Sex and Race Differences in the Development of Gender Stereotypes

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Abstract

Kristine E. Copping: Sex and Race Differences in the Development of Gender Stereotypes
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Age, gender, and race differences in stereotype awareness and endorsement were assessed in 385 Black and White 4th, 6th, and 8th graders. Children reported their own stereotypes and their perceptions of adult beliefs about gender differences in ability in three domains: literacy, math/science, and sports. Consistent with study hypotheses, evidence of in-group bias was found for all variables, and older youth reported more traditional stereotypes than younger youth. Some evidence was found in support of social status theory: Girls reported stronger literacy stereotypes than boys, and in general did not endorse math/science stereotypes. Boys, the high status group, reported literacy stereotypes favoring girls and only fourth graders endorsed traditional math/science stereotypes. Children’s perceptions of adults’ gender stereotypes were strongly correlated with individual endorsement of gender stereotypes. Implications of the results for course selection and gender differences in valuing of academic domains are discussed.
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Girls are less likely than boys to pursue careers in domains such as engineering, computer science, and the physical sciences (National Science Foundation, 2000, 2008). Professional sports played by men have greater visibility in popular culture and have greater monetary rewards than those pursued by women (Seepersaud, 2007; Women’s Sports Foundation, 2008). On the other hand, girls outperform boys in literacy domains; over the last 30 years, there has been little narrowing of the gender gap in reading (NCES, 2004). In fact, the gender gap increased for 17-year olds in 2004 compared to 1980 and 1988 (NCES, 2006). Researchers have increasingly posited the importance of values and attitudes in explaining the substantial gender differences in educational and career choices of young adults (Eccles, Wigfield, Harold & Blumenfeld, 1993). One social factor in the United States that may shape the developing values and identities of young men and women are gender stereotypes about differences in skills. As children age they may become increasingly likely to endorse the traditional gender stereotypes held by larger society, with resulting repercussions for their eventual educational and occupational choices.

**Gender Stereotype Development**

Stereotypes are shared knowledge structures about particular social groups that are acquired at a young age through socialization practices (Devine, 1989). Various studies have indicated that children as young as two years of age have a limited understanding of some traditional gender stereotypes (Ruble, Martin, & Berenbaum, 2006). This knowledge becomes more detailed and domain specific with age. For
example, 3-5 year olds begin to categorize certain occupations and child and adult activities as male or female; from preschool through fifth grade, children increasingly report gender stereotypes regarding the personality traits of men and women and girls and boys (see Ruble, Martin, & Berenbaum, 2006 for a review). Studies indicate that gender stereotype knowledge continues to develop across childhood, especially when forced choice measures (i.e., in which children are forced to choose one sex or the other) are used in assessment for questions such as “Who is the strong one?” (Signorella, Bigler, & Liben, 1993). On the other hand, when nonforced choice measures are used, older children show a decrease in stereotyped attitudes for questions such as, “Who can…?”

Although most developmental stereotype research has been conducted with children, the study of stereotypes in adolescence is interesting for both theoretical and applied reasons. The onset of puberty may alert adolescents to gender role expectations and lead to increased desire to conform to them (boosting their reliance on stereotypes) (Nash & Feldman, 1981). At the same time, cognitive maturity allows for more flexible opinions of gender norms (Eccles, 1987). From an applied perspective, it is during adolescence that youth’s choices about academic courses, extracurricular activities, and social networks begin to significantly shape their educational and career trajectories; thus, gender-linked beliefs that might influence such choices should be of concern to developmental researchers.

Although much research has focused on children’s awareness of broad societal gender stereotypes—particuarly regarding personality characteristics and work, little has focused on child endorsement of gender stereotypes in specific academic and non-academic skill domains. Specifically, although societal stereotypes about gender
differences in mathematics and science, literacy, and athletic prowess are prevalent, little research has examined the age at which children become aware these stereotypes, and how, with age, endorsement of such stereotypes may become more or less similar to their perceptions of adults’ stereotypes.

In the area of mathematics, children’s parents and teachers have been shown to influence children’s gender stereotype awareness and related outcomes (Bahnot & Jovanovic, 2005; Eccles & Blumenfeld, 1985; Jacobs, 1991; Tiedemann, 2000; Wigfield, 1994). When parents endorse traditional gender stereotypes, they might underestimate their daughters’ ability in male-typed activities, which could have a negative effect on girls’ self-confidence in those areas (Jacobs, 1991). Bhanot and Jovanovic (2005) investigated how parents’ gender stereotypes influenced the amount of intrusive support they give sons versus daughters on homework. While boys received more intrusive support from parents, the study showed that girls were more sensitive than boys to these intrusions when the subject was math. Intrusions during math homework make salient to girls that math is a male domain, promoting self-doubt for girls. Further, when parents believe girls are better in English than math, they are less likely to help their daughters with their English homework. As a result, parents may pass on their gender stereotypes to their children, even in subtle ways (Bhanot & Jovanovic, 2005).

Teachers may also shape students’ gendered beliefs by treating boys and girls differently in the classroom, and by holding different expectations and explanations for behavior and achievement based on gender. For example, teachers provide boys with more helpful and specific feedback than they provide for girls (Eccles & Blumenfeld, 1985). Tiedemann (2000) found that even when boys and girls scored the same on
mathematics tests, teachers still perceived the boys to be more able than the girls, and Wigfield (1994) found that low expectations can be transferred directly from teachers to students. Therefore, teachers’ gender stereotypes are likely to negatively influence girls’ self-confidence about their math abilities and boys’ self-confidence in literacy domains.

