14 of the children were Chinese, 8 were Greek, 7 were White, and the remaining 3 had other ethnic origins. The children attended an English-speaking school in a lower to middle class area of a large city. Children were tested individually in one 25-minute session in an empty classroom by a White female adult. Experimental Tasks and Procedures

All children received the following tasks: two forms each of a comparison, role-taking, and referential communication task and an integration task. All subjects received the comparison, role-taking, and referential communication tasks first but the order of these three tasks was randomized across subjects. Within each of these three tasks all subjects received the "Centering" instructional set before receiving the "Decentering" instructional set. All subjects then received the integration task.

The stimuli for the comparison, role-taking, and referential communication tasks were similar in design to those used in Study 3. For all three tasks, subjects' choices of clues were recorded. There were four trials on each task and subjects' number of correct clues out of four was their score for each task. Two blindfolded dolls were used as the partners or listeners in the role-taking and referential communication tasks.

. Comparison tests. Stimuli consisted of pairs of geometri-

cally-shaped objects which on half the trials differed in colour and on the remaining trials differed in texture (roughsmooth). Children selected from three printed clues placed in front of them the clue that would help them remember the referent. All three clues described the referent but only one of these reliably discriminated it from the nonreferent. The correct clue on half the trials referred to the referent's colour; on the other half, to its texture.

This task was administered under the following two instructional sets, each of which consisted of four trials. 1) Comparison-Centering. This task was given under the usual conditions of drawing subjects' attention to the referent. Subjects were given two objects to look at and handle. The experimenter then placed the two objects upon an 8 in. x 5 in. (20.3 cm x 12.7 cm) cardboard rectangle divided into halves. The outline around one half was painted purple. The referent "right one" was placed into this purple box and the nonreferent was placed on the other side. Subjects were told to remember the right one and were then asked to indicate which object had been designated the right one. All subjects correctly chose Three clues were presented to the child who was the referent. asked to choose the clue to help him/her remember the right one. The correct clue on two of the four trials was a colour; on-the other two trials it was a texture. 2) Comparison-Decentering. This task was intended to draw subjects' attention equally to

the referent and nonreferent. The cardboard rectangle was turned over, revealing an orange box surrounding one of the halves. Subjects were given two stimuli. As the experimenter placed them on the cardboard, she said, "The one that goes in the orange box is the wrong one. I want you to remember the right one. I don't want you to remember the wrong one. Which is the right one?" All subjects correctly identified the referent. When subjects were given the three clues they were told, "Choose a clue that will help you to remember the right one. Don't remember the wrong one." The correct clue was a colour on two trials; for the other two trials the correct clue was a texture.

Role-taking tests. The stimuli were similar to those used in Study 3 in the blindfolded listener condition. Each stimulus was painted two colours and was either rough or smooth in texture. The three clues referred to the two colours and to the texture of the stimulus; thus, the correct clue was the texture.

This task was given under two sets of instructions: the first highlighted the subjects' perceptual abilities; the second set highlighted both the subjects' sight and the other's lack of sight. There were four trials in each condition. 1) Role Taking-Centering. A 2-ft. (.61 m) high Holly Hobby doll wearing a brightly-coloured blindfold was seated close to the child. The doll's eyes had been completely covered. The doll

was introduced and subjects were asked to pretend the doll was a real person. Subjects were given a stimulus and were told to "have a look at it." The three clues were placed in front of them. The experimenter said, "Can you see them OK? You look at the three clues and pick the clue that Holly would use to `describe this thing." Before subjects responded they were quizzed to ensure they understood that the clue was for Holly; all subjects responded appropriately. 2) Role Taking-Decenter-The Holly Hobby doll was put out of sight and a new 1-ft. 'ing. (.3 m) high doll was introduced as Susan. Subjects were asked to pretend this doll was real. The experimenter then said, "I'm going to put this blindfold on Susan so she can't see. Can you see what's happening to her? . There, now I've covered up her eyes so she can't see anything." Subjects were given an object "to have a look at." Placing the three clues down, the experimenter said, "Can you see them OK?". Pick the clue that Susan would use to describe this thing now that she cannot see." When asked, all subjects responded correctly that the clue would be for Susan.

<u>Referential communication tests.</u> These tasks involved the subject sending a message about a specific referent to a listener with restricted perception. The stimuli were pairs of same-shaped objects, one of which was rough, the other smooth. Each object was painted two colours; one colour was common to both objects, the other colour was different for the two

objects. Four clues all describing the referent were given to subjects. These four clues described the colour common to both objects, the colour that was unique to the referent, the shape common to both objects, and the texture of the referent.

"The two instructional sets under which this task was given each consisted of four trials. The two conditions differed in that the first emphasized the referent and the subjects' ability to see, whereas the second placed equal emphasis on both referent and nonreferent and on the subjects' sight and the listener's lack of sight. 1) Referential Communication-Centering. The Holly doll wearing the blindfold was seated near the subject and he/she was asked to pretend the doll was The cardboard with the purple box was introduced. real. Subjects were handed two objects. The experimenter said, "Can you see them OK?" Placing the objects on the cardboard, she then said, "The one that goes in the purple box is the right Which is the right one? (All subjects responded correctone. ly.) Look at these four clues." The clues were placed in front of the subject and the experimenter then said, "You look at these clues and pick the clue that will help Holly find the. right one." All subjects responded correctly, when asked, that they were choosing the clue for Holly. 2) Referential Communication-Decentering. The Holly doll was removed and the cardboard with the orange box was placed on the table. The Susan doll was introduced and subjects were asked to pretend she was

a real person. While putting a brightly-coloured blindfold over the doll's eyes, the experimenter said, "I'm going to put this blindfold on Susan so she can't see. Can you see what's happening to her? I've covered up her eyes so she can't see anything." Subjects were given two objects. The experimenter then said, "Can you see them OK? The one that goes in the orange box is the wrong one. Which is the right one? (All subjects pointed to the referent.) Here are four clues. You look at the clues and pick the clue that will help Susan find the right one now that she cannot see. Don't let her guess the wrong one. Help her find the right one, not the wrong one." All subjects replied correctly that the clue was for Susan.

