

Children's Gender-Based Reasoning about Toys

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MARTIN, CAROL LYNN; EISENBUD, LISA; and ROSE, HILARY. *Children's Gender-Based Reasoning about Toys*. CHILD DEVELOPMENT, 1995, 66, 1453-1471. The goal of these studies was to investigate how preschool children use gender-based reasoning in making judgments about toy preferences for themselves and for others. In Studies 1 and 2, children ($n = 22$, $n = 71$) were shown unfamiliar, non-sex-typed toys and asked to rate how much they, other girls, and other boys would like each toy. As expected, children made gender-based inferences: "What I like, children of my sex will also like, and children of the other sex will not like." Study 3 was designed to assess how children use gender-based reasoning to make decisions about attractive and unattractive toys when they are given gender labels. Children ($n = 91$) were shown unfamiliar toys varying in attractiveness that were given explicit gender labels (e.g., "this is a toy girls really like") or no label. With a different experimenter (to avoid demand characteristics), children rated their own and others' liking of the toys. Children used gender labels to guide their own preferences and their expectations for others. Even with very attractive toys, children liked toys less if they were labeled as being for the other sex, and expected other girls and boys to do the same. The role of gender-based reasoning in cognitive theories of gender and on children's play preferences is discussed.

In some situations, children have access to explicit gender-related knowledge (e.g., they may have been told that boys like to play with trucks), but in other situations, they do not. The goal of the present studies was to investigate children's use of gender-based inferences in reasoning about toy preferences for themselves, for other girls, and for other boys, in both kinds of situations. In studies 1 and 2, we explored whether children would make gender-based inferences when asked to make judgments about their own and others' liking of toys in the situation in which they had no prior knowledge of the sex-typing of the toys. Study 3 was designed to explore children's use of gender-based reasoning to make judgments about their own and others' liking of toys when they were given explicit information about the sex-typing of toys.

Children's Toy Choices

A consistent finding in the developmental literature is that children prefer toys

traditionally stereotyped for their own sex more than toys stereotyped for the other sex. Sex-typed toy preferences have been apparent in studies of children's play (Eisenberg, Murray, & Hite, 1982; Fein, Johnson, Kosson, Stork, & Wasserman, 1975; Goldman, Smith, & Keller, 1982), and when children have been asked to select favorite toys for themselves or for others (Bradbard, 1985; Bradbard & Parkman, 1983; Goldman et al., 1982; Robinson & Morris, 1986; Ross & Ross, 1972).

One consequence of children selecting own-sex-stereotyped toys is that it limits their experiences (Bem, 1975). Different types of toys encourage distinctly different types of play and learning (Connor & Serbin, 1977; O'Brien & Huston, 1983; Serbin & Connor, 1979). Thus, it is important that we understand more fully how children make decisions about what they want to play with. And, because children also influence their peers' toy choices through their reactions to

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them (e.g., Fagot, 1977; Langlois & Downs, 1980), we also need to investigate how children determine the toys they consider to be appropriate for others.

Reasoning about Sex-Typed Toys

Cognitive theories of gender-role acquisition are based on the idea that children socialize themselves into gender roles. Gender stereotypes provide children with normative information about how each sex should look, act, and think, according to cultural beliefs (Kohlberg, 1966; Martin & Halverson, 1981). One way to communicate these cultural gender stereotypes to children is by explicit gender labeling of objects and activities (e.g., "boys like to play with cars") through television, books, peers, and adults.

According to Martin and Halverson's (1981) cognitive approach, children use gender to reason about toys following a specific pattern. First, they decide if the toy is "for boys" or "for girls," drawing on their pre-existing beliefs about which toys are typically liked by girls and which toys are typically liked by boys. Then, they compare their answer about who usually likes the toy to their knowledge of which sex they are. For instance, a girl will reason that a doll is something girls usually like, I am a girl, therefore I will probably like to play with the doll. In some situations, this kind of reasoning may become so well learned that it is done virtually automatically.

In most studies of toy preference, the influence of gender labels has been inferred from children's behavior. The problem is that in these studies, children's familiarity with toys and their prior reinforcement histories with them, rather than gender labels, may be accounting for their behavior. For this reason, the ideal method for assessing the effects of gender labels involves using novel objects or toys given arbitrary sex-typed labels ("this is a toy girls like"). Because novel toys have not been previously associated with either sex, girls and boys do not have differential exposure to or experience with them (Bradbard & Endsley, 1983).

Labeling toys as being for girls or for boys influences children's behavior in a number of ways. First, children's exploration of toys varies depending on how a toy is labeled. Children tend to explore same-sex-labeled toys more than other-sex-labeled toys (Bradbard & Endsley, 1983; Bradbard, Martin, Endsley, & Halverson, 1986). Labels also influence children's performance on games. When a novel game is labeled as be-

ing for their own sex, children perform better than when a game is labeled as being for both sexes, and much better than when it is labeled as being for the other sex (Montemayor, 1974). Recall of information also is influenced by gender labels. Children better remember the names of objects labeled as being for their own sex than names of objects labeled as being for the other sex (Bradbard & Endsley, 1983; Bradbard et al., 1986).

Reasoning about Novel Toys

Once children learn gender labels, their behavior often changes so that it matches stereotypic expectations. However, what happens when children are asked to make toy choices when the sex-typing of a toy is unknown? Presumably their toy choices would be affected by the perceived attractiveness of the toy. The interesting situation to consider is children's reasoning if they then are asked to make judgments about toy choices for other girls and for other boys. In this case, there are two likely patterns of responses. One pattern, an egocentric pattern, would involve children using their own opinion about how attractive a toy is as the only criterion for making judgments about all other children's interest in the toy. In other words, a child could reason, "I like this toy (because it is attractive); therefore other girls and other boys also would like this toy."

The other pattern, a gender-based or "gender-centric" pattern, would involve children drawing inferences based on their own liking of toys combined with their beliefs about boys and girls. For example, a girl might reason, "I like this toy (because it is attractive); therefore other girls would like it and other boys would not like it" (see Fig. 1). This pattern involves the same information sources as in the examples presented by Martin and Halverson (1981), although the order of use of the information is somewhat different. In this case, even without explicit gender labels, the girl may be relying on an underlying abstract theory of gender group differences, thereby inferring that because she likes a toy, children of the other sex might not like the toy. Furthermore, she also may be relying on an abstract theory of within-group similarity, thereby inferring that because she likes the toy, children of the same sex also might like the toy.

The literature on conceptual development provides insights into why children might form such theories about gender groups. Theories underlying categories pro-

