THE INFLUENCE OF SEX-TYPED INTERESTS ON CHILDREN'S SOCIAL JUDGMENTS

By

CAROLYN HELEN WOOD

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Department of Family & Nutritional Sciences

The University of British Columbia
1956 Main Mall
Vancouver, Canada
V6T 1Y3

Date 6 October, 1986
ABSTRACT

Findings from research on the influence of sex stereotypes on impression formation have suggested that young children use stereotyped information differently than older children and adults. When gender labeling and sex-typed individuating information are both available (e.g., a boy who likes playing with dolls), older children and adults use both types of information to make inferences about others while younger children use only the gender labels and ignore the individuating information. When making inferences about others, why do younger children rely on information about the sex of the other child when more relevant information about the sex-typing of the other child's stated interests are available? Is it because they do not see interests as predictive or do gender labels for some reason overpower other information?

To answer these questions, this study was designed to investigate whether young children are able to use sex-typed interest information, in the absence of gender labels, to make inferences about other children. Fifty-six girls and boys (M age = 4.5 yrs.) were given short statements about six gender unspecified children's sex-typed toy interests (three masculine, three feminine). These statements varied in salience information (single interest without pictures,
multiple interests without pictures and multiple interests with pictures). Children made ratings of how much they thought the other child would like six new toys (two feminine, two masculine, and two the same as in the original statement). A second testing session was designed to assess whether, when given both gender and interest information, children would make toy inferences based on gender as has been found in previous studies. Children were read four short stories about other children's (two girls, two boys) counter-stereotypic interests, and were again asked to predict the child's other toy interests. Also, children's knowledge of sex stereotypes and toy preferences were assessed.

Results showed that, as in the previous studies, when gender labeling information was available, children relied on gender labels more than on individual sex-typed interests to make toy inferences. More importantly, when only sex-typed interests were available, children were able to use the interest information to make inferences. This effect occurred selectively however. Both girls and boys made clear sex-typed inferences about the interests of another child who was said to have interests consistent with their own sex (e.g., when girls made attributions about a child who was said to like sewing machines) but inferences about children who had interests inconsistent with their own sex (e.g., when girls made attributions about a child who was said to like train
engines) were less clear. Salience of toy interests did not influence toy ratings, indicating a fictitious child's interest in one toy was sufficient information for children to make inferences. The implications of these results for findings from previous studies, and for children's in depth understanding of sex stereotypes and the salience of gender schemas at different ages are discussed.
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Person perception, or the process of forming impressions and gaining understanding of other individuals (Feldman & Ruble, 1981), is thought to be directed by the motivation to structure and organize our interactions with others in order to control our environment and to act effectively within it. For example, understanding and predicting others' behavior enables us to plan our actions in accordance with our predictions. For this reason, within the area of person perception, special attention has been paid to conducting research on impression formation. That is, how do we come to organize various informational cues from other persons and form meaningful impressions of them (see Livesley & Bromley, 1973; Feldman & Ruble, 1981; Shantz, 1975, 1983)?

One well known, though not fully understood, way in which impressions of others are thought to be organized is through the use of social stereotypes. Stereotypes, defined as structured sets of cognitive beliefs, are thought to create impressions and expectations about target groups and to aid in determining the personality attributes one believes individuals within those groups possess (Ashmore & Del Boca, 1979; Hamilton, 1979; Martin & Halverson, 1981). Stereotyping, therefore, is conceptualized as a particularly important cognitive process employed by individuals as part of their implicit personality theory of social groups (Ashmore & Del Boca, 1979). In response to this conceptualization of
stereotypes, different questions guiding research in impression formation have become relevant. For example, it is now thought to be important to know what stereotypes are used, under which conditions, and with what effects on social cognition.

Researchers interested in the area of gender stereotypes have recently begun to address these questions, particularly the extent to which stereotypes about males and females influence the processing of social information (Bem, 1981; Deaux & Lewis, 1984; Martin & Halverson, 1981). For example, several recent studies have been done to assess the influence of gender on children's social evaluations and predictions. This interest stems from evidence that even very young children (before the age of three years) have categorical knowledge of gender (labeling of self and others on the basis of gender) (Kuhn, Nash & Brucken, 1978; Slaby & Frey, 1975; Thompson, 1975). Furthermore, stereotypical beliefs about sex differences in roles, traits, activities, and interests are salient and well developed in most young children (Edelbrock & Sugawara, 1978; Huston, 1983; Kuhn et al., 1978; Martin & Halverson, 1981; Reis & Wright, 1982; Williams, Bennett & Best, 1975).

Three studies in particular have examined the issue of how children make judgments about others when given
information about a person's gender as well as individuating information about sex-related interests (Berndt & Heller, 1986; Martin, 1985; Zucker, Wilson & Stern, 1985). Children were asked, for example, what the future toy interests would be of a boy who in the past has preferred dolls and sewing machines. Specific predictions tested in these studies differ (one tested friendship evaluations, two tested activity and interest preferences), however, the major findings are generally consistent across all studies; young children are highly influenced by gender labeling information, whereas older children and adults are influenced more by individuating information.

In a series of three studies, Zucker et al. (1985) focused on children's (kindergarten & grades 1-6) friendship evaluations of peers exhibiting sex-typed and cross-sex-typed behaviors and interests. Children were read stories about a same-age boy or girl in which the number of masculine and feminine behaviors and interests varied. The sex-typed behaviors and interests were peer preference (plays with boys or girls), dress up preference (dresses up in father's or mother's clothes), fantasy hero, and toy preference. For each story children were asked to rate, among other aspects, how much they would like to be a friend of the target boy (or girl) who, for example, preferred to play with girls and to dress-up in mother's clothing, whose fantasy hero was 'Wonder
Woman', and whose favorite toy was Barbie doll. Results of the three studies revealed a developmental trend; friendship ratings differed between young (kindergarten and grades 1 & 2) and older (grades 3 - 6) children. Young children's evaluations were not affected by the sex-typed behavior and interests of the target; their evaluations were based on gender alone. That is, young children were most interested in being friends with same-sex children regardless of the target child's pattern of sex-typed behavior. Older children's evaluations, by contrast, were based both on the sex-typed behavior and the gender of the target child. With a male target child, for example, boys preferred the exclusively masculine boy most as a friend, and the exclusively feminine boy was preferred least, while girls, conversely, preferred the exclusively feminine boy most as a friend, and the exclusively masculine boy was preferred least. Similarly, with a female target child, girls preferred the exclusively feminine girl most as a friend and the exclusively masculine girl least, while boys preferred the exclusively masculine girl most as a friend and the exclusively feminine girl least. Unfortunately, this study did not test both male and female targets at the same time, so no direct comparisons of the influence of targets' sex on preferences are available.

Berndt and Heller's (1986) study on the influence of
gender stereotypes on ratings of activities in children revealed a similar, although not identical, age trend. Given gender labels and behavioral information that was either consistent or inconsistent with gender stereotypes, children of three ages and college students were asked to predict a (3rd grade) target child's future behavior. Results show that kindergartners used different information for making predictions, depending on the sex of the target. That is, for boy targets, kindergartners based their predictions on gender, while for girl targets, they based their predictions on both gender and prior behavioral information. Children in third grade tended to base their predictions mostly on gender; there was a trend for them to use the behavioral information as well, but this was not significant. In contrast, both sixth graders and college students tended to use gender and behavioral information to make predictions. For example, target children whose past behavior was inconsistent with stereotypes (e.g., a girl who fixed a bike), were expected to show less stereotyped behavior in the future than either targets whose past behavior was consistent with stereotypes or whose past behavior was not stated (sex only condition). In addition, college students tended to use the behavioral information more than sixth graders, although they still did not completely ignore gender.