<u>Integration test.</u> The integration task measured the degree to which subjects perceived positive and negative attributes to be compatible. The task first required subjects to select four self-descriptive items from each of four lists containing positive adjectives (eg., happy), negative adjectives (eg., angry), positive behaviours (eg., play with friends), and negative behaviours "(eg., tease people). See Appendix Ď for a complete list. The experimenter read aloud the items from each list in turn and subjects responded by saying "yes" or "no" as to whether that item applied to them.

The next step was to acquaint subjects with the response measure. A 14 in. (35.6 cm) cardboard 'Hard-Easy' scale containing seven circles was placed on the table and the

meaning of the seven circles was explained. From left to right , these circles consisted of three blue circles progressively decreasing in diameter, a fourth circle which was the smallest and which was painted half blue and half yellow, and then three yellow circles progressively increasing in diameter. Subjects were told the yellow circles meant something was easy and the blue circles meant something was hard or difficult. The words 'Easy' and 'Hard' were printed in large letters under the appropriate circles. Subjects were told, "This little yellow one means a little bit easy. This [next] one means pretty easy. And this big yellow one means really easy. This little blue one means a little bit hard. This [next] one means pretty And this big blue one means really hard. This [fourth] hard. circle is yellow and blue. It means a Mit easy and a bit hard; it's right in the middle." Subjects were then asked to indicate by pointing to one of the circles how easy or how hard it was for various pairs of descriptive clauses to describe the same person.

Subjects then received two practice trials during which the experimenter ensured subjects grasped the requirements of the task. They were reminded of the instructions and were them given eight trials in the form, "Somebody who can _____ and can _____." Pairs of adjectives and behaviours subjects had previously said were self-descriptive were substituted in the blanks. These eight pairings consisted of two pairings each

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of a positive and negative adjective, a positive adjective and a negative behaviour, a negative adjective and a positive behaviour, and a positive and negative behaviour. The number of the circle subjects pointed to (1 meaning hard and 7 meaning easy).to show how hard or easy they thought it was for each pair of items to describe the same person, was recorded. Each subject's total score for all eight trials was used as the index of integration. Thus, scores could range from 8 to 56.

Results and Discussion

The results of this study will be presented in the following order: First, the data pertaining to the effects of grade on comparison, role taking, and referential communication will be discussed. Second, the ordering found among comparison, role taking, and referential communication will be presented. Third, the effects of the decentration manipulation will be presented. Finally, the data pertaining to the development of integration and its relation to comparison, role taking, and referential communication will be considered.

Development of Comparison, Role Taking, and Referential Communication

To test grade effects on comparison, role taking, and referential communication, the data from the younger group (first and second graders) were compared to those of the older group (fourth and fifth graders) on each of the three tasks by

means of 2 x 2 analyses of variance. The two factors in each analysis were grade (G1/2 vs G4/5), and instructional set (Centering vs Decentering); this latter variable was a repeated measure. The means from these three two-way analyses are presented in table 8. Here I will discuss only the results pertinent to grade effects. On the comparison task there was no significant main effect for grade, with means of 2.8 and for the younger and older grades, respectively. There was 3.3 also no grade x instructional set interaction. A significant grade effect did emerge on the role-taking task, however, F(1,30) = 4.83, p < .05, with means for the younger and older grades of 2.5 and 3.6 . There was no interaction of grade with instructional set. Finally, on the referential communication task, there was a significant main effect for grade, F(1,30) = 16.81, p<.001, with means of 1.2 and 3.0 for the younger and older grades. This grade effect did not interact with instructional set.

Focusing on the Centering condition in the present study (see table 8), these data provide a partial replication of the developmental results of the previous study: both role-taking and referential communication performance improved with age. Unlike the previous study, this study found no significant developmental increase on the comparison task, although the direction of the means is consistent with the hypothesis. Group means indicate that this failure to detect a significant

Table 8

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, Mean Number of Correct Word Choices in the Three Grade x Instructional Set Interactions

Task	Instructions		Grade	
		1/2	4/5	Mean
	Centering	2.8	3.0	2.9
Comparison	Decentering	2.9	3.6	3.3
	Mean	2.8	3.3	
ب د	Centering	2.5	, 3.6	3.1
Role Taking	Decentering	2.6	3.6	3.1
•	Mean	2.5	3. 6	
•	Centering	0.9	. 2.7	1.8
Referential	Decentering	· 1.5	3.3	2.4
Communication /	Mean	1.2	3.0	-

Note. The maximum score is 4.

developmental effect was not due to a ceiling effect being obtained on this task. Rather, compared to their counterparts in Study 3, the children in the younger sample here seemed to perform a little better on the comparison task whereas the older children here seemed to perform a little worse. It is unclear why this should be so but it does imply that in these younger children the decentering ability hypothesized to under-, fie comparison was well developed.

