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ABSTRACT

To investigate social cognitive factors in early sex-role development, this study examined young children's gender-related judgments of toy appropriateness under speeded and delayed response conditions. Subjects were 55 boys and 59 girls, aged 3, 5, and 7. Ninety-two photographs of common toys were independently rated as mainly for girls, mainly for boys, or neutral. In the categorization condition, children stated who usually played with the toy shown. In the immediate-response condition, subjects were further asked to respond as quickly as possible after the toy photograph was presented. In the delayed-response condition, subjects waited for a signal, that was presented after a 2.8-second delay, before answering. During the waiting period, children were instructed to "think hard about who usually plays with this toy." Results revealed that children's flexibility, or judgment of a toy as neutral, to neutral toy stimuli increased with age. In contrast, flexibility with respect to sex-typed toys was generally low; some increase in flexibility was shown from age 3 to age 5, followed by a decline in flexibility with respect to feminine toys at age 7. Children's knowledge of same-sex stereotypes was high from age 3, while opposite-sex knowledge was initially low and increased with age more slowly for boys than for girls. By age 7, however, stereotype knowledge was uniformly high in all children. (MM)

Developmental Differences in Young Children's Sex-Typing: Automatic versus Reflective Processing

by

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ABSTRACT

Social cognitive factors in early sex-role development were studied by examining judgments of toy appropriateness for boys versus girls under both speeded and delayed response conditions, used as indices of automatic and reflective gender-schema processing, respectively. Subjects aged 3 to 7 viewed photographs of sex-typed and neutral toys and indicated either immediately or after a 2.8 sec. delay who usually plays with them. A toy choice task assessed the children's own sex-typed toy preferences. Flexibility judgments (number of neutral responses) increased in a linear fashion with age to neutral toy stimuli. In contrast, flexibility with respect to sex-typed toys was generally low; some increase in flexibility was shown from age 3 to age 5, more so for feminine than masculine toys, followed by a decline in judged feminine toy flexibility in 7-year-olds. The prediction that automatic-mode processing would be more strongly related to children's own sex-typing than is their reflective-mode processing was supported only for 3-year-old boys, in whom automatic-mode stereotyped judgments of feminine toys were linked to strength of sex-typed toy preferences.

INTRODUCTION

The purpose of this study was to increase our understanding of early sex-role development by application of a reaction time methodology which incorporated a delayed-response requirement into young children's gender-related judgments of toys. Specifically, categorization judgments of toy appropriateness for boys, girls, or both boys and girls were solicited from 3-, 5-, and 7-year-old children under both speeded and deliberate response conditions. The expectation was that an immediate response requirement would result in judgments of an automatic nature which tap children's general gender stereotype beliefs. In contrast, requiring response after an enforced delay period should promote reflective gender-schema processing which permits accessing of situational information and consequent increased recognition of gender behavior flexibility. The children's own toy preferences were also assessed to investigate the relationships of the cognitive gender-schema measures to early sex-typed behavioral inclinations.

Research evidence to date suggests that even children as young as age two have a tendency to choose colors, toys, and activities appropriate to their own sex, and to prefer same-sex playmates (Maccoby, 1988; Leinbach & Fagot, 1986; Perry, White, & Perry, 1984; Picariello, Greenberg, & Pillemer, 1990; Reid, Tate, & Berman, 1989). However, the nature of age-related changes in gender flexibility and the extent to which there are sex differences in these developmental patterns remains an open issue due to the varied nature of researchers' findings in this field (e.g., Huston, 1983; Katz & Boswell, 1986). From the perspective of cognitive developmental theory (e.g., Kohlberg, 1966), little sex-typing is believed to take place prior to attainment of gender constancy at about age 5-6, and because of the final consolidation of gender constancy at that age period, that age level should be a time when gender flexibility is least evident. On the other hand, recent

work (e.g., Carter & Levy, 1988) suggests that gender schematization is a major factor related to sex-typed preferences even in young children. However, the question of the extent to which understanding of gender stereotype flexibility may be a relevant component in this age period remains unclear. It was hoped that the reaction-time techniques employed in the present study would further clarify the nature of gender-schema processing in early development and the links between young children's gender schematization and their sex-typed behavioral preferences.