Berndt and Heller suggest their findings for
kindergartner's inferences about girl targets can be explained in terms of the kindergartner's limited understanding of gender stereotypes. Based on their responses to the "sex only" condition (no behavioral information mentioned), it was apparent that kindergarteners were not certain of the stereotypical behaviors of boys and girls, and so they may have been more willing to use past behaviors rather than gender labels as a basis for their predictions. This explanation is not adequate, however, since in order to make inferences based on past behaviors an understanding of gender stereotypes is still needed; kindergartners would need to know how behaviors are linked within the gender stereotyping components of masculinity and femininity (see Deaux & Lewis, 1984). That is, children would need to understand, for example, that both washing dishes and baking brownies are "feminine" interests. Perhaps then, as Berndt and Heller also suggest, the reason kindergartners were able to use prior behaviors to make inferences about girls but not about boys is that children of this age are less flexible in their thinking about boys' cross-sex behaviors than girls'. Similarly, third graders in the Berndt and Heller study may have had rigid stereotypes about both boys and girls and so were more likely to base their predictions on gender than the older, sixth grade children with their more flexible stereotypes.
Martin's (1985) study concerning children's predictions of target children's toy preferences also found age differences in the use of gender-related categorical information. In this study, target children's stated sex-typed toy interests were varied so that some were traditionally sex-consistent, some were traditionally sex-inconsistent, and others were neutral. Children were asked to rate, among other aspects, how much the target child would like to play with various masculine and feminine toys. As in the Zucker et al. study, young children (4 - 6 yrs.) based predictions about target children completely on gender; across all conditions young children rated the targets' liking of sex-consistent toys higher than ratings of sex-inconsistent toys. That is, young children assumed boys would like boys' toys and girls would like girls' toys, and these ratings were not influenced in any way by the targets' stated interests. In contrast, older children (7 - 10 years) were sensitive to targets' interests; they based toy selection predictions partly on the targets' interests and partly on the sex of the target child. So, for example, older children predicted greater interest in cars and train engines for a girl said to be interested in football than for a girl said to be interested in make-up kits.

In summary, for both social evaluation and interest judgments, the three preceding studies suggest an age
difference in use of relevant gender-related individuating information. For younger children, gender labels are used in making inferences, while individuating information about others tends to be ignored. In contrast, older children tend to use both gender labels and individuating information to make predictions and evaluations. Further, as Berndt and Heller (1986) found, college students tend to be most sensitive to individuating information and almost ignore gender labeling. It should be noted, however, that these proposed changes with increasing age are not perfectly supported in the three studies since Berndt and Heller's third grade and kindergarten children appear to have partially reversed the trend. Overall, however, an age difference is generally suggested in that with age the influence of targets' sex decreases while the influence of targets' interests increases.

Recent research on adult impression formation further highlights the proposed changes with age; given gender labels and information relevant to personality traits (e.g., assertive behavior), adult predictions are based more on traits than on gender information. For example, Locksley, Borgida, Brekke and Hepburn (1980) found that a single instance of individuating information about the target was sufficient to outweigh the effects of social category (gender) information.
Specifically, subjects rated targets with masculine behavior (e.g., assertive) as more likely to perform masculine behavior in the future than targets with feminine behavior, regardless of the targets' gender. Females who were described as assertive were predicted to act and to have more masculine traits than males who were described as passive. Similarly, in a set of three studies, Deaux and Lewis (1984) found that given categorical information about gender and labels of either role behaviors or traits (e.g., a leader or emotional), college students' judgments of the target adults' other traits or future behaviors were influenced far more by the specific gender-related component information than by the gender label information.

More recently, Rasinski, Crocker and Hastie (1985) have replicated the Locksley et al. (1980) study. These researchers, however, used a different method of analysis to rate stereotypical beliefs than Locksley et al.; college student's personal stereotypes were assessed rather than using cultural stereotypes. Findings using this criterion also showed that college students, like the older children and adults in the previous studies, were sensitive to both behavioral and gender information. In addition, no evidence was found that adults completely ignore gender labeling information in their social judgments. In reference to the trend towards decreasing use of gender with age it is,
therefore, not as certain as Locksley et al. have suggested, that adults completely ignore gender category information in the presence of individuating information. What is known, however, is that in contrast to younger children, older children and adults are far more sensitive to individuating information when making inferences about others.

In summary, it appears that when other relevant information is available older children and adults tend to base predictions more on specific information about the target person than on gender labels. In contrast, younger children generally tend to base their predictions and evaluations solely on gender labels and ignore sex-related individuating information. Given that young children in this age range (4-6 years) exhibit knowledge of sex stereotypes as well as sex-typed preferences, the findings that young children ignore sex-typed interests and activities in these studies seem surprising. The studies therefore raise an important question. Why do young children rely completely on biological gender information and not sex-typed interests to make judgments about other individuals?

One possible explanation in response to this question is that children are using biological gender information "over-enthusiastically" (see Martin & Halverson, 1981; Taylor & Crocker, 1979 for discussion). That is, gender may be so
salient for young children that they use it for processing information to the exclusion of other, even more relevant information such as individual interests. This explanation derives from a schematic processing model proposed by Martin and Halverson (1981) as an approach to the study of sex stereotyping in children. The model is based on the assumption that sex stereotypes function as schemas or abstract, organized knowledge structures that automatically "guide information processing by structuring experiences, regulating behavior, and providing bases for making inferences and interpretations" (p.1120) (see also Taylor & Crocker, 1979).

Schemas are thought to structure experiences by providing the organization for incoming information. Information is processed to "fit" the schema in two ways. Information consistent with the schema is attended to, encoded and recalled, while information inconsistent with the schema is either ignored or distorted. In this way, it is thought that schemas influence what information is remembered; information consistent with schemas is remembered better than information inconsistent with schemas (Cohen, 1981; Rothbart, Evans & Fulero, 1979; Snyder & Uranowitz, 1978). Furthermore, it is believed that without appropriate schemas, some information will never be encoded (Bartlett, 1932).

Schemas function to provide a basis for making inferences
and interpretations when information is missing or ambiguous. Schemas allow the perceiver to "fill-in" missing information by relying on information already contained in the schemas (Taylor & Crocker, 1979). The information that is supplied is consistent with the schema. For example, it would be expected that children would predict a girl would have feminine interests when they have no information about that girl's interests.

Thus, it is from Martin and Halverson's (1981) schematic processing model that the relation of sex stereotypes or gender schemas to forming impressions about others can be seen; gender schemas produce a generalized readiness to process information on the basis of a network of knowledge relevant to males and females. The reason why young children rely completely on gender information to make predictions about their peers may therefore be due to these children using gender schemas "over-enthusiastically". In other words, gender schemas may be so salient and important for young children that they may use them to the exclusion of any other individuating information about a person. It should be noted that in this case interest information may be predictive for young children, but not as strongly predictive as gender, resulting in gender information overriding interest information.
A second possible explanation for why young children use gender exclusively as a predictor of others' behavior is that children do not see interests as predictive; gender may be the only available predictor for them. There are two possible reasons why interests may not be seen as predictive by young children. The first is that children may lack a strong associative network for sex-typed (toy) interest information. Stereotypes are thought to be composed of multiple independent components that are linked in some type of network (Deaux & Lewis, 1984). Specifically, for sex stereotypes, this network includes components such as traits, role behaviors, occupations, physical appearance and interests, each of which has a masculine and a feminine version (Deaux & Lewis, 1984). This network concept of sex stereotypes makes explicit the difference between masculinity and femininity versus gender labels of male and female; each is a separate and independent component under the umbrella of the sex stereotype. For example, some males may have feminine interests and so femininity is not equivalent to being female. The findings from the previous social judgment studies, therefore, may not suggest that young children use sex stereotypes for their judgments and that adults do not, but rather that young children tend to focus on the gender label component of sex stereotypes while older children and adults tend to focus more on the masculine and feminine interests component. In view of
this, it is suggested that although young children are able to link biological gender to inferences about masculine or feminine toy interests, they may still not necessarily be able to link masculine or feminine toy interests to inferences about other sex-typed toy interests. That is, both processes (toy inference based on biological gender vs. toy inference based on another masculine or feminine toy interest) are based on sex stereotypes, but young children may lack the (toy) interest component or associative network for masculinity and femininity. The result would be that young children may be unable to generalize (due to limited cognitive abilities) from specific sex-typed interests to the broader category of masculinity or femininity. Interests would consequently not have predictive value. The biologically based component, therefore, would be used instead of interests as a basis for young children's inferences about others.

Another reason why interests may not be seen as predictive by young children relates to developmental constraints. One constraint is apparent through evidence of a developmental trend in children's use of social categories in descriptions of peers (see Livesley & Bromley, 1973; Peevers & Secord, 1973; Scarlett, Press & Crockett, 1971). Knowledge of concrete and external categories (e.g., gender) is acquired before knowledge of abstract and internal categories (e.g.,
interests). In this way, toy interest information may be too abstract for use by young children in prediction of others, again resulting in gender-based inferences.

To evaluate these possible explanations for why young children process information about others differently than older children and adults, the present study was designed to explore whether young children could use sex-typed interests to make predictions about others when gender labeling cues were not given. For purposes of comparison, this study tested variables similar to those used in Martin's (1985) study, which used toy interests. Children were told about target children with masculine toy interests and target children with feminine toy interests. No information about the gender of the target child was mentioned. Children were then asked to predict target children's interest in new toys that were consistent with the sex-type of previously stated toys (toy-type consistent), and that were inconsistent with the sex-type of previously stated toys (toy-type inconsistent), as well as the toys that were previously stated (same toys).

Results from this study should help clarify why children rely solely on gender labels when making predictions about others. These results could take two directions; children may find toy interests predictive of other interests or they may not find toy interests predictive of other interests. If
toy interests are found to be predictive for young children it would indicate that children have categorical or schematic knowledge of interests and there may, therefore, be other reasons causing gender labels to override interests as a predictor for young children in the previous studies. With this outcome, children should predict that targets would be most interested in toy-type consistent and same toys, and least interested in toy-type inconsistent toys.

If children make interest judgments based on targets' other masculine or feminine interests, it is also possible that they may be inferring the gender of targets from the stated sex-typed interests (e.g., that a target with feminine interests is a girl). Children may therefore still be basing their judgments on gender labels. Evidence that children can associate gender with sex-typed objects is demonstrated in their accurate responses to sex stereotype measures when asked, for example, whether boys or girls play most with various sex-typed toys. While this possible "cognitive switch" into gender label from interest information is an important process to be aware of, the implications for the present study in explaining the results from previous studies are not affected. That is, it is still important to find whether young children can make predictions in the absence of specific gender labeling information, even if this is achieved
through "switching" into gender labeling. This result would suggest that Martin's young children used gender to make predictions not because they cannot use interest information, but because in a context involving contradictory information (e.g., a boy who likes dolls) children cannot deal with the two pieces of information. That is, they cannot conceive of a male with feminine interests (or vice versa). This may be because young children do not have the cognitive ability to consider these two (or any two) contradictory aspects at the same time, whereas older children do have the ability. So even though both pieces of information are available as predictors for young children, they would be equally likely to base inferences on either source of information, and ignore the other. However, since previous studies show that young children base inferences on gender labeling information instead of individuating information, the issue remaining is whether gender labels consistently overpower relevant information.

Conversely, if toy interests are not found to be predictive for young children it would indicate that young children do not have categorical knowledge of interests, or that interests are too abstract for them to use. In this case, children would predict that targets would be equally interested in both toy-type consistent and toy-type inconsistent toys. However, if interests are not found to be
predictive in the present study, it could be argued that young children did not find a simple statement about targets' interests sufficient for them to perceive those interests as dispositions in others. Young children may require more "proof". Predictive utility of interests may, therefore, be influenced by how salient the interest information has been made. In previous studies the individuating information was perhaps not made salient to the children. For example, Martin showed pictures of the target children but not of their toy interests. So, presenting the toy interest information with pictures in the present study, rather than verbally, should increase the salience of targets' interests. Stating that the target has more than one toy interest should also increase the salience of interests. Thus, in the present study salience of toy interest information was varied by using a single interest condition as well as multiple interest conditions. A verbal (no picture) description was used in the single interest and one multiple interest condition and then pictures of interests in a second multiple interest condition. Three conditions were therefore used: single interest without pictures, multiple interests without pictures, and multiple interests with pictures. Finally, the proposed absence of gender cues in this study should also increase the salience of interest cues.
Children's knowledge of the stereotyped toy preferences of boys and girls were also assessed. Gender stereotyping knowledge is important since it is considered to be a precondition for the predictive utility of sex-typed interests. That is, children without knowledge of gender stereotypes should not be able to make judgments based on masculine or feminine interests. While strong evidence shows that children of this age have gender stereotyping knowledge of toys, this measure ensured that the participants in this study have knowledge of the particular toys being tested. Three categories were initially available for children to indicate who likes to play most with a toy; just girls, just boys, or both girls and boys. Then, using the forced-choice procedure, children decided between two categories, for girls or for boys.

The stereotype test was also used to assess stereotype flexibility. Individual differences in flexibility in stereotyping knowledge may influence how inferences are made. Flexibility is thought to be related to children first answering that both girls and boys like to play with a toy, rather than immediately stating that only girls or only boys would like the toy. It may be that children high in flexibility in stereotyping knowledge respond differently than children low in flexibility. No specific predictions were proposed however.
Children were also asked to state their preference for each of the toys presented in the study. Children stated whether they liked each toy "a lot", "a little", or "not at all". Should children's responses on the toy inference ratings appear to be based on their own perspective rather than the targets', this measure permitted an examination of whether their ratings are influenced more by gender-based preferences (i.e., boys attributing highest interest to masculine toys and girls attributing highest interest to feminine toys) or by individual likes and dislikes.

Finally, to ensure that children in the present study are similar to those from previous studies, children were given a task to assess whether, when given both gender and interest information, they base their toy inferences on gender. This task will replicate Martin's (1985) study using stories, in which target children were said to have counter-stereotypic interests. Children were read four short stories about target children's (two girls, two boys) sex-typed toy interests, and then, as in the toy inference task, were asked to predict the target child's future toy interests. These future toy interests included predictions about the same toy as stated in the story, and two toys consistent with the gender of the target child (gender consistent toys), and two toys consistent with the stated interests of the target child
(interest consistent toys).

In summary, the goal of this study was to explore the predictive utility of individuating (toy) interest information for young children. Gender of the target child was not mentioned in order to allow for testing of children's impressions of others in the absence of gender labeling information. After hearing about a target child's interest in either masculine or feminine toys, children were asked to rate the target's interest in other toys (toy-type consistent, toy-type inconsistent, and same toys). Since even very young children can categorize activities and interests (e.g., toys, clothing, games & work) according to sex-stereotypes (see Huston, 1983), it was expected that they would use interest information to make predictions about the target child's other gender-related interests. These predictions were expected to vary with the salience of the information provided; toy inference ratings based on single interest information were expected to be lower than those based on multiple interest information, and inference ratings based on the no picture conditions were expected to be lower than those based on the picture condition.

The data gathered from this study should contribute to explaining results from three previous studies (Berndt & Heller, 1986; Martin, 1985; Zucker et al., 1985) in which young children, in contrast to older children and adults, used
gender category information to make predictions about others and ignored individuating information. Results from this study should also provide further insight into the processes involved in impression formation in young children and subsequent inferences made about other people based on gender-related categorical information. These inferences are important because they influence children's expectations and behaviors toward others.
METHOD

Subjects

A total of fifty-six children (26 girls, 30 boys) were recruited from day care centres in the Vancouver region. Children's ages ranged from 38.5 to 73.0 months (M=54.0 mos., SD=88.7). Mean ages for girls (M=54.9, SD=84.2) and for boys (M=53.2, SD=93.1) did not significantly differ, t(54) = 1.22, NS. The majority of children were Caucasian (88%) and from middle class homes.

Materials

The toy inference task (see Appendix A) was administered to test young children's ability to make inferences based solely on toy interest information when gender of the target child was not specified. For example, children were told about "a child who really likes to play with airplanes". The task consisted of three types of conditions, each with a feminine and masculine version, resulting in a total of six statements of targets' toy interests (three feminine, three masculine). The three conditions were used to manipulate salience of the toy interest information (single interest, multiple interests without pictures and multiple interests with pictures). In the single interest condition, the target child was said to have an interest in playing with one toy; no pictures were shown. In the multiple interest without
pictures condition, the target child was said to have an interest in playing with two toys traditionally associated with the same gender category (e.g., a truck and an airplane). Again, no pictures were shown. In the multiple interests with pictures condition, the target child was said to have an interest in playing with two toys traditionally associated with the same category, and as well, pictures of the two toys were shown to the children. For the picture conditions, a picture of each toy was pasted on a white 3 x 5 inch card.