Relations among Comparison, Role Taking, and Referential Communication

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The next step in the data analyses was to determine whether the results of Study 3 were replicated insofar as the ordering among the three tasks was concerned. Guttman scalogram analyses were performed to test the hypothesis that comparison would precede role taking which would precede referential communication. Two scalograms were performed, one on the Centering instructional sets of the tasks since this represents the task situation similar to Study 3, and the other on the Decentering instructional task sets for further corroboration. The same passing criterion of three out of four correct trials was used as in Study 3 for each of the three tasks.

Considering first the Centering task sets, (see table 9) moderate support was obtained for the hypothesis. The obtained coefficient of reproducibility was .85 indicating that this ordering of the tasks was moderately consistent across sub-

Frequency of Children Evidencing Success (+) and Failure (-) on the Comparison, Role-Taking and Referential Communication Tasks in the Centering Condition

Table 9

Response Patterns	Comparison	Role Taking	Referential Communication	Frequency
1	-	-	-	4.
2	· +	-	-	3
3	· +	· +	· – 。	9 '
4	, + ,	+	+ *	· 9 ·
Error Patterns	, , , , , , , , , , , , , , , , , , ,		• • • •	
5	_ ·	+	. –	. 4
6	-	÷	+	0
3	+	-	+ '	0 ´
8	`-	+	۰ +	· · 3

Note. Coefficient of reproducibility = .85. Coefficient of

scalability = .53.

jects; that is, knowing a subjects scale score (how many tasks were passed) was a relatively reliable indicator of which of the three tasks contributed to his/her scale score. The coefficient of scalability was .53 indicating again both that the ordering of the three tasks was comparison, then role taking, and finally referential communication and that these abilities were moderately cumulative. This sequence confirms what was found in Study 3 despite the higher passing criterion for the comparison task.

The Guttman scalogram analysis performed on the Decentering tasks (see table 10) served to strengthen the above findings. The obtained coefficient of reproducibility for the Decentering tasks was .90 and the coefficient of scalability was .70. Since the Decentering instructions were intended to maximize subjects' performance on these tasks, these results indicate that the Decentering manipulation did not change the order of task difficulty but perhaps made the tasks less difficult.

The Role of Decentration in Comparison, Role Taking, and Referential Communication

One of the main purposes of this study was to determine whether decentration represents an ability which a child either possesses or does not, or a gradually emerging and strengthening ability which can be facilitated or impeded. The data concerning the effects obtained under the two forms of task

Table	10
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Frequency of Children Evidencing Success (+) and Failure (-) on the Comparison, Role-Taking and Referential Communication

Response Patterns	Comparison	Role Taking	Referential <u>Communication</u>	Frequenc y
1	-	р — * ж. —	·_	4
2	+		-	4
3 (+	+	-	5
4°	+ .	+	+	- 14,
Error atterns	-		•	
5	-	+	- `	3
6	-	-, 1	· +	0 ັ
7	· + * *	-	+	0 ′
8	-	+	+ ·	2

Tasks in the Decentering Condition

<u>Note.</u> Coefficient of reproducibility = .90. Coefficient of scalability = .70.

instructions provided some evidence to support the former The effect of instructional set was tested for each claim. task in the three two-way analyses of variance (see table 8). Results showed that on the comparison task the main effect for instructional set was not significant, with means of 2.9 and 3.3 for the Centering and Decentering instructions. Thus, Decentering instructions did not improve children's comparison scores to a significant degree. There were also no significant effects for the decentration manipulation on the role-taking task. . Children performed at the same level regardless of whether they received Centering or Decentering instructions, with means of 3.1 and 3.1, respectively, for the two sets of instructions. It will be recalled that neither grade x instructional set interaction was significant. Therefore, even though a ceiling effect could account for the lack of instruction effect on the G4/5 children, it could not account for there being no effect on the G1/2 children. The decentration manipulation was successful in significantly raising children's referential communication scores, F(1,30) = 4.76, p<.05. Children gave the listener poorer clues when they received Centering instructions than when they received the Decentering instructions, with means for the two sets of instructions of 1.8 and 2.4, respectively.

These data suggest that neither form of decentration as measured by comparison or role-taking tasks can be facilitated

by instructions. It seems that decentration is an ability which may be trained (Cox, 1977) but which is not affected by temporarily drawing subjects' attention to two elements. Referential communication, however, can be facilitated by instructions to attend to the referent and nonreferent as well as to one's own and another's perceptual abilities. This implies that when both forms of decentration must be used simultaneously, subjects perform below the level of their ability and so performance is facilitated by instructions. Thus, it seems that only the ability to integrate the two forms of decentration is impeded by Centering instructions or facilitated by Decentering instructions. This issue will be discussed in more depth in the general discussion following this study. <u>Development of Integration and its Relation to Comparisón</u>,

Role Taking, and Referential Communication

The final step in the analysis was to explore the relation of integration to comparison and role taking as well as to referential communication. As a preliminary step, the developmental nature of integration itself was tested since if it showed no change with age it could hardly, be used to explain a developmental phenomenon. The hypothesis that younger children would have a lower level of integration than older children was tested and analysed with a one-tailed <u>t</u>-test. Results supported the hypothesis; means for the younger and older groups were 31.0 and 34.9, respectively, $\underline{t}(30) = 1.73$, $\underline{p} < .05$. Both the younger and older children acknowledged positive and negative aspects of themselves; the older children, however, saw these qualities as being more compatible than the younger children. That is, older children were better able, to integrate positive and negative characteristics.