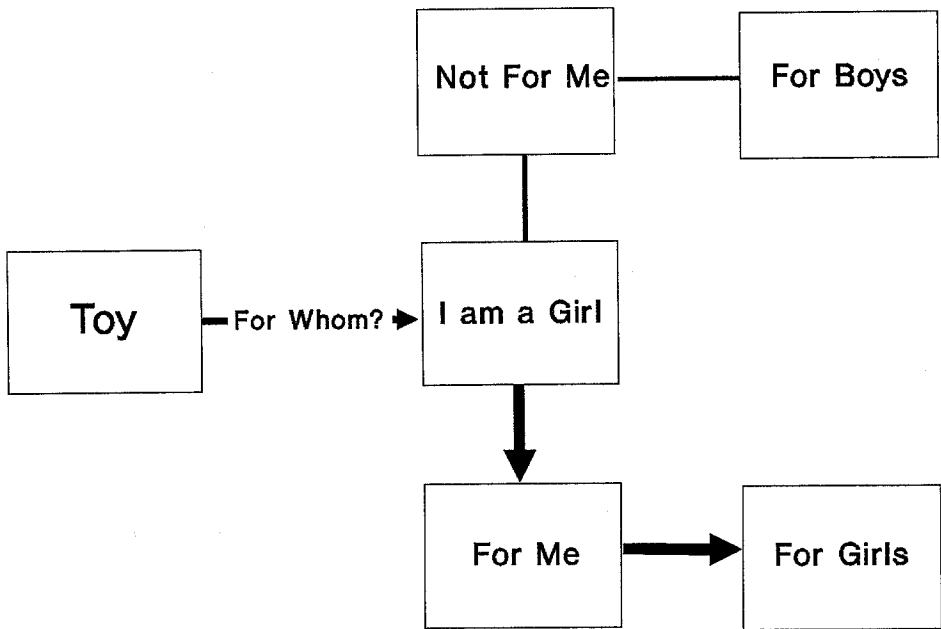


FIG. 1.—Children's reasoning about novel toys

vide conceptual coherence to categories, even when group members seem to be dissimilar (Medin, 1989). These implicit theories are based on assumptions that category members share deeper properties, or essences (Gelman, 1989; Gelman & Markman, 1986, 1987; Medin, 1989). Because group members share a category label, perceivers assume that they also share other properties. For instance, after being taught a novel characteristic about boys, children assume that an unfamiliar boy also will have the characteristic, even if he doesn't look like the other boys (Gelman, Collman, & Maccoby, 1986).

Overview

In the first two studies, we examined children's reasoning about toys when they had no explicit gender labels to provide information about the sex-typing of the toys. To do this, children were asked to make judgments about how much they and other children would like a group of novel, non-sex-typed toys. We expected to find that children would use gender-based reasoning to help them make judgments about toy choices for others because they assume a common essence underlying the gender categories.

In the third study, we explored the influence of explicit gender knowledge (i.e., gender labels) on children's judgments of how much they and other children would

like a group of unfamiliar toys that varied in attractiveness. We were particularly interested in investigating the kind of situation described by a colleague in which he observed a young boy happily playing with a toy racing car until the helmet of the race car driver fell off, revealing a female with blonde hair. The boy then dropped the car like a "hot potato" (D. B. Carter, personal communication, April 1987). Although researchers have shown that children avoid playing with sex-inappropriate toys (e.g., Frey & Ruble, 1992; Hartup, Moore, & Sager, 1963), the question remains whether gender labels are so powerful that they alter children's desire for unfamiliar and very attractive toys.

Study 1

To examine children's use of gender-based inferences when they do not know the sex-typing of a toy, we simply asked children to make judgments about how much they and others would like a set of unfamiliar, non-sex-typed toys. If children show an ego-centric pattern of responding, we should find that their judgments of how much other girls and boys like the toys will vary with their own liking of the toys. If children show the expected gender-centric pattern, their judgments of how much children of the same sex like the toys should be similar to their

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judgments of how much they like the toys, whereas their judgments of how much children of the other sex like the toys should not match their own preferences.

Method

Subjects.—Twenty-two children (11 boys, 11 girls) ranging in age from 50 to 67 months ($M = 59$ months) participated in the study. Most were Caucasian (77%) and from mixed-sex preschools in middle-class neighborhoods.

Materials.—Because of the importance of using toys that were unfamiliar to the children, we bought unusual toys and toylike objects designed for adults (e.g., magnetic ball sculpture) from toy stores, zoos, and gift shops. We also included six familiar sex-typed objects. Two adult judges made the final selection from this group of 10 “toys” to be used in the study: One sex-typed masculine toy (a transformer) and one sex-typed feminine toy (a doll house) were selected on the basis of being familiar sex-typed toys, and eight objects and toys were selected that were judged to be unfamiliar to most children, interesting, and not sex-typed. The eight novel objects (and the brief labels used for them in the tables) included a magnetic balls and links sculpture (magnet stand), spinning bells on a stand (spinning bells), colored interlocking gears (wonder wheels), metal nail sculpture (pin pressions), prism looking glass (looking glass), colored sand in a thin transparent plastic box (magic hill), colored magnetic puzzle squares (magnetix), and a create-a-creature flip sections book (animal flip book).

A “cup” rating scale was used so children could indicate how much they liked the toys. The scale was made up of Styrofoam cups cut into four heights (5, 4, 3, and 2 inches) and glued upside down from tallest to smallest on a cardboard base. Similar scales have been used in other studies (e.g., Martin, 1989) with children as young as 4 years old.

Procedure.—A female experimenter tested children individually. The experimenter explained that she was interested in finding out how much the children liked different things. The experimenter then showed the children how to use the four-point cup rating scale by using familiar foods until the children could successfully indicate each level of the scale. She explained that when they pointed to the tallest cup, it meant they liked something a lot (scored as a 4); the next tallest cup meant they liked

something pretty much (3); the second shortest cup meant they liked something okay (2); and the shortest cup meant they liked something a little bit (1).

The experimenter then said she wanted to find out how much children like different toys. A toy was randomly selected, brought out of a box, and put on the table. The experimenter demonstrated each toy (when appropriate), then pushed it within reach of the children. Then the children had 30 sec to inspect the toy. When time was up, the experimenter moved the toy out of reach and assessed familiarity by asking if the child had ever seen the toy before. The rating scale was placed in front of the children and they were asked to rate how much they liked the toy (by pointing to the appropriate cup), how much they thought girls would like to play with it, and how much they thought boys would like to play with it (the order of asking about girls or boys varied). The same procedure was repeated for each of the 10 toys.

Results

The familiar sex-typed toys were presented with the unfamiliar toys to allow children to rate and play with familiar toys, but they were not included in any of the analyses. As a manipulation check, sex-typing of the novel toys was assessed by comparing how much girls and boys said they would like each toy. Only one of the unfamiliar toys was found to be sex-typed by the children, and it was dropped from all further analyses (see Table 1). Familiarity ratings (see Table 1) showed that, for the toys selected to be unfamiliar, most children had not seen these toys before (59% to 82%). Because some toys were more familiar than expected, analyses were done both including and excluding these toys.

There are several ways to investigate children's patterns of responses for the toys. We chose the method of analyzing absolute difference scores because it is the most direct way to assess whether children are using a gender-centric pattern. Specifically, the absolute difference between children's own liking of the toys and their predictions for same-sex peers was compared with the absolute difference between their own liking and their predictions for other-sex peers, using t tests. Evidence of a gender-centric pattern would be apparent if the magnitude of difference between the own- and same-sex ratings was smaller than the magnitude of difference between the own- and other-

TABLE 1

GIRLS' AND BOYS' RATINGS OF LIKING AND PERCENTAGE OF CHILDREN WHO ARE UNFAMILIAR WITH THE TOYS: STUDY 1

Toy	Girls	Boys	% Unfamiliar
Magnet stand	3.45	2.82	68
Spinning bells	3.27	3.27	64
Wonder wheels	2.91	3.55	64
Pin pressions	3.09	3.91	59
Looking glass	3.27	3.64	59
Magic hill	3.73	3.91	73
Magnetix	2.64	3.37 ^a	82
Animal flip book	3.00	3.27	82

^a Indicates that girls and boys differed on how much they liked the toy, $p < .05$.

sex ratings. Using simple mean comparisons would also be effective, but given that we were not really interested in mean scores and the crucial comparisons are the self and same-sex versus self and other-sex differences, it is more meaningful to compare directly these differences. Subtracting from a constant score (i.e., own-ratings) is equivalent to a direct comparison of the scores, but by doing the subtraction, we could assess the degree of difference as well.