For the toy inference task, children made ratings about what they thought the target child's toy interests would be for as many as six toys for each condition (two same, two consistent, two inconsistent). Same toys were those toys that the gender unspecified target was said to like in the stories. Consistent toys were toys belonging to the same traditional sex-typing category as the toys in the stories. For instance, if the story toy was a football, then an airplane would be a consistent toy since both are masculine sex-typed. Inconsistent toys were toys belonging to a different sex-typing category than the story toy(s). For instance, if a doll was the toy stated in the story, then race cars would be an inconsistent toy, since dolls are feminine sex-typed while race cars are masculine sex-typed.
The replication of Martin's toy inference task (see Appendix B) was administered to assess whether, when given both gender and interest information, young children in the present study would make toy inferences in the same pattern as the young children in Martin's study. The replication task consisted of four pictures of target children and four brief stories (two of girls, two of boys). These four stories, randomly selected from Martin's counter-stereotypic conditions, stated that the target had a best friend of the opposite sex and an interest in a traditionally sex-inconsistent toy (e.g., "Jason's best friend is a girl. Jason likes to play with make-up kits."). Each story also contained neutral information (e.g., "Jason lives in Vancouver."), and the target child's name, age and sex. The age of the target child corresponded to the age of the child being tested.

For the replication task, children rated five toys for each condition (one same, two gender consistent, two interest consistent). Gender consistent toys were toys traditionally associated with the gender of the target child. For instance, footballs are associated with boys and dolls are associated with girls. Interest consistent toys were toys belonging to the same traditional sex-typing category as the story toy. Since each child made 34 toy ratings in the toy inference task (six ratings in each of four statements, and
five ratings in each of two statements), and 20 toy ratings in the replication task (five ratings in each of four stories), a total of 54 toy ratings were made by each of the children.

A total of 18 sex-typed toys (nine stereotyped feminine toys, nine stereotyped masculine toys) were required for the toy inference and replication tasks. Toy inference ratings for both of these tasks included two masculine sex-typed toys (car, train engine) and two feminine sex-typed toys (doll, sewing machine). These specific toys were also used by Martin in her toy ratings task. A picture of each toy was pasted on a white 3x5 inch card. In addition to these four toys used for the inference ratings, the 18 toys also included ten stated toy interests (five feminine, five masculine) of targets in the toy inferences task, and four stated toy inferences (two feminine, two masculine) of targets in the replication task. Toys for this study were selected from a previously tested sample of 113 toys (Halverson & Martin, 1985) considered to be sex-typed by at least 75 percent of children (four to nine years old).

Children's ratings of target children's toy preferences were made using three pictures of faces (big smile, little smile, big frown). The face with a big smile represented "likes a lot", the face with a little smile represented "likes a little", and the face with a big frown represented "does not
like at all". These faces were hand-drawn on 5 x 8 inch white cards.

A measure of children's knowledge of the stereotyped toy preferences of girls and boys was also administered (see Appendix C). This measure tested for stereotyping knowledge of the 18 toys used in the study. Stereotyping knowledge of pictures of sex-typed toys were assessed using three rating cards labeled "for boys", or "for girls", or "for boys and girls", and showing pictures of boys or girls (one card with two boys, one card with two girls, one card with one boy and one girl together).

Finally, a measure of children's own toy preferences was administered (see Appendix D). Preferences of the toys used in the study were assessed using the three pictures of faces as a rating scale. Children were asked to rate whether they would like each of the toys "a lot", "a little" or "not at all".

Procedure

Each child was tested individually in a small room or in an area away from other children. Testing involved two separate sessions, lasting approximately ten minutes each. These two sessions were held between four and seven days apart for each child. Two female experimenters conducted the testing; one experimenter always administered the first
session and the other experimenter always administered the second session.

In the first session children were trained in using the (faces) rating scale, and training continued until they could accurately use the scale. Then, for the replication task, children were read four brief stories (two of girls, two of boys) randomly selected from the Martin (1985) study. These stories included the target child's sex, age, and interest information. For all stories, the interests presented were counter-stereotypic (e.g., "Larry's best friend is a girl. Larry likes to play with an iron and an ironing board."). After hearing each story, children were asked to rate how much they thought the target child would be interested in the following toys: the same toy as mentioned in the story, two gender consistent toys, and two interest consistent toys. The order of asking these ratings was random. This procedure was repeated for each of the four stories. The presentation of male and female story versions were counterbalanced.

Next, children were tested for their knowledge of stereotypic toy preferences of boys and girls. Children were shown, one at a time, pictures of toys, and asked to rate whether only girls, only boys, or both girls and boys like to play most with the toy. Children placed each toy in front of one of three cards that had pictures either of girls, or boys, or both a girl and a boy. After all pictures had been placed
in one of the three categories, the experimenter used a
forced-choice procedure for the items placed in the category
"for boys and girls". Specifically, the experimenter said,
"You said both boys and girls like (toy name), but who likes
it most, boys or girls?". These masculine and feminine sex-
typed toys were first arranged in a random order, and then
presented in that same order for each testing.

Finally, children were tested for how much they would
like the toys presented in the study. Children were shown,
one at a time, pictures of each of the 18 sex-typed toys.
These toys were shown in the same pre-arranged random order as
in the stereotyping measure. After each toy was shown,
children were asked to rate how much they would like the toy.
Children pointed to the appropriate face from the rating scale
that expressed whether they liked the toy "a lot", "a little"
or "not at all".

The Martin replication stories always preceded the
stereotype and preference tests so as not to make stereotypes
or personal preferences associated with toys salient to the
child when making toy inference ratings in the replication
task. Order of the stereotype and preference measures were
counter-balanced. The stereotype and preference measures and
the replication task were not given during the same session as
the toy inference task so as not to influence the children's
toy inference ratings for a gender unspecified target child.

In the second testing session, the experimenter first quickly reviewed the rating scale until children could accurately use the scale. Then, the toy inferences task was administered by presenting the six toy interest statements, one at a time. First, children were presented with the single interest condition (either a masculine or feminine version). Children were told about a gender unspecified target child's interest in one sex-typed toy (e.g., "A child I know really likes to play with doll clothes."). Then the experimenter said, "Now I want you to help me decide what other toys this child would like to play with. Remember, this is not about what you like, but about what the other child that I told you about would like to play with.". Children then made ratings about what they thought the target child's toy interests would be for five pictures of toys (two consistent, two inconsistent, and the same toy as in the testing statement). The presentation and rating of these toys were made in random order. Then the other version (masculine or feminine) of the single interest condition was read to the child, and again five toy inference ratings were made of the pictures of consistent, inconsistent and same toys. This general procedure, of making a statement about a gender unspecified target's toy interest and then having the child make inference ratings about that target's interest in other toys, was then
repeated for each of the statements in the multiple interest without pictures and the multiple interests with pictures conditions. However, since the multiple interest conditions each stated two toy interests, a total of six toy inference ratings, instead of five, were made for each statement (two same, two consistent, two inconsistent).

For the multiple interest without pictures condition (both the masculine and feminine version), children were told about a gender unspecified target child's interest in two toys from the same gender category (e.g., "A child I know really likes to play with trucks and airplanes"). Pictures of these toys were not shown. For the multiple interest with pictures condition (both the masculine and feminine version), children were again told about a gender unspecified target child's interest in two toys from the same gender category, but pictures of these two toys were shown.

The single interest conditions were always administered before the multiple interests conditions. This order was thought to ensure that the multiple interests and picture conditions would not influence children's inferences in the single interest conditions. Order of presentation of the multiple interests with pictures and the multiple interests without pictures conditions were counterbalanced. Order of presentation of the masculine and feminine versions within
each of the three conditions was also counterbalanced.