Having shown that integration itself was developmental in nature, I then attempted to find the extent to which it was related to the development of comparison, role taking, and referential communication. To this end, both zero-order and partial correlational analyses were performed on the Centering instructional sets of the three tasks. One-tailed tests of significance were used since a positive relation was predicted between integration and each of the three tasks.

Considering first the comparison task, there was no significant relation between comparison and integration, $\underline{r}(30) = -.05$. Thus, the hypothesis that integration might be related to comparison failed to receive support in this study.

The hypothesis that integration would be related to role taking received support from the present data. First, the correlation between role taking and integration was significant, $\underline{r}(30) = .47$, $\underline{p} \lt .01$. Since both role taking and integration also correlated with age, however $(\underline{r}(30) = .43, \underline{p} \lt .01, and$ $\underline{r}(30) = .37, \underline{p} \lt .05$, respectively), age was partialled out as a variable and a first-order partial correlation was then performed on the role-taking and integration data. Even with the effects due to age removed, there was still a significant correlation between role taking and integration, r(29)=.38, p<.05. The cognitive skills involved in role taking to a certain extent overlap with the skill required for perceiving compatibility among apparently contradictory self attributes. This suggests that an important cognitive skill in role taking is the ability to acknowledge simultaneously contradictory perspectives. This notion will be discussed more fully later.

Finally, the hypothesis that referential communication would be related to integration was tested. A significant correlation was found between these two variables, r(30) = .52, p' < .01, thus providing support for the prediction. Because referential communication and integration were both significantly related to age $(\underline{r}(30)=.53, \underline{p} < .01 \text{ and } \underline{r}(30)=.37$, p < .05, respectively) and to role taking (r(30) = .49, p < .01)and $\underline{r}(30) = .47$, $\underline{p} \lt .01$, respectively), the effects of age and role taking were eliminated and a second-order partial correlation coefficient was calculated. Results showed that even with the effects of both age and role taking removed, the rélation between referential communication and integration remained significant, r(28)= .32, p < .05. These data suggest that integration is related to referential communication beyond its involvement in role taking. Thus, the two most difficult tasks here, role taking and referential communication, are

related to integration. Role taking may require an integration of the self's and the other's perspectives; referential communication may require this integration of perspectives as well as an integration of the two forms of decentration. That referential communication correlates with this measure of integration is consistent with my earlier argument that these two nonsocial and social processes are coordinated simultaneously and not sequentially. Thus, as it takes some integrative ability to consider two contradictory attributes simultaneously and say that they could both describe the same person, it also takes an integrative ability to coordinate the requirements of two different processes for one common aim, in this case to solve a referential communication task. This issue . will be discussed more fully in the general discussion.

In summary, the present study has contributed to all three aims of this research. First, the finding that role taking is a developmental phenomenon was supported. Second, there was some support that social decentration was an important ability for role taking and that this form differed from the nonsocial form used in comparison. It was also found that integration is another ability related to role taking. Finally, regarding the third aim, moderate support was found for Study 3 in terms of the developmental sequence of comparison, then role taking, and then referential communication, again attesting to the importance, although not exclusive

importance, of role taking to more complex social behaviours. This study went one step further by showing that the ability to integrate was also related to referential communication development perhaps insofar as it is necessary to integrate the requirements of comparison and role taking in order to succeed at referential communication. These issues and others raised in the present series of studies will now be discussed.

GENERAL DISCUSSION

The present research thesis was conducted with three major aims in mind: First, I wanted to describe role-taking development using tasks that fulfilled a concise threecomponent definition of role taking. My second aim was to identify some of the variables that might explain or underlie role-taking development. Specifically, the roles of decentration and integration were tested. The involvement of decentration was studied first by looking at the relation of role taking to a process that was comparable but nonsocial, namely . This strategy addressed the particular issue of comparison. whether social or nonsocial decentration underlies role-taking development. The importance of decentration was also studied by examining the effects of a direct manipulation of children's attention on role taking and on related abilities. The other ability hypothesized to be related to role taking, namely integration, was assessed and its importance to role taking and other related abilities was measured. The third goal of the present research was to test empirically the central status of role taking in explaining other social-cognitive behaviours such as referential communication. To this end, the relative importance to referential communication of both role taking and comparison was studied, thereby providing information regarding the contributions of both social and nonsocial

decentration to this more complex behaviour. In order to specify further the nature of the relation of these skills to communication, the variables proposed to underlie role-taking and comparison development, namely decentration and integration, were examined as they also related to referential communication. The contribution made by the present series of four studies toward our understanding of role taking in these three areas will now be assessed and discussed.

Age of Onset and Course of Role-Taking Development

Prior to a discussion of the nature of role-taking development it is important to point out that this issue was examined with a systematically developed conceptual definition of role taking that included three components (Higgins, 1981). Previous attempts at understanding role taking and its importance to social cognition have largely failed because of flaws or inconsistencies in the ways the constructs under study have been operationalized. Therefore, the first step in this thesis was to define a priori the components of role taking and subsequently devise tasks which met these requirements. Higgins'(1981) three-component definition of role taking involved an inference, the interrelation of at least two mental elements, and the inhibition or control of the self's perspective. The tasks designed for the four studies here all met these criteria.

With respect to inferences, for example, the affective role-taking task used in Studies 1 and 2 required subjects to go beyond the given information to respond that the experimenter would have a certain emotional reaction to a particular object or activity; the available information simply consisted of a card representing that activity or object appearing in a particular position in the experimenter's line-up. In Studies 3 and 4 again subjects had to go beyond the given information that the listener wore a blindfold or was immobile to infer what kind of perception the listener would and would not have. Both tasks also required subjects to interrelate at least two mental elements, namely two viewpoints. In the affective role-taking task of Studies 1 and 2, for example, subjects had to consider someone else's feelings toward events about which they themselves had very different emotional reactions. Similarly, the perceptual tasks required a consideration of one's own and the other's different spatial orientations (Study 1) and perceptual abilities (Studies 3 and 4). Finally, in all tasks the perspectives of the subjects themselves were involved and were made salient. This was done by having subjects first make affective ratings for themselves or by drawing attention to their own perceptual abilities and only then confronting them with the other's activity line-up or perceptual limitations. In this way the third role-taking requirement was also fulfilled; subjects had to control their own salient perspec-
tive to respond correctly on each task.

As important as meeting role-taking task requirements is minimizing the involvement of other skills or processes which are extraneous to role taking. When children fail role-taking tasks it is essential to be sure that their failure reflects their inability to role take and not their failure to meet some other task demand. Since role taking must be assessed within a specific context such as a task setting, however, these other task demands, relating less to the process of role taking than to its measurement, will necessarily be present. Since they may affect the age at which role taking first appears, they will be discussed here briefly.

Study 1 indicated by the correlation between the two perceptual role-taking tasks that some formal knowledge might also be necessary for success on these tasks. It was suggested that the knowledge in this instance could be a familiarity with spatial relations and the ability to rotate them mentally. In addition, Study 3 revealed that subjects could better take the role of a blindfolded listener than of an immobile listener. Presumably, the more past experience one has had with the state to be inferred, the easier will be the inference, that is, the first role-taking component. To the extent that the mental rotation of objects or the knowledge of others is lacking in a subject, role taking may suffer because of inaccurate inferences.

The important point here is that to some extent this problem of extraneous task demands is unavoidable since any context will bring certain other skills to bear on the measurement of role taking. The influence of these other skills can be minimized, however. The first way to reduce this problem is by being aware of the other skills or knowledge required in a given task and ensuring that the youngest children tested have these skills or knowledge. Second, one can covary out these other effects if one cannot ensure that the youngest children have this knowledge. The influence of extraneous skills was reduced as much as possible in the present studies, though as elsewhere, this remains a limitation.

Minimizing the involvement of skills other than role taking in the present tasks was accomplished by limiting both linguistic and memory demands upon subjects. This was done in Studies 1 and 2 by using nonverbal response measures, such as pointing to pictures representing one's choice of affective reactions, or by reconstructing the other's perspective rather than verbally describing it. In Studies 3 and 4 verbal production demands were reduced by using one-word clues, thereby requiring only simple word comprehension and recognition. Finally, by wording instructions in all tasks in a very simple manner, the use of linguistic skills was further minimized.

The importance of memory skills was reduced in the present tasks as well. For example, in the affective role-taking task

of Studies 1 and 2 the experimenter's line-up of activity or event cards was left intact during the subjects' role-taking judgments. During Studies 3 and 4 the listener was present throughout the tasks, thus ensuring that subjects did not have to rely on their memory of her perceptual limitations.

Having met the a priori requirements of role taking and having reduced as much as possible the potential that any roletaking failures would be attributable to other deficient abilities not directly pertinent to role taking, one can be relatively confident that the present studies are indeed measuring role taking. Therefore, with these tasks more than with previous tasks which have failed to meet the role-taking requirements or to reduce other task demands, one is in a better position to address the first important role-taking issue regarding the age at which role taking is acquired and the nature of the course of its development.

In the present series of experiments the youngest age groups tested were first and second graders and the oldest group tested was fifth graders. All four studies indicated that role-taking performance improved with age across this age range. Regarding the onset of role taking, some children at the youngest ages tested failed to show any indication that they could infer someone clse's different perspective, others had acquired some role-taking skills, and still others had already acquired full role-taking skills. In Study 1, for

example, looking just at the affective role-taking test, 22.6% of the first graders tested responded completely egocentrically, that is, they attributed their own affective reactions to the experimenter; 45.1% had acquired some role-taking skills; and the remaining 32.3% of the children responded completely correctly by accurately inferring the experimenter's feelings toward various activities. Similarly in the other three studies, the majority of first and second graders responded either completely egocentrically or with some degree of roletaking ability. Thus, in terms of the age of onset of role taking, for a few children this takes place before the age of 6 or 7 but for the vast majority of children the ability to infer a different perspective is just beginning to develop around these ages and continues to develop over the next few years.

Even by fifth grade some children had not fully mastered role taking. Referring again to the affective role-taking task in Study 1, although 75.0% of the fifth graders accurately inferred the experimenter's view, the remaining 25.0% of the children showed some lesser degree of role-taking skills. Similarly in the remaining studies the fifth graders as a group never reached a ceiling level of role-taking performance. Thus, it would appear that in the majority of children role taking begins to appear around the age of 6 or 7 and is mastered by many but not all children by age 11. This finding is

supported by many other studies testing children within this age span although, as mentioned earlier, these tests have varied in the number of role-taking components they included and in the degree to which extraneous variables were controlled (Chandler & Greenspan, 1972; Cox, 1978; Flavell et al., 1968; Kurdek & Rodgon, 1975; Nigl & Fishbein, 1974; Rubin, 1973; Urberg & Docherty, 1976).