Analyses of all toys combined.—The magnitude of differences was compared for the novel toys, using all the toys except the one toy that was sex-typed by the children. For each toy, two scores were calculated. First, we calculated the absolute difference between each child's own liking of the toy minus the child's prediction for same-sex peers. Second, we calculated the absolute difference between each child's own liking of the toy minus the child's prediction for other-sex peers. Then these scores were summed across toys. As expected, children used a gender-centric pattern: the absolute difference between children's own liking minus predictions for same-sex peers ($M = 6.95$) was found to be smaller than the absolute difference between children's own liking minus their predictions for other-sex peers ($M = 11.77$), $t(21) = 4.66$, $p < .001$. Analyses of mean scores also confirmed this pattern. Overall, children liked the toys ($M = 3.34$), and they thought that children of the same sex would like the toys more ($M = 3.26$) than children of the other sex ($M = 2.21$).

Because two of the toys were more familiar than we expected, we conducted the same analyses again but removed the scores from the two most familiar toys (the metal sculpture and prism glass toys). The patterns

remained the same: the absolute difference between children's own liking minus predictions for same-sex peers ($M = 4.95$) was smaller than the absolute difference between children's own liking minus their predictions for other-sex peers ($M = 8.23$, $p < .001$).

Individual toy analyses.—The absolute difference method also was used to analyze children's responses to each individual toy. As shown in Table 2, for four of the seven toys, the absolute differences between children's own liking of the toy and their predictions for same-sex peers were significantly smaller than the absolute differences between children's own liking of the toy and their predictions for other-sex peers. For the remaining toys, the differences were in the expected direction. Children's familiarity with the toys did not appear to influence the likelihood of using the gender-centric pattern.

Discussion

The findings suggest that children predicted others' liking of toys using gender-centric patterns. For these novel toys, children's judgments were influenced by gender. Children matched their predictions about others' liking of toys to the sex of the person and their own liking of the toy. For example, if a girl liked a toy, she assumed that others of her own gender group (i.e., girls) would like the toy, and that others not in her gender group (i.e., boys) would not like the toy as much. The pattern was confirmed on individual toys, although the differences were not always significant, probably because of the small size of the sample. Even for these young children, gender appears to be salient, and seems to provide important information for making judgments under conditions of uncertainty.

TABLE 2
CHILDREN'S ABSOLUTE DIFFERENCE SCORES FOR INDIVIDUAL
NOVEL TOYS: STUDY 1

Toy	Own/Same-Sex ^a	Own/Other-Sex ^b	p Value
Magnet stand	1.05	1.41	.30
Spinning bells	1.18	1.32	.70
Wonder wheels	1.14	1.82	.02
Pin pressions .....	.59	1.68	.001
Looking glass	1.41	1.86	.31
Magic hill .....	.73	1.82	.004
Animal flip book .....	.86	1.86	.005

^a Absolute difference score based on children's own liking of toy minus their predictions for same-sex peers.

^b Absolute difference score based on children's own liking of toy minus their predictions for other-sex peers.

Study 2

The goal of Study 2 was to extend the findings from the first study, using a larger sample and more toys. The toys in Study 1 were all interesting and attractive. In Study 2, we wanted to investigate whether children also would use gender-based matching to make predictions for toys that were less attractive than the toys used in Study 1. Also, because the sample size was increased, more sophisticated methods could be used to assess the patterns of children's responses.

Method

Subjects.—The subjects were 71 4- and 5-year-old children (38 males, 33 females; 50–69 months, $M = 58$ months). Most of the children were Caucasian (78%) and from mixed-sex preschools in middle-class neighborhoods.

Materials.—Two adult judges selected 12 toys. Five "toys" were selected on the basis of being unfamiliar and highly attractive, according to the results of Study 1 (spinning bells, magnet stand, looking glass, animal flip book, wonder wheels). Three objects were selected from the set of objects pretested by Bradbard and Endsley (1983) and used in an earlier study (Bradbard et al., 1986). These objects included a metal garlic press (dabble press), a metal shoe shaper (silver shape), and a pizza cutter (pizza cutter). Although these objects are familiar to adults, they have been found to be unfamiliar, moderately attractive, and not sex-typed by young children. Judges also selected two similar objects, a nutcracker and a mellon baller (wonder scoop), believed to be unfamiliar to children. Finally, the judges se-

lected two toys on the basis of their being sex-typed, one sex-typed for females (a Barbie doll) and one sex-typed for males (a "gross face" ball).

Procedure.—Each child was tested individually by a female experimenter. The procedure was identical to the one used in Study 1.

Results

Preliminary analyses were done to ensure that the novel toys (the Barbie doll and gross face ball were not included in any analyses) were unfamiliar, not sex-typed, and that they varied in attractiveness. Only two toys were found to be relatively familiar to the children, the nutcracker and the pizza cutter. Boys and girls said they liked the novel toys about equally, suggesting that they are not sex-typed (see Table 3). Children's own liking of toys was used to verify judges' expectations about attractiveness. The five toys selected by judges as being highly attractive ($M = 3.56$) were rated by the children as being significantly more "liked" than the less attractive toys ($M = 2.41$), $t(68) = 9.99$, $p < .001$.

Analyses of all toys combined.—The major analysis was a repeated-measures ANOVA with two between-subjects factors (sex, age) and two within-subject factors, attractiveness (high, moderate) and target (own liking compared with predictions for same-sex peers, own liking compared with predictions for other-sex peers). The dependent measure was the summed absolute difference score. Specifically, the own liking/same-sex peers score was calculated as the absolute difference between children's own liking for each toy minus their predictions

TABLE 3

GIRLS' AND BOYS' RATINGS OF LIKING AND PERCENTAGE OF CHILDREN WHO WERE UNFAMILIAR WITH THE TOYS: STUDY 2

	Girls	Boys	% Unfamiliar
Highly attractive toys:			
Spinning bells	3.81	3.58	86
Magnet stand	3.27	3.58	75
Looking glass	3.45	3.61	73
Animal flip book	3.55	3.76	82
Wonder wheels	3.59	3.45	78
Moderately attractive toys:			
Dabble press	2.13	2.53	77
Silver shape	1.94	2.18	93
Wonder scoop	2.06	2.47	81
Nut cracker	2.42	2.89	59
Pizza cutter	2.61	2.79	34

of how much same-sex peers would like the toys, summed over toys. Similarly, the own liking/other-sex peers score was calculated as the absolute difference between children's own liking for each toy minus their predictions of how much other-sex peers would like the toys, summed over toys. If children responded using gender-based reasoning, then the target effect should be significant. The target effect was significant, $F(1, 65) = 67.51$, $p < .001$, indicating that the absolute difference between own liking and predictions for same-sex peers ($M = 5.47$) was smaller than the absolute difference between own liking and predictions for other-sex peers ($M = 13.73$). An age effect was also found to be significant, $F(1, 65) = 4.71$, $p < .04$, in which younger children ($M = 5.42$) had larger absolute difference scores than older children ($M = 4.36$). An examination of the mean scores across all toys confirmed the gender-centric pattern in that children's own liking of toys ($M = 2.87$) was more similar to predictions for same-sex children ($M = 2.94$) than to their predictions for other-sex children ($M = 2.35$).

Furthermore, there was a trend for the age \times attractiveness \times target effect, $F(1, 65) = 3.64$, $p < .07$. Simple effects analyses were done for each age group separately. Importantly, both younger and older children showed the expected target effect ($ps < .001$). Although younger and older children showed somewhat different patterns, the attractiveness \times target interaction was not significant for either group (for younger $p = .15$; for older $p = .36$), and so no further simple effects analyses were conducted.

Because two of the toys were more familiar than the rest, t tests were conducted

on the major comparison of interest (target) with and without inclusion of these two toys to indicate whether familiarity with the toys influenced children's responses. In both cases, when the absolute difference scores were compared across toys, the absolute difference between own liking and predictions for same-sex peers was significantly smaller than the absolute difference between own liking and predictions for other-sex peers (both $ps < .001$).

Individual toy analyses.—Because there were differences in the familiarity of the supposedly novel toys, analyses also were conducted separately for each toy. First, a simple comparison was made of children's own liking with their predictions for the other two groups of children (same-sex peers and other-sex peers). For each toy, we calculated the percentage of children who gave themselves and others the same scores versus lower and higher scores. As can be seen in Table 4, about 60% of the children predicted that same-sex others would like the toys equally as much as they liked the toys, regardless of toy attractiveness. In contrast, only 28% (for attractive toys) and 39% (for less attractive toys) of the children predicted that other-sex peers would like the toys equally as much as they liked the toys.

Second, for each toy, the absolute difference scores were calculated as was done before. As shown in Table 5, for each toy, the absolute difference between children's own liking of the toy and their predictions for same-sex peers was significantly smaller than the absolute difference between children's own liking of the toy and their predictions for other-sex peers, $ps < .005$.

TABLE 4

COMPARISON OF THE PERCENTAGE OF CHILDREN WHOSE LIKING OF TOYS WAS THE SAME, HIGHER, AND LOWER THAN THEIR PREDICTIONS FOR PEERS: STUDY 2

COMPARED WITH:	SAME-SEX PEERS			OTHER-SEX PEERS		
	% Lower	% Equal	% Higher	% Lower	% Equal	% Higher
Highly attractive toys:						
Spinning bells	21	73	6	63	31	6
Magnet stand	31	55	14	59	23	18
Looking glass	25	63	11	52	35	13
Animal flip book	29	65	7	72	24	4
Wonder wheels	37	57	6	63	27	10
Mean %	29	63	9	62	28	10
Moderately attractive toys:						
Dabble press	17	56	27	34	36	30
Silver shape	13	59	29	31	29	40
Wonder scoop	13	64	23	39	30	31
Nut cracker	17	63	20	41	27	32
Pizza cutter	14	65	21	42	32	24
Mean %	15	61	24	37	39	31

For the purpose of comparison, in group presentations, 137 undergraduate students (119 women, 18 men) were asked to predict on a 7-point scale how much they and other adult men and women would like one of the objects (the magnetic sculpture) labeled an "adult toy." When the absolute difference score was calculated, the pattern was very similar to children's responses. Specifically, the difference between the students' own liking ratings minus ratings for same-sex peers was significantly smaller ($M = 1.10$)

than the absolute difference between their own liking ratings minus ratings for other-sex peers ($M = 1.86$), $p < .001$. When analyzed separately, both women and men showed this pattern.

Correlational analyses.—Two kinds of correlational analyses were computed. The first correlational analyses involved assessing the relation between children's own liking of the toys and their predictions for same-sex and other-sex peers, with scores

TABLE 5

MEAN ABSOLUTE DIFFERENCES SCORES FOR INDIVIDUAL TOYS AS A FUNCTION OF TOY ATTRACTIVENESS AND TARGET: STUDY 2

	Own/Same-Sex ^a	Own/Other-Sex ^b
Highly attractive toys:		
Spinning bells .....	.40	1.34 ^c
Magnet stand .....	.65	1.45 ^c
Looking glass .....	.56	1.25 ^c
Animal flip book .....	.48	1.49 ^c
Wonder wheels .....	.61	1.49 ^c
Moderately attractive toys:		
Dabble press .....	.66	1.21 ^d
Silver shape .....	.63	1.34 ^c
Wonder scoop .....	.53	1.40 ^c
Nut cracker .....	.55	1.44 ^c
Pizza cutter .....	.48	1.31 ^c

^a Absolute difference score based on children's own liking of toy minus their predictions for same-sex peers.
^b Absolute difference score based on children's own liking of toy minus their predictions for other-sex peers.
^c Difference between scores significant $p < .001$.
^d Difference between scores significant $p < .005$.

summed across all toys. Three summed scores were calculated: children's own liking, children's predictions for same-sex peers, and children's predictions for other-sex peers. The correlations among summed scores showed that children's own liking ratings were highly positively correlated with their predictions for same-sex peers, $r(68) = .73$, $p < .001$, whereas their own liking ratings were unrelated to their predictions for other-sex peers, $r(68) = -.07$. Children's predictions for same- and other-sex peers were in the negative direction, although not significant, $r(68) = -.19$, $p = .13$.

The second correlational analysis involved assessing the relation among the profiles for the toy preference scores for each child individually. Specifically, two p correlations were computed. The first represented the extent to which each child's ratings of how much he or she liked each toy was correlated with the child's predictions of how much girls would like each toy. The second represented the extent to which the child's ratings of how much he or she liked the toy was correlated with the child's predictions of how much boys would like each toy. Thus, for each child, two p values were computed, each across the 10 novel toys. Some children had to be dropped from the analyses because of a lack of variability in their scores. For example, several children gave exactly the same ratings for themselves (e.g., 4) and for other-sex peers (e.g., 1) across all the toys and so no correlation could be computed. To obtain average p values, each child's score was converted to a z value (as in an r to z transformation), the z scores were averaged, and then converted back to p values. The results are similar to those found using the r correlation method. Specifically, for girls, their own liking ratings across toys correlated more highly with the predictions they made of how much girls would like the toys, $p(24) = .77$, than with their predictions of how much boys would like the toys, $p(25) = .18$. Similarly, for boys, their own liking ratings across toys correlated more highly with the predictions they made of how much boys would like the toys, $p(25) = .87$, than with their predictions of how much girls would like the toys, $p(26) = .12$.

Discussion

The findings from Study 2 extend the preliminary results reported in Study 1. Generally, children were found to use the gender-centric pattern. Children's own liking of toys was more similar to their predic-

tions of how much same-sex peers would like the toys than to their predictions of how much other-sex peers would like the toys. By including attractive and less attractive toys, it was possible to assess whether gender-centric patterns occurred with both types of toys. Even when toys were not extremely attractive or interesting, children showed a gender-based pattern in which they inferred that their own gender group will like the same toys as they do, and that the other gender group will like them less. Adults also showed a gender-centric pattern, although the study is only a preliminary examination of this effect. The correlational analyses showed that children make gender-based inferences more strongly for their own sex than for the other. Specifically, children expect others in the same gender group to prefer the same toys that they do more than they expect children in the other gender group to reject these toys. Finally, the correlational analyses showed the same gender-based patterns when profiles of liking were compared across toys. That is, a child's own liking of toys highly correlated with his or her predictions about same-sex peers, across all the toys. In contrast, a child's own liking of toys was not highly correlated with his or her predictions about other-sex peers across the toys.

Study 3

Studies 1 and 2 illustrated how children draw gender-based inferences to make decisions about toys not known to be sex-typed. The goal of the third study was to investigate children's judgments of toy preferences for themselves and for others when toys were given explicit gender labels.

This study differs from earlier studies of gender labeling in three ways. First, the study involved judgments of toy preference rather than exploration or memory. Although the study does not assess actual toy play patterns, children's reports of toy preferences should provide insight into their toy behavior. Second, we minimized the demands inherent in the labeling situations so that children could easily disregard the labels if they so desired. This was done by setting up a pretense in which the experimenter who labeled the toys said she had to leave and another experimenter came in and asked children their toy preferences. Third, the toys we used in this study varied in attractiveness, unlike the toys used in many of the earlier gender labeling studies. It is reasonable to assume that the effect of gender

labels may vary depending on toy attractiveness. For instance, the influence of gender labels potentially could be counteracted by a toy's inherent attractiveness. If a girl finds a toy extremely attractive, she may disregard information about who should play with it (according to cultural stereotypes), especially if it contradicts her desire to play with the toy. Alternatively, gender labels may be so powerful that they alter the perception of attractiveness. The case of the boy dropping the racing car like a hot potato suggests that a very attractive toy may suddenly become extremely unattractive once its sex-typing becomes obvious.

