

Gender Attitudes in Early Childhood: Behavioral Consequences and Cognitive Antecedents

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This study examined factors that predicted children's gender intergroup attitudes at age 5 and the implications of these attitudes for intergroup behavior. Ethnically diverse children from low-income backgrounds ($N = 246$; Mexican-, Chinese-, Dominican-, and African American) were assessed at ages 4 and 5. On average, children reported positive same-gender and negative other-gender attitudes. Positive same-gender attitudes were associated with knowledge of gender stereotypes. In contrast, positive other-gender attitudes were associated with flexibility in gender cognitions (stereotype flexibility, gender consistency). Other-gender attitudes predicted gender-biased behavior. These patterns were observed in all ethnic groups. These findings suggest that early learning about gender categories shape young children's gender attitudes and that these gender attitudes already have consequences for children's intergroup behavior at age 5.

Children's divisions into girl and boy "camps" offer a dramatic view into the powerful effects of social identity. Around the world, girls tend to play with girls, whereas boys tend to play with boys (MacCoby, 1998). Such stark separation is stunning, yet as adults we tend to accept this segregation without a thought and sometimes even encourage it. Although children's apparent rejection of the other gender may seem cute and harmless, this early segregation may form the root of biases that have more serious consequences later in life. Biased attitudes can lead to the exclusion of others, even despite norms of fairness and equality among children (Bennett, 2014; Rutland & Killen, 2015; Rutland, Killen, & Abrams, 2010). Biased attitudes can also perpetuate gender segregation, which may

result in increased gender stereotyping and gender-stereotypical behavior (Martin & Ruble, 2010). Indeed, the gender segregation that we see early on in life continues to be prevalent in adulthood. Gender segregation is prevalent in the workplace and among adult friendships (Mehta & Strough, 2009), and this segregation is believed to affect cross-gender relationships and encourage gender discrimination (Rudman & Glick, 2008). Because of these important potential implications, the current study aimed to investigate factors that might influence gender attitudes as they emerge in early childhood, as well as the consequences of gender attitudes for intergroup behavior.

Early childhood is a critical time when children's knowledge about and identification with gender emerges (Halim & Ruble, 2010). The meaning of gender as a category is made psychologically salient to children through cues in the environment. As highlighted by developmental intergroup theory, society "functionalizes" gender in innumerable ways (Bigler & Liben, 2007). For example, embedded in many languages are gender pronouns and different ways of speaking to someone based on gender. Toys and clothing items are often color coded in stores, dividing the world into pink and blue. During early childhood, young children are

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sensitive to these cues. Developmental intergroup theory predicts that the salience of gender leads to children's ability to categorize individuals by gender. This categorization, in turn, is posited to lead to stereotyping and prejudice based on gender (Bigler & Liben, 2007).

Similar to developmental intergroup theory, our questions about the emergence of gender attitudes were guided by two major theoretical perspectives: social identity theory (Tajfel & Turner, 1986) and cognitive theories of gender development (Martin, Ruble, & Szkrybalo, 2002). Social identity theory predicts that identification with a social category should elicit biased intergroup attitudes, favoring one's own group above other groups, as a way to bolster one's self-esteem (Tajfel & Turner, 1986). Cognitive theories of gender development emphasize that children's knowledge of gender (e.g., awareness of gender stereotypes) and their understanding of gender as a category (e.g., the permanence of gender, *gender constancy*) motivates biased intergroup attitudes (i.e., positive or negative evaluations) and behavior (Martin et al., 2002). These related theoretical perspectives propose that an emerging sense of gender identity and gender category knowledge is likely to promote positive attitudes (e.g., admiration or even adoration) toward one's own-gender group and possibly negative attitudes (e.g., skepticism or even dislike) of the other gender group. Although considerable research has demonstrated that the mere act of categorization often leads to stereotyping and prejudice in children 6 years and older (Bigler & Liben, 2007), scant research has tested whether normative developmental changes in gender category knowledge and

identification at earlier ages predict children's developing gender intergroup attitudes and behavior. These are the aims of the current study (see Figure 1 for a conceptual model).

Antecedents of Children's Gender Attitudes: Private Regard and Gender Cognitions

In infancy, children can make perceptual categorical distinctions between genders (Quinn, Yahr, Kuhn, Slater, & Pascalis, 2002). However, it is during early childhood that children become conceptually aware that the world is divided along gender lines (Halim & Ruble, 2010). They typically learn that there are two gender categories—male and female—and that they belong to one of these categories.

Private Regard

Social identity theory posits that stronger identification with a social group should be associated with more positive in-group attitudes and in some cases, more negative out-group attitudes (Hewstone, Rubin, & Willis, 2002). Thus, the advent of gender identification should be associated with changes in children's gender attitudes. A child's personal evaluation of their gender as positive or negative is referred to as *private regard*, a key dimension of social identity (Ashmore, Deaux, & McLaughlin-Volpe, 2004; Bennett & Sani, 2011). In accordance with social identity theory, we expected that children who personally identify with their gender more strongly (e.g., *I am really happy to be a girl/boy*) should show more positivity toward

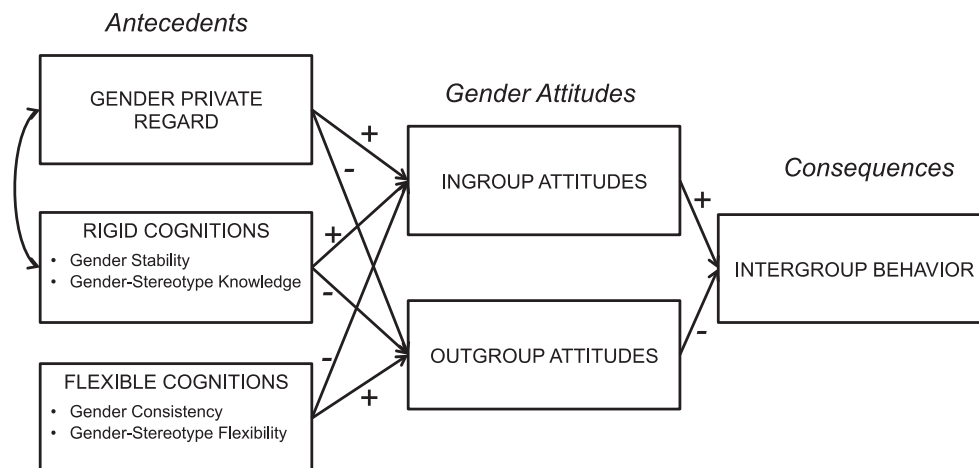


Figure 1. A conceptual model depicting the primary research questions. In-group and out-group attitudes are conceptualized here as higher numbers indicating more positive attitudes. Intergroup behavior is conceptualized here as higher numbers indicating more favoritism toward the in-group compared to the out-group.

same-gender peers (e.g., *I think girls/boys are really nice*) and possibly less positivity toward other-gender peers (Figure 1). A handful of cross-sectional studies with elementary school children have found that stronger gender identities were associated with more biased gender attitudes (Susskind & Hodges, 2007), although this effect was sometimes only found for girls (Egan & Perry, 2001).

Gender Cognitions

Cognitive theories of gender development also predict that children's awareness of gender categories should affect their attitudes about girls and boys (Martin et al., 2002). One set of gender cognitions seems likely to promote rigidity in gender attitudes. The acquisition of gender constancy, on a basic level, involves the understanding that one's gender remains the same across time (second stage: *gender stability*, e.g., a girl will become a woman) and despite superficial transformations (third and final stage: *gender consistency*, e.g., girls wearing pants, boys playing with dolls; Kohlberg, 1966; Slaby & Frey, 1975). Children who understand gender stability but not yet consistency, usually between ages 3 and 5, may perceive the psychological boundaries surrounding gender as firmer than those who understand both aspects of constancy, and this may encourage greater commitment to their gender (Halim et al., 2014). Indeed, considerable research has supported the idea that gender constancy relates to various aspects of gender typing (e.g., Martin et al., 2002), but others have not shown such relations (e.g., Arthur, Bigler, & Ruble, 2009). In the present study, we examine whether gender stability is linked to having more biased gender attitudes (Figure 1).

Children's gender stereotype knowledge is another possible rigidity-related antecedent of gender attitudes. According to cognitive theories of gender development, the formation of gender identity is accompanied by the motivation to learn the features that distinguish one's gender from the other (Martin & Ruble, 2004). This learning involves actively searching for and attending to gender-related information. The acquisition of this information forms the basis for descriptive gender stereotypes—representations of girls and boys that are generalized to new individuals. Social identity theory also stresses the importance of finding one's group positively distinct from other groups (Tajfel & Turner, 1986). As children come to learn the ways that society distinguishes one gender from the other, differences between the two genders might

be highlighted. Hence, as they gain stereotype knowledge, children, in turn, might exhibit more bias in their gender attitudes (Figure 1).

Another set of gender cognitions seems likely to promote flexibility in gender attitudes as children advance beyond a rudimentary understanding of gender constancy and knowledge of basic descriptive gender stereotypes. As stated earlier, *gender consistency* is the third and final stage of gender constancy, which is usually attained between ages 5 and 7 (Slaby & Frey, 1975). Children who understand gender consistency may be less afraid to engage in cross-gender-typed activities than they had been previously. They understand that despite their engagement in cross-gender-typed activities, their gender will still remain the same (Smetana & Letourneau, 1984). Children might thus have more opportunities to interact with the other gender. Hence, gender consistency achievement should be associated with less biased gender attitudes (Figure 1). As early as age 5, some children may also begin to show gender-stereotype flexibility. Although children already know many descriptive gender stereotypes, they may nevertheless *believe* that boys and girls can do similar things and possess similar traits (Katz & Ksansnak, 1994; Serbin et al., 1993; Trautner et al., 2005). Because greater perceived similarity between groups often reduces intergroup bias (Roccas & Schwartz, 1993), we hypothesized that gender-stereotype flexibility would be associated with less biased gender attitudes (Figure 1).

Consequences of Gender Attitudes for Intergroup Behavior

Examining the development of children's gender attitudes is especially important because even despite norms of fairness and equality, in intergroup contexts these prejudicial attitudes may lead to unfair behaviors, such as social exclusion (e.g., Rutland & Killen, 2015; Rutland et al., 2010). Intergroup attitudes comprise both evaluative beliefs (i.e., cognitions) and affective responses regarding a particular group (Eagly & Chaiken, 1993). Although these two components of attitudes have been linked to different neural substrates (Amodio, 2014) and predict different forms of discrimination in adults (Dovidio et al., 2004; Millar & Tesser, 1986), it is not known whether this distinction is relevant to gender attitudes in young children. Thus, we proposed that gender attitudes should be associated with instances of gender-based bias (Figure 1) and that this effect may or may not be specific to

evaluative beliefs or affect in young children. That is, we took an exploratory approach investigating whether a distinction between affect- and cognitive-based gender attitudes would be empirically supported.

Examining Gender-Based Intergroup Processes Within a Cultural Context

In this study, we examined gender processes in a diverse sample of ethnic minority girls and boys. We did not expect processes to differ significantly between ethnic groups or by gender. However, this diverse sample presented the opportunity to test whether effects might be more pronounced in some groups than in others. In terms of gender, impressively, across different national (American, Welsh, Italian) and age groups (preschool and elementary school), several past studies have found that girls expressed more biased gender attitudes compared to boys (e.g., Egan & Perry, 2001; Gasparini, Sette, Baumgartner, Martin, & Fabes, 2015; Leroux, 2008; Susskind & Hodges, 2007; Yee & Brown, 1994). Whether this greater bias is more apparent in in-group favoritism or out-group negativity, or equally in both, is uncertain. The current study disentangles the two.

In terms of ethnicity, we report data on children from African American, Latina/o immigrant, and East Asian immigrant backgrounds. We examined these groups because of their large presence in the United States (U.S. Census Bureau, 2011). Furthermore, each ethnic group has unique cultural practices and histories that may affect levels of intergroup bias. For example, both Latina/o and Asian cultures have historically emphasized differences between genders and have encouraged distinct gender roles (e.g., Latina/o *machismo* and *marianismo* [female submissiveness], Piña-Watson, Castillo, Jung, Ojeda, & Castillo-Reyes, 2014; Asian Confucius ideals of patriarchy, Fang, 2000). Asian and Latina/o immigrant children might be sensitive to this emphasis on gender, possibly heightening their intergroup bias (Bigler & Liben, 2007). Indeed, there has been some past evidence suggesting that Asian and Latina/o immigrant children show heightened gender stereotyping and gender typing (Lobel, Gruber, Govrin, & Mashraki-Pedhazur, 2001). In contrast, some scholars have suggested that equality between genders is emphasized in African American culture, with African American mothers often serving as the main breadwinners and promoting strength among daughters (Hill, 2004). Scholars also report that African American parents do not

socialize their children along traditional “gender lines” but rather adjust their expectations based on children’s age and competency (Peters, 1997). Thus, compared to Latina/o and Asian immigrant children, intergroup bias might be attenuated among African American children. However, it is important to note that certain contextual factors, like high-risk environments and negative experiences, may accentuate gender typing in some cases (e.g., adolescent male *bravado*; Cunningham, 1999).

Study Overview and Predictions

The current research aims to extend knowledge about the development of gender attitudes. We examined both precursors and consequences of early gender attitudes by testing a more complete model than has been previously put forth. The current research also goes beyond previous work by using multiple measures of gender attitudes, assessing own-gender and other-gender attitudes separately, and testing some links longitudinally when appropriate. By testing links between time points, our approach can provide insights regarding the directionality of effects. We followed children from ages 4 to 5—a period of early childhood ideally suited for our questions, during which gender categories are particularly salient and when gender knowledge, identity, and attitudes are emerging (Ruble, Martin, & Berenbaum, 2006).

We expected that positive in-group attitudes and negative out-group attitudes would be associated with bias in behavior (Figure 1). We also expected that private regard and rigidity-related cognitions (*gender stability*, *gender-stereotype knowledge*) would predict more positivity toward same-gender peers and possibly less positivity toward other-gender peers over time. In contrast, we hypothesized that flexibility-related cognitions (*gender consistency*, *gender-stereotype flexibility*) would be associated with less bias in gender attitudes. We anticipated that these intergroup processes would generalize across genders and ethnicities. At the same time, we explored whether certain groups (girls, Latina/o and Asian American children) might show more bias in gender attitudes compared to other groups (boys, African American children).

Method

Participants and Procedure

Children participated in two waves (2009–2011) at ages 4 and 5 ($N = 246$: 121 girls, 125 boys; Wave

1: $M_{\text{age}} = 4.23$ years, $SD = 0.15$; Wave 2: $M_{\text{age}} = 5.32$ years, $SD = 0.13$). The sample included 54 Mexican- (23 boys, 31 girls), 68 Chinese- (33 boys, 35 girls), 67 Dominican- (36 boys, 31 girls), and 57 African American children (33 boys, 24 girls). Children were recruited as part of a larger longitudinal developmental study from in-person contacts with mothers served by public hospitals and health clinics in a large northeastern city. The larger study aimed to examine cultural factors affecting school readiness. From ages 4 to 5 there was a 14% attrition rate (see Supporting Information). Interviewers assessed children in their dominant language (English, Spanish, or Chinese). Interviews took place at a university laboratory room. We obtained parental consent either in person or through the mail via signed returned consent forms. At each wave, families were paid \$100 for participating.

Private regard and rigidity-related cognitions (gender stability and gender-stereotype knowledge) were assessed at ages 4 and 5 because these ages have been found to be a peak time for gender rigidity (Halim, Ruble, Tamis-LeMonda, & Shrout, 2013). Flexibility-related cognitions (gender consistency and gender stereotype flexibility) were only measured at age 5 because past research suggests that such cognitions begin to emerge at this time (Halim et al., 2013; Trautner et al., 2005). Gender attitudes and intergroup behavior were assessed at age 5.

Measures

Social Identity-Related and Gender Cognition Antecedents

We examined one evaluative antecedent (private regard) and four gender cognition antecedents (gender stability, gender stereotype knowledge, gender consistency, and gender stereotype flexibility). Taking advantage of our longitudinal design, we represented private regard, gender stability, and gender stereotype knowledge as both individual differences at age 4, and as changes from age 4 to age 5. This approach allowed us to determine whether private regard, gender stability, and gender-stereotype knowledge were already established by age 4 or whether there was further development in the ages 4–5 interval that helps explain gender attitudes at age 5.

Private regard. At the 4- and 5-year assessments, private regard was measured with two items averaged together (adapted from Ruble et al., 2007). To illustrate the format of one item: *Are you happy that*

you are a girl/boy or are you not happy that you are a girl/boy? (If happy) Are you pretty happy to be a girl/boy or really happy? (0 = not happy, 1 = pretty happy, 2 = really happy). Interitem correlations were moderate but significant at both ages—age 4: $r(231) = .33$, $p < .001$; age 5: $r(240) = .29$, $p < .001$. Children, on average, exhibited positive private regard across ages 4 and 5 ($M = 1.61$, $SE = .03$), although there was a range of responses. For example, based on the scale, at age 4, 9% said they were not happy (0s and < 1), 17% said they were a little happy (1s), 32% were between a little happy and very happy (between 1 and 2), and 43% said they were very happy (2s). At age 5, 6% said they were not happy, 16% said they were a little happy, 12% were in between a little happy and very happy, and 66% were very happy.

Gender stability. At ages 4 and 5, interviewers asked children, “When you grow up, will you be a mommy or a daddy?” and “When you were a baby, were you a baby boy or a baby girl?” (adapted from Ruble et al., 2007; Slaby & Frey, 1975). Interviewers also presented children with a picture of a girl and pictures of an adult woman and man, depicting a generic “mommy” and “daddy,” and asked children who the girl would become. Children were also presented with a picture of a “daddy” and pictures of a boy and girl, and then asked who the daddy was before. Responses were scored as 1 (*correct*) or 0 (*incorrect*) and summed with possible scores ranging from 0 to 4 ($M = 3.22$, $SD = 0.78$; age 4: $\alpha = .45$; age 5: $\alpha = .50$).

Gender-stereotype knowledge. At ages 4 and 5, to assess stereotype knowledge, we selected common gender stereotypes that are familiar to young children on the basis of prior research (e.g., Levy, Taylor, & Gelman, 1995; Moller & Serbin, 1996; Newman, Cooper, & Ruble, 1995; Ruble et al., 2007) and that, for items referring to activities, have a basis in actual behavior (e.g., Connor & Serbin, 1977). Interviewers pointed to a drawing of a boy and a girl and said, “This is the boy, and his name is Bobby. This is the girl, and her name is Lisa.” Interviewers then asked, “Which one of these children (e.g., likes dolls, likes trucks, is strong, gets scared a lot)? Lisa, Bobby, or both?” We also included one question pertaining to adult-related gender stereotypes (e.g., “Who likes to fix things? Miss Miller, Mr. Stevens, or both?”). If children responded with “both” (about 4% of responses on average at age 4; 19% at age 5), interviewers probed further for children to pick only one individual from the pair in order to assess knowledge of

stereotypes separate from personal beliefs. These probes led to the choice of the stereotype-congruent figure about 66% of the time on average. If children insisted on “both” in response to the probe, their response for the particular item was not included in the final score. To be developmentally appropriate, we asked about gender stereotypes in a descriptive way (rather than requiring prescriptive responses—who *should* or who *can* do X; e.g., Liben & Bigler, 2002; Signorella, Bigler, & Liben, 1993), which yielded an assessment of young children’s foundational knowledge and emerging sets of beliefs. Final responses were scored as 1 (*stereotype congruent*) or 0 (*stereotype incongruent*) and summed (five items, actual range: 0.00 to 5.00; $M = 3.64$, $SD = 0.94$; age 4: $\alpha = .40$; age 5: $\alpha = .79$).

Gender consistency. At age 5, interviewers asked children four questions to assess their understanding of gender consistency (e.g., “If a girl had her hair cut really short, would she become a boy?” “If a boy played with baby dolls, would he become a girl?”; adapted from Ruble et al., 2007). Responses were scored as 1 (*correct*) or 0 (*incorrect*) and summed ($\alpha = .86$; score range = 0–4). On average, children did not show a full understanding of gender consistency ($M = 2.49$, $SD = 1.61$; 20% got all four questions wrong, 36% got between 1 to 3 questions correct, and 44% got all four questions correct).

Gender-stereotype flexibility. At age 5, to assess children’s flexibility in their endorsement of gender stereotypes, we rescored the measure of gender-stereotype knowledge to count the number of “both” responses children initially gave to an item (adapted from Bigler & Liben, 1992; see Signorella et al., 1993). To be conservative, if children showed a lack of stereotype knowledge in a subsequent probe (e.g., answering “boys” to “If you had to pick one, which one of these children likes dolls?”, occurring about 33% of the time), then their response was not counted as flexible. We aimed to include responses to capture cases where children knew the gender stereotype but still opted to say that both genders did X. The literature suggests that 5-year-olds have a wider range of gender knowledge than 4-year-olds (Ruble et al., 2006). Thus, we added four items to the stereotype knowledge measure including more complex stereotypes. These items were generated based on gender stereotypes that have been previously established in the literature (Kite, Deaux, & Haines, 2008) and have been shown to be accessible to young children (Miller, Lurye, Zosuls, & Ruble, 2009; Signorella & Liben, 1985). These included activities (e.g., sports,

shopping, does fun and exciting things) and traits (e.g., is “nice and sweet”). This allowed us to sum flexible responses to a total of nine gender stereotypes (possible range = 0–9; actual range = 0–7). Children showed low gender-stereotype flexibility on average ($\alpha = .52$; $M = 1.26$, $SD = 1.40$).

Gender Attitudes

At age 5, we measured both affective and cognitive components of gender attitudes based on social psychological theories of adult intergroup attitudes. However, we did not have strong hypotheses regarding their differential effects in young children, in part, because it is not clear that children can differentiate these aspects.

To assess *affect-based* gender in-group and out-group attitudes separately, interviewers asked children two questions, “Tell me how you feel about (same-gender [girls/boys])?” and “Tell me how you feel about (other-gender [girls/boys])?” (adapted from Yee & Brown, 1992). Participants responded on a 5-point scale of faces ranging from a frowning face to a smiling face. Experimenters made sure the children understood how to use the scale and required children to point to the selected response (range = 1–5).

We also measured *cognitive-based* in-group and out-group attitudes. Based on commonly used attitude measures like the multiresponse racial attitude measure (Doyle & Aboud, 1995), interviewers asked children three questions about their own-gender group (e.g., “Do you think [girls/boys] are nice [mean, smart]? How nice [mean, smart]? A little or a lot?”). We scored responses on a 3-point scale (0 = *no*, 1 = *a little*, 2 = *a lot*), with higher numbers indicative of more positive in-group attitudes (reverse-scored the *mean* trait item) and averaged them together ($\alpha = .54$; range = 0–2). To assess out-group attitudes, interviewers asked about the same three items concerning the other-gender group ($\alpha = .69$; range = 0–2). These in-group and out-group cognitive-based attitude measures were separated in the child interview, spaced apart by several other measures to reduce reactivity.

Intergroup Behaviors

We assessed two intergroup behaviors. The first was children’s *allocation of resources* to gender groups. Children were shown two abstract color drawings, one purportedly made by a group of four girls and the other by a group of four boys. Interviewers asked children to allocate seven coins

between the drawings based on their personal judgment (e.g., "Which [drawing] do you think is the nicest?"; adapted from Yee & Brown, 1994). We calculated the proportion of coins given to the child's own-gender group (.50 would indicate equal distribution).

The second behavioral measure assessed the *difference in seating distance* from a same- versus an other-gender child. The interviewer presented children with a row of seven miniature toy chairs and asked them to imagine that a girl, represented by a cutout figure, enters a room and sits down on a chair at the beginning of the row (based on Amodio & Devine, 2006). Children were then asked to imagine that they went into the room too, represented by another cutout figure. Interviewers then asked children, "Where do you want to sit? Can you show me?" (1 = right next to the girl, 6 = at opposite end). This process was repeated with an imaginary boy, in counterbalanced order. We subtracted the in-group member score from the out-group member score, so that higher numbers indicated more intergroup bias (a child "sat" farther away from the out-group member than from the in-group member). Ten children were excluded from analysis, as four confused the pretend child as someone they knew ("my brother"), two misunderstood the task, and four received poor instructions.

Results

We first present additional descriptive statistics of all measures and report any gender or ethnic differences in the distributions. For measures that were collected at both ages 4 and 5 (private regard, gender stability, and gender-stereotype knowledge), we used mixed models analyses to explore mean-level differences by gender and ethnicity, as well as to examine trends over time. This analysis treated time, gender, ethnicity, and their interactions as fixed effects, and treated the average over the two time points (i.e., the intercept) as a random subject effect. Mixed models use all available data and do not exclude children who only have data at one time point. We specified that degrees of freedom for the significance tests be calculated using the Satterthwaite adjustment, which produces fractional degrees of freedom. For measures collected at only age 5 (gender consistency, gender-stereotype flexibility, gender attitudes, intergroup behaviors), we conducted 2 (gender) \times 4 (ethnicity) analyses of variance to explore differences in means by gender

and ethnicity. We tested our central hypotheses based on Figure 1 using path models that were estimated with the structural equation program, Mplus (version 7, Muthén & Muthén, 1998–2011). Specifically, we tested (a) whether private regard and gender cognitions predict children's gender attitudes and (b) whether children's gender attitudes predict intergroup behavior. Correlations of all measures are reported in Table 1. Means and standard deviations by gender and ethnic group are reported in Table 2.

Descriptive Statistics of Measures and Group Variation Antecedents

Across ethnic groups, we expected to see increases in children's private regard, gender stability, and gender stereotype knowledge across ages 4 and 5, as children attend to information about gender at this developmental stage. No group differences were expected for gender consistency or gender-stereotype flexibility, as these cognitions are only just emerging in 5-year-olds. We will describe the descriptive statistics (group differences if any, trajectories over time if applicable) for each antecedent in separate paragraphs below for clarity.

Girls expressed greater *private regard* than did boys at age 4, $t(435.9) = 2.61$, $p = .009$, $d = 0.25$. However, boys showed a larger increase in private regard from ages 4 to 5 than girls, such that by age 5, boys' private regard was on par with that of girls, as indicated by a significant Time \times Gender interaction, $F(1, 223.0) = 8.27$, $p = .004$. No effects of ethnicity were found.

No group differences in mean *gender stability* were found. Across all groups, gender stability increased from ages 4 to 5, $F(1, 236.6) = 151.25$, $p < .001$.

Across time (at both ages 4 and 5), girls showed greater *gender-stereotype knowledge* compared to boys, $F(1, 450.5) = 12.31$, $p < .001$. However, the pattern of change from age 4 to age 5 was different for boys and girls, $F(1, 235.4) = 25.57$, $p < .001$. Gender stereotype knowledge increased for boys, $t(231.4) = 6.22$, $p < .001$, but girls' gender stereotype knowledge remained steady and high without significant change, $t(233.0) = 0.93$, *ns*.

Boys showed more understanding of *gender consistency* than did girls, $F(1, 237) = 4.20$, $p = .042$, $\eta^2 = .02$. No other group differences were found.

For *gender-stereotype flexibility* no group differences were found.

Table 1
Zero-Order Correlations Between Measures

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Private regard (age 4)	.09	.25***	.06	.04	.08	.00	-.08	.03	.06	-.17*	.02	.05	.11
2. Private regard (age 5)	—	.13*	.23***	-.01	.11 [†]	.03	-.01	.25***	.42***	-.09	-.05	.02	.06
3. Gender stability (age 4)	—	—	.29***	.18**	.16*	-.01	-.09	.03	.14*	-.12 [†]	.03	-.08	.07
4. Gender stability (age 5)	—	—	—	.05	.23***	.17**	.02	-.03	.13*	-.10	-.06	.01	.01
5. Stereotype knowledge (age 4)	—	—	—	—	.14*	-.00	-.06	-.00	.10	-.07	.01	-.00	.02
6. Stereotype knowledge (age 5)	—	—	—	—	—	.14*	-.06	-.02	.16*	-.02	.03	-.01	.06
7. Gender consistency (age 5)	—	—	—	—	—	—	-.02	-.05	-.01	.01	.11 [†]	.01	.05
8. Stereotype flexibility (age 5)	—	—	—	—	—	—	—	-.08	-.05	.06	.18**	-.07	-.07
9. In-group affect-based attitudes (age 5)	—	—	—	—	—	—	—	—	.13*	-.25***	-.04	.04	-.06
10. In-group cognitive-based attitudes (age 5)	—	—	—	—	—	—	—	—	—	-.14*	-.00	-.03	.00
11. Out-group affect-based attitudes (age 5)	—	—	—	—	—	—	—	—	—	—	.22***	-.12 [†]	-.03
12. Out-group cognitive-based attitudes (age 5)	—	—	—	—	—	—	—	—	—	—	—	-.16*	-.15*
13. Coin allocation (age 5)	—	—	—	—	—	—	—	—	—	—	—	—	.06
14. Seating distance (age 5)	—	—	—	—	—	—	—	—	—	—	—	—	—

[†] $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Gender Attitudes

We assessed the correlations between cognitive and affective components of attitudes to test whether these components were related, but still distinct. In-group cognitive- and affect-based attitudes were related, $r(243) = .13$, $p = .050$, and out-group cognitive- and affect-based attitudes were also related: $r(245) = .21$, $p = .001$, but these correlations were small. For mean levels of attitudes, we expected that children would show strong inter-group bias, expressing high positivity toward their own gender and comparatively less positivity toward the other gender. Results supported our predictions.

Affect-based attitudes toward the own-gender group were on average very positive ($M = 4.17$, $SD = 1.19$); 57% of children chose the happiest face on the scale (5 on a 1–5 scale) and 19% chose the next most happy face (4 on the scale). A minority of children (12%) felt negative toward their own-gender group, choosing the somewhat sad or very sad face (1 or 2).

In contrast, *affect-based attitudes toward the other gender* were on average somewhat negative ($M = 2.46$, $SD = 1.45$). The mean was significantly below the midpoint of the scale, $t(244) = 5.87$, $p < .001$, $d = 0.75$, suggesting that on average, children expressed out-group negativity. A closer look at the data revealed that there was ample

Table 2
Means (and Standard Deviations) of All Measures by Gender and Ethnicity

Variable	Boys					Girls				
	African American	Chinese American	Mexican American	Dominican American	African American	Chinese American	Mexican American	Dominican American	All boys	All girls
Antecedents										
Private regard	1.38 (0.65)	1.44 (0.68)	1.48 (0.52)	1.47 (0.57)	1.53 (0.39)	1.72 (0.38)	1.62 (0.46)	1.69 (0.38)	1.44 (0.61) _a	1.66 (0.41) _b
Private regard level (age 4)	1.73 (0.57)	1.56 (0.57)	1.76 (0.47)	1.72 (0.44)	1.50 (0.72)	1.74 (0.43)	1.57 (0.58)	1.79 (0.31)	1.69 (0.52) _a	1.66 (0.52) _a
Private regard change (ages 4–5)	0.32 (0.67)	0.18 (0.84)	0.33 (0.60)	0.29 (0.81)	0.00 (0.77)	0.05 (0.58)	-0.01 (0.79)	0.14 (0.41)	0.27 (0.73) _a	0.04 (0.64) _a
Gender cognitions										
Rigidity-related										
Gender stability level (age 4)	2.80 (0.87)	2.43 (0.87)	2.76 (0.84)	2.67 (0.94)	2.91 (0.86)	2.84 (0.86)	2.72 (0.88)	3.10 (0.88)	2.66 (1.13)	2.88 (1.06)
Gender stability level (age 5)	3.71 (0.86)	3.62 (0.86)	3.67 (0.84)	3.59 (0.94)	3.65 (0.85)	3.87 (0.86)	3.47 (0.86)	3.85 (0.85)	3.65 (0.72)	3.71 (0.68)
Gender stability change (ages 4–5)	0.94 (1.19)	1.19 (1.17)	0.61 (1.12)	1.10 (0.92)	0.76 (1.26)	1.00 (1.04)	0.97 (1.21)	0.57 (1.03)	0.98 (1.11)	0.84 (1.13)
Flexibility-related										
Gender stereotype knowledge level (age 4)	3.54 (1.14)	2.81 (1.13)	2.92 (1.08)	3.43 (1.17)	3.52 (1.12)	3.83 (1.11)	3.46 (1.14)	4.14 (1.14)	3.19 (1.31) _a	3.75 (1.13) _b
Gender stereotype knowledge level (age 5)	4.37 (1.12)	3.53 (1.11)	4.26 (1.08)	4.10 (1.12)	3.33 (1.09)	3.53 (1.11)	3.77 (1.11)	3.78 (1.10)	4.04 (1.08)	3.61 (1.35)
Gender stereotype knowledge change (ages 4–5)	0.84 (1.39)	0.63 (1.81)	1.35 (1.30)	0.81 (1.60)	-0.23 (1.51)	-0.24 (1.54)	0.32 (1.79)	-0.46 (1.40)	0.87 (1.56) _a	-0.15 (1.57) _b
Gender attitudes (age 5)										
In-group										
Affect-based	2.97 (1.59)	2.44 (1.52)	2.83 (1.44)	2.67 (1.57)	2.50 (1.77)	1.69 (1.66)	2.19 (1.56)	2.77 (1.56)	2.70 (1.53) _a	2.27 (1.67) _b
Cognitive-based	1.30 (1.02)	1.29 (1.55)	1.43 (1.56)	1.19 (1.35)	0.87 (1.15)	1.44 (1.67)	1.52 (1.48)	0.94 (1.26)	1.29 (1.36)	1.22 (1.44)
Out-group										
Affect-based	3.97 (1.33)	4.24 (1.18)	4.00 (1.38)	4.33 (0.89)	3.83 (1.58)	4.32 (1.04)	4.00 (1.34)	4.48 (0.77)	4.15 (1.19)	4.18 (1.20)
Cognitive-based	1.52 (0.61)	1.61 (0.46)	1.84 (0.30)	1.69 (0.41)	1.56 (0.58)	1.75 (0.46)	1.58 (0.56)	1.75 (0.45)	1.65 (0.48)	1.67 (0.51)
Intergroup behavior (age 5)										
Coin allocation	3.09 (1.63)	2.22 (1.21)	2.26 (1.45)	2.64 (1.62)	2.33 (1.43)	2.29 (1.30)	2.74 (1.39)	1.97 (1.30)	2.58 (1.52)	2.46 (1.45)
Seating distance difference	1.08 (0.70)	0.98 (0.62)	1.29 (0.76)	0.99 (0.69)	0.78 (0.69)	0.78 (0.73)	1.04 (0.73)	0.78 (0.76)	1.07 (0.69) _a	0.85 (0.73) _b

Note. Different subscripts within rows indicate a significant difference between girls and boys at at least the $p < .05$ level.

variability in affect-based other-gender attitudes. About a third of children (36%) chose the saddest face on the scale (1) and 22% chose the somewhat sad face (2; 58% together). Nevertheless, 26% of children chose one of the happy faces (15% the happiest face).

On average, children felt more positive toward their own-gender group than toward the other-gender group, $F(1, 235) = 162.98, p < .001, \eta^2 = .69$, as expected, but this pattern was further qualified by a marginally significant Target \times Ethnicity interaction, $F(3, 235) = 2.61, p = .052, \eta^2 = .03$. It is notable that although all ethnic groups showed more positivity toward their own gender than toward the other gender (all p 's $< .001$), the difference between these attitudes was larger for Dominican- ($d = 2.24$) and Chinese-American children ($d = 2.15$) than for Mexican- ($d = 1.27$) and African American children ($d = 1.07$). With the exception of the Mexican-American group, this ethnic group difference was consistent with our predictions. Boys and girls did not differ in their mean levels of affect-based attitudes.

For *cognitive-based attitudes*, children exhibited very positive attitudes toward their *own gender* on average ($M = 1.66$, possible range from 0 to 2, $SD = 0.49$). Over half the sample (57%) had scores of 2.00, meaning they felt very positive toward their own gender on each item. Another third (34%) expressed positivity but in a less extreme manner (scores from 1.00 to 1.67). Nine percent of children evaluated their own-gender group negatively (below 1.00).

We explored whether children would show negative attitudes toward the *other gender*. Although, on average, children evaluated the other-gender group less positively ($M = 0.96, SD = 0.72$) than they did their own-gender group, $F(1, 237) = 153.71, p < .001, \eta^2 = .39$, there was much variability. About half the sample (45%) expressed negativity toward the other gender (means below 1.00), with 23% of the sample expressing extreme negativity (means of 0.00). The other half of the sample (55%) expressed positivity toward the other-gender group (means from 1.00 to 2.00) including a substantial number expressing extreme positivity (17% with means of 2.00).

We tested the generalizability of the results across gender and ethnicity by conducting a 2 (gender) \times 4 (ethnicity) \times 2 (target: in-group vs. out-group) RM analysis of variance on cognitive-based attitudes. Results showed a gender main effect, $F(1, 237) = 4.47, p = .036, \eta^2 = .02$, which was subsumed by a Target \times Gender interaction, $F(1, 237) = 4.09, p = .044, \eta^2 = .02$. Girls expressed more negative

cognitive-based attitudes concerning boys than boys did of girls, $t(244) = 2.41, p = .017, d = 0.31$. The mean for girls was significantly lower than the midpoint of the scale (from 1), $t(119) = 2.17, p = .032, d = 0.40$, but this was not the case for boys, $t(125) = 0.95, p = .347, d = 0.17$. This suggests that girls showed negativity toward boys, whereas boys showed relative neutrality toward girls. Girls' and boys' evaluative beliefs concerning their own gender were not differentially positive, $t(243) = 0.30, p = .767, d = 0.04$. No other effects were found, suggesting that these findings were robust across ethnic group. In short, although we predicted that girls would generally show more out-group negativity in their attitudes compared to boys, this effect was only found for cognitive-based evaluations.

Intergroup Behaviors

For the coin allocation task, on average, children allotted more coins to their own than to the other-gender group, $M = 0.62, SD = 0.25$; greater than chance, $t(245) = 7.51, p < .001, d = 0.96$. For the seating distance task, overall, unexpectedly, children on average did not show a significant difference in how closely they sat from an own-gender ($M = 2.48, SD = 1.86$) and other-gender child ($M = 2.68, SD = 1.83$), $t(235) = 1.43, p = .155, d = 0.19$. However, there was substantial variability to support the meaningful inclusion of this measure in our model. No gender or ethnic differences were found for either measure.

Modeling Associations Among Gender Cognitions, Attitudes, and Intergroup Behaviors

As illustrated by our model (Figure 1), we expected that the development of gender cognitions and knowledge would affect gender attitudes, which in turn would influence gender intergroup behaviors. To represent this theoretical prediction in a comprehensive analysis, we conducted a path analysis using maximum likelihood estimation. The path analysis approach allowed us to use all available data at ages 4 and 5, including participants with incomplete data. Also, the path analysis approach helped reduce the possibility of making Type I errors given the number of potential associations among variables that we wanted to investigate. We thus conducted a path analysis model that simultaneously included all associations between adjacent variables in Figure 1 (private regard and gender cognitions with gender attitudes; gender attitudes with intergroup behaviors; $N = 246$). We

did not estimate direct paths between private regard/gender cognitions and intergroup behaviors, as our conceptual model did not specify these paths. We adjusted for ethnic group (dummy coded) as exogenous covariates of all of the other variables (not shown in Figure 2).

Results indicated satisfactory model fit, $\chi^2(16) = 12.04$, *ns*, supporting our overall conceptual model depicting significant associations among gender cognitions, attitudes, and behaviors (Figure 2). We also tested an alternative model whereby gender cognitions predicted behaviors and behaviors predicted attitudes. This alternative model had significantly worse fit, difference in $\chi^2(16) = 49.89$, $p < .001$ (see Supporting Information), further supporting our hypothesized conceptual model. We had no predictions regarding model fit as a function of ethnic or gender group. Exploratory multiple groups analyses indicated no significant improvement in model fit when separating the model by ethnicity, difference in $\chi^2(84) = 59.88$, *ns*, or by gender, difference in $\chi^2(94) = 88.00$, *ns* (Supporting Information). Overall, the common model including all participants (both genders and all ethnicities) produced the best fit.

For clarity, only significant paths are depicted in Figure 2 (see Supporting Information for the full model that includes marginally significant paths, as well as for a table of all estimated coefficients).

Antecedents of Children’s Gender Attitudes

Effects of private regard and rigidity-related gender cognitions on gender attitudes. To test whether private regard and rigidity-related gender cognitions (gender stability, gender-stereotype knowledge) were associated with more biased gender attitudes over time, we examined whether (a) age 4 levels of these predictors and (b) increases in these predictors from ages 4 to 5 were associated with gender attitudes at age 5. Investigating these aspects tell us whether certain *levels* and *trajectories* of these predictors would influence attitudes over time.

Private regard. We predicted that both private regard levels at age 4 and increases in private regard from ages 4 to 5 would be associated with more positive in-group attitudes at age 5. These hypotheses were confirmed for 3 of the 4 predicted paths (see Figure 2). Private regard at age 4 predicted more positive in-group affect- and cognitive-

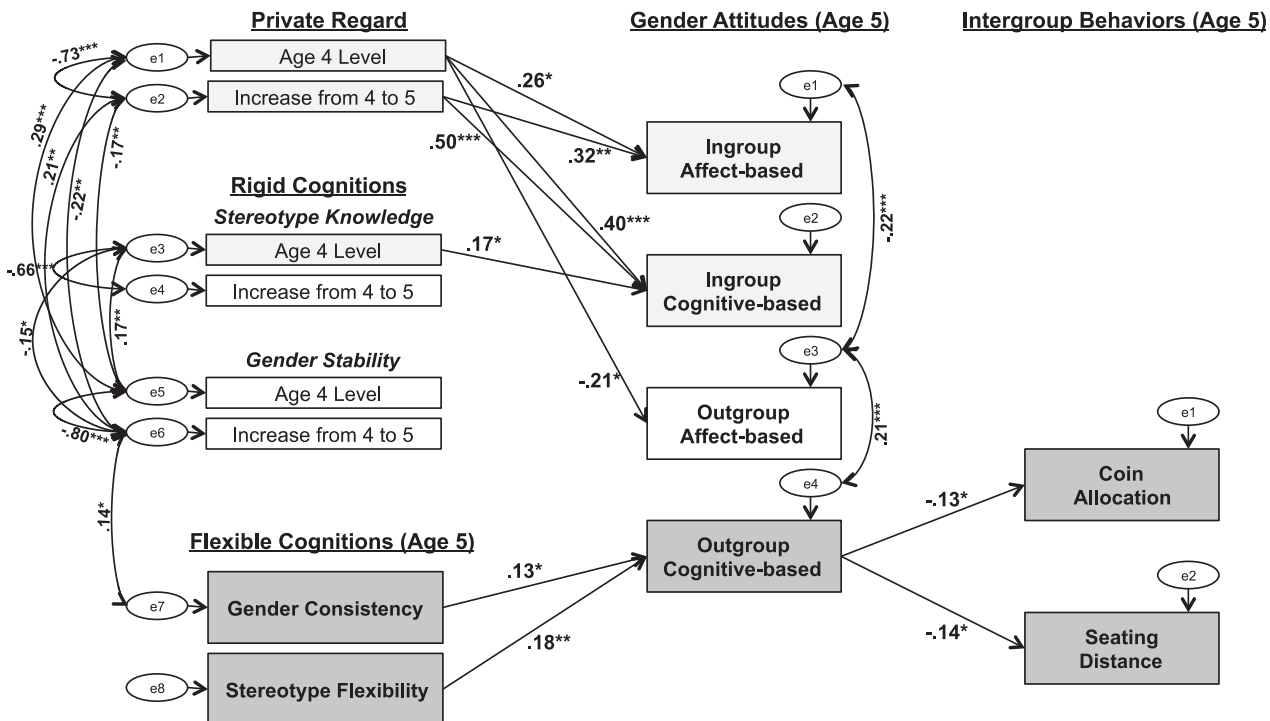


Figure 2. Standardized coefficients from a path model. Only significant paths and correlations are depicted, although all paths between adjacent variables were estimated. Ethnicity was adjusted for in the equations directly predicting all of the other variables, but these paths are not depicted for visual clarity. Boxes are shaded for visual clarity (see Supporting Information).

* $p < .05$. ** $p < .01$. *** $p < .001$.

based attitudes at age 5, $\beta = .26$ (.11), $p = .017$, $\beta = .40$ (.10), $p < .001$, respectively. An increase in private regard from ages 4 to 5 also predicted more positive in-group affect- and cognitive-based attitudes, $\beta = .32$ (.10), $p = .002$, $\beta = .50$ (.10), $p < .001$, respectively. These results suggest that initial levels and increases in private regard predict more positive in-group attitudes later in time. We also explored whether greater private regard would be linked to more negative out-group attitudes over time. Interestingly, private regard at age 4 predicted more negative out-group affect-based attitudes at age 5, $\beta = -.21$ (.11), $p = .049$.

Gender stability and stereotype knowledge. Similar to our predictions for private regard, we expected that gender stability and stereotype knowledge levels at age 4 and increases in these cognitions from ages 4 to 5 would be associated with more positive in-group attitudes at age 5. The data supported only one of the four predicted paths. Gender stereotype knowledge levels at age 4 predicted more positive in-group cognitive-based attitudes at age 5, $\beta = .17$ (.09), $p = .050$. We also explored whether greater gender stability and stereotype knowledge would be linked to more negative out-group attitudes over time. However, the model revealed no associations between gender stability or stereotype knowledge with out-group attitudes.

Effects of flexibility-related gender cognitions on gender attitudes. In contrast to predictions, neither gender consistency nor stereotype flexibility predicted more positive out-group affect-based attitudes nor did they predict less positive in-group affect-based attitudes. With regard to cognitive-based attitudes, as hypothesized, the model revealed that gender consistency, $\beta = .13$ (.06), $p = .038$, and stereotype flexibility, $\beta = .18$ (.06), $p = .003$, both predicted more positive out-group cognitive-based attitudes, but neither predicted in-group cognitive-based attitudes.

Consequences of Gender Attitudes for Intergroup Behavior

We expected gender attitudes to predict intergroup behaviors. Only out-group cognitive-based attitudes predicted coin allocation, $\beta = -.13$ (.06), $p = .039$, and seating distance, $\beta = -.14$ (.07), $p = .038$. This suggests that children who viewed the other gender's characteristics more negatively were more biased. These children rewarded a greater proportion of coins to a picture made by one's own gender than to a picture made by the other gender. These children also showed a larger difference in sitting farther from an other-gender

versus an own-gender child. No other-gender attitude predicted these behaviors. Hence, as expected, more negative gender attitudes predicted behavioral expressions of prejudice reflecting economic bias and social distance.

Summary

Across ethnic groups and genders, at age 5, children favor their own gender over the other gender. Depending on the measure of gender attitudes, girls sometimes showed more negativity toward boys than boys did toward girls. Dominican American and Chinese American children also sometimes showed more gender bias in attitudes compared to Mexican American and African American children. These gender attitudes had consequences for behavior. Children's out-group attitudes predicted biased intergroup behavior. The data suggest that developments in gender cognition and gender identity influence these early attitudes. Flexibility in gender cognitions was associated with having more favorable out-group attitudes. Greater private regard and rigidity-related gender cognition levels at age 4 and their increases from ages 4 to 5 were more generally connected to positive in-group attitudes, although we did not find support for all expected links. As anticipated, these processes were generalizable across diverse ethnic groups and genders.

Discussion

The present study examined whether gender attitudes predict children's treatment of same- and other-gender peers in early childhood and whether normative developments in gender-related social cognition could influence children's early and biased gender attitudes. The current research extends knowledge of the development of gender attitudes by testing a more complete model than has been previously put forth, by examining these processes at a time when gender attitudes begin to emerge in early childhood and by linking both precursors and consequences of early gender attitudes. Our findings also advance beyond prior studies by disentangling in-group versus out-group attitudes and by sampling ethnically diverse children.

Although previous research has described children's gender attitudes, our data are the first to reveal that young children's negative attitudes toward the other gender can have implications for intergroup behavior. Children who evaluated the other gender more negatively gave fewer resources

to the other gender when deciding how to allocate coins to girls versus boys based on their drawings. They also exhibited interpersonal bias, sitting farther from an other-gender child compared to an own-gender child. Furthermore, these negative out-group attitudes were associated with a pattern of social cognition characterized by a less sophisticated understanding of gender as a permanent category (*gender consistency*) and the belief that girls and boys are quite different (less *stereotype flexibility*). Interestingly, these more sophisticated cognitions were not directly connected to intergroup behaviors but rather indirectly connected to intergroup behaviors through gender attitudes (see Supporting Information). This link between attitudes and behavior is consistent with the adult intergroup literature, where attitudes have been shown to predict discriminatory actions toward out-group members more strongly than stereotypes, whereas stereotypes tend to predict discriminatory expectations and impressions (Amodio & Devine, 2006). Our data also revealed that children's emerging sense of private regard for their gender and knowledge of gender stereotypes predicted more positive in-group attitudes over time. Overall, these results highlight the importance of gender attitudes in affecting young children's treatment of own- and other-gender peers. These results also underscore the role of gender identification and gender cognition in shaping children's early gender attitudes.

Possible Specificity in the Predictors and Consequences of Gender Attitudes

A suggested theme that recurred when examining both the predictors and consequences of children's gender attitudes was specificity. With regard to predictors of gender attitudes, the data revealed that children who showed initial higher levels and greater increases in private regard showed more positive attitudes toward their own gender a year later. Stereotype knowledge also predicted positive in-group attitudes (cognitive-based) over time. Only one path connected private regard to negative out-group attitudes. Interestingly, in subsequent tests, when we adjusted for general cognitive skills, this connection was no longer significant. Overall these two factors—private regard and stereotype knowledge—seem most strongly connected to in-group positivity. We speculate that this is because these factors reflect basic psychological processes involved in learning about social categories and social identification. In its purist form, such as in minimal group paradigms where individuals are

randomly assigned to arbitrarily defined groups, the strongest evidence is found for ensuing "in-group love" but not necessarily "out-group hate" (Brewer, 1999). Of course, it is possible that other factors, such as actual positive or negative experiences with the other gender, may also play a large role in determining out-group attitudes. However, consistent with social identity theory (Brewer, 1999), we speculate that in-group attitudes might emerge before out-group attitudes, and thus private regard and stereotype knowledge may show corresponding effects because of their similar developmental timing.

One might have expected that gender stability would have followed suit in predicting in-group attitudes. However, gender stability showed no connections with gender attitudes. Nevertheless, it is notable that children who understood gender stability tended to show more private regard for their gender both concurrently at age 4 and across time from ages 4 to 5 (Figure 2). Also, zero-order partial correlations revealed that gender stability at age 4, adjusting for cognitive skills, predicted in-group cognitive-based attitudes at age 5, $r(219) = .15$, $p = .028$. This suggests that, perhaps independently, gender stability is related to cognitive-based attitudes, but when taking into account other factors, such as stereotype knowledge, this association no longer exists. It is possible that stability predicts in-group attitudes through its connection with private regard. A test of the indirect effects from age 4 stability (and the increase in stability from ages 4 to 5) to age 5 private regard and then to age 5 in-group cognitive-based attitudes was indeed significant, supporting this hypothesis, β 's = .10 (.04), $p = .023$, $p = .015$, respectively. Together, then, we found some support for both private regard and "rigidity"-related gender knowledge to be primarily associated with in-group attitudes. The associations tested had the additional advantage of being examined longitudinally over time, suggesting causal effects.

Gender "flexibility" was not common among the 5-year-olds in our sample, as overall mean levels of gender-stereotype flexibility and gender consistency were low. However, there was variability, and for those children who showed more flexibility, specificity was once again suggested. Both stereotype flexibility and gender consistency concurrently predicted more positive judgments of the *other* gender, but not of one's own gender. It is possible that at later ages, when children have become more accustomed to their gender identities and when children's in-group favoritism might show more variability, cognitive

flexibility would predict more tempered in-group favoritism. Taken together, the data revealed that different factors predicted children's attitudes toward their own versus the other gender.

Our results also suggested specificity in the consequences of gender attitudes. Only children's out-group attitudes, and not their in-group attitudes, were related to intergroup behavior. Perhaps out-group attitudes had more predictive power because of the greater variability in children's out-group attitudes. Because most children had very positive in-group attitudes at age 5, their in-group attitudes may not have served as a meaningful individual difference during this developmental period.

Variation by Gender and Ethnicity

Although girls and boys showed similar patterns overall, some interesting differences emerged. First, girls showed high levels of private regard and stereotype knowledge earlier than did boys. Girls' earlier gender development in these areas echoes findings that girls know labels for gender earlier than boys (Zosuls et al., 2009). Perhaps gender is more salient to girls earlier on because in our society, being male is often treated as "normative," with female being a deviation from this prototype. Girls' earlier awareness of gender than boys' might parallel the earlier awareness of race/ethnicity identities among ethnic minority as compared with ethnic majority children (Kowalski, 2007). Second, girls showed negativity toward boys in both of the attitude measures (means significantly below the scales' midpoints), whereas boys showed negativity toward girls in their affect-based attitudes only. These data suggest that girls have greater overall negativity toward boys than vice versa. If so, these results are consistent with findings among Welsh and Italian preschoolers (Gasparini et al., 2015; Yee & Brown, 1994), and are even consistent with those including elementary school-aged children (Leroux, 2008; Zosuls et al., 2011). A growing number of studies that combined measures of in-group and out-group attitudes, or compared differences between the two, have also found that girls show more general intergroup bias than do boys (Dunham, Baron, & Banaji, 2015; Egan & Perry, 2001; Powlishta, 1995; Powlishta, Serbin, Doyle, & White, 1994; Susskind & Hodges, 2007). One possibility for this gender difference is that children are simply following learned gender stereotypes that girls are nice and good, whereas boys are bad (Heyman, 2001). Another is that girls have negative experiences when playing with boys (Pellegrini & Smith,

1998). Further work is needed to understand this gender difference.

In terms of ethnic differences, overall, as we anticipated, processes generalized across ethnic groups, as we found no improvement in model fit in the multiple groups analysis. We also explored whether Latino/a/o and Asian American children would show heightened levels of intergroup bias compared to African American children. The data partially supported this prediction. For affect-based attitudes, Dominican- and Chinese-American children showed a wider span in the difference between how positively they felt toward the in-group versus the out-group compared to Mexican- and African American children. Perhaps Dominican- and Chinese-immigrant families place greater stress on gender roles compared to African American families (Fang, 2000; Peters, 1997; Piña-Watson et al., 2014), leading to more biased gender attitudes. Why did Mexican-American children show less biased gender attitudes compared to Dominican-American children if they espouse similar cultural values (*machismo/marianismo*)? Interestingly, past research on the same sample has found that these Dominican-immigrant children dress in more gender-stereotyped ways compared to Mexican-immigrant children (Halim et al., 2013). One possibility is that the Mexican-immigrant families possessed fewer financial resources compared to the Dominican-immigrant families (Yoshikawa, 2011) making it more difficult to buy toys and clothes, which often make gender more salient to children. Greater attention to these intra-Latina/o group differences is needed.

Limitations

Despite the many significant relations found in the path analysis model, many of which supported our hypotheses, caution is needed in interpreting some results, especially those involving expected relations that were not found. For some measures, the interitem consistency estimated with Cronbach's alpha was $< .60$, indicating either measurement error or item heterogeneity. However, there are several reasons why we still have confidence in these measures. First, the items were extensively pilot tested to ensure child understanding. One reason for the low alphas is that the number of items in each measure was relatively small. We had fewer items for some measures because we wanted to test an array of different gender constructs and needed to be mindful of young children's attention spans and patience. Second, statisticians have made

strong arguments that Cronbach's alpha often actually underestimates reliability (e.g., Sijtsma, 2009), and some recommend avoiding the use of Cronbach's alpha entirely (Raykov, 1998). Third, each of the measures with lower reliability showed meaningful and expected associations with other variables, suggesting that these measures contain sufficient meaningful signal relative to their noise. Fourth, for gender stability and gender-stereotype knowledge, we obtained significant test-retest estimates from one year to the next, even during a period of expected developmental change, which would reasonably lower the estimates. Finally, these instruments for gender stability and stereotype knowledge were based on previously established measures (Ruble et al., 2007; Slaby & Frey, 1975).

Notably, lower reliability was particularly evident for some of the measures collected at age 4. For example, our stereotype knowledge measure had lower reliability at age 4 but good reliability at age 5. It is possible that at age 4, some children are still learning individual stereotype knowledge items (e.g., they may know that boys tend to play with trucks, but not yet know that girls tend to play with dolls). Thus, this, and perhaps other measures that we used, might better be conceptualized as composite variables and represented as sum scores. Upon closer examination of the data, this indeed seemed to be true of boys in particular. Boys at age 4 seemed to know basic male stereotypes but not yet female stereotypes (accordingly $\alpha = .42$ for boys, but $\alpha = .60$ for girls at age 4). Consistent with this idea, girls possessed greater stereotype knowledge compared to boys at age 4. Thus, perhaps it is not until age 5 that stereotype knowledge becomes a more organized and coherent construct. Given these issues, cautious interpretation of the nonsignificant results and future replication is needed.

Conclusion and Broader Implications

Considerable prior research has examined attitudes about gender among children and adults (e.g., Rudman & Glick, 2008; Zosuls et al., 2011). Yet, the developmental origins of such processes have to date remained unexamined. In the present study, we used social identity theory and cognitive theories of gender development as guides for predictions about how early gender cognitions and identification should relate to attitudes and, in turn, intergroup behaviors. As predicted, our longitudinal study showed positive self-identification with gender was associated with more positive in-group attitudes over time. Less flexible gender cognitions

were linked with more negative out-group attitudes, which were associated with greater gender intergroup bias. These findings have important implications for interpersonal relationships. As gender is often one of the first social categories that young children make their own, these findings concerning gender attitudes might be used as a model system for how intergroup attitudes, in general, develop. In addition, there is growing concern about children's exclusion and unfair treatment of peers because of its harmful effects on children's well-being (Rutland & Killen, 2015). Understanding the development of gender attitudes can potentially foster norms of inclusion among children (Nesdale & Lawson, 2011) and benefit relationships between girls and boys, and future relationships between women and men.

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Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

Figure S1. Standardized Coefficients From a Structural Equation Model

Table S1. Multiple Groups Analysis by Gender and Ethnicity: Model Fit Statistics for Path Analysis Models

Table S2. Path Coefficients for Figure 2

Appendix S1. Mediation Analyses

Appendix S2. Attrition Information