These data are inconsistent, however, with those of other studies which claimed to have documented role taking in children much younger than 6 years of age. What these other studies have in common with one another is that they did not require children to make inferences about the internal dispositional qualities of another. Borke's (1971) task, for example, could be performed simply by projecting one's own feelings onto the other or on the basis of social knowledge. This latter possibility was also a criticism against Zahn-Waxler et al.'s (1977) gift-selection task with which it had appeared children under 6 years of age could role take. Another study (Masangkay, McCluskey, McIntyre, Sims-Knight, Vaughn & Flavell, 1974) claiming to demonstrate perceptual role-taking skills in 2- to 5-year-old children, found that very young children knew that when another person is facing in a different direction than they are, this other person is looking at different things than they are. As in the above studies, inferring the other's psychological state is unnecessary to perform this task. Thus.

it appears that studies which claimed to have found role-taking skills in preschool children have failed to test role taking adequately. These tasks seem to be measuring different and easier skills than role taking. When role-taking tasks are faithful to the three-component definition, as in the present research, one finds that role taking begins to emerge for most children at approximately 6 years of age. Having documented the age of acquisition and course of role-taking development, the next issue to be addressed concerns the identification and examination of the abilities underlying the development of this skill.

Abilities Underlying Role-Taking Development

The second goal of this thesis was to determine the abilities that underlie role taking. Two abilities were examined in this regard: decentration and integration. Results showed both abilities were important in the development of role taking.

The question as to whether decentration, or the ability to deploy attention over several stimuli, is critical in the development of role taking was approached by two strategies in this thesis research. The first strategy involved looking at the relation between the development of role taking and a similar but strictly cognitive ability, namely comparison. The second strategy involved directly manipulating decentration by directing children's attention equally to the two elements in

the role-taking situation that needed attention, the self's and other's perspectives.

Regarding the first strategy, on a conceptual level both comparison and role-taking processes require subjects to -differentiate between two mental elements and to coordinate these differentiated elements. In the case of a comparison task subjects must attend to both a referent and a nonreferent, distinguishing between them along some dimension; in a roletaking task, subjects must differentiate their own salient perspective from someone else's different perspective of the same object or event. Thus, both tasks appear to require decentration: the issue is whether the involvement of the self in a role-taking task makes a difference in terms of the task requirements or whether decentering from the self requires the same skills as decentering from a referent. The present studies indicate that the two tasks do differ in the types of skills they require.

On an empirical level, Study 2 supported the suggestion that the two tasks were related; comparison and role taking were found to be significantly correlated. Since the correlation was only .31, comparison and role taking were related but were not entirely overlapping processes. One must conclude that in addition to certain common abilities such as decentration, one or both tasks also required other distinctive abilities. The distinctive ability in role taking 'is often

assumed to be social decentration or nonegocentrism which involves controlling the self's perspective. The results of this and subsequent analyses were consistent with this assumption. Although showing a relation between comparison and role taking, Study 2 failed to show any sequence of development of the two processes. Since this study used the word-pair task as the measure of comparison, it seemed that the available tasks which confounded comparison with a social interaction were limiting our understanding of this process as well as of the role-taking process. Discerning whether there indeed was a relation and developmental sequence between comparison and role taking was important; thus, as a result of Study 2 I designed a new task in Study 3 which measured comparison as a nonsocial process and then determined the nature of its relation to role taking.

The Guttman scalogram analysis in Study 3 further supported the idea that role taking involves more than the cognitive decentration found in comparison. Comparison was found to be an easier task than role taking. Children mastered the nonsocial comparison process before they mastered the more social role-taking process. This task ordering received moderate support in Study 4. By fifth grade, however, both processes had been acquired to the same degree, though not necessarily fully. For example, in Study 3 fifth graders responded correctly to approximately 88% of the comparison

questions and to 90% of the role-taking questions. Thus, even though comparison may be somewhat easier than role taking in the beginning, neither process was fully mastered by all children in fifth grade.

Thus far the data have shown that comparison and role taking share some properties yet remain distinct from one another. This conclusion differs radically from others encountered in the role-taking and comparison literature. For example, Asher and Oden (1976) concluded that comparison and role taking were entirely different and unrelated processes. Their conclusion was based on a limited analysis of the relation between the two processes. The present conclusion also differs from the decentration theory of role taking. The decentration theory (Piaget, 1967), it will be recalled, explained role taking in terms of the child's increasing ability to shift attention from one aspect of a situation, that is, mental element to another. This theory would maintain that the self is like any other element from which one shifts one's attention, and therefore that comparison and role taking should be performed by the same process or involve the same skills. The decentration theory is partially accurate in that it seems that what role taking and comparison do share is the ability to differentiate between elements. However, the present data indicate that the theory is inaccurate in that decentering from the self, that is, shifting attention from the self's perspective to another's requires an additional and

more difficult skill than does decentering from a referent. In other words, the present research indicates that social decentration is different from nonsocial decentration.

To understand this difference between the nonsocial and social forms of decentration it may be beneficial to consider the elements involved in these processes; that is, differentiation and integration. The differentiation component was emphasized in the decentration manipulation used in Study 4. In the Centering conditions of the comparison and role-taking tasks, children's attention was drawn by an external source either to the referent or to the self's perspective. In the Decentering conditions their attention was drawn equally by this external source to both elements in the situation that needed attention, that is, to the referent and nonreferent in the comparison task and to the self's and other's perspectives in the role-taking task. Results showed that neither comparison nor role-taking performance improved as a result of the decentration manipulation. We can conclude from these data that decentration, and in particular the differentiation component of decentration, seems to be an ability which one, either has or does not have; when decentration is acquired it is already at its highest level of expression. Since the bulk of the present research shows that both comparison and role taking are developmental phenomena, it may be that decentration is one component only of these two processes and further that

it is one of the first components to develop in both comparison and role taking. This is consistent with the correlational findings of Study 2 in which these two processes were found to overlap in the skills they required but only to a degree.