The relation between attractiveness and sex-typing has been investigated in several studies. In a study to assess the avoidance of cross-sex-typed toys, 3–8-year-old children were given a choice between attractive toys considered to be neutral and unattractive toys (e.g., broken toys) considered appropriate for their own sex (Hartup et al., 1963). Given this choice, children tended to select on the basis of sex-typing rather than on the basis of attractiveness, indicating that children actively avoid cross-sex-typed toys.

Recent evidence suggests that some children may be more influenced by sex-typed norms than others. Frey and Ruble (1992) assessed the relation between attractiveness and sex-typing of toys when these aspects were in conflict and not in conflict in children from 5 to 10 years old. In the conflict situation, they were shown a videotape of children of their same sex playing with an unattractive neutral toy and children of the other sex playing with a highly attractive neutral toy. In the nonconflict situation, they were shown a videotape of same-sex children playing with an attractive toy and other-sex children playing with a similar attractive toy. Afterward, children's time playing with the toys and with other non-sex-typed toys was assessed. As expected, the conflict situation led to different toy preferences than the nonconflict situation. Specifically, boys who understood gender constancy, but not girls, played with the sex-typed but unattractive toys more than with the attractive toys. Frey and Ruble (1992) suggested that gender constancy may push children into having a stronger motivation to follow sex-typed norms, even when it requires restricting their behavior and play with attractive toys.

In Study 3, we assessed the relation of sex-typing and toy attractiveness, but we used a preference paradigm and extended it

to include attributions of others' liking of the toys. Children were shown novel toys, varying in attractiveness, each of which was either labeled as being for the same sex, for the other sex, or not labeled. They were asked how much they liked each toy and how much they thought other boys and other girls would like the toy. We assessed children's memory for the gender labels because, for cognitive theories of gender development, labels are assumed to exert their influence only if they are remembered. Specifically, if children remembered labels for the toys, we would expect their preferences and behavior to be guided by these labels. If they do not remember the labels, no influence should be found.

Children's liking of the novel toys and their attributions about others' liking of the toys were expected to be influenced by the explicit gender labels. Consistent with cognitive gender theories (e.g., Kohlberg, 1966; Martin & Halverson, 1981), and with previous findings using toys (Hartup et al., 1963) and novel objects (e.g., Bradbard & Endsley, 1983), gender labels were expected to increase children's interest in toys labeled for their own sex over toys labeled for the other sex. Furthermore, we expected that children would attribute liking to others following the same pattern. Specifically, children should predict that others will like toys labeled for their own sex more than toys labeled for the other sex.

Level of attractiveness of toys also was expected to influence liking of toys and attributions of liking. Specifically, when toys were given same-sex labels, we expected children to like attractive toys more than less attractive toys, and to report that other children would like attractive toys more than less attractive ones. When toys were given other-sex labels, attractiveness was not expected to influence liking. That is, children were expected to show a "hot potato" effect by disliking all toys labeled for the other sex, and by expecting others to dislike toys labeled as being for the other sex, regardless of the toys' original attractiveness. Due to the importance of avoiding things associated with the other sex (Frey & Ruble, 1992; Hartup et al., 1963), it is hypothesized that no matter how attractive or interesting the toys are initially, if they are given other-sex labels they will be liked less.

Method

Subjects.—Ninety-one preschool children (47 girls, 44 boys) ranging in age from 48 to 70 months of age ($M = 58$ months)

participated in the study. Data from three girls were dropped because of failures to understand the rating scale, and data from three boys were dropped because of short attention span and experimenter error. The majority of the children were Caucasian (80%) and were enrolled in mixed-sex pre-schools in middle-class neighborhoods.

Materials.—The toys used in the study were selected for their novel quality, lack of sex-typing, and level of attractiveness based on the results of the first two studies: three were selected as being attractive (high liking, $M = 3.5-3.8$) and three were selected as being less attractive (moderate liking, $M = 2.4-2.9$). The attractive toys (referred to by the names they were given when presented to the children) were the spinning bells, the magnet stand, and the looking glass. The less attractive toys were the dabble press (garlic press), silver shape (shoe shaper), and wonder scoop (melon baller). Three boxes covered in white paper were used to hold the toys, each approximately $14 \times 9 \times 8$ inches. One box had pictures of girls glued on the front with the word “girls” written on it, the second had pictures of boys and the word “boys” written on it, and the third had no pictures or writing. A stopwatch was used to time presentation of toys. To measure children’s liking of the toys, the four-point cup rating scale was used (see Study 1).

Procedure.—To ensure that toys were included in the label and the nonlabel conditions an equal number of times, six versions of label-toy combinations were developed. The versions were constructed by having each attractive toy randomly paired with a less attractive toy twice, forming two sets of three pairs each. Children were randomly assigned to one of the two sets. Within each set, the labels for each pair were varied in three patterns so that each toy pair received each label (or no label) once. For each set, one-third of the children were presented with each pattern of labels. Thus, each child was exposed to two toys in the nonlabel condition, two toys labeled as being “for girls,” and two toys labeled as being “for boys.”

Two experimenters were used in the study. One experimenter told children the sex-typed labels and the other asked them their preferences. This was done to ensure that children would not feel under pressure to conform to the sex-typed labels they were given.

Experimenter 1 arranged toys in their appropriate boxes under a table and Experimenter 2 brought the child into the testing room. Experimenter 2 then left the room saying she had forgotten something. Experimenter 1 began the toy labeling task by telling children that they would be shown some toys. The children were told that later they would be asked how much they liked each of the toys. The three boxes were placed on the table. Each toy was lifted out of its box, one at a time (random order). The experimenter labeled it by describing who likes to play with it most (boys, girls, or no label). If the toy was labeled, the experimenter pointed to the pictures and the words (boys or girls) on the box. She gave the toy’s name (described in Materials section), had the child repeat the name, and demonstrated its use. The child then had 30 sec to inspect the toy. Afterward, the experimenter repeated the toy’s name and label, and placed the toy in a different box (the general toy box under the table). When the toy was unlabeled, the experimenter only told the child the name of the toy and did not mention a label.

To ensure that children learned the gender labels, their immediate memory was assessed by Experimenter 1 asking them to try to remember which sex she said liked each of the toys, or if she did not say if either sex liked the toy. If the child was incorrect, the experimenter provided the correct information. Experimenter 2 came into the room and said she would finish playing with the child, and Experimenter 1 left the room. Experimenter 2 taught the child how to use the rating scale as was done in Studies 1 and 2.

Then, Experimenter 2 randomly chose a toy from the general toy box and placed it on the table. For each toy, she asked children to indicate how much they liked the toy, how much they thought girls would like the toy, and how much they thought boys would like the toy (order varied). This procedure was used for all the toys. Experimenter 2 was not aware of the labels Experimenter 1 had given the toys.

Finally, children’s memory for the gender labels was assessed. The experimenter placed all three boxes on the table. Experimenter 2 then randomly selected a toy and asked the children to try to remember what Experimenter 1 had said about who liked each of the toys; boys, girls, or she did not say; children were then asked to place the toy in the appropriate box. This procedure was repeated for each of the toys.