HYPOTHESES:

1. Gender stereotype knowledge as revealed by stereotypic judgments in the immediate-response condition will increase in a linear fashion from age 3 to age 7.
2. Gender schema flexibility as revealed by flexible judgments in the delayed-response condition will be greatest for 7-year-olds and least for 5-year-olds.
3. Automatic-mode gender-schema processing will be more closely linked to children's own sex-typed toy preferences than is reflective-mode processing.
4. More gender-schema flexibility will be shown by girls than by boys.

METHOD

Subjects

Subjects consisted of 114 young children (55 males, 59 females) aged 3, 5, and 7 (mean ages 43.3, 68.4, and 94.4 months) who attended a university campus day-care center or elementary school.

Materials

Materials consisted of 92 8.9 cm x 12.4 cm color photographs of common toys which had been selected from an original pool of 125 toy photographs which had been rated by fourth graders as to gender category and age level.

Sex-typed items were toys rated by both sexes as mainly for girls or mainly for boys (mean agreement 74% for the feminine category, 67% for the masculine category); neutral items were toys rated as being for both girls and boys (mean agreement 83%). Photographs were divided into three equivalent sets, one of which was used in the immediate-response condition and a second of which was used in the delayed-response condition. Each of these sets consisted of 6 neutral items, 6 masculine items, and 6 feminine items. The toy preference test involved obtaining the child's own toy preferences in relation to 6 masculine-neutral and 6 feminine-neutral toy pairs (the same procedure used in Perry, White, & Perry, 1984), and so the toy set employed for this (initial) test phase contained 12 neutral items in addition to 6 masculine and 6 feminine items. Assignment of toy sets to one of the two categorization conditions or to the personal toy preference task was counterbalanced across subjects.

Procedure

Each child was tested individually, first regarding their own sex-typed toy preferences (see Perry, White, & Perry, 1984), secondly, in the immediate-response toy-categorization condition, and lastly, in the delayed-response condition. The toy photographs were manually presented by the researcher. For the categorization conditions, the researcher employed an Apple personal computer to record children's response choices and latencies, and to time the delay interval of 2.8 seconds used in the delayed-response condition.

In the categorization conditions the subjects were instructed to look at each photograph and decide who usually plays with the toy shown, mainly girls, mainly boys, or both girls and boys. In the immediate-response condition, children were further asked to respond as quickly as possible after the toy photograph was presented. In the delayed-response condition which followed, they were asked to wait for a signal (which was programmed to occur 2.8 sec after stimulus photograph presentation) before giving their answer. During the waiting period, children were instructed to "Please think hard about who

usually plays with this toy."

RESULTS

Sex-Typed Toy Preferences

Two sex-typing component subscores as well as a total sex-typing score were derived from children's responses on the toy preferences task. Attraction-to-same-sex-toys was measured by summing the number of times a child indicated a preference for a same-sex toy over a neutral toy alternative; avoidance-of-opposite-sex-toys was assessed by summing the number of times a child chose a neutral toy over an opposite-sex alternative toy (both of these scores thus varied from 0 to 6). These two component sex-typing measures were added together to obtain a total sex-typing score (from 0 to 12). The extent to which these subscores were correlated with each other as well as with the total sex-typing score was examined for the 6 age x sex subgroups of children in the study (3, 5, and 7 year-old males and females). Both component subscores were found to be consistently correlated with the total sex-typing score, but not with each other; thus, attraction to same-sex toys and avoidance of opposite-sex toys appear to be independent components of sex-typed behavioral preferences.

The strength of attraction to same-sex toys and avoidance of opposite-sex toys as a function of children's age and sex is presented in Figure 1. It may be seen from Figure 1 that with increasing age there is a systematic increase in avoidance of opposite-sex toys by both sexes of children, but especially by older boys; in contrast, there is some decline with age in attraction to same-sex toys, particularly evident in older girls. It is clear that the two sex-typing subscores are highly similar among 3 year olds of both sexes, and increasingly diverge with age such that among 7 year olds sex-typing appears to be stronger with respect to opposite-sex toy avoidance than same-sex toy attraction, and stronger for boys than for girls. The reliability of these patterns was confirmed by the results of a three-way

analysis of variance (ANOVA) in which child age and sex were between-subjects factors and sex-typing subscore type was a within-subjects factor. Significant effects in that analysis included a main effect of child sex, qualified by two-way interactions of sex x age and sex x subscore type, and further qualified by the three-way interaction of sex, age, and subscore type, F (2, 108) = 30.01, $p < .001$.

Flexible Reaction-Time Task Judgments

The number of "both girls and boys" responses served as the index of gender-schema flexibility. The extent of consistency in children's flexible-gender judgments) was assessed by computing Pearson product moment correlations between the number of flexible judgments on the various response condition by toy gender category combinations for the six age level by sex subgroups. For boys, a very high degree of consistency was evident in 3-year-olds' responding across both response conditions and all three toy gender categories; 5-year-old boys, in comparison, showed only some moderate consistency across toy types within a given response condition, and 7-year-old boys showed virtually no consistency at all (except for that between immediate-response masculine and feminine toy flexibility, $r = .58$, $p < .05$). A different correlational pattern was found for girls, in that 3-year-old girls displayed only moderate consistency, largely present across toy types within a given response condition, while 5-year-old girls showed very high consistency across both response conditions and all toy types. The 7-year-old girls, like 7-year-old boys, showed very little consistency (except for judgments of masculine toys across the two response conditions, and feminine toys across response conditions, $rs = .46$ and $.43$, $p < .05$).

The mean number of flexible judgments made under the two response conditions are presented in the two panels of Figure 2. It may be seen that while response condition appeared to have little effect, the age changes were sharply differentiated for neutral as compared with sex-typed stimulus toys: the number of flexible judgments to neutral-gender toys increased in a

systematic linear fashion with age, while in contrast, flexible categorization of sex-typed toys remained at a relatively stable low level throughout the 3-7 age range. An ANOVA which included age level and sex as between-subjects variables and toy gender category (masculine, feminine, or neutral) as a within-subjects variable confirmed these patterns in showing significant main effects of age level, F (2, 108) = 12.15, $p < .01$, and toy type, F (2, 107) = 114.25, $p < .01$, as well as a two-way interaction of age level and toy type, F (4, 214) = 30.56, $p < .01$.

Since judgments of "for both girls and boys" in response to neutral-gender toys do not have the same flexible-stereotype meaning as do such responses to sex-typed toys, additional ANOVAs were also carried out which excluded the neutral-toy category. Age and sex differences within younger and older children were explored separately in this regard by comparing 3- and 5-year-olds in one of these ANOVAs, and 5- versus 7-year-olds in the other. The ANOVA on the two younger-aged groups revealed an increase in number of flexible judgments of sex-typed toys from age 3 to age 5, F (1, 67) = 4.09, $p < .05$, more flexible judgments for feminine than masculine toys, F (1, 67) = 6.09, $p < .05$, and a two-way interaction of age and toy type, F (1, 67) = 4.87, $p < .05$. The interaction reflected the fact that the increase in flexible judgments from age 3 to age 5 was much greater for feminine toys (Ms = 1.04, 1.97) than for masculine toys (Ms = 1.01, 1.42). The ANOVA on 5- and 7-year-olds likewise indicated an age by toy type interaction, F (1, 75) = 6.58, $p < .05$, due to the fact that play with feminine toys was not viewed as flexibly by 7-year-olds as by 5-year-olds (M = 1.25 for 7-year-olds), while the flexibility of masculine toys was judged similarly by 7- and 5-year-olds (M = 1.38 for 7-year-olds).

The only indication of any response-condition effects was a borderline interaction of age and task condition in the ANOVA on 3- and 5-year-olds, F (1, 67) = 3.10, $p < .09$. While 3-year-olds showed more flexibility under delayed- than immediate-response conditions (Ms = 1.21, .84), 5-year-olds

gave somewhat more flexible responses in the immediate- than in the delayed-response situation (Ms = 1.79, 1.60). Thus, the only support for the expectation that children would reveal more gender-schema flexibility under delayed- than under immediate-response conditions was the tentative trend in this direction shown by 3-year-olds.

Stereotyped Reaction-Time Task Judgments

Children's gender stereotype knowledge was evaluated by examining the number of "boys" responses to masculine toys and "girls" responses to feminine toys. To assess the degree of consistency in these judgments, correlations in number of stereotyped responses made over the two response conditions and three toy gender categories were examined within each of the 6 age level by sex subgroups. These correlational patterns were mixed in nature, and generally indicated only limited areas of consistency which varied with sex and age level.

The mean number of stereotyped responses given to sex-typed toys by the six age level by sex subgroups is presented in the two panels of Figure 3. Stereotyped judgments under both immediate- and delayed-response conditions show a clear increase with age in gender stereotype knowledge, F (1, 108) = 15.66, $p < .01$. The ANOVA on these data further indicated a main effect of toy type, and two-way interactions of toy type with sex and toy type with age, but all of these effects were qualified by the three-way interaction of age, sex, and toy type, F (2, 108) = 8.04, $p < .01$. At age 3, both girls and boys, but especially boys, had less knowledge of opposite-sex than same-sex stereotypes, Ms = 2.78 vs. 3.97 for girls, Ms = 1.91 vs. 3.97 for boys. By age 5, however, girls' knowledge of masculine toys was as high as that for feminine toys (Ms = 4.14, 3.58), while boys' knowledge of feminine toys still lagged behind that for masculine toys (Ms = 2.83, 4.08). At age 7, in contrast, children of both sexes had similarly high levels of knowledge about toys of both gender types.

Reaction-Time Task Judgments and Sex-Typed Preferences

Correlations were computed between the various reaction-time task measures of gender flexibility and stereotyped judgments and the two sex-typing subscores (attraction to same-sex toys; avoidance of opposite-sex toys) as well as the total sex-typing score. The only significant relationship was one for 3-year-old boys, who showed a significant correlation between their immediate-response feminine toy stereotyped judgments and their total sex-typing score, $r = .50$, $p < .05$. As only the corresponding correlation with the sex-typing subscore of avoidance of opposite-sex toys also approached significance, $r = .45$, the relationship between gender-schema knowledge and sex-typing in 3-year-old boys would appear to be largely linked to the opposite-sex avoidance component of their sex-typing.

CONCLUSIONS

1. Flexibility judgments (number of neutral responses) increased in a linear fashion with age to neutral toy stimuli. In contrast, flexibility with respect to sex-typed toys was generally low; some increase in flexibility was shown from age 3 to age 5, more so for feminine than masculine toys, followed by a decline in judged feminine toy flexibility in 7-year-olds.
2. The prediction that automatic-mode processing would be more strongly related to children's own sex-typing than is their reflective-mode processing was supported only for 3-year-old boys, in whom automatic-mode stereotyped judgments of feminine toys were linked to strength of sex-typed toy preferences.
3. Children's knowledge of same-sex stereotypes was high from age 3, while opposite-sex knowledge was initially lower and increased with age more slowly for boys than for girls. By age 7, however, stereotype knowledge was uniformly high in all children.

4. Consistency in gender flexibility judgments was most evident among younger children, being very high at age 3 for boys and at age 5 for girls, and largely absent at age 7 for both sexes. Consistency in gender stereotype judgments was more mixed in pattern and generally limited in extent.
5. A pattern of stronger sex-typing in boys than in girls did not emerge until age 7.
6. Attraction to same-sex toys and avoidance of opposite-sex toys were similarly strong components of sex-typing in 3-year-olds, but diverged with age due to declining attraction to same-sex toys in combination with increasing avoidance of opposite-sex toys.

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Figure 1. Personal Toy Preferences

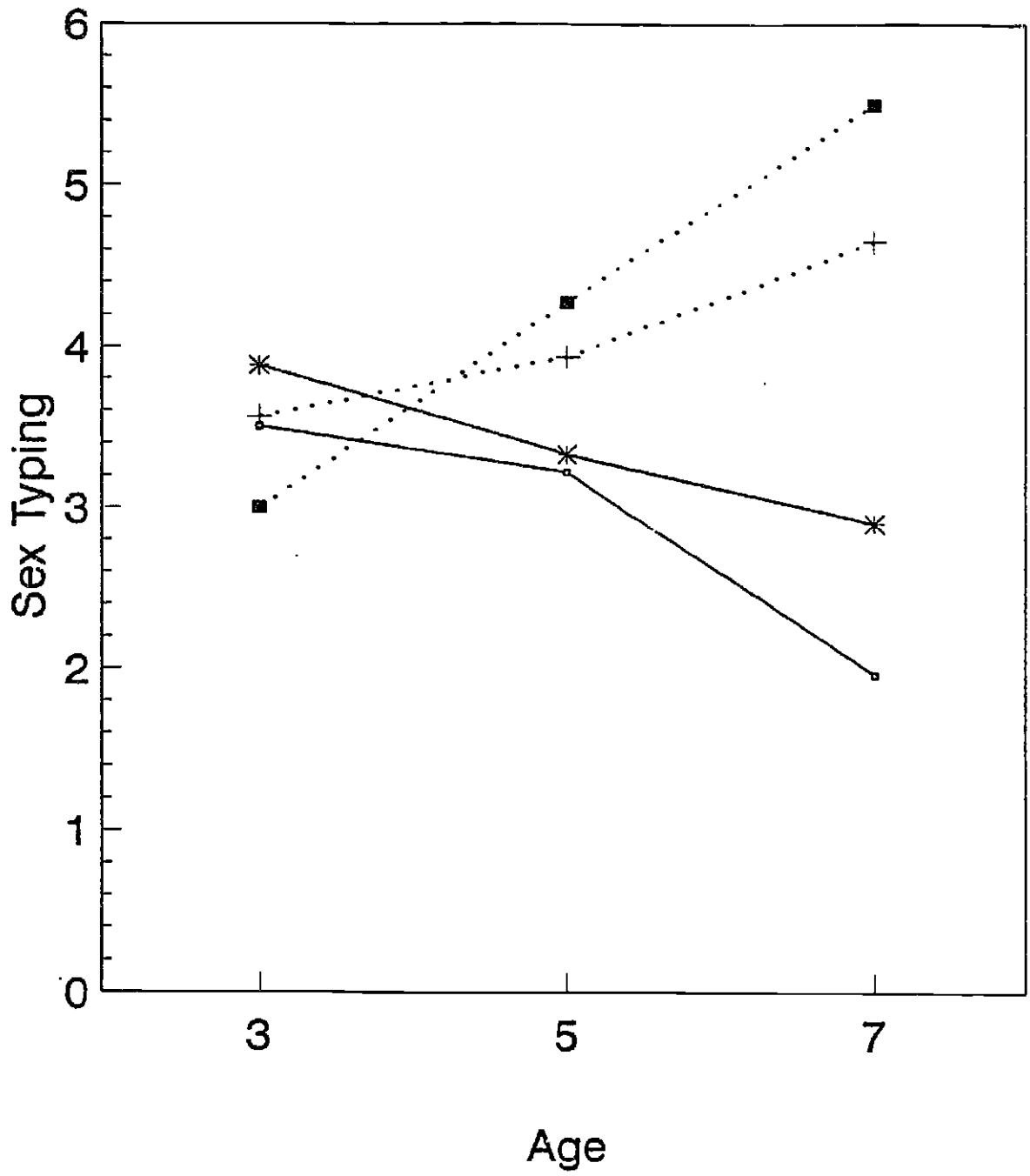

Figure 2-1. Flexible Judgments
Automatic Task

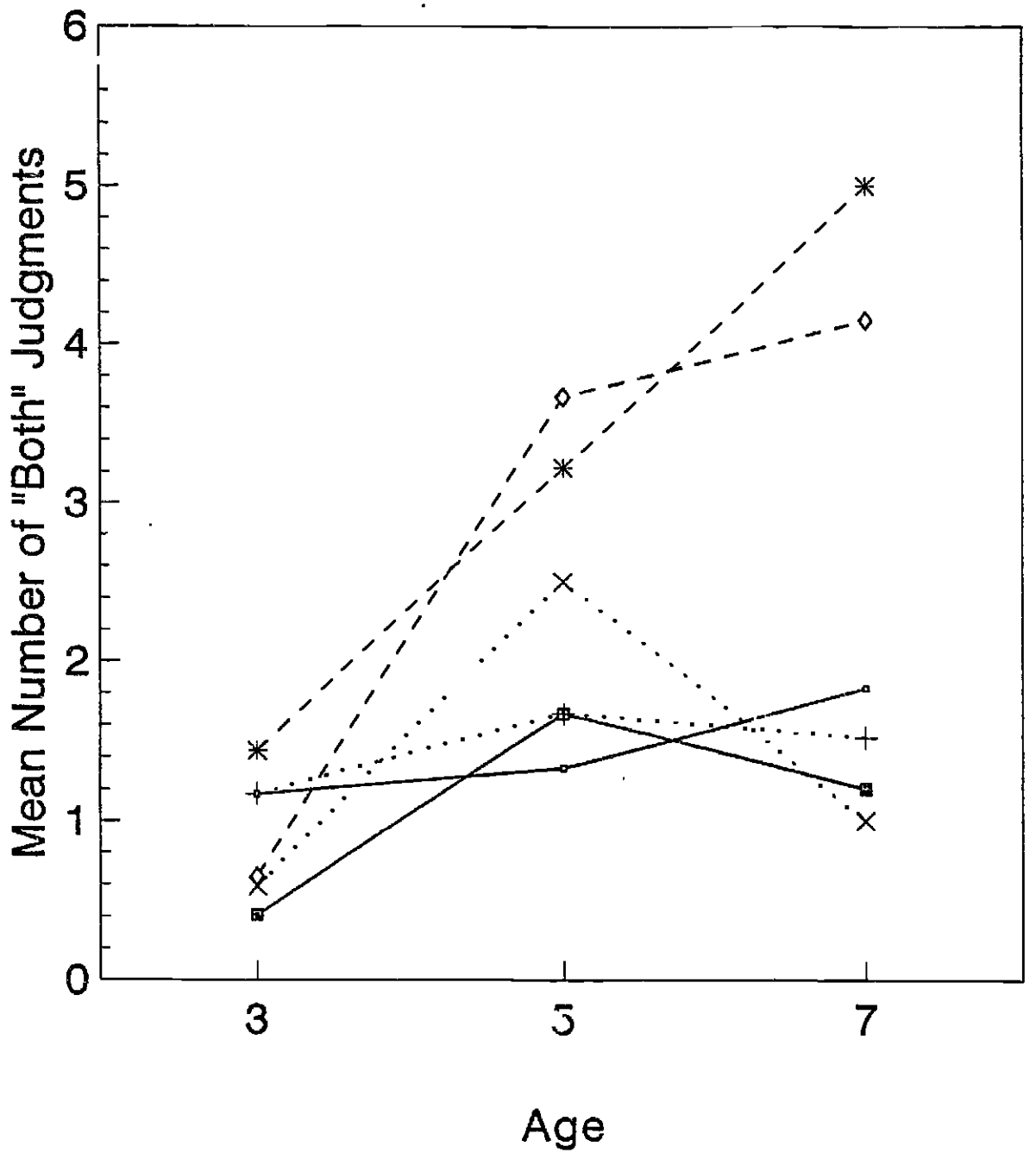

Figure 2-2. Flexible Judgments
Delay Task

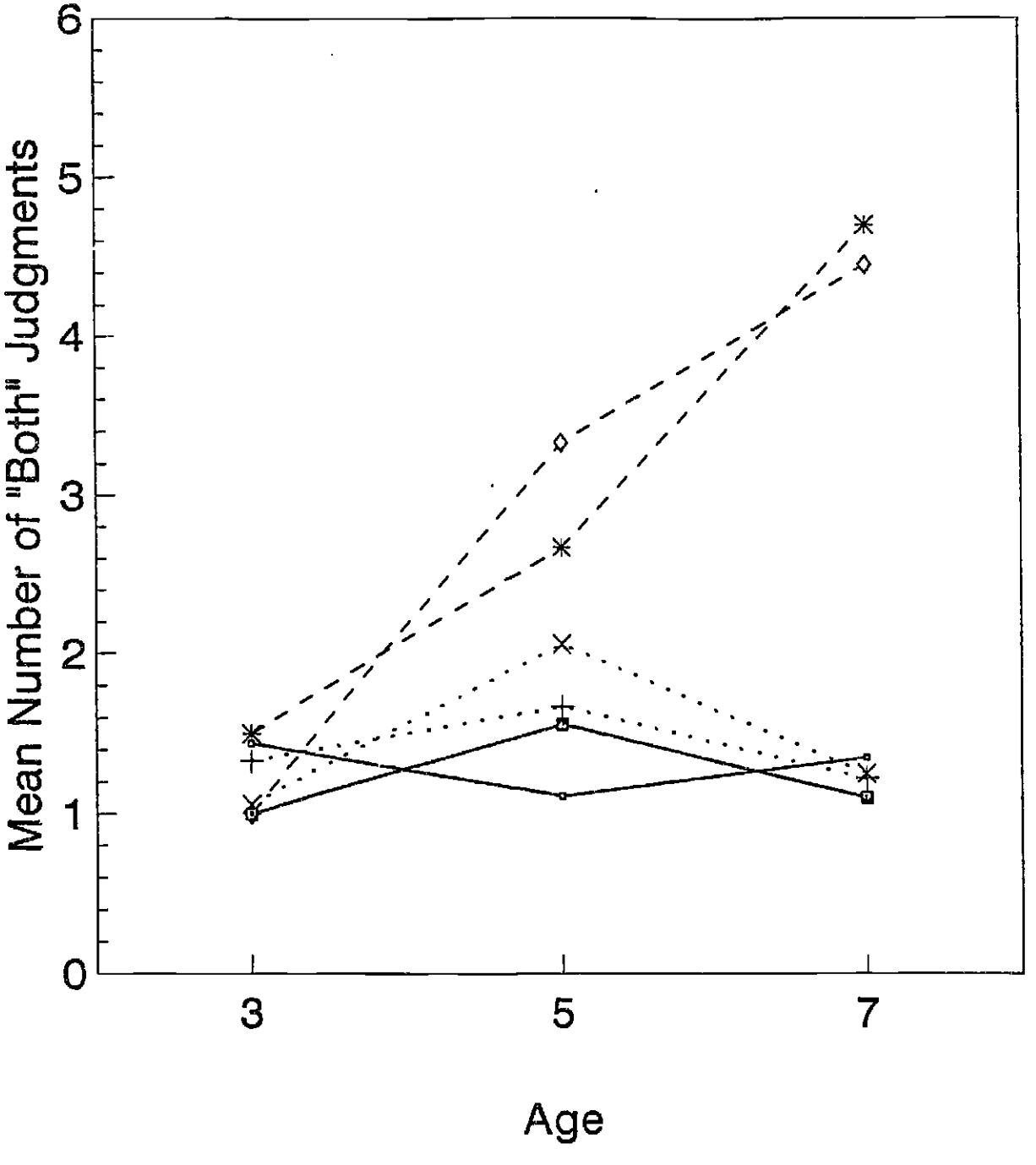

Figure 3-1. Stereotype Judgments
Automatic Task

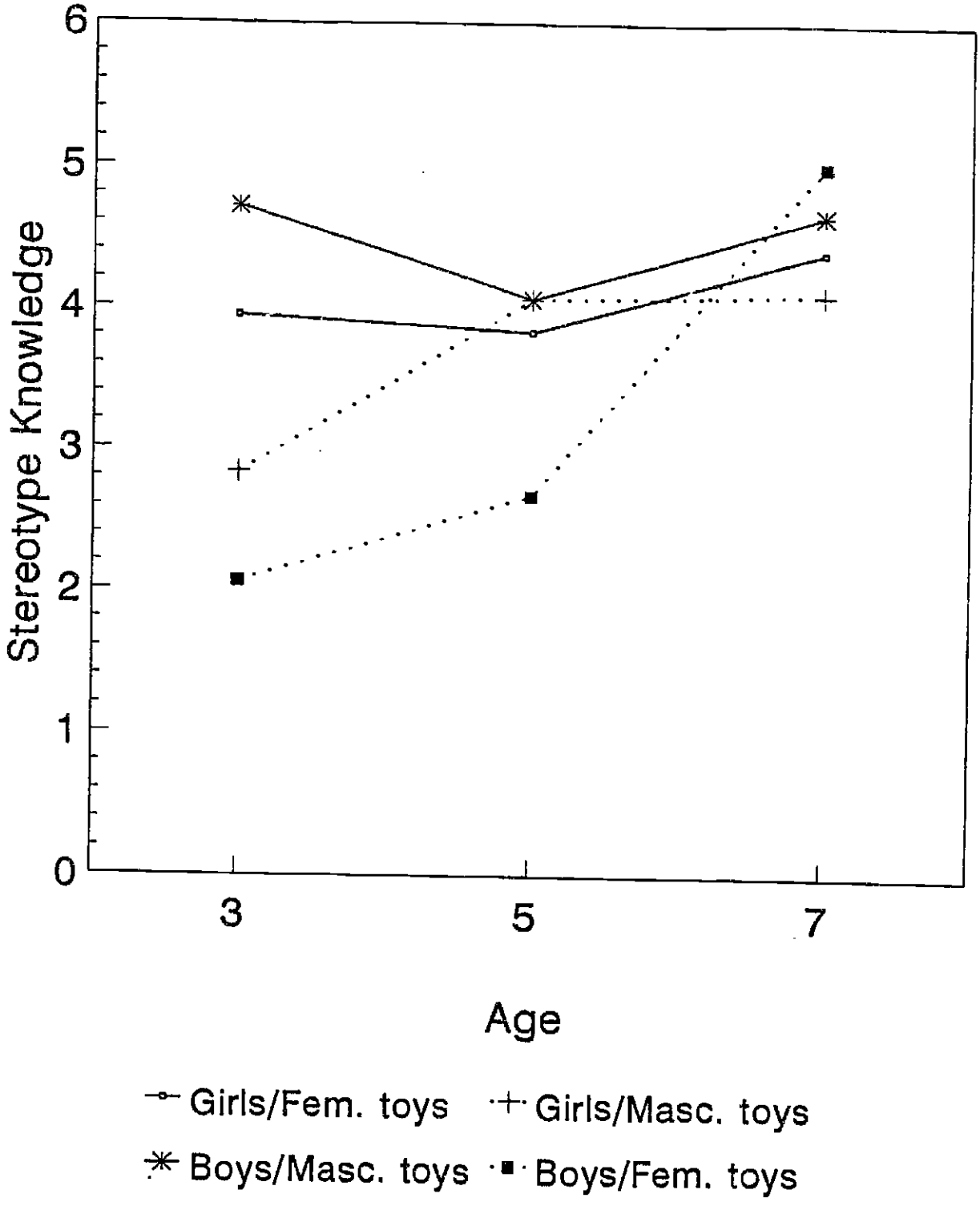

Figure 3-2. Stereotype Judgments
Delay Task