As children have more experiences in social situations in which societal stereotypes may be evident, particularly with adults who, consciously or unconsciously, endorse gender stereotypes, they may be more likely to pick up on them. According to general experiential theory, stereotypes are like any form of world knowledge in that older children will be more aware of them than younger children (Rowley et al., 2007). Importantly, children may have the tendency to report gender stereotypes as their own beliefs in an attempt to express their awareness of social stereotypes; therefore, Devine (1989) suggests the importance of distinguishing between a child’s personal beliefs from their stereotype knowledge (Augoustinos & Rosewarne, 2001). In the current study, I address this issue by asking children to separately report what they think and what they think adults think about each of the domains of interest.

**Gender Differences in Self-Competence Perceptions, Achievement, and Valuing of Academic and Sports Domains**

By middle childhood, children’s rankings of their abilities are consistent with traditional stereotypes: On average, boys rank their self-concept the highest and higher than girls, and believe others think they are most capable, in math and science skills, whereas girls rank their self-concept the highest, and believe others think they are most capable, in verbal skills (Eccles, Wigfield, Harold & Blumenfeld, 1993; Sinclair, Hardin, & Lowery, 2006). These self-perceptions are in contrast to national norms, which
showed no gender differences in mathematic abilities in a nationally representative sample of United States fourth and eighth graders on the NAEP (National Assessment of Educational Progress) mathematics assessment in 2004, and minimal differences in 2007 (Lee & Grigg, 2007; NCES, 2006). Researchers have suggested that the value children place on certain domains, reflected by one’s interest and perceived usefulness of a particular activity may influence participation in that domain (Eccles et al., 1993). Eccles et al. (1993) found that elementary-aged boys placed a greater value on sports than girls, and girls placed a greater value on reading than boys. No gender difference was found for math. This combined research indicates that both children’s competency and value beliefs are in line with traditional gender stereotypes.

While elementary-aged children typically see math as appropriate for girls and boys, adolescents begin to think of math as a “masculine” domain (Huston, 1983); in fact, in one recent study, high-school girls were more likely than boys to underestimate their grades in mathematics when they endorsed gender stereotypes (Chatard, Guimond, & Selimbegovic, 2007). Starting in middle school, girls report less positive attitudes about math and science than boys, and this pattern continues into high school and beyond (Schmader, Johns, & Barquissau, 2004; Tittle, 1986). As children enter adolescence their beliefs about their abilities and their perceptions of domain value impact the choices they make regarding activities and classes. Thus adolescents’ identities may be shaped by their self-views, which are likely influenced by their gender stereotype endorsement.

The Impact of Social Status on Gender Stereotype Endorsement

In his classic social identity theory, Tajfel (1970) noted that although individuals have a natural tendency to show a positive bias toward their own social groups,
individuals of low status groups are less likely than members of high status groups to show in-group bias. Instead, these individuals sometimes affirm socially-sanctioned status differences by favoring out-group members. Rowley et al. (2007) extended this theory by showing that in the real world situations of status differences in race and gender groups, members of low status groups (i.e., girls, African Americans) endorse stereotypes that favor their own group, but are less likely than members of high status groups (boys, Whites) to endorse stereotypes that reflect negatively on their own social group.

Because of negative stereotypes about girls’ performance in math and science, girls as a low-status group may choose to strongly endorse the stereotype that girls are better than boys in literacy skills and may report egalitarian stereotypes for math/science. Boys, on the other hand, being members of a high status group, may report that they are better than girls in math/science and sports, and that girls are better in reading/writing. According to social status theory, boys may be more likely than girls to endorse these traditional gender stereotypes for all domains, indicating both positive and negative attributes of their group, because as members of a high-status group, boys have less need than girls to report group-enhancing beliefs (Rowley et al., 2007). It would be adaptive for girls’ self-esteem to deny negative stereotypes about their group (Tajfel, 1970). Additionally, as previously mentioned, boys may not value reading and writing skills as much as girls, and girls may not value sports as much as boys, making both groups more willing to report that their counterparts are better in those particular domains. Interestingly, the patterns of stereotype endorsement may vary for girls and boys based on race.
The Role of Race in Gender Stereotype Development

As African American boys progress from elementary to middle school they are increasingly likely to recognize the negative images and stereotypes held by others about their group (Graham, 2004). As a result, some ethnic minority boys may begin to devalue academic achievement and instead focus their attention on nonacademic pursuits, such as sports (Graham, 2004; Graham, Taylor, & Hudley, 1998). In light of this process, one might expect African American boys to be less likely than White boys to report traditional math/science gender stereotypes, because African American boys may place less value on academic domains and choose only to endorse stereotypes for domains in which they are expected to excel. However, Rowley et al. (2007) found that Black boys, and not White boys, reported traditional math/science stereotypes. This question is further explored in the current study.

In addition, previous research has shown that African American girls may be viewed in a better light than African American boys within school settings (Chavous, Harris, Rivas, Helaire, & Green, 2004; Rowley, Kurtz-Costes, & Cooper, in press). Because of their relatively strong performance, gender has the potential to serve as a protective factor for ethnic minority girls in schools. Negative academic assumptions are more likely to be held for ethnic minority boys, despite the fact that African American girls are representative of two marginalized groups about whom negative academic stereotypes are held (Chavous et al., 2004; Hudley & Graham, 2001). Hudley and Graham (2001) asked seventh and eighth graders to nominate high and low academic achievers from an ethnically diverse set of photos of girls and boys. Both boys and girls in their sample were more likely to choose ethnic minority boys (in comparison to ethnic
minority girls and White boys) as low academic achievers. Additionally, whereas White boys tended to select pictures of White boys as high achievers, African Americans chose only African American girls, but not boys, as high achievers (Hudley & Graham, 2001).