Results

Memory for labels.—Children remembered many of the gender labels for the toys (or that they were unlabeled) (60%), although this percentage is lower than in one of the previous studies (e.g., Bradbard & Endsley, 1983, found 80% accuracy; Bradbard et al., 1986, found 60% accuracy). A few children did not remember any labels correctly (1%) and a few remembered all the labels correctly (11%). Due to the variability in memory scores, the children were divided into groups of rememberers and nonrememberers (rememberers were those who correctly remembered at least four of six labels). It was expected that the effects of the gender labels would occur only for children who remembered them.

Children's own toy preferences.—Children's ratings of how much they liked the toys were analyzed using a repeated-measures ANOVA with two between-subject factors (sex of subject; level of recall of gender labels—high, low) and two within-subject factors (toy attractiveness—attractive, less attractive; gender label—for same sex, for other sex, no label). Age was not included in any of the analyses because the age range was relatively narrow and because recall level correlated positively with age.

Not surprisingly, toy attractiveness influenced children's liking of toys, $F(1, 87) = 35.02$, $p < .001$. Children preferred attractive toys ($M = 3.55$) more than the less attractive toys ($M = 3.05$). The gender label effect also was significant, $F(2, 174) = 6.41$, $p < .002$. Children preferred toys labeled as being for their own sex ($M = 3.43$) more than toys labeled for the other sex ($M = 3.04$) or unlabeled toys ($M = 3.26$). An unexpected sex of subject effect was found to be marginally significant, $F(1, 87) = 3.76$, $p < .06$, with girls tending to like the toys more than boys.

We might have expected that the gender label effect would be modified by interactions with recall level, but none of the higher-order interactions were significant. Nonetheless, because of the predictions, further analyses were done for the children with high and low levels of recall. The label effect was not significant for children who showed poor recall of the toys' gender labels, but it was significant for those children who remembered the labels, $F(2, 88) = 6.29$, $p < .003$. Furthermore, as shown in Figure 2, for children who remembered the gender labels, attractiveness of toys influenced rat-

ings for the same-sex-labeled toys ($p < .008$) and for the nonlabeled toys ($p < .001$). For the other-sex-labeled toys, attractiveness had less of an influence on children's liking, consistent with the hot-potato idea that other-sex-labeled toys are avoided even if they are attractive. The ratings for attractive toys were somewhat higher than for the less attractive ones, although the difference was not significant ($p = .14$).

Children's attributions of others' toy preferences.—Children's predictions about how much other girls and boys would like the toys was analyzed using a repeated-measures ANOVA with two between-subject factors (sex of subject; level of recall of gender labels) and three within-subject factors (gender labels; sex of target; toy attractiveness).

Children predicted that other children would like attractive toys ($M = 3.00$) more than less attractive ones ($M = 2.38$), $F(1, 87) = 4.84$, $p < .03$. Whether children used attractiveness in attributing toy preferences to others was modified somewhat by children's recall levels, $F(1, 87) = 3.58$, $p < .07$. Children who recalled gender labels tended to believe others would like the attractive toys more than the less attractive ones ($p < .008$), whereas children who recalled fewer gender labels did not show an influence of toy attractiveness. Furthermore, this interaction was subsumed by the significant interaction of recall level \times toy attractiveness \times sex of subject, $F(1, 87) = 4.97$, $p < .03$. For boys, attractive toys were given higher ratings than the unattractive ones, and recall level did not interact with attractiveness of toys, but for girls it did ($p < .004$). Girls who did not recall toy labels tended not to differentiate others' liking of toys based on attractiveness, whereas girls who recalled more gender labels did (see Table 6).

Surprisingly, the sex of target effect was significant, $F(1, 87) = 7.70$, $p < .007$. This effect was subsumed by the significant sex of subject \times sex of target interaction, $F(1, 87) = 31.72$, $p < .001$. Boys thought other boys would like the toys more than other girls ($M_s = 3.10$ vs. 2.86 , $p < .05$), and girls thought other girls would like the toys more than other boys ($M_s = 3.24$ vs. 2.52 , $p < .001$). Both the main effects of attractiveness and target and this two-way interaction were subsumed by the significant sex of subject \times target \times attractiveness interaction, $F(1, 87) = 4.43$, $p < .04$. For girls, toy attractiveness did not interact with sex of target,

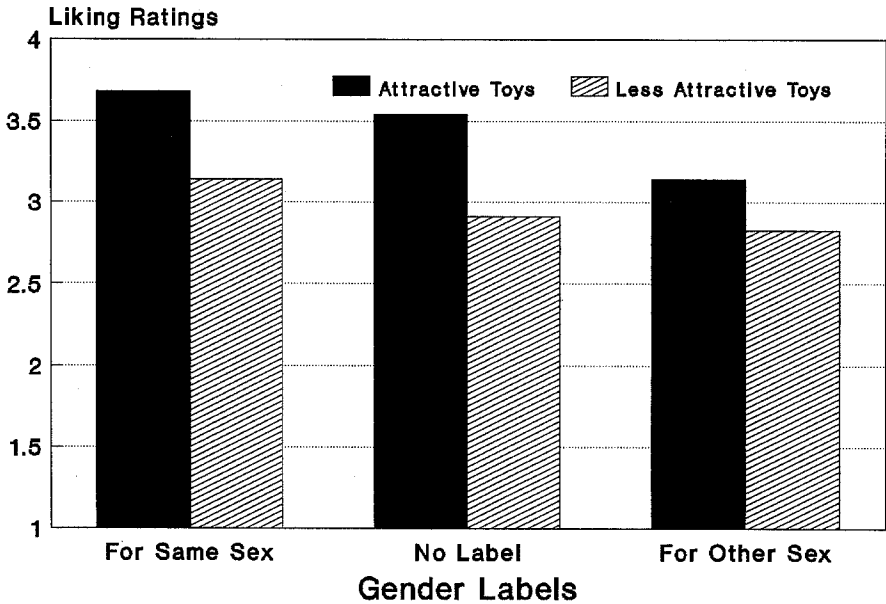


FIG. 2.—Mean liking ratings given by children who remembered gender labels as a function of toy attractiveness and gender labels: Study 3.

but for boys, it did marginally ($p < .07$). Boys used toy attractiveness to determine how much other boys would like toys ($p < .03$) but not to determine how much other girls would like the toys (see Table 6).

The main effect of gender label was significant, $F(2, 174) = 6.72$, $p < .003$, with children generally believing others would like toys labeled for the same sex (i.e., they believe girls will most like girls' toys) more than toys labeled for the other sex ($M_s = 3.04$ vs. 2.77). This main effect was subsumed by the significant interaction of gender label \times recall level of labels, $F(2, 174) = 4.21$, $p < .02$. Not surprisingly, children who recalled more labels used them to make their judgments ($p < .001$), whereas children who recalled fewer labels did not.

To assess the predictions concerning the hot potato effect, further analyses were conducted for children who recalled the labels. For these children, attractiveness of toys influenced ratings for the toys given same-sex labels, $t(45) = 2.41$, $p < .02$, and there was a trend for the neutral toys, $t(45) = 1.96$, $p < .06$. For the toys labeled for the other sex, attractiveness did not influence children's attributions of how much others would like the toys, consistent with the hot potato idea that they believe children will avoid toys labeled for the other sex, even if they are attractive (see Fig. 3).

Discussion

When making decisions about unfamiliar toys for themselves and for others, most children used the explicit information provided by gender labels. Consistent with Kohlberg's cognitive developmental theory and with Martin and Halverson's (1981) gender schema theory, it was the children who remembered the labels who used them. Furthermore, children demonstrated the "hot potato" effect in that, regardless of toy attractiveness, they tended to like less toys that were labeled as being for the other sex. The hot potato effect was even more apparent in children's judgments about others. They expected other children of both sexes to be less interested in toys that were labeled for the other sex, regardless of their attractiveness. In neither the case of their own liking of toys nor in the predictions for others, however, did labeling a toy for the other sex completely eliminate interest in the toy. Children still said they would have some interest in playing with the toy and expected others would as well.

Although the methods were quite different, it is possible to compare the present findings concerning children's own liking of the toys with the results reported by Frey and Ruble (1992). The young children in the present study showed an influence of sex-typed labels in that these labels influenced

TABLE 6

CHILDREN'S PREDICTIONS OF OTHERS' LIKING OF TOYS AS A FUNCTION OF MEMORY FOR LABELS, TOY ATTRACTIVENESS, TARGET, AND SEX OF SUBJECT: STUDY 3

Children Who Remembered Sex-Typed Labels						
TOY LABELS						
TARGET	For Same Sex		For Other Sex		Nonlabeled	
	Boy	Girl	Boy	Girl	Boy	Girl
Attractive toys:						
Boys	3.63 (.68)	3.05 (1.18)	2.58 (1.26)	2.32 (1.29)	3.42 (.84)	2.90 (1.20)
Girls	3.07 (1.11)	3.44 (.85)	2.48 (1.09)	3.04 (1.02)	2.48 (1.05)	3.63 (.69)
Total	3.35	3.25	2.53	2.68	2.95	3.27
Unattractive toys:						
Boys	2.95 (1.05)	2.95 (1.03)	2.79 (1.23)	2.53 (1.17)	3.00 (1.25)	3.05 (1.18)
Girls	2.74 (1.29)	3.11 (.97)	2.26 (1.16)	2.82 (.96)	2.26 (1.13)	3.07 (1.11)
Total	2.85	3.03	2.53	2.68	2.63	3.06
Children Who Did Not Remember Sex-Typed Labels						
TOY LABELS						
	For Same Sex		For Other Sex		Nonlabeled	
	Boy	Girl	Boy	Girl	Boy	Girl
Attractive toys:						
Boys	3.28 (.79)	2.68 (1.07)	3.08 (1.08)	3.12 (1.24)	3.32 (.80)	3.04 (1.17)
Girls	2.30 (1.13)	3.20 (.83)	2.30 (1.13)	3.30 (.80)	2.50 (1.10)	3.45 (.89)
Total	2.79	2.94	2.69	3.21	2.91	3.25
Unattractive toys:						
Boys	3.00 (1.16)	3.04 (1.06)	2.96 (1.02)	2.80 (1.19)	3.16 (.99)	2.72 (1.31)
Girls	3.00 (.97)	3.20 (.83)	2.35 (1.35)	3.40 (.82)	2.45 (1.32)	3.30 (.87)
Total	3.00	3.12	2.66	3.10	2.81	3.01

their ratings of how attractive or desirable a toy was perceived to be. Attractive toys lost their appeal when given other-sex labels but not when given same-sex labels. Similarly, Frey and Ruble found that gender-constant boys often avoided playing with an attractive toy demonstrated by a girl and instead preferred playing with a less attractive toy demonstrated by a boy. However, we did not find sex-typed labels dominating attractiveness as strongly as they found, possibly due to the lack of conflict between these two dimensions in our study. Children said they would like about equally well unattractive toys that were sex-typed for the same sex and attractive toys that were sex-typed for the other sex. That is, they did not show a stronger preference for using sex-typing over attrac-

tiveness, a pattern that would be expected from children who have obtained gender constancy, according to Frey and Ruble (1992). Further research is needed to determine how cognitive development, such as gender constancy, and how individual difference factors influence children's toy preferences.

Unlike other labeling studies, we also examined children's attributions about others' liking of toys, and some unexpected patterns emerged. Both boys and girls showed a tendency to attribute more liking of toys to own-sex versus other-sex children. In a sense, this also may be considered a gender-centric pattern in that children attributed toy liking, in part, based on the sex of the peer

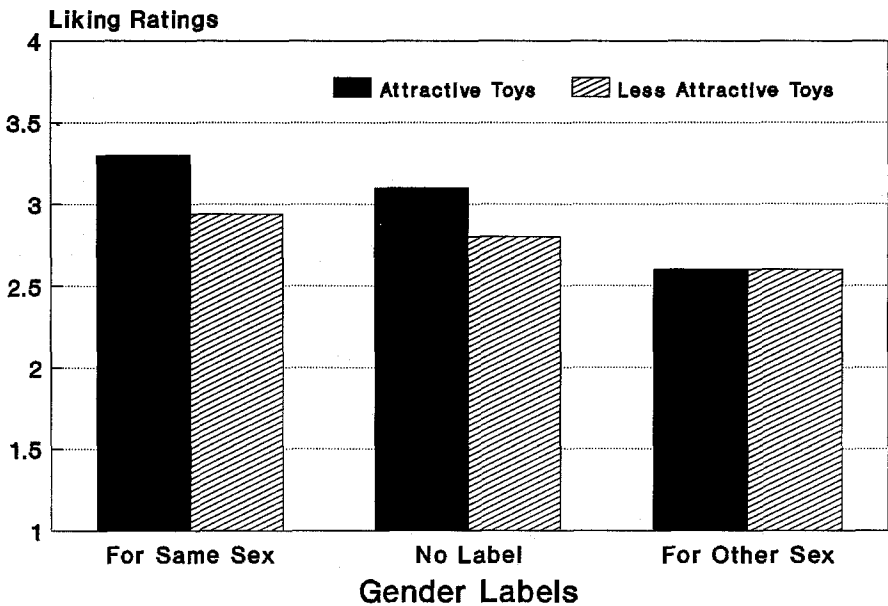


FIG. 3.—Mean predictions of others' liking given by children who remembered gender labels as a function of toy attractiveness, gender labels, and sex of target: Study 3.

group. Surprisingly, girls and boys used attractiveness somewhat differently for determining others' toy preferences. Girls considered toy attractiveness when attributing how much other girls and boys would like toys, such that they believed other peers would generally like attractive toys more than unattractive ones. In contrast, boys used toy attractiveness in that same manner only when attributing toy liking to other boys.

General Discussion

The present studies were designed to investigate children's use of gender-based reasoning when they are asked to make judgments about their own and others' toy preferences. The findings suggest that children use both gender labels and gender-based matching as ways of making decisions about themselves and about others.

Gender-Based Reasoning When Toys Are Sex-Typed

A number of studies have been done to assess the impact of gender labels on children's memory, performance, and exploration (e.g., Bradbard & Endsley, 1983; Montemayor, 1974). We were interested in assessing the effects of gender knowledge in new domains, specifically, children's judgments about toy preferences for themselves and for others.

The typical method in some of the earlier studies has been to use toys (novel objects) that are of equal but moderate attractiveness. By varying the attractiveness of unfamiliar toys as we did in Study 4, we were able to assess more directly the "hot potato" idea in which children's desires for even very attractive toys are diminished by other-sex labels.

As predicted based on cognitive gender theories, for children who remembered the toy labels, their own liking of toys varied depending on attractiveness of the toys and their labels. Children who remembered the labels used them to guide their preferences: they said they preferred toys labeled for their own sex more than toys labeled for the other sex, especially if they were attractive. Toy attractiveness played more of a role in influencing children's judgments for own-sex-labeled toys than for other-sex-labeled toys, consistent with the "hot potato" idea that toys lose their attractiveness when labeled for the other sex.