The other ability studied here as it might help to explain role-taking and perhaps comparison development was integration. As was mentioned earlier, integration is considered to be a part of decentration but one that may be studied independently. In Study 4 a test of integration was administered which involved assessing the degree to which subjects could perceive apparently contradictory attributes as being compatible, that is, capable of describing the same person. Integration was found to be related to role taking but not to comparison. possible explanation then of the relation between comparison and role taking is that they both require some decentration, that is, some ability to shift attention from one thing to another, but that role taking requires more integration than does comparison. Unlike a role-taking situation, in a comparison task one can simply inhibit one element, that is, the referent and then consider the nonreferent and its attributes; simultaneous integration is unnecessary for this to occur. Т am suggesting that in role taking, by contrast, the self's perspective cannot be inhibited and must therefore be integrated, that is, simultaneously coordinated with the other's perspective.

One might consider what it is about the self which renders it incapable of being inhibited. There seems to be some tendency for people to think of themselves as being dissimilar from others, a tendency that is further enhanced in role-taking tasks in which the other's different perceptual needs, for example, are made visually obvious. Studies in other areas have found that when the self is involved in a task, information is processed differently than when the self is not concerned (Kuiper & Rogers, 1979; Rosenbach, Crockett & Wapner, 1973), this difference depending of course upon the type of What all these tasks point to is the notion that the task. self is a particular salient entity. In a role-taking situation, the effect of this overwhelming salience of the self is that it cannot be inhibited; rather the self's perspective must be controlled, that is, coordinated simultaneously with the other's perspective. It was subjects who could bring this ability to bear upon the role-taking situation when the task itself did not encourage the integration of the two perspectives who were successful in role taking. In conclusion, it seems that it is integration that makes the difference between nonsocial comparison and social role-taking tasks, and that the reason integration is more involved in role taking is because of the involvement of the self.

This interpretation has a very important implication for a theory of role taking. Regarding the traditional theories,

the present data seem to offer some support for both theories. The decentration theory was supported in that this ability seemed to be related to the acquistion of role taking. This theory was not supported in that the involvement of the self, as one of the elements from which subjects had to decenter, was found to make this a different and more difficult task than tasks of nonsocial decentration. In this respect the present research supported the nonegocentrism theory of role taking. As children became better able to consider simultaneously both their own salient perspective and another's perspective, their role-taking performance increased. Thus, the present research implies that a behaviour as complex as role taking cannot be explained by a theory that takes into account only one ability. A theory of role taking, to be comprehensive, will have to account for both strictly cognitive abilities and more social abilities which seem to be involved in role-taking development.

The Relation of Role Taking to Referential Communication

The final aim of this research thesis was to determine the involvement of role taking to another social behaviour, communication, thereby empirically testing the claim that role taking is central to social cognition (Kohlberg, 1969), and especially to communication (Glucksberg et al., 1966; Piaget, 1926). Of particular interest was determining to what component this relation could be attributed. By comparing the

involvement of role taking with comparison in the communication process, the opportunity was present to see whether the involvement of the self in the role-taking process made a unique contribution to the communication situation or whether this process was redundant with a similar nonsocial process.

In Studies 3 and 4, therefore, tasks were developed specifically to address the issue of the importance of the self to communication. The tasks for comparison, role taking, and referential communication were very similar in content so that the only difference among them was the process required to perform them. Making the tasks minimally dependent upon verbal skills reduced the possibility Shantz cautioned against (1981) of high task correlations being a result of shared method variance due to high verbal demands. The tasks developed in this research thesis were clearly matched in terms of the demands they placed on subjects, excepting the processes under study and are therefore more accurate and appropriate tasks with which to examine this issue.

The other important feature of the tasks used here is that each was developed to meet all the requirements determined by their conceptual definitions. For example, as described earlier, the referent in the comparison task was presented with similar nonreferents. Further, since the interest was in the comparison process itself, the necessity of subjects using sampling skills in generating relevant clues was eliminated by

providing them with clues and requiring them to select the appropriate clue. Similarly, as previously discussed, the roletaking test used in these studies required an inference, the coordination of at least two mental elements, and the control of the self's perspective. Finally, the referential communication task used required subjects to deliver to a listener with different informational needs a clue that would distinguish between a referent and similar nonreferent.

Results of Studies 3 and 4 indicated that both comparison and role taking were necessary for referential communication. This provides support for the status attributed to role taking within social cognition (Flavell, 1977), but relegates it to a status to be shared with the nonsocial comparison process. As such, the present research represents the first empirical attempt to test the notion which others have suggested, namely that both nonsocial comparison and social role taking are both important for social cognition (Kohlberg, 1969) and for communication in particular (Asher & Wigfield, 1981). The present studies contradict, therefore, earlier studies that claimed role taking was not very critical to communication development (Asher, 1979; Asher & Oden, 1976; Shatz & Gelman, 1973). In part this conclusion had been based on the finding that very young children alter their styles of speech for different aged listeners; this argument is flawed since this type of task confuses social knowledge with role taking.