Scoring

Children's inference ratings of targets' toy interests were obtained using a 3-point scale. The ratings from the faces scale were converted to numbers with "3" given for "likes a lot", "2" given for "likes a little" and "1" given for "not like at all". For the toy inferences task, mean toy inference rating scores were computed for consistent toys, inconsistent toys, and same toys. For the replication task, mean toy inference rating scores were computed for toys consistent with the gender of the target, toys consistent with the interests of the target, and the same toy as stated in the story.

For the stereotyping measure, three categories were originally used to indicate who most liked to play with a toy (for boys, for girls, or for boys and girls). Then, with the forced-choice procedure, two categories remained. Here, the "boys and girls" category was taken away, and children were forced to decide between "for boys" or "for girls". A score of "1" was given for children who either originally gave a stereotyped answer (e.g., they said only girls play with make-up kits) or when forced to choose gave a stereotyped answer (e.g., they said both boys and girls like to play with a tool kit, but when forced, said only boys). A score of "0" was
given for children who originally gave a counter-stereotypic answer (e.g., they said only boys play with doll houses) or when forced to choose gave a counter-stereotypic answer (e.g., they said both boys and girls like to play with airplanes, but when forced, said only girls).

Scores for flexibility in stereotyping were also derived from the stereotyping measure. These were calculated from the three categories (for boys and girls, for boys, for girls) present before the forced-choice procedure. A score of "1" was given for answering that a toy was most liked by both girls and boys, and a score of "0" was given for answering that a toy was most liked only by girls or by boys. Summing these scores then resulted in the total number of toys each child first answered as being liked by both girls and boys. A median split resulted in children with scores above the median labeled as high in flexibility in stereotyping knowledge, and children with scores below the median labeled as low in flexibility in stereotyping knowledge.
RESULTS

Replication Task

For the replication of Martin's (1985) toy inference task, planned comparisons of means revealed that children tended to base their toy inferences on gender labels more than on individual toy interests. For all target children\(^1\), young childrens' attributed interest in toys consistent with the gender of the target \((M=2.49)\) was higher than for toys consistent with the interests of the target \((M=1.99)\), \(t(29)=4.13, p<.0001\). No significant differences were found between attributed interest in toys consistent with the gender of the target and those previously stated in the story (same toys) \((M=2.39)\). For all targets then, children attributed as much interest to toys consistent with the gender of the target as to same toys. It appears then that young children in the present study attributed toy inferences to target children in the same manner as the young children in the Martin study; children relied on gender categories more than on individual sex-typed toy interests when making toy inferences about target children.

Toy Inference Rating Scores

Toy inference rating scores were dependent measures in a repeated measures analysis of variance (see Appendix E), with one between subjects' factor, sex of subject (boy, girl), and
three within subjects' factors, conditions (single interests, multiple interests without pictures, multiple interests with pictures), toy types (masculine, feminine), and toy inferences (same, consistent, inconsistent).2

The predicted two factor interaction of toy inferences by conditions was not significant. However, the interaction of sex of subject by conditions was significant, F(2,108)=7.98, p<.001. While boys attributed to the target children an equal interest in toys across all conditions, a Newman-Keuls analysis revealed that girls attributed significantly higher toy inference rating scores in the single interest condition (M=2.49) than for both the multiple interests with pictures condition (M=2.32) and the multiple interests without pictures condition (M=2.29) (p<.01 for both comparisons). The two multiple interest conditions did not differ.

As predicted, the main effect for toy inferences was significant, F(2,108)=61.78, p<.001. Children were able to make inferences based on sex-typed toy interests in the absence of gender information. Specifically, children indicated target children would be most interested in the same toys as presented in the original statement (M=2.70), moderately interested in consistent toys (M=2.25), and least interested in inconsistent toys (M=2.06). Planned comparisons of means revealed significant differences among
all toy inference rating scores; same toy scores were significantly higher than both consistent toy scores, \( t(55)=9.37, \ p<.0001 \), and inconsistent toy scores, \( t(55)=9.02, \ p<.0001 \), and consistent toy scores were significantly higher than inconsistent toy scores, \( t(55)=3.55, \ p<.001 \).

The main effect for toy inferences was subsumed by a significant three-factor interaction of sex of subject by toy type by toy inferences, \( F(2,108)=15.16, \ p<.001 \). Simple effects analyses revealed a significant toy type by toy inferences effect for both boys, \( F(2,58)=9.45, \ p<.001 \), and girls, \( F(2,50)=6.24, \ p<.004 \). As can be seen in Figure 1,

Insert Figure 1 about here.

for boys' toy inferences about masculine toys, a Newman-Keuls analysis revealed that while boys thought target children would not significantly differ in their interest for same and consistent toys, boys did think that target children would be significantly more interested in both same and consistent toys than inconsistent toys (\( p<.01 \) for both comparisons). For feminine toy types, however, boys predicted target children would not significantly differ in their interest for consistent and inconsistent toys, although they thought same toys would differ from both consistent (\( p<.01 \)) and inconsistent toys (\( p<.06 \)). Conversely, as can be seen in
Figure 2, for toy inferences about masculine toys,

Insert Figure 2 about here.

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girls predicted target children would not significantly differ in their interest for consistent and inconsistent toys, and would prefer same toys to both \( (p<.01) \). However, for feminine toys, a Newman-Keuls analysis revealed that girls thought target children would be significantly more interested in consistent toys than inconsistent toys \( (p<.01) \), as well as more interested in same than both consistent \( (p<.01) \) and inconsistent toys \( (p<.001) \).

Another way to interpret the pattern of findings for the three factor interaction is to consider toy types as being either consistent or inconsistent with the sex of the child being tested (instead of toy types being masculine or feminine). Using this approach, the interaction can be interpreted as both boys and girls attributing a similar pattern of interests to the target children. First, boys and girls both attributed high interest to same toys (whether consistent or inconsistent with their sex). Further, when children rated toys consistent with their own sex (i.e., masculine toys rated by boys and feminine toys rated by girls), both sexes rated consistent toys as having
significantly higher interest for the target child than inconsistent toys. However, when children rated toys inconsistent with their own sex (i.e., feminine toys rated by boys and masculine toys rated by girls), both sexes rated consistent and inconsistent toys as having equal interest for the target child, and this interest was rated as significantly lower than for same toys.

**Stereotyping Scores**

Scores on the stereotyping measure indicated children had high stereotyping knowledge of the 16 toys presented in the two testing sessions ($M=12.78$). Only five children answered 50 percent or more of the questions "incorrectly" (i.e., indicating they did not correctly attribute the sex-typing of the toys). The stereotyping measure, therefore, was not used in the central analysis of the toy inferences task.

An analysis was done to determine whether individual differences in stereotyping influenced toy inference ratings. Using scores on a total of 16 toys, a cut-off score of 12 or more was used to indicate high stereotyping knowledge, and less than 12 to indicate low stereotyping knowledge, ($^2$ (1)=$4.0$, $p<.05$). Toy inference rating scores were dependent measures in a repeated measures analysis of variance (see Appendix F), with two between subjects' factors, sex (boys,
girls) and stereotyping knowledge (high, low), and three within subjects' factors, conditions (single interests, multiple interests without pictures, multiple interests with pictures), toy types (masculine, feminine) and toy inferences (same, consistent, inconsistent).

In addition to the three significant effects found in the original analysis of variance, a significant two-factor interaction of stereotyping knowledge by toy inferences was found, \( F(2,104)=4.43, \quad p<.014 \). For children with high stereotyping knowledge, significant differences among all means for toy inference rating scores were found. As predicted, children with high knowledge of stereotyped toys were able to use individuating toy interests when making toy inferences about a gender unspecified target child. Specifically, planned comparisons showed that scores for same toys (M=2.81) were higher than scores for consistent (M=2.30) toys, \( t(38)=12.57, \quad p<.0001 \), scores for same toys were higher than for inconsistent (M=2.06) toys, \( t(38)=9.32, \quad p<.0001 \), and, most important, scores for consistent toys were higher than for inconsistent toys, \( t(38)=3.13, \quad p<.003 \). For children with low stereotyping knowledge, however, no significant difference was found between consistent (M=2.19) and inconsistent (M=2.07) mean toy inference rating scores. As expected, children with low stereotyping knowledge did not use toy interests to make inferences about a gender unspecified target.
child. Children with low stereotyping knowledge did, however, rate same toys ($M=2.44$) significantly higher than consistent toys ($M=2.19$), $t(16) = 2.16, p < .05$, and inconsistent toys ($M=2.07$), $t(16) = 3.11, p < .007$.

The significant stereotyping knowledge by toy inferences interaction subsumed a significant main effect for stereotyping knowledge, $F(1,52) = 5.73, p < .02$. Children with high stereotyping knowledge attributed to target children higher interest in toys ($M=2.39$) than children with low stereotyping knowledge ($M=2.23$). A post hoc examination of the stereotyping knowledge by toy inferences interaction revealed that this main effect was due to high stereotyping knowledge children attributing higher toy inference rating scores respectively to same and consistent ($M=2.81$, $M=2.30$) toys than did the low stereotyping knowledge children ($M=2.44$, $M=2.19$), whereas scores for inconsistent toys were the same for high ($M=2.06$) and low ($M=2.07$) stereotyping knowledge children. In other words, only same and consistent toy inference rating scores were affected by high and low stereotyping knowledge; scores on inconsistent toy inference ratings were not affected. Furthermore, high stereotyping knowledge children attributed a greater difference between same and consistent scores (difference=.51) than did low stereotyping knowledge children (difference=.25).
Scores for "flexibility" in stereotyping knowledge were also computed from the stereotyping measure. The number of toys children first thought both boys and girls would most like to play with were individually summed for each child. These "flexibility" scores resulted in a maximum score of seven toys out of 16 first answered as being liked by both boys and girls (M=3.93, median=4.00). A median split was then used to divide children into groups with high and low "flexibility" in stereotyping knowledge. The "flexibility" scores were incorporated into planned t-tests for differences between mean toy inference rating scores across conditions and toy inferences. Across conditions, differences between all means were nonsignificant; children's high or low "flexibility" scores had no effect on toy inference ratings. Across toy inferences, differences between all means were significant. Again, toy inference ratings were not differentially affected by high or low "flexibility". It was concluded therefore that "flexibility" in stereotyped knowledge of toys had no apparent effect on children's toy inference ratings across conditions or toy inferences.

Preference Scores

Analysis of children's toy preferences showed that children strongly preferred same-sex toys over toys for the other sex. Specifically, for the two masculine toys (cars,
train engines) and the two feminine toys (dolls, sewing machines) used in the toy inference ratings, boys preferred masculine toys ($M = 2.40$) more than feminine toys ($M = 1.80$), $t(29) = 3.60$, $p < .001$, and girls preferred feminine toys ($M = 2.44$) more than masculine toys ($M = 2.02$), $t(25) = -2.36$, $p < .026$.

Further, comparison of means for all masculine toys with all feminine toys revealed that boys preferred masculine toys most, $t(29) = 5.31$, $p < .0001$, and girls preferred feminine toys most, $t(25) = -5.48$, $p < .0001$.

During testing of the toy inferences task, children's spontaneous remarks about the gender of target children were recorded. Three girls and four boys mentioned gender. For example, when the experimenter said, "I know a child who really likes to play with a purse and comb set a lot and also with a doll house a lot.\" two girls and one boy asked if the target child was a girl (the experimenter answered that she did not know and repeated the statement). Also, when the experimenter said she knew a child who liked to play with a tool kit a lot and also with an airplane a lot, two boys spontaneously remarked, "That's a boy.\" All seven gender remarks "correctly" identified the gender of the target child who would traditionally be associated with the sex-typed toy (e.g., purse and comb sets are associated with girls, and tool kits are associated with boys).
DISCUSSION

Inferences Across Toy Inference Ratings

As expected, children were able to make inferences based on targets' interests in the absence of gender labels. Young children used sex-typed toy interests to make inferences about targets' future toy interests, without knowledge of targets' gender. Specifically, across all conditions, boys and girls said targets would be most interested in the same toys as stated in the stories, moderately interested in toys consistent with the traditional sex-typing of the toys stated in the stories, and least interested in toys inconsistent with the traditional sex-typing of the toys stated in the stories. For example, if a target was said to be interested in make-up kits, children predicted that in the future the target would be most interested in make-up kits, moderately interested in dolls and sewing machines, and least interested in cars and train engines.

In addition, the division of children into high and low stereotyping knowledge revealed significant differences in ability to make inferences based on interests. As expected, children with low knowledge of stereotypes did not rate consistent and inconsistent toys as significantly different, while children with high knowledge of stereotypes did rate them differently. Consequently, only children with high knowledge of gender stereotypes were able to make judgments...
based on masculine or feminine interests.

Although children were able to make predictions based on sex-typed interests, this effect occurred selectively. That is, boys made toy predictions based on targets' interests in masculine toys, while their predictions based on targets' interests in feminine toys were less clear. Conversely, girls made toy predictions based on targets' interests in feminine toys, while their predictions based on targets' interests in masculine toys were also not as clear. Thus, children appear to be sure about the toy interests of a target child who is said to be interested in toys consistent with their own sex; they attribute to the target child highest interest in toys identical to the target's stated toy interest, moderate interest in toys consistent with the stated toy interest, and least interest in toys inconsistent with the stated toy interest. This understanding does not hold for statements where targets are said to be interested in toys inconsistent with the sex of the child being tested. In these cases, while children still understand the relation between stated toy interests and identical toys, they seem unsure about the other toy interests and so the target child is attributed equal interest in consistent and inconsistent toys.

One could argue that these results indicate children are responding egocentrically. That is, children may not be
taking the position of targets to infer their perspective, but instead be relying on their own perspective. This inability to consider, at the same time, both the other person's point of view as well as one's own is common before the age of six (see Flavell, 1977). Children's toy preferences were assessed in the present study and an analysis of these preferences showed that children strongly preferred same-sex toys. A pattern of egocentric responses, therefore, would entail that children attribute highest interest to toys consistent with their own sex across same, consistent and inconsistent toy ratings regardless of the targets' stated interests. Specifically, across all toy inference ratings, boys responding egocentrically would attribute higher interest to masculine toys than feminine toys, and girls responding egocentrically would attribute higher interest to feminine toys than masculine toys.

This gender-based egocentric pattern was not evident in the present results. First, for inferences about same toys, both boys and girls did not attribute highest interest to same-sex toys. Instead, children attributed highest interest to the same toy as the target's original stated interest. For example, where the target's stated interest was a feminine sex-typed toy, boys attributed highest interest to the same feminine toy, and not to other feminine or masculine toys.
However, if boys were egocentric they would attribute low interest to the same feminine toy. So for inferences about same toys, it appears children did not base responses on their own perspective.

Secondly, for inferences for which targets' stated interests were inconsistent with the sex of the child being tested (i.e., for girls, a target interested in masculine toys and for boys, a target interested in feminine toys), children attributed very similar, if not identical, interest scores to both masculine and feminine toys. However, if children were responding in an egocentric manner they would attribute higher interest to same-sex toys.

Finally, if toy inference scores are considered in terms of whether children made ratings specifically on masculine or feminine toys, instead of whether children made ratings on toys consistent or inconsistent with the targets' previously stated toy interests, it is again evident that children are not responding egocentrically. Specifically, as expected, a trend is evident for girls and boys both to rate masculine toys higher when targets' stated interests are masculine than when targets' stated interests are feminine. Similarly, as expected girls and boys both show a trend to rate feminine toys higher when targets' stated interests are feminine than when targets' stated interests are masculine. These differences between ratings on masculine toys and between
ratings on feminine toys, across masculine and feminine toy types, were not always significant. However, a trend is evident in the expected direction which suggests children are not egocentric.

In sum, these results do not fit an egocentric response pattern. Children's responses were not based on their own perspective for either same toy ratings or for ratings on toys where targets' interests are inconsistent with their own sex, so it cannot be said that children in this study are responding egocentrically.

How then can children's tendency to use interests selectively be explained? Children appeared to have difficulty making stereotype-based inferences about a target child with interests unlike their own while clearly making stereotype-based inferences for a target child with interests like their own. Perhaps the most parsimonious explanation for this finding is that children have less knowledge about the sex stereotypes associated with the opposite sex than for their own sex (Martin & Halverson, 1981). That is, although children appear to learn equally well the association between both gender groups and activities, their indepth knowledge about stereotypes may be selective. Perhaps children learn more about the activities and interests traditionally associated with their own sex than for those traditionally
associated with the other sex. Empirical evidence for such selectivity in sex stereotyping knowledge has been found with children's knowledge of toys (Halverson & Martin, 1985) and novel objects (Bradbard, Martin, Endsley, & Halverson, in press). In those studies, children showed more detailed knowledge about toys labeled for their own sex than toys labeled for the other sex. Similarly, children in this study may have had detailed knowledge about toy interests consistent with their sex but insufficient knowledge about interests inconsistent with their sex. More specifically, children may lack knowledge of the associative network for stereotyped components not associated with their own sex (see Deaux & Lewis, 1984). So for example, girls may not understand how footballs, cars, and train engines are linked within the component of masculinity (i.e., one interest linked to another interest). In this way, children would exhibit confusion when trying to make inferences when given only information about interests inconsistent with their own sex. As a result, children would not be able to make clear predictions of that target's future toy interests. Conversely, having detailed knowledge of the relations among toy interests consistent with their own sex, children would be able to make clear inferences based on the target's interests.
Implications for Previous Studies

The results indicating children were able to make interest-based judgments in the absence of gender are particularly significant given that in previous studies (Berndt & Heller, 1986; Martin, 1985; Zucker et al., 1985), where gender information was available, young children based their inferences on gender rather than individual interests. In contrast, older children and adults under the same or similar circumstances based their inferences more on individuating information (Berndt & Heller, 1986; Deaux & Lewis, 1984; Locksley et al., 1980; Martin, 1985; Zucker et al., 1985). The reasons for young children and older children using information differently when making social judgments had not been clearly understood in these studies. Did young children rely solely on gender information because they did not see interests as predictive or did gender information for some reason overpower other, even more relevant, information?

Results from the present study provide evidence that aids in answering why young children relied on gender instead of individuating information to make inferences in previous studies. The results show that when gender labels are not present young children will, in some cases, use sex-typed interests to make social judgments. Interests, therefore, are not too abstract for use by young children in making predictions about others. Neither do children assume that an
individual's interests vary across time. Evidence for this assertion comes from children attributing to targets a high interest in toys previously stated as being of interest to the target. In other words, in the present study, all children understood that if a target was said to like airplanes that the target would also like airplanes in the future. Correct attributions in this example are significant since they suggest that children recognize stability of interests across time. Children's perception of the stability of interests is important since it is thought that consistency of dispositions across time (and situations) is related to an increase in their value as a basis for predictions (Rholes & Ruble, 1984). That is, if children assumed interests varied across time, then they would see no predictive value to using individuating information. However, since children in the present study made predictions about a specific toy to the same toy it indicates children understand that an individual's interests can be stable. These findings are supportive of results from previous studies. Heller and Berndt (1981) and Rholes and Ruble (1984) have found that five to six year olds as well as children of about eight years expect stability of behavior across time.

Another proposed explanation for why young children appear not to find interests predictive in previous studies
was that young children possibly are unable to generalize from specific stereotypic interests to broader categories (Martin, 1985). For example, while adults predict that people (regardless of gender) who behaved assertively in the past will perform other "masculine" behaviors in the future (Locksley et al., 1980), it was suggested that young children perhaps are unable to infer such broad traits from a few specific behaviors or interests. If young children are unwilling or unable to make such generalizations, Martin proposed that gender would necessarily direct their inferences. However, results from the present study provide evidence that young children are able to generalize from specific gender-related interests to broader categories, at least when those interests are consistent with own-sex stereotypes. For example, when children were told of a target's interest in a purse and comb set, they were willing to infer that the target would be most interested in other "feminine" interests, such as, dolls and sewing machines, and least interested in "masculine" interests, such as, cars and train engines.

In reference to young children's use of information in previous studies, the explanation remains incomplete as to why young children, unlike older children and adults, ignored interests when gender labels were available. Results from the present study have added an important piece of information
to this puzzle: young children are able to make inferences based on interests when gender labels are absent. So if interests as well as gender labels are both predictive for young children, why are interests ignored when gender labels are present? Perhaps, as suggested earlier, this could be explained partly as a general cognitive processing constraint. Young children may base inferences on only one piece of information due to constraints on their ability to integrate multiple pieces of information at the same time. This integration problem has been demonstrated in earlier research. When multiple pieces of information are available, young children tend to rely on one piece of information whereas older children tend to use the full range of available information (see Higgins, 1981). Nevertheless, cognitive processing constraints fail to explain why young children consistently prefer gender labels over the more relevant individuating interest information. That is, if young children's use of information is completely determined by integration constraints, we would not expect a preference for one type of information over another. So while cognitive constraints may help explain how much information is used, they do not help explain which piece of information is preferred. Perhaps preference for one type of information over another is determined by perceived salience. Young
children may not use individuating interests because gender may be perceived as a more salient and important stereotype or schema for them (Martin & Halverson, 1981).

One reason young children may find gender labels so salient and important is because their gender schemas are undifferentiated or not fully developed. According to Kohlberg's (1966) cognitive developmental theory, children under seven years may fail to recognize the diversity of male and female behaviors, interests and traits. Martin (1985) refers to this thinking as "gender-centric" or the failure to recognize variability within gender groups. Similarly, this thinking could be classified as a lack of "flexibility" in knowledge of sex stereotypes and schemas (see Maccoby, 1980). For example, young children may not differentiate between boys who like "boys" things and boys who like "girls" things. Consequently, if these children are told that a boy likes dolls, they would ignore this individuating information since it would be inconsistent with their gender schema, and rigidly process inferences about that boy on the basis of gender. Once children's schemas become more flexible and they recognize that some boys like "girls" things, they may find it easier to process inferences about a boy on the basis of individual interests. For example, they may predict that a boy who likes dolls would be interested in other "girls" things. In this case, paying attention to individual
interests would be consistent with a more flexible schema. Therefore, for children possessing "flexibility" in stereotyping knowledge, gender may not overpower more relevant information such as individual interests because these interests are no longer inconsistent with their gender schema. Conversely, for children not possessing flexibility in stereotyping knowledge, gender information may be rigidly adhered to because individuating interests may be inconsistent with their gender schema.

Post hoc analyses of the predictions children made when both gender and interest information were available (i.e., the replication task) support this proposal concerning young children's rigid gender schemas. As expected, for children low in flexibility in stereotyping knowledge (i.e., children who first rated one to three out of 16 toys as being most liked by both boys and girls), gender strongly overpowered interest information. Specifically, scores for inferences based on gender (M=2.63) were significantly higher than those for inferences based on previously stated interests (M=1.97), (p<.007). For children high in flexibility in stereotyping knowledge (i.e., children who first rated four to seven out of 16 toys as being most liked by both boys and girls), scores for inferences based on gender (M=2.39) were also significantly higher than those for inferences based on
interests (M=1.96), (p<.03). However, it is interesting that the differences in scores between gender and interests were smaller for high flexibility children than for low flexibility children. This was due to high flexibility children attributing lower scores to inferences based on gender. In other words, for high flexibility children, gender still overpowers interests but by a smaller margin than for low flexibility children. These findings, therefore, show a trend consistent with the proposal that for low flexibility children, gender is most likely to be used because interests are inconsistent with a rigid schema, while for high flexibility children, gender is less likely to be used because interests are consistent with a more flexible schema.

Perhaps in the present study gender information rather than interests was still used more by children with "high" flexibility because their flexibility scores were not really high. That is, the median split used to separate low from high scoring children resulted in scores between four and seven out of 16 being labeled as "high" flexibility. Possibly older children with truly high flexibility scores (e.g., scores of 12 or more out of 16) would be less likely to use gender information, and would rely more on interest information. This suggestion is consistent with Kohlberg's theory (1966), in asserting that with the development of concrete operational thinking, children are more ready to
understand that sex stereotypes are flexible, and that males and females can share attributes. Empirical evidence supports the idea that stereotypes become more flexible with age; children older than seven years are more aware than children under seven years of exceptions in sex stereotypes. Children over seven years understand that activities and interests can be classified as equally appropriate for both sexes (see Huston, 1983; Leahy & Shirk, 1984). In future research it would be interesting to investigate whether greater flexibility in stereotyping knowledge is related to the tendency to use individuating interests when making inferences about others.

Under conditions in which gender information is not present, as in the toy inference task in the present study, children both flexible and inflexible in knowledge of sex-stereotypic behaviors should not have problems predicting interests from a specific interest (given that they believe interests have predictive value) since there would be no gender information that would be inconsistent with the interest information. Results from the present study support this proposal. Scores for flexibility in stereotyping knowledge of toys were not related to children's toy inferences; all highly stereotyped children found predictive value in individual sex-typed toy interests.
Inferences Across Conditions

Contrary to prediction, children were not influenced by manipulations of the salience of toy interests. This result emphasizes the significance of the central finding that children are able to base predictions on sex-typed interests; a target's stated interest in only one toy with no pictures shown is sufficient information for children to make inferences. Multiple interests without pictures and multiple interests with pictures did not, as expected, increase children's reliance on sex-typed interests when making predictions. In fact, multiple interests may have decreased girls' reliance on sex-typed interests. That is, girls attributed significantly higher mean toy inference rating scores across the single interest conditions than across either the multiple interests without pictures or the multiple interests with pictures conditions. In contrast, boys attributed to target children an equal interest in toys across all conditions. It is not clear why girls attributed higher inference rating scores to the single interest conditions.

In summary, the results have aided in explaining findings from previous studies, and in providing further insight into young children's understanding of sex stereotypes and their
effects on impression formation. The results indicate that when gender labels are not available, young children, in some cases, are able to make inferences based on sex-typed interests. This suggests not only that interests are not too abstract for young children, but that young children are able to make generalizations from specific sex-typed interests to broader categories. In this case, it is apparent that in previous studies, when gender labels were available, gender must have overpowered interest information for young children, but not for older children and adults. Consequently, age differences in the salience and importance of gender and individuating information when forming impressions about others are evident. That is, with age the salience of gender decreases while the salience of individuating information increases. Further study into the reasons for children's reliance on gender even when they are able to use individuating interests should increase our understanding of the development of gender stereotypes and their effects on person perception.
FIGURE 1: Boys' mean toy inference ratings
FIGURE 2: Girls' mean toy inference ratings
Footnotes

1 Means for same, gender consistent and interest consistent toy ratings were summed across the four replication stories. Since half of the subjects were tested with only one story and the other half were tested with four stories, this meant a decrease in subjects by 50%. However, when t-tests for rating scores were individually computed for each story it was found that differences between all means (except as expected between same & gender consistent toys) were significant at at least the .03 level.

2 An analysis of variance selecting for children whose ages ranged between 43.0 and 73.0 months was also calculated since this age range was the most accurate match to Martin's (1985) young children. This meant dropping six children between 38.5 and 43.0 months from the present study. The results of this analysis did not reveal significant effects different from the analysis using all ages. Selecting for different ages was therefore not used in any further data analysis; results are reported only from the analysis using all ages.

3 For the stereotype measure, children were tested with unequal numbers of toys (due to unequal stories in testing of the replication task). Therefore, to equalize childrens' toy ratings when calculating the stereotype scores, two toys were randomly dropped from analysis. This resulted in a total of 16 instead of 18 toys.
BIBLIOGRAPHY


APPENDIX A

TOY INFERENCE TASK

SINGLE INTERESTS (No Pictures)

FEMININE

I know a child who likes to play with a purse & comb set a lot. How much would this child like to play with these other toys?

S purse & comb set
C doll
sewing machine
Inc car
train engine

MASCULINE

I know a child who likes to play with a tool set a lot. How much would this child like to play with these other toys?

S tool set
C car
train engine
Inc doll
sewing machine
TOY INFERENCE TASK

MULTIPLE INTERESTS (No Pictures)

FEMININE

I know a child who likes to play with a make-up kit a lot. doll & crib

How much would this child like to play with these other toys?

S make-up kit
        -------

doll & crib
        -------

C doll
        -------

sewing machine
        -------

Inc car
        -------

train engine
        -------

MASCULINE

I know a child who likes to play with army tank a lot. motor bikes

How much would this child like to play with these other toys?

S army tank
        -------

motor bikes
        -------

C car
        -------

train engine
        -------

Inc doll
        -------

sewing machine
        -------
TOY INFERENCE TASK

MULTIPLE INTERESTS (With Pictures)

FEMININE

I know a child who likes to play with doll clothes a lot. tea set with tray

How much would this child like to play with these other toys?

S  doll clothes ---
tea set with tray ---
C  doll ---
sewing machine ---
Inc car ---
train engine ---

--------------------------------------------------------------------------------

MASCULINE

I know a child who likes to play with trucks a lot. G.I.Joe Soldiers

How much would this child like to play with these other toys?

S  truck ---
G.I.Joe soldiers ---
C  car ---
train engine ---
Inc doll ---
sewing machine ---
APPENDIX B

REPLICATION TASK

1. Here is a picture of a boy named Larry. Larry is ___ years old and he was born in Vancouver. Larry's best friend is a girl. Larry likes to play with an iron and an ironing board.

Show me how much Larry would like to play with ....

(gender)   a car          -------
           train engine     -------
(interest) doll          -------
                       sewing machine  -------
(same)      iron & ironing board  -------

2. Here is a picture of a girl named Susie. Susie is ___ years old and has a pet dog. Susie's best friend is a boy. Susie likes to play with airplanes.

Show me how much Susie would like to play with ...

(gender)   doll          -------
           sewing machine  -------
(interest) car          -------
                       train engine  -------
(same)      airplane      -------
3. Here is a picture of a boy named Jason. Jason is ___ years old and he was born in Vancouver. Jason's best friend is a girl. Jason likes to play with make-up kits.

Show me how much Jason would like to play with ...

(gender) doll
sewing machine
(interest) car
train engine
(same) baseball

4. Here is a picture of a girl named Cathy. Cathy is ___ years old and she has a pet dog. Cathy's best friend is a boy. Cathy likes to play baseball.

Show me how much Cathy would like to play with ...

(gender) doll
sewing machine
(interest) car
train engine
(same) baseball
APPENDIX C

STEREOTYPE MEASURE

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APPENDIX D

PREFERENCE MEASURE

1. TRUCK
2. DOLL CLOTHES
3. ARMY TANK
4. PURSE & COMB SET
5. SEWING MACHINE
6. TRAIN ENGINE
7. DOLL
8. CARS
9. MAKE-UP KIT
10. MOTOR BIKE
11. TEA SET WITH TRAY
12. DOLL & CRIB
13. AIRPLANE
14. G.I.JOE SOLDIER
15. DOLL HOUSE
16. TOOL KIT
17. IRON & IRONING BOARD
18. BASEBALL
APPENDIX E

REPEATED MEASURES ANALYSIS OF VARIANCE

BETWEEN SUBJECT FACTORS ARE:

A - SEX: 1 boys, 2 girls

WITHIN SUBJECT FACTORS ARE:

B - CONDITIONS: 1 single interest, 2 multiple interests, 3 multiple interests with pictures

C - TOY TYPE: 1 masculine, 2 feminine

D - RATINGS: 1 same, 2 consistent, 3 inconsistent

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APPENDIX F
REPEATED MEASURES ANALYSIS OF VARIANCE

BETWEEN SUBJECT FACTORS ARE:

A - SEX: 1 boys, 2 girls

B - STEREOTYPE KNOWLEDGE 1 low stereotype, 2 high stereotype

WITHIN SUBJECT FACTORS ARE:

C - CONDITIONS: 1 single interest, 2 multiple interests, 3 multiple interests with pictures

D - TOY TYPE: 1 masculine, 2 feminine

E - RATINGS: 1 same, 2 consistent, 3 inconsistent

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