Children's attributions of how much other girls and boys would like the same unfamiliar toys followed a similar but not identical pattern to their own liking of the toys. As before, both attractiveness of toys and their gender labels influenced ratings. Not surprisingly, children generally believed that others would like the attractive toys

more than the less attractive ones, and that they would like own-sex-labeled toys more than other toys. Attributions of how much others would like the toys, however, also varied according to both attractiveness and toy labels. Children who remembered the toy labels said that others would like attractive toys more than less attractive ones only if they had been given same-sex labels. For toys given other-sex labels, the attractiveness of toys did not offset the labels, again providing support for the hot potato idea.

Consistent with other studies using real toys (e.g., Hartup et al., 1963), our findings suggest that gender labels provide children with salient cues that can be used to influence their own desires as well as their expectations about others. Gender categorization may be useful for helping children organize their social worlds, but they also may limit their experiences with certain kinds of toys. In terms of being able to minimize the negative consequences of gender-stereotypic toy choices, however, we would hope that children would relax their stereotypic ideas when faced with particularly attractive and interesting toys. Our findings suggest that children relax their standards only slightly when making decisions about their own toy preferences. In general, the hot potato effect is evident: children seem to lose interest, and expect others to do the same, when confronted with even very interesting toys labeled as being for the other sex.

Gender-Based Reasoning When Toys Are Unfamiliar

In studies 1 and 2, we explored children's use of gender-based inferences when they had no prior knowledge of the sex-typing of toys. We also investigated the types of patterns children would use to make decisions about attractive and less attractive unfamiliar toys. The results of the studies converge to form a consistent picture of how children use gender when making decisions about unfamiliar toys for themselves and for others.

Children tended to show a gender-centric pattern of responding when making decisions about both unfamiliar and familiar toys ("what I like, peers of my sex will like; what I like, peers of the other sex will not like"). Although the evidence is only preliminary, undergraduates showed a similar gender-based pattern of inferences.

The gender-centric pattern is intriguing for several reasons. First, it suggests that

gender is salient for young children, and for adults, even in situations where it need not be. Second, gender-based inferences about unfamiliar toys may contribute to the initial formation of gender stereotypes. Children may add information to their gender stereotypes based on what they like (and dislike) merely by generalizing their own preferences to members of their own group. This process may contribute to the early development of gender stereotypes.

The most intriguing aspect of the gender-centric pattern is what it implies about individuals' beliefs about gender categories. Children and adults seem to develop abstract theories about gender that go beyond the explicit gender knowledge they may have been given. Their abstract gender theories seem to be of two forms. One form is a theory of group *differences*: what one sex likes, the other does not. The other form is a theory of within-gender-group *similarity*: what a person of one sex likes, other people of the same sex also will like.

Abstract gender theories may derive from individuals' tendencies to endow some social categories, just as they do with natural kind categories, with a core essence that is expected to characterize every member of the group (see Rothbart & Taylor, 1990). Individuals may be particularly likely to assume an underlying essence for certain social categories, such as gender and race. These categories may be treated as central categories because they are assumed to be salient and unalterable, even though these aspects are in fact culturally determined and many aspects of them are alterable (see Rothbart & Taylor, 1990). Furthermore, the centrality of gender categories may be reinforced by the perception that these categories have strong functional significance (Bem, 1981), that is, they have a high inductive potential (Rothbart & Taylor, 1990). These ideas—that gender and race categories are unalterable and have high inductive potential—likely relate to beliefs that differences between these categories are due to biological factors (Rothbart & Taylor, 1990). Both adults (Martin & Parker, 1994) and children (Taylor & Gelman, 1991) show evidence of holding beliefs that differences between males and females are based, at least in part, on biological factors.

Once individuals attribute essences to the social categories of gender, they may reason on that basis. As such, they would employ what we've called the *within-gender-*

group theory, which allows them to assume similarities among members of the same gender group. The basis of the other theory, the *gender-group-differences* theory, seems less clear. Individuals often assume differences once group boundaries have been marked. Research on intergroup relations has shown that perceivers attribute differences to members of different groups even when the categories are relatively arbitrary (e.g., Tajfel, 1981). Also, research has shown that more differences are attributed when there is an assumption of a biological basis for group differences (Hoffman & Hurst, 1990). However, the number of groups involved also may influence individuals' judgments. For gender groups, because there are only two mutually exclusive groups (at least in popular beliefs), assumptions of group differences may be extreme. The reasoning may be that if females have a particular characteristic, then males are unlikely to have that characteristic.

Thus, these two gender-based theories appear to form because of the basic tendencies perceivers have to classify and simplify information in their social worlds, and because of the powerful tendencies of individuals to endow social categories with meaningful essences (Rothbart & Taylor, 1990).

There may be developmental trends in the use of gender-based theories. When they are younger than 5, children may apply their gender-based theories across many situations because they fail to understand about individual differences among members of one gender group (or across gender groups). Research has shown that young children assume similarity within one gender group even when given information that challenges this assumption. For instance, children believe that an unknown boy with feminine interests (e.g., likes playing with kitchen sets) will be as interested in trucks as a boy with masculine interests, but older children are more likely to modify their judgments based on information about the specific individuals (Berndt & Heller, 1986; Martin, 1989). Once a child knows another person well, the tendency to rely on gender-based theories may be somewhat offset.

Furthermore, although more research is needed to definitively map the progression of these theories, it appears that the within-group theory is stronger, and may develop earlier, than the between-group theory. Two different lines of research suggest that the between-group theory becomes stronger

with age. In one, Martin (1989) found that young children assume there are some differences in interests between girls and boys, but older children showed more highly differentiated beliefs about the sexes. In the other, Biernat (1991) found that children's beliefs about masculinity and femininity initially appear to be viewed as two separate dimensions, but as children grow older, they become treated more as a unidimensional construct, with masculinity and femininity being negatively correlated.

Also, situations may vary in eliciting abstract gender theories. When given little information upon which to make a judgment (as was done in the present studies), both children and adults may use their abstract theories. When more information is available, reliance on gender may be minimized (Martin, 1989; Serbin & Sprafkin, 1986).

There are several limitations associated with the studies we conducted. First, we constructed the rating scales in a way that limited the range of responses children could give. The scales ranged from liking a toy very much to liking a toy only a little. We assumed that children would like anything labeled as a toy. However, by limiting their responses, we may have been less likely to detect beliefs about group differences (e.g., children would not have been able to indicate that a toy would be disliked by other-sex children). Second, children may have been hesitant to predict how much others would like toys in the kinds of situations we used (in which they had extremely limited information about the other children). During testing, however, we did not notice children being indecisive about their predictions for others. Third, it was impossible to assess whether children from different racial groups or from different socioeconomic backgrounds would respond differently than the children we tested. Fourth, the situations used in these studies emphasized gender categories to the exclusion of other categories (except in Studies 2 and 3 in which attractiveness also varied). In real world settings, children also may employ other kinds of information, such as age, as a basis for making judgments. Finally, it is important to remember that the present studies assessed only one aspect relevant to children's toy choices, that is, their stated preferences for themselves. The relation between children's stated preferences and their actual behavior has not been determined, nor would we expect that they would be in perfect accord. Children's preferences are likely to be more

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stereotypic than their actual behavior. Nonetheless, it is not unreasonable to expect that children's stated preferences relate to their actual toy choices. Further research is needed to investigate how gender knowledge translates into behavioral choices.

In conclusion, children's toy choices are influenced by gender-based reasoning in several ways. Children's abstract theories about gender groups may allow them to make assumptions about who would like to play with novel, non-sex-typed toys. They assume that if they like a toy, children of their same sex will also like the toy more than children of the other sex. When available, explicit gender labels also guide children's preferences and their expectations about others' preferences by making even very attractive toys lose some of their appeal when labeled as being for the other sex. When children use gender-based reasoning in these ways, they may unknowingly limit the range of their own and others' play experiences.

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