The present research also contradicts those studies in which referential communication was explained solely from a task analytic approach (Asher & Wigfield, 1981; Dickson, 1981). While important, comparison processes were not sufficient for the acquisition of referential communication; role taking was also important to this more complex behaviour. Therefore, we can conclude that the involvement of the self in role taking made a significant and unique contribution to the communication process beyond the contribution of strictly cognitive comparison processes.

The present research takes a much larger step toward a fuller understanding of social-cognitive behaviour, however, than simply demonstrating that both comparison and role taking are necessary skills for referential communication. In Studies 3 and 4 it was found that although necessary, the abilities to compare and role take were not sufficient for accurate performance on the more complex behaviour. Study 4 provided an insight into what the other ability necessary for referential communication might be. In this study, integration was found to be correlated with referential communication independently of its relation to role taking. I would suggest that subjects first develop the ability to compare, that is, to detect differences between similar stimuli; they then develop the ability to control the self's salient perspective and to make social inferences in this light. To be able to participate in

a referential communication situation requires the further integration of the cognitive requirements of these two processes. Subjects must be able to employ both processes in the same task before they will succeed in a referential communication task. Others have suggested an integration of the comparison and role-taking approaches to referential communication (eg., Asher & Wigfield, 1981) but this research is the first properly controlled empirical test of the necessity and sufficiency of these skills. It was necessary to devise new tasks to overcome the methodological inconsistencies and weaknesses which had impeded and stifled our understanding of these processes and their interrelation.

To summarize, in addition to the purely cognitive skill of comparison, role taking was found to be a necessary precursor to the more complex social skill of referential communication. This was interpreted as further evidence that the self's involvement in role taking is what provides role taking's unique contribution compared to a strictly nonsocial comparison measure. Regarding referential communication as an example of a social-cognitive behaviour then, role taking can help account for its development but not exclusively. A nonsocial process was also a precursor. Moreover, these two processes were not sufficient for successful performance on this more complex communication task; it appeared that the further ability to integrate the cognitive requirements of these processes was also required.

This finding suggests that social behaviours are not simply the sum of their component abilities. Rather, a more difficult simultaneous integration of components is necessary in order to combine these precursor skills in the appropriate manner for the more complex social behaviour. The implication here is that only determining which abilities correlate with a given social behaviour cannot provide enough information as to how this behaviour is performed; one must also attempt to examine and understand how these abilities are combined with respect to one another when one is performing the more complex behaviour.

To conclude, the present research has advanced our understanding not only of role taking but also of how it relates to a comparable, strictly cognitive comparison process. The results indicated that decentration is important for both comparison and role taking but that in addition, nonegocentrism was also very important for role taking. This was suggested by the finding that role taking was more difficult than comparison, and that the ability to integrate was related to role-taking but not to comparison development. These findings indicated that the involvement of the self made this task more difficult than comparison.

The present research also advanced our knowledge of how both comparison and role taking are involved in a more complex social-cognitive behaviour, namely communication. Though

important, role taking does not entirely explain referential communication; rather it, and more precisely its requirements, must be integrated with the requirements of the nonsocial comparison process before referential communication is mastered. These findings put us in a better position to understand the possible roots of role-taking and communication failures. Moreover, they have shed some light on the nature of successful role-taking and referential communication development.

FOOTNOTES

1. Unfortunately, after the data had been scored and coded for one of the analyses the raw data for the second graders' comparison task was lost by a research assistant. I knew from the coded data that four second graders had successfully performed at least three of the six comparison trials and that the other 11 children had scored less than three out of six on this task. With this information still available, I chose to reconstruct a set of data for the second graders but in a way that would bias these fictitious data against my developmental hypothesis; that is, I chose the most conservative and stringent path. The four subjects whom I knew had scored at least three were given scores of six out of six trials; the remaining subjects who had scored less than three were also given the highest possible scores for them, that is, two out of six. This was the most conservative estimate of the lost raw data, biasing the data against finding a developmental improvement in comparison. Whatever the real scores were for the second graders, they could have been no higher than these reconstructed data. The raw data for the fifth graders were still available so their continuous data were used. This was preferable to dichotomizing their data and prevented any further loss of information.

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APPENDIX C

Word Pairs, Study 2

Practice trials: <u>house</u> - apple

table - bird

1. walk - <u>run</u>

2. <u>cake</u> - cookie

3. spoon - fork

4. triangle - square

5. watch - clock*

6. <u>butterfly</u> - spider

7. hill - mountain*

8. plant - flower*

9. <u>skate</u> - boot

10. teeth - lips

11. door - window

12. sock - <u>foot</u>

13. cat - <u>kitten</u>

14. boat - ship*

15. scissors - knife

16. shirt - sweater
17. mitten - glove*
18. balloon - ball
19. pencil - pen
20. zebra - horse
21. helmet - hat
22. T.V. - radio
23. bus - car
24. chair - stool
25. glass - cup*
26. bread - banana
27. sheep - lion
28. moon - star
29. green - yellow

30. <u>airplane</u> - kite

* from Cohen and Klein (1968).

APPENDIX D

Positive and Negative Adjectives and Behaviours, Study 4

A happy lucky smart loved proud funny

angry sad afraid unlucky embarrassed lonely

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laugh cry have bad dreams play with friends spill things tell jokes slam doors have lots of toys tease people help people lose things know the right answer. in school hit people hug your mother throw things against a wall have good manners break things share things with friends steal things have nice birthday parties stick your tongue out at people find money say bad words win games pull anyone's hair listen to the teacher have bad manners do homework