Rowley and her colleagues (2007) examined race and gender stereotype endorsement of Black and White fourth, sixth, and eighth graders concerning a variety of domains. They found that younger children were less likely than older children to endorse traditional gender stereotypes, indicative of the younger children’s in-group biases. Black boys in their sample reported egalitarian scores for reading/writing and scores that favored boys in math and science. In contrast, White boys reported egalitarian scores for math and science and scores favoring girls in reading/writing. Black girls reported the highest scores favoring females in reading/writing and math/science, suggestive of their low-status standing or their actual outstanding academic achievement. This study highlights the importance of social group status in endorsement of gender stereotypes. Members of low status groups were more likely than high status groups to deny negative stereotypes and strongly endorse positive stereotypes held about their group. In addition, all groups showed evidence of self-enhancement (Rowley et al., 2007).

In light of these findings, research on academic gender stereotypes held by Whites might not accurately portray stereotype endorsement of Blacks (Rowley et al., 2007). In this study, we explored stereotype endorsement patterns of both Blacks and Whites, with the expectation that Black boys and girls might show less traditional beliefs than White children in the domain of math/science. Furthermore, if it is the case that Black boys are viewed by themselves and others as the lowest-status group, then according to status
theory, they should report egalitarian gender stereotypes for the academic domains and report that boys are better than girls in sports.

*The Present Study*

The goal of the current study was to examine age, gender, and race differences in Black and White children’s reports of their own and adults’ gender stereotypes regarding math/science, reading/writing, and sports abilities, thereby extending the findings of Rowley et al. (2007). Whereas Rowley et al. (2007) had children rate various groups’ domain competencies (using separate measures for boys and girls), we asked children to select who is better, boys or girls, in math/science, reading/writing, and sports. In this way, we aimed to more precisely tap children’s gender stereotypes and their perceptions of adults’ stereotypes for academic and sports domains. Beliefs about adults’ gender stereotypes were not assessed by Rowley et al. (2007), therefore another goal of this study was to include this measure in order to better capture children’s gender stereotype knowledge, and to compare children’s beliefs about adults’ gender stereotypes to their own. In line with the Rowley et al. extension of social identity theory and integration with experiential theory, we predicted that:

1). All groups would show in-group bias. When comparing the stereotype scores of boys and girls, at each grade level, for each domain, gender differences in reports would reflect in-group bias even if a group endorsed a stereotype that did not favor their group. For example, while all groups were expected to report that boys are better in sports than girls, girls’ mean stereotype score for sports would be less traditional than boys, indicating a bias on the part of both boys and girls towards their own group.
2). According to experiential theory, older children would report stronger
traditional stereotypes than younger children. Averaging across domains, eighth
graders will report stronger traditional stereotypes than fourth or sixth graders.
3). Compared to high-status groups, low-status groups would exaggerate
stereotypes that favor their own group, and would deny or downplay negative
stereotypes held about their group. As members of a low-status group, girls
would report that they are much better than boys in reading/writing, but would
report egalitarian views concerning math/science. Boys on the other hand, being
members of a high-status group, would report that boys are better than girls in
math/science, but that girls are better than boys in reading/writing. Thus, unlike
girls, boys would report academic stereotypes that reflect both positively
(math/science) and negatively (language arts) on their group. Status effects were
not predicted for girls concerning sports, because prior research has shown that
girls do not value sports ability as much as they value academic ability (Eccles et
al., 1993). Status effects in relation to race were considered exploratory.

4). There would be a significant positive correlation between what children report
they think and what they report adults think for each domain.

Method

Participants

Participants were 385 children and adolescents living in the Southeastern region
of the U.S.A. Although children of other races and ethnicities participated in the study,
the current report included only those children who reported that they were European
American/White (n = 256) or African American/Black (n = 129), because we wanted to
compare the gender stereotypes held by White children to those of Black children.
Children were told to select the label (European American/White, African
American/Black, Hispanic/Latino, Native American, Asian American/Pacific Islander or
Other) that best represented their racial or ethnic group. A bi- or multi-racial
classification was given to participants who circled more than one ethnic group and they
were excluded from the present study.

The sample consisted of 162 fourth graders (78 boys, 84 girls), 111 sixth graders
(50 boys, 61 girls) and 112 eighth graders (34 boys, 78 girls). Participants were drawn
from five elementary schools, four middle schools, and one K-8 school. Percent African
American of the participating schools’ student population ranged from 18 percent to 84
percent. Mean ages were 9.5 years ($SD = .53$) for fourth graders, 11.5 years ($SD = .64$)
for sixth graders, and 13.5 years ($SD = .58$) for eighth graders.

Procedure

Written parental-informed consent was obtained for each study participant.
Children were administered self-report questionnaires in groups of two to 15 participants
at their school in a single session. A prepared script which gave general guidelines and
asked participants to provide a response for each item was read aloud by a research
assistant. One White and one Black research assistant were present at most of the
sessions. While the majority of the fourth grade interviews were administered by female
research assistants, we discovered that the presence of a male research assistant made
recruiting sixth and eighth grade boys easier; therefore, several of the middle school
interviews were administered by both a female and a male research assistant. At the
conclusion of the session, participating children were given a small gift (e.g., flashlight, stress ball, key chain).

Measures

*Academic and Sports Stereotypes.* Five-point Likert scale items were used to assess children’s beliefs about how boys and girls perform in a variety of domains, including sports, mathematics, science, and literacy (reading/writing). For example, the item “I think that in science” was followed by a scale with 1 = “boys are much better than girls,” 2 = “boys are a little better than girls,” 3 = “boys and girls are the same,” 4 = girls are a little better than boys,” and 5 = “girls are much better than boys.” Separate items were used to assess beliefs about sports, math, and science. One additional item assessed stereotypes about reading, spelling, and writing. Children were also asked to rate what they believe adults would say about each of the above domains. The response scale was the same, but the prompt read, “Most grownups think that in science,” instead of “I think that in science.” The children were asked to “circle the number below that comes closest to explaining how you feel/how you think most grownups feel.” Math and science items were averaged for each child to create one combined math/science score. Mean scores were adjusted so that higher numbers reflect stronger endorsement of traditional gender stereotypes on all measures.

Results

To analyze grade, gender, and race differences in children’s reports of their individual gender stereotypes and their perceptions of adults’ gender stereotypes in math/science, reading/writing, and sports, a doubly-repeated-measures ANOVA was utilized. Grade (4, 6, 8), Gender (female, male), and Race (Black/White) were entered as
between-subjects variables and Domain (i.e., reading/writing, math/science, sports) and Belief Source (i.e., the child’s stereotypes versus the child’s perception of adults’ stereotypes), were the within-subjects (repeated) variables, resulting in a 3(Grade) x 2(Gender) x 2(Race) x 3(Domain) x 2(Belief Source) doubly-repeated-measures ANOVA design.

Tables 1 and 2 show means and standard deviations of children’s gender stereotypes and their perceptions of adults’ stereotypes, respectively, for each domain by race, gender, and grade level. Means are based on descriptive statistics and therefore may be different than the estimated marginal means reported in the next section. We considered that mean scores of 3.2 and above represented traditional beliefs and that mean scores of 2.8 and below represented nontraditional beliefs. Scores within the 2.8 to 3.2 range reflected egalitarian beliefs. Group mean comparisons throughout the results section were based on 95% confidence intervals.

Correlations among the study variables can be found in Table 3. Participants who reported higher traditional gender stereotypes also reported that adults hold more traditional stereotypes, as predicted in Hypothesis 4. Overall, higher traditional gender stereotypes for Math/Science were associated with less traditional gender stereotypes for Reading/Writing.

*Children’s Stereotypes and their Perceptions of Adults’ Stereotypes*

In the 3(Grade) x 2(Gender) x 2(Race) x 3(Domain) x 2(Belief Source) doubly-repeated-measures ANOVA on stereotype scores, the main effect of Domain was significant, $F (2, 746) = 114.29, p < .001$. On average, for the entire sample of participants, traditional gender stereotypes were reported for Sports (S) and
Reading/Writing (R/W), whereas the mean score for Math/Science (M/S) was egalitarian ($M_S = 3.83, SD = .04; M_{R/W} = 3.41, SD = .04; M_{M/S} = 2.97, SD = .03$). The mean for Sports was the highest, then Reading/Writing, which was higher than Math/Science, $F(1, 373) = 67.04$ and $66.04$, $p’s < .001$, respectively.

The Domain x Grade and Domain x Gender interactions were significant, $F(4,746) = 8.17, p < .001$, and $F(2,746) = 33.02, p < .001$, respectively. The two-way interactions were qualified by a significant three-way interaction of Domain x Grade x Gender, $F(4,746) = 6.44, p < .001$ (see Figure 1), providing partial evidence for our hypotheses that children would show in-group bias, older children would be more likely than younger children to report stereotypes that reflect traditional views, and that group status would play a role in stereotype endorsement.

To interpret the three-way interaction, the Grade x Gender means are examined within each domain. For the domain of Sports, all group means were consistently traditional, with boys at each grade level reporting stronger stereotypes than girls, on average, indicative of in-group bias as predicted in Hypothesis 1 (for boys, $M_{4th} = 4.17, SD = .09; M_{6th} = 4.15, SD = .10; M_{8th} = 4.07, SD = .13$; for girls, $M_{4th} = 3.41, SD = .09; M_{6th} = 3.52, SD = .09; M_{8th} = 3.66, SD = .08$). For Reading/Writing, the mean scores for girls at each grade level and sixth- and eighth-grade boys were traditional, whereas the mean score for fourth-grade boys was egalitarian. On average, fourth-grade girls’ reports of reading/writing stereotypes were significantly higher than fourth-grade boys’ reading/writing stereotypes, again suggesting in-group bias for the youngest grade, and status effects for girls. Additionally, sixth- and eighth-grade boys’ literacy stereotype scores were higher than fourth-grade boys’ scores, on average, providing evidence for the
experiential theory proposed in Hypothesis 2 (for boys, \( M_{4th} = 2.92, SD = .09; M_{6th} = 3.38, SD = .09; M_{8th} = 3.62, SD = .12; \) for girls, \( M_{4th} = 3.44, SD = .08; M_{6th} = 3.50, SD = .08; M_{8th} = 3.58, SD = .07 \)). Last, for Math/Science, the mean stereotype score for fourth-grade boys was the highest, and it was the only traditional score. On average, sixth- and eighth-grade boys and fourth- and eighth-grade girls held egalitarian beliefs; sixth-grade girls were nontraditional and their mean was lower than all other groups except for fourth-grade girls (for boys, \( M_{4th} = 3.44, SD = .06; M_{6th} = 2.92, SD = .07; M_{8th} = 2.99, SD = .09; \) for girls, \( M_{4th} = 2.81, SD = .06; M_{6th} = 2.71, SD = .06; M_{8th} = 2.93, SD = .06 \)). As predicted in Hypothesis 3, the reading/writing and math/science results for girls provide support for group-status theory. That is, girls—members of the low status group—were more likely than boys—high status group members—to report stereotypes in which their group was viewed positively, and they were less likely to report negative stereotypes about their group.

The three-way interaction of Domain x Grade x Race was also significant, \( F(4,746) = 2.51, p < .05 \) (see Figure 2). All group means were traditional for Sports, and these beliefs did not differ across Race or Grade. For Reading/Writing, the means for all groups were also traditional, except for fourth-grade Black students, who, on average, were egalitarian (for Whites, \( M_{4th} = 3.27, SD = .06; M_{6th} = 3.43, SD = .08; M_{8th} = 3.56, SD = .08; \) for Blacks, \( M_{4th} = 3.09, SD = .10; M_{6th} = 3.44, SD = .10; M_{8th} = 3.64, SD = .12 \)). Sixth and eighth-grade White children reported significantly higher scores than fourth-grade White children, and sixth- and eighth-grade Black children reported significantly higher scores than fourth-grade Black children, providing support for experiential theory (Hypothesis 2). For the domain of Math/Science, all groups had means that were
egalitarian, with the exception of sixth-grade Black students, whose mean was significantly lower than all other groups and was nontraditional (for Whites, $M_{4th} = 3.07$, $SD = .04$; $M_{6th} = 2.96$, $SD = .06$; $M_{8th} = 2.97$, $SD = .06$; for Blacks, $M_{4th} = 3.18$, $SD = .07$; $M_{6th} = 2.67$, $SD = .07$; $M_{8th} = 2.96$, $SD = .09$). The interactions of Domain x Race, Domain x Gender x Race, and Domain x Grade x Gender x Race were nonsignificant, all $Fs < 2.0$.

The main effect of Source and the Source x Gender interaction were also significant, $F (1, 373) = 42.82$ and $4.67, p < .001$ and .05, respectively. For the sample as a whole, across domains, the mean for the children’s own stereotype beliefs was lower than the mean for the children’s perceptions of adults’ stereotypes ($M_c = 3.31$, $SD = .02$; $M_A = 3.49$, $SD = .03$), indicating that, on average, children reported that they perceive adults to more strongly endorse gender stereotypes than they do. The significant Source x Gender interaction reflected that although both boys and girls reported that adults’ stereotypes were more traditional than their own, the mean for girls’ reports of their own beliefs was significantly lower than the other three means (for boys, $M_c = 3.46$, $SD = .04$; $M_A = 3.58$, $SD = .04$; for girls, $M_c = 3.17$, $SD = .03$; $M_A = 3.40$, $SD = .03$).

The interactions of Domain x Source and Domain x Source x Gender (see Figure 3) were also significant, $F(2, 746) = 16.11$ and $5.34, p < .001$ and .01, respectively. To interpret the three-way interaction, the results are summarized within each domain. For the domain of Sports, all group means were consistently traditional, and boys, on average, for both their individual and perceptions of adults’ stereotypes, reported stronger stereotypes than girls, indicative of in-group bias as predicted in Hypothesis 1 (for boys, $M_c = 4.00$, $SD = .08$; $M_A = 4.27$, $SD = .08$; for girls, $M_c = 3.31$, $SD = .06$; $M_A = 3.75$, $SD = .06$).
The means for both boys’ and girls’ individual stereotypes were lower than the means for boys’ and girls’ perceptions of adults’ stereotypes, respectively. Next, for Reading/Writing, girls, on average, reported higher scores than boys, both for individual and perceptions of adults’ stereotypes (for boys, $M_C = 3.20, SD = .07$; $M_A = 3.41, SD = .07$; for girls, $M_C = 3.46, SD = .05$; $M_A = 3.56, SD = .05$). While the mean for girls’ individual stereotypes did not differ from girls’ perceptions of adults’ stereotypes, the mean for boys’ perceptions of adults’ stereotypes was higher than boys’ reports of their own beliefs. Finally, for Math/Science, the means for boys’ individual and perceptions of adults’ stereotypes were higher than girls’ individual and perceptions of adults’ stereotypes (for boys, $M_C = 3.18, SD = .05$; $M_A = 3.05, SD = .05$; for girls, $M_C = 2.74, SD = .04$; $M_A = 2.89, SD = .04$). While the mean for boys’ individual stereotypes was higher than the mean for boys’ perceptions of adults’ stereotypes, the mean for girls’ perceptions of adults’ stereotypes was higher than the mean for girls’ individual stereotypes. These results show that whereas both boys and girls, on average, perceive adults to hold egalitarian views regarding math/science, each gender group favored its own group, on average, in reports of their own stereotypes. Again, both the reading/writing and math/science results for girls provide evidence for group-status theory in that, on average, girls reported stereotypes that reflected positively on their own group, but did not report negative stereotypes.

The main effects of Grade and Gender were significant, $F (2, 373) = 3.14, p < .05$ and $F(1, 373) = 34.37, p < .001$, respectively. Across domains, eighth graders ($M_{8th} = 3.48, SD = .04$), were more traditional than fourth and sixth graders ($M_{4th} = 3.37, SD = .03$; $M_{6th} = 3.36, SD = .03$), providing support for experiential theory (Hypothesis 2). In
addition, the mean of boys’ stereotypes, across domains \((M_B = 3.52, SD = .03)\) was higher, and more traditional, than that of girls \((M_G = 3.28, SD = .03)\). The main effect of Race was nonsignificant, as were the Grade x Gender, Grade x Race, Gender x Race, and Grade x Gender x Race interactions, all \(Fs < 1.0\).

To broadly summarize these results, as predicted, evidence of in-group bias was found for all three skill domains, and older children were more likely than younger children on average to report traditional sports and literacy stereotypes. In contrast, math/science stereotypes were not more consistently traditional among older children than younger children. The means for literacy and math/science stereotypes for girls were partially consistent with predictions of status theory: Girls, on average, reported traditional literacy stereotypes and egalitarian math/science stereotypes. Older boys, on average, also reported traditional literacy stereotypes. However, math/science beliefs of older boys were egalitarian. Correlation analyses revealed consistently strong relationships between children’s reports of their own stereotypes and their perceptions of adult stereotypes.

Discussion

The purpose of this study was to test theoretical suppositions of experiential and status theory regarding the academic and sports gender stereotypes of Black and White children in fourth, sixth, and eighth grade. The results of the current study support both theories, and extend the results of Rowley et al. (2007). In addition to using a stereotype measure in which children made direct comparisons of the abilities of boys and girls, an added component to this study was the inclusion of the measures assessing children’s perceptions of adults’ gender stereotypes. Comparisons across domains enabled us to
determine the relative strength of children’s gender stereotypes regarding sports, math/science, and reading/writing. In discussing the findings of this study, it is important to remember that the mean scores reported above represent a range of beliefs. For each domain there were children who were traditional, egalitarian, and nontraditional.

**In-Group Bias and Gender Stereotypes**

Consistent with Tajfel’s (1970) social identity theory, it was expected that individuals would report a positive bias toward their own social groups. Indeed, self-enhancement did appear to be common to most groups in all domains, but not to a degree that strongly opposed the larger society’s gender stereotypes (Rowley et al., 2007). For example, while both boys and girls reported traditional stereotypes for Sports, boys at each grade level reported stronger stereotypes than girls, suggesting in-group enhancement for both boys and girls. Younger children, particularly fourth-grade boys, seemed to rely on in-group enhancement more than older children across domains.

**Experiential Theory and Endorsement of Gender Stereotypes**

When averaging across domains, as predicted, eighth graders reported stronger traditional stereotypes than fourth and sixth graders. This finding provides support for the experiential theory, suggesting that older children have had more time to become aware of the larger society’s gender stereotypes. However, this result was qualified by the Domain x Grade x Gender interaction. Older children were more likely than younger children to *perceive* and to *endorse* traditional gender stereotypes about language arts. Older girls held more traditional sports stereotypes than younger girls. However, traditionality did not increase with age in boys’ reports of sports stereotypes (which were highly traditional at all ages), and not among math/science stereotypes. In fact, both boys
and girls reported egalitarian math/science stereotypes in eighth grade. Considering that boys in fourth grade reported traditional stereotypes for math/science and older boys reported lower scores and were egalitarian, there appears to be little support for the experiential theory in the math/science domain for this sample of boys. While eighth-grade girls’ scores for math/science were more traditional than fourth-grade girls’ scores, sixth-grade girls were actually the least traditional, so among girls there also seems to be little evidence of an increasing likelihood to endorse traditional stereotypes. However, our data are cross-sectional and do not extend beyond middle-school aged youth. These issues will be addressed further in the limitations section below.

**Status Effects on Gender Stereotype Endorsement**

Our results provided some evidence for status effects on the endorsement of gender stereotypes. For example, girls—the low status group—were more likely to perceive and endorse stronger traditional gender stereotypes about language arts than boys were to endorse math/science stereotypes. Furthermore, sixth- and eighth-grade boys (members of the high-status gender group) reported traditional literacy stereotypes. However, fourth-grade boys were egalitarian in their reports of literacy stereotypes, and girls of all ages endorsed sports stereotypes. Taken together, these findings within the academic domains indicate that girls, as members of a low-status group, are more likely to endorse positive stereotypes about their group than boys, high-status group members, and that as high-status group members, boys are more willing to report stereotypes that reflect negatively on their group. It is also possible that boys value the domain of reading/writing less than girls (Eccles et al., 1993), and that they therefore are more likely to endorse the stereotype that girls are better in language arts than they are. Similarly,
girls may value the domain of sports less than boys (Eccles et al., 1993), allowing for girls’ strong endorsement of traditional sports stereotypes, despite their low-status group membership and the tenets of status theory.

The findings for math/science stereotypes were not as straightforward. Taken together, the Domain x Grade x Gender and Domain x Grade x Race interactions showed that sixth graders—particularly sixth-grade girls and sixth-grade African American boys—were more nontraditional than all other children in their beliefs about math/science abilities. Only fourth-grade boys were traditional, with other group means reflecting egalitarian beliefs. These findings may reflect the tenets of status theory (that as members of a low-status group, girls are less likely than boys to report negative societal stereotypes that are held about their group). Alternatively, because girls are performing as well, if not better, than boys in math/science at least up until high school, boys and girls might be reporting beliefs about abilities that reflect their current realities. As such, it is possible that both genders may report traditional gender stereotypes if they were assessed again later in development, if and when gender differences in achievement arise or become salient.

Averaging across domains, boys reported more traditional beliefs than girls. However, the significant interactions showed that boys’ relatively higher scores for sports drove the finding that boys are more traditional than girls. Nevertheless, prior research does show that, in general, girls tend to display less stereotypical thinking than boys, especially when assigning traits to particular genders, whereas boys are more rigid, on average (Huston, 1983; Ruble, Martin, & Berenbaum, 2006; Signorella, Bigler, & Liben, 1993).
Racial Differences in Reports of Gender Stereotypes

Given the negative stereotypes that society holds about Black boys’ academic achievement, we wanted to explore the gender stereotypes of Black boys and girls, particularly for math/science. If Black children reported that girls are better in Math/Science than boys, this result would contradict traditional societal stereotypes that say that boys are better in Math/Science. Among Black students, only sixth graders reported that girls were better than boys in Math/Science. It is not clear why these nontraditional views were found only for sixth-grade Black children, and not among fourth and eighth graders. However, it is important to note that this finding might have been driven primarily by Black girls, more so than Black boys, because we have more Black girls than Black boys in our sample. This finding may indicate that Black girls are aware of the negative academic stereotypes held about Black boys. If African Americans believe that African American girls are better than African American boys across academic domains, then status theory would predict that Black boys, as low-status group members based on their race, would report egalitarian stereotypes for math/science and reading/writing in an attempt to deny society’s negative stereotypes about their group. However, for our sample, we did not find evidence to support this particular notion (as we did not find a significant Race x Gender interaction).

Perceptions of Adults’ Stereotypes

As expected, children’s reports of their own gender stereotypes were strongly correlated with their perceptions of adults’ gender stereotypes for all domains. As a whole, boys and girls both reported stronger traditional perceptions of adults’ stereotypes for Sports than for Reading/Writing and Math/Science. In most cases, children’s reports
of their own stereotypes were less traditional than their reports of their perceptions of adults’ stereotypes. On average, boys reported higher scores for adults than themselves for Sports and Reading/Writing, while girls reported higher scores for adults than themselves for Sports and Math/Science. Thus, each gender group reported that adults have stronger traditional stereotypes in the academic domain in which their own gender group is negatively stereotyped.

As previous research has shown, parents and teachers may unwittingly convey their gender stereotypes to their children and students (Bahnot & Jovanovic, 2005; Eccles & Blumenfeld, 1985; Jacobs, 1991; Tiedemann, 2000; Wigfield, 1994). The current study shows that, on average, youth in this sample believe that adults are highly stereotyped in the domains of reading/writing and sports. These beliefs may have influenced children’s own traditional beliefs in these domains. Additionally, when children think that adults endorse traditional gender stereotypes, their performance and self-concept may be undermined in the domains in which negative stereotypes are believed to be held about their social group (Bahnot & Jovanovic, 2005; Eccles & Blumenfeld, 1985; Jacobs, 1991; Kurtz-Costes et al., 2008; Tiedemann, 2000; Wigfield, 1994). Even though not all children may endorse traditional gender stereotypes themselves, if they believe that adults endorse traditional gender stereotypes, then the children may suffer related consequences.

Study Implications, Limitations, and Suggestions for Future Research

Although a central goal of the study was to differentiate between children’s knowledge of gender stereotypes (indicated by their perceptions of adults’ stereotypes) and their actual individual endorsement of gender stereotypes, some caution must be
taken in interpreting these results. First, as would be the case with any study of social stereotypes, it is possible that these children’s reports reflect social desirability. That is, they may not have fully expressed their honest views concerning their beliefs about girls and boys in the domains of interest. In general, it might be most socially desirable to indicate that one has egalitarian stereotypes across all domains. The stereotype measure used may have particularly led to social desirability because of the forced choice between boys and girls. A more indirect measure of beliefs might have yielded stronger stereotype reports (Rowley et al., 2007). Future research should consider new and innovative ways of controlling for effects of social desirability when measuring a variety of social stereotypes.

Another limitation of the study is that it relies on cross-sectional data. Approaching the hypotheses of this study with a longitudinal design would allow for a more accurate description of the ways children’s stereotypes change over time. It would also be of interest to conduct a similar study with a much larger sample of children, so that factors such as academic achievement, the degree to which one values certain domains, ability perceptions, parental income and education, participation in advanced classes, extracurricular activities, experiences with gender discrimination, etc. could all be evaluated as possible influences on gender stereotype endorsement. For example, if a boy does not value reading and writing skills, and a girl does not value sports ability, then it is possible that they may not feel the need to endorse egalitarian beliefs concerning those particular domains. However, if one does value a particular domain about which negative stereotypes are held for one’s social group, then endorsing egalitarian beliefs could be adaptive (Tajfel, 1970).
Future research could also attempt to untangle the race differences that emerged in this study. First, measures could be used that clarify the reference group boys and girls use. In the current study, it was unclear whether children were using their own racial group as the reference group for items, or a more diverse group (e.g., was a Black girl comparing all girls and boys across racial groups, or was she thinking instead of Black boys vs. Black girls?). In addition, school-related factors that may have influenced children’s responses should be examined to disentangle age and contextual influences.

The finding that sixth-grade girls and sixth-grade Black children were more nontraditional than other groups may have been linked to contextual factors such as the race make-up of children’s schools or even of the attitudes of a specific math or science teacher. We were unable to control for school and classroom factors in the current study because cell sizes would have been too small to detect effects. A larger sample size would be beneficial in future research.

The results of this study have implications for gender differences in students’ course selection in high school and ultimately for career choices. By middle school, when youth begin to have more choices regarding their course selections, boys report greater competence among boys in math and science, and girls favor girls in literacy domains. Youth are likely to take courses in domains in which they believe they are competent. Therefore, if boys believe that they are more competent in math and science than in literacy domains, they will be likely to make curricular decisions consistent with these beliefs. Similarly, even though girls, on average, reported egalitarian views for math/science, they strongly endorsed traditional stereotypes for reading/writing, which may lead girls to focus on their literacy skills. As a result, endorsement and/or awareness
of traditional gender stereotypes may be limiting the aspirations or young people. It would be interesting to examine the range of belief patterns reported by girls and boys and their associated outcomes. For example, would a girl’s course selection, achievement, and future career path differ if she endorsed egalitarian stereotypes for all domains versus traditional stereotypes for all domains, versus nontraditional stereotypes for all domains, versus various combinations of stereotype beliefs based on particular domains? Furthermore, future studies should examine how gender stereotype endorsement changes longitudinally as youth move from middle to high school and the implications for identity, self-perceptions, and motivation to achieve in stereotypically “male” and “female” domains. A longitudinal design would be required for such an endeavor.

Researchers should also investigate racial differences in gender stereotype endorsement as youth transition to higher education settings. Understanding these differences and changes over time in gender stereotype endorsement might provide further explanations for the differential performance and self-competence ratings of girls and boys of both races in a variety of academic domains. Parents and teachers should be aware of the stereotypic messages they may convey, directly or indirectly, to children, and attempt to communicate unbiased, high expectations of all children.
Table 1

*Means and Standard Deviations for each of the Individual’s Stereotypes, by Race, Gender, and Grade*

<table>
<thead>
<tr>
<th></th>
<th>Whites</th>
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<th>Blacks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>4th</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports</td>
<td>3.95 (.82)</td>
<td>3.38 (.66)</td>
<td>4.32 (.82)</td>
<td>3.09 (.95)</td>
</tr>
<tr>
<td>Reading/Writing</td>
<td>3.12 (.87)</td>
<td>3.33 (.63)</td>
<td>2.74 (1.09)</td>
<td>3.43 (.79)</td>
</tr>
<tr>
<td>Math/Science</td>
<td>3.32 (.72)</td>
<td>2.85 (.41)</td>
<td>3.58 (.87)</td>
<td>2.61 (.54)</td>
</tr>
<tr>
<td>6th</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports</td>
<td>3.94 (.93)</td>
<td>3.23 (.91)</td>
<td>4.00 (.88)</td>
<td>3.31 (1.05)</td>
</tr>
<tr>
<td>Reading/Writing</td>
<td>3.10 (.83)</td>
<td>3.37 (.55)</td>
<td>3.32 (.67)</td>
<td>3.58 (.76)</td>
</tr>
<tr>
<td>Math/Science</td>
<td>3.23 (.68)</td>
<td>2.79 (.65)</td>
<td>2.81 (.61)</td>
<td>2.44 (.65)</td>
</tr>
<tr>
<td>8th</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports</td>
<td>4.08 (.65)</td>
<td>3.50 (.72)</td>
<td>3.70 (.95)</td>
<td>3.34 (.94)</td>
</tr>
<tr>
<td>Reading/Writing</td>
<td>3.42 (.71)</td>
<td>3.52 (.62)</td>
<td>3.50 (.71)</td>
<td>3.50 (.88)</td>
</tr>
<tr>
<td>Math/Science</td>
<td>3.10 (.78)</td>
<td>2.90 (.40)</td>
<td>3.05 (.28)</td>
<td>2.86 (.41)</td>
</tr>
</tbody>
</table>

*Note.* Higher scores reflect more traditional stereotypes.
Table 2

*Means and Standard Deviations for each of the Perceptions of Adults’ Stereotypes, by Race, Gender and Grade*

<table>
<thead>
<tr>
<th></th>
<th>Whites</th>
<th></th>
<th>Blacks</th>
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</thead>
<tbody>
<tr>
<td>Boys</td>
<td>Girls</td>
<td>Mean (SD)</td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>4th</td>
<td>Sports</td>
<td>4.22 (.74)</td>
<td>3.46 (.83)</td>
<td>4.21 (.98)</td>
</tr>
<tr>
<td></td>
<td>Reading/Writing</td>
<td>3.19 (.88)</td>
<td>3.44 (.67)</td>
<td>2.63 (1.07)</td>
</tr>
<tr>
<td></td>
<td>Math/Science</td>
<td>3.25 (.56)</td>
<td>2.86 (.44)</td>
<td>3.60 (.91)</td>
</tr>
<tr>
<td>6th</td>
<td>Sports</td>
<td>4.19 (.83)</td>
<td>3.83 (.79)</td>
<td>4.47 (.70)</td>
</tr>
<tr>
<td></td>
<td>Reading/Writing</td>
<td>3.68 (.83)</td>
<td>3.57 (.65)</td>
<td>3.42 (.77)</td>
</tr>
<tr>
<td></td>
<td>Math/Science</td>
<td>2.94 (.68)</td>
<td>2.90 (.43)</td>
<td>2.71 (.56)</td>
</tr>
<tr>
<td>8th</td>
<td>Sports</td>
<td>4.29 (.75)</td>
<td>3.89 (.95)</td>
<td>4.20 (.79)</td>
</tr>
<tr>
<td></td>
<td>Reading/Writing</td>
<td>3.75 (.85)</td>
<td>3.57 (.65)</td>
<td>3.80 (.63)</td>
</tr>
<tr>
<td></td>
<td>Math/Science</td>
<td>2.81 (.66)</td>
<td>3.04 (.33)</td>
<td>3.00 (.47)</td>
</tr>
</tbody>
</table>

*Note.* Higher scores reflect more traditional stereotypes.
Table 3

*Bivariate Correlations among the Variables*

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<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Individual sports stereotype</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Individual reading/writing stereotype</td>
<td>-.01</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Individual math/science stereotype</td>
<td>.28**</td>
<td>-.45**</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Perception of adults’ sports stereotype</td>
<td>.52**</td>
<td>.08</td>
<td>.14**</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Perception of adults’ reading/writing stereotype</td>
<td>-.08</td>
<td>.45**</td>
<td>-.34**</td>
<td>.13*</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>6. Perception of adults’ math/science stereotype</td>
<td>.15**</td>
<td>-.24**</td>
<td>.48**</td>
<td>.08</td>
<td>-.29**</td>
<td>–</td>
</tr>
</tbody>
</table>

*Note.* *p*<.05, **p**<.01
Figure Captions

Figure 1. Mean Scores for Fourth-, Sixth- and Eighth-Grade Children for Reports of Gender Stereotypes Concerning each of the Domains, by Gender.

Figure 2. Mean Scores for Fourth-, Sixth- and Eighth-Grade Children for Reports of Gender Stereotypes Concerning each of the Domains, by Race.

Figure 3. Mean Scores for Children’s Individual and Perceptions of Adults’ Gender Stereotypes Concerning each of the Domains, by Gender.
Child and Adult Belief Source

Gender Stereotypes

- Boys S
- Boys R/W
- Boys M/S
- Girls S
- Girls R/W
- Girls M/S


