Gender vs. Appearance in Inductive Generalization:
Do Young Children Essentialize Social Categories?

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Background

Social cognitive theorists have proposed that children and adults essentialize social categories (Rothbart & Taylor, 1990; Bigler & Liben, 2006). Accordingly, children assume that category members share an unseen essence that gives rise to visible characteristics, and, consequently, expect distinct groups to possess different qualities. Thus, children should infer that males and females differ in inherent, unseen properties as well visible features.

Although one study of category-based induction reported that 4-year-olds generalized unfamiliar biological properties on the basis of gender rather than similarity in appearance (Gelman, Collman, & Maccoby, 1986), and there is evidence for some stereotyping of toy and play preferences among 4-year-olds (Martin, 1989), gender stereotype studies have found that knowledge of stereotypes for psychological and behavioral traits increases between 5 and 11 years of age (e.g., Best et al., 1977).

Goals

We sought to expand on previous findings by (a) comparing children's generalization of biological and behavioral characteristics, and (b) examining whether children's use of gender as a basis for inductive generalization changes during early childhood. Thus, we compared 3-year-old, 4-year-old, and 5-year-old children.

A larger goal of the study was to examine children's use of different types of social categories in inductive inference. Given that 4-year-olds generalize on the basis of gender rather than appearance (Gelman et al, 1986), we sought to determine whether gender has a special status in children's reasoning, or whether children also would make similar use of other social similarities. Thus, in addition to presenting a contrast between gender and appearance, we also presented a kinship vs. appearance contrast and a classmate vs, appearance contrast (this data isbeing collected currently).

Here we present the results for the gender vs. appearance condition only. Replicating the results of Gelman et al (1986) was a first step in this project.

Method

Participants: 17 3-year-olds,16 4-year-olds, & 17 5-year-olds participated in the main study. 12 adults participated in a pilot procedure.

Materials: Computer-generated images of children were arranged in sets of three. Each set included a boy and a girl on the top page, and a third child on the bottom page. The boy and girl differed in facial features, hair color and style, and shirt color. The third child resembled either the boy or the girl in facial features , hair color, and hair style. The child was either a boy who resembled the girl, or a girl who resembled the boy.

Procedure:

- **Pilot Procedure:** To ensure that the images intended to be resemble each were in fact more similar than the images intended to look different, we asked adults to rate the overall similarity of 36 pairs of pictures on a 5 point scale, including identical pairs, similar pairs, and different pairs. Adults clearly differentiated among these three sets of images in their similarity ratings.

- **Main Task:** Children were shown 8 sets of pictures. For 4 sets they were taught contrasting biological properties for the boy and the girl, e.g., "This girl has transfa in her blood. This boy has prothro in his blood." For the other 4 sets they were taught contrasting behavioral characteristics, e.g. "This boy likes to follow rules. This girl likes to meet new people."

The third child was introduced, and similarities in gender and appearance were mentioned. Then children were asked about the characteristics of the third child:

e.g., "Now here's someone else. She is a girl like this girl here. And she looks kind of like this boy. What does this girl have in her blood? Does she have transfa like this girl? Or does she have prothro like this boy?"
"
e.g., "Now here's someone else. She looks kind of like this boy here. And she's a girl like this girl here. What does this girl do? Does she like to follow rules like this boy? Or does she like to meet new people like this girl?"

Boy   Girl   **Boy   Girl**

Boy   **Girl**

Biological and Behavioral trials were presented in alternating blocks of two trials of one type followed by two trials of the other type.

Biological traits were novel terms for children. Behavioral traits were positive and gender neutral.

Results

Data analysis examined generalizations of characteristics on the basis of gender (Gender Matches), rather than appearance. For both biological trials and behavioral trials, children were given scores from 0-4 corresponding to the number of gender-based generalizations they made.

Age x Trial Type ANOVA:

- **Age:** There were no significant age differences.

- **Trial Type:** There were no significant differences between biological and behavioral trials.

- **Interaction:** There was not a significant interaction.

Mean Gender Match Responses
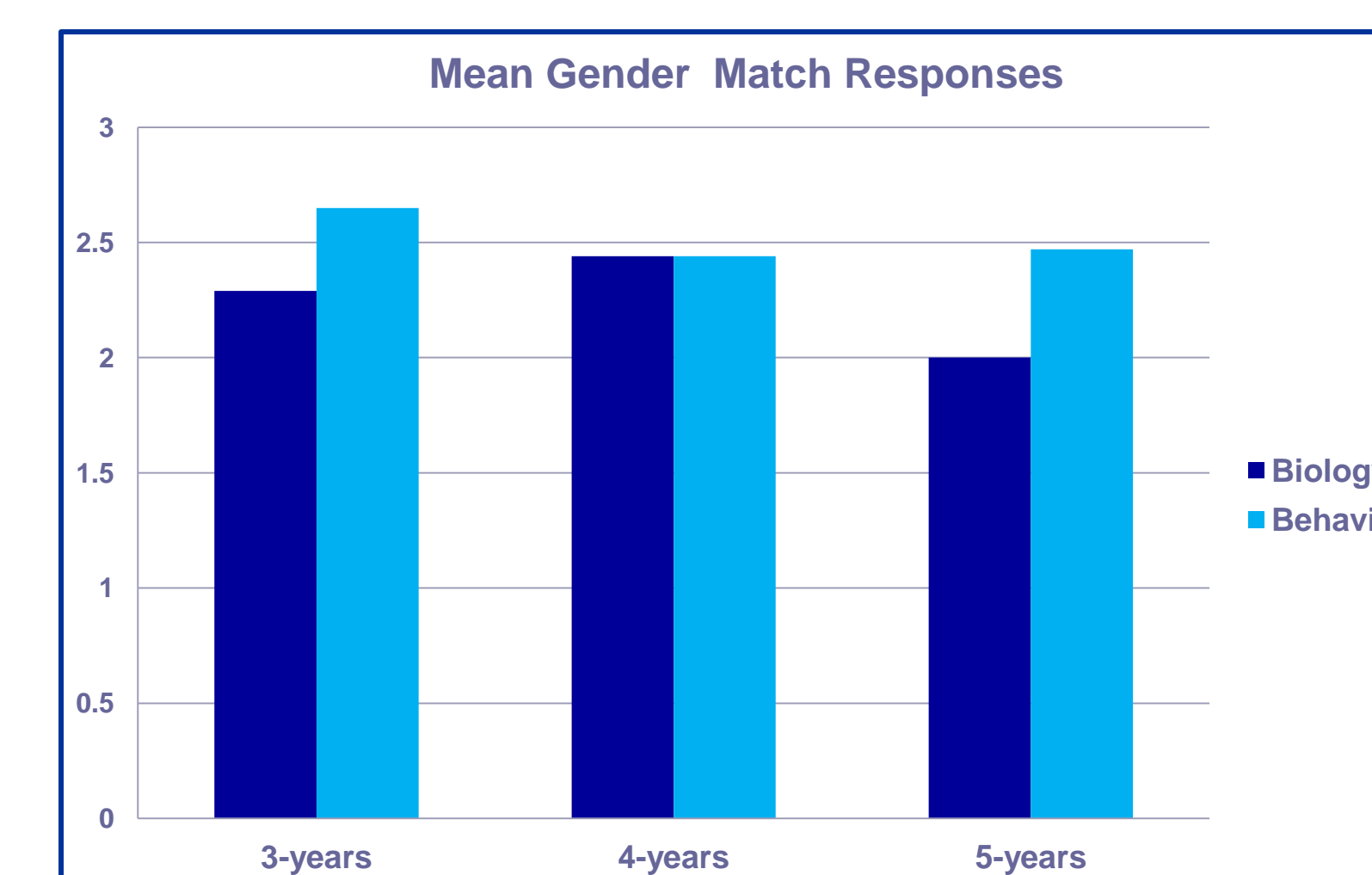
Comparisons with chance: Performance was compared to chance with t-tests for Total scores (biological & behavioral trials combined), Biological scores, and Behavioral scores.

- **Age groups combined:** With all three age groups combined performance differed significantly from chance for :
  Total score
  Biological score
  Behavioral score

- **Three-year-olds**: 3-year-olds performed significantly above chance for:
  Total score
  Behavioral trials

- **Four-year-olds:** 4-year-olds did not differ from chance for any measure.

- **Five-year-olds:** 5-year-olds did not differ from chance for any measure.

Although the combined data from all 3 age groups gave the appearance of that children generalize attributes on the basis of gender, more detailed examination of each age group and each type of trial provided little evidence of above chance performance. Thus, preschool children did not consistently generalize on the basis of gender.

Conclusions

Contrary to expectations we did not replicate the finding of Gelman et al. (1986) that young children generalize novel properties on the basis of gender rather than appearance. Specifically, 4-year-olds in the present study (the age group examined by Gelman et al.) did not generalize either biological or behavioral characteristics on the basis of gender.

The present study differed from the Gelman et al. (1986) study in 3 ways:

- **Stimuli:** Our computer-generated images looked different from the pictures used by Gelman et al.:

- **Items:** The items used on the two studies differed. Gelman et al. presented unfamiliar properties, which were novel biological facts, and familiar properties, which were gender-stereotypical behaviors, e.g., "This boys likes to play with trucks and do boy things. This girls likes to play with dolls and do girl things.:

- **Verbal references to gender:** The Gelman et al. procedure repeatedly mentioned gender labels, but did not verbally mention appearance. Our procedure mentioned both gender and appearance verbally, but also mentioned gender less often than the Gelman et al. procedure.

Any of the above differences could have contributed to our failure to replicate the previous findings. We suspect the difference in items and verbal references to gender may be most important. Repeated mention of gender labels along with presentation of gender-stereotypical behaviors may have primed children to emphasize gender in their reasoning. This possibility will be examined in a future experiment.

The present results, when compared with the results reported by Gelman et al., suggest that methodological details may influence children's use of gender as a basis for induction.

More importantly, children's performance in the present study suggests that young children do not consistently view gender as more relevant than appearance for making inductive generalizations. Consequently, these results call into question the notion that young children view boys and girls as essentially different. Further research is required to determine the age at which children begin to essentialize gender.

References
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