Toy stories: Children’s use of gender stereotypes in making social judgments

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ABSTRACT

Young children tend to categorize people and objects to understand their environments, but under certain circumstances, they can also appreciate individual differences. Three studies investigated how young children use categorical and individuating information to make social judgments. In Study 1, 3- to 5-year-old children (N = 33; 18 boys, 15 girls) predicted hypothetical peers’ preferences for toys along a spectrum from highly stereotyped for girls to neutral to highly stereotyped for boys. Hypothetical peers were described by gender and as enjoying activities that were stereotypical, counter-stereotypical, or unrelated to gender. Children’s choices were consistent with use of the provided individuating information rather than gender alone. In Studies 2 and 3, we rest-tested these ideas with preschool samples from the United States (N = 44) and China (N = 21) respectively and also asked children about their toy, playmate, and activity preferences. For both samples, responses followed the same pattern as Study 1 for social judgments and were characterized by preferences for same-gender peers and neutral or gender-typed toys and activities, particularly in girls. While young children express preferences consistent with gender identity, they process and use individuating information in making social judgments, a capacity that could be targeted by interventions designed to reduce the development of gender-based bias.

1. Introduction

Gender stereotypes can have long-lasting implications for children’s development. For example, stereotypes about masculinity may discourage boys from playing with toys that foster their nurturing sides and develop their socio-cognitive skills, putting them at risk for future emotional maladjustment (Jones et al., 2015). Toys marketed for boys elicit practice with spatial skills and mental rotation, whereas “girls’” toys afford caretaking behavior (Wong & VanderLaan, 2020). As such, gender-stereotyped toys have been implicated in the underrepresentation of women in STEM fields (Shenouda, 2014), because the abilities fostered by toys marketed to girls do not include the scientific, mathematical, and mechanical skills (Cherney, 2018) associated with STEM. Although awareness of gender stereotype effects has prompted positive steps, such as the establishment of nonprofit organizations focused on girls’ STEM education, documentation of even young children’s use and endorsement of gender stereotypes remains plentiful (e.g., Kwan et al., 2020; Wong & VanderLaan, 2020). Studying how and when young children use gender stereotypes will facilitate creation of appropriate interventions to counteract these effects. In three studies, using two samples from the United States (US) and one from China, we examined how children balance the use of stereotypes versus information about individuals to make social judgments and considered children’s own gender-related preferences in this context.

Directly examining how children balance categorical and individuating information informs the intervention efforts that are most likely to change the role that stereotypes play in children’s decision-making. If gender stereotypes are particularly salient in children’s choices, then efforts to dismantle, widen, or otherwise increase the flexibility of these schemas might be an effective strategy for intervention. The focus in this case might be on providing numerous counter-stereotypic associations and exemplars to illustrate the range and variety within a category. However, if children are at least partially attending to individuating information, an additional approach might be to capitalize on that tendency with increased attention to the multi-faceted nature of individual interests. Such an approach would emphasize the complexity of individuals and boost resistance to categorization of self and others in the first place, particularly when making social judgments. Given that gender stereotypes are early in the process of formation and expansion over the course of the preschool years (Martin & Ruble, 2004), this developmental period might be ideal for intervention.
1.1. Development of gender stereotypes in early childhood

Developmental Intergroup Theory (DIT; Bigler & Liben, 2007) provides a framework for consideration of children's formation and subsequent use of stereotypes. According to DIT, children classify individuals on the basis of psychologically salient categories. Gender is highly salient, as it is invoked both implicitly and explicitly in contexts ranging from the immediate family to society (Brown & Stone, 2018). Such salience signals gender as an important dimension for categorizing people. Children as young as toddlerhood and early preschool easily assign gender to themselves and others (Leaper, 2015), which leads to recognition of differences between categories as meaningful (Bigler & Liben, 2007). Over time, gender categories become differentially associated with toys, dress, activities, and behaviors. Preschool children's recognition of these associations contributes to gender stereotype formation (Miller et al., 2006).

The messages that young children receive about the importance of gender and the toys, activities, and behaviors that are appropriate for each gender come from myriad sources. For example, adults identify toys and activities as being for particular genders, and young children adhere to these norms (Miller et al., 2006). Indeed, subtle messages about gender often reach children despite adults' efforts to mitigate those messages (Mesman & Groeneweld, 2018). Although parents might refrain from explicit statements about what is appropriate for boys versus girls, implicit messages are often sent through toys and activities provided for children (Brown & Stone, 2018). Even in families in which parents endorse flexible gender roles and explicitly support cross-gender play, children—particularly boys—report that parents would disapprove if they played with cross-gender toys (Freeman, 2007; Raag & Rackliff, 1998), suggesting that they have experienced implicit direction with respect to gender-typed play. In addition, children's media reinforces gender-stereotypical behavior (Arthur et al., 2008; Coyne et al., 2016), meaning children receive no shortage of messages about gender-typed toys, behaviors, and activities. According to DIT (Bigler & Liben, 2007), this plethora of information raises gender's salience as both an important category and a classification with specific, differentiated implications for its constituent groups (e.g., dolls for girls, trucks for boys).

On top of the socio-environmental messages that define and reinforce gender as a meaningful, differentiated category, children play a significant role in their own socialization with respect to gender and gender stereotypes (Leaper, 2015). Children vary in the extent to which they rigidly adhere to gender-typed play or avoid cross-gender play (Green et al., 2004), but typically, children begin to show preference for their own category by preschool (Halim et al., 2017). According to social identity theory (Tajfel & Turner, 1986), identification with a particular gender group promotes a positive view of that group and its gender-typed associations (Martin & Ruble, 2010). Although positive regard for one's gender is thus a way in which children build up their own self-esteem (Halim & Ruble, 2010), children also reinforce gender-typed play and discourage cross-gender play in each other (Leaper, 2015).

Gender itself is also potentially an important variable for understanding the development of gender stereotypes, as the process might vary somewhat between children who identify as boys versus girls. For example, rigidity of gender stereotypes has been found to be greater in boys than girls, and boys might both experience and exert more pressure to adhere to gender stereotypes (Banerjee & Lintern, 2006; Brown & Stone, 2018; Freeman, 2007; Giles & Heyman, 2004; Lobel & Menashri, 1993). Additionally, situational gender cues, even if unrelated to toys, raises boys’—but not girls’—avoidance of cross-gender toys, particularly if they perceive a close adult as disapproving of cross-gender play (Brown & Stone, 2018). Combined with gendered messages adults send through their gender-typed play with children (Wood et al., 2002), boys might experience and adopt greater gender-typed constraints in their play than girls do (Leaper, 2015). In contrast, with respect to social identity, girls have shown more in-group bias than boys on the basis of gender (Dunham et al., 2016; Powlisha et al., 1994), possibly because girls develop stereotype knowledge and high in-group positivity earlier than boys. Girls might experience gender as more salient than boys owing to females' relatively lower place in the social hierarchy (Halim et al., 2017). Such experience might increase girls' preferences for gender-typed toys and activities relative to boys.

1.2. Gender stereotypes and decision-making

In general, young children often apply an essentialist idea of gender (Taylor, 1996) in their social judgments. They expect other children's preferences to match their own if they are the same gender (Martin et al., 1995) and assume biological similarities between children of the same gender (Gelman et al., 1986). Same-gender children are also expected more than cross-gender children to engage in prosocial reciprocity (Renno & Shuts, 2015). In studies of toy preferences, young children prioritize gender-appropriateness even over the attractiveness of a toy (Martin et al., 1995). In such research, however, gender is made salient, meaning that children's own social identity and in-group favoritism is primed, and likely affects their responses (Bigler & Liben, 2007; Tajfel & Turner, 1986).

Other work suggests that children might understand the limits of information provided by gender alone. For example, young children recognize that gender is not always the best indicator of knowledge even for highly gender-stereotyped domains, as they prioritize information based on expertise over gender (e.g., trusting a boy who is a ballet expert over a girl who does not dance; Bosevski et al., 2016). Similarly, many preschool-aged children endorse the possibility that gender norms could be different in other cultures, suggesting that they recognize that some norms might be arbitrary. They are also inclined to protest against gender-based rules when they are clearly unfair (Conry-Murray & Turiel, 2012), and they evaluate exclusion of a child based on gender stereotype-incongruent preferences as morally wrong (Killen et al., 2001). Thus, even in preschool, when children's thinking about gender appears to be less flexible than later in childhood (Martin & Ruble, 2004), children have some sense that associations with gender cannot fully explain a person's knowledge, behavior, or rights.

The contrasts in this body of research suggest a question with significant implications for mitigating the negative effects of gender stereotypes: Can young children, whose cognitive capacities are still developing, set aside their gender stereotypes so as to prioritize information about an individual in making social judgments? After all, children are tasked with making such judgments every day, such as deciding whom to trust or befriend, or with whom to share resources. In making social judgments, they often have category and/or individuating information available. Category information (stereotypes) consists of characteristics attributed to a particular social group, and individuating information consists of characteristics specific to one person, such as preference for an activity. These information sources might align, such as when a girl prefers activities that are also stereotypically associated with girls (e.g., doll play), they might conflict (e.g., a boy enjoys doll play), or individuating information might be irrelevant to stereotypes (e.g., a boy/girl likes painting). When information sources conflict, DIT predicts that if gender is not particularly salient, children might prioritize individuating information in social judgments. However, decisions that make children's own gender identity salient, such as questions about their own preferences, might motivate children to choose consistently with their own gender identity (Tajfel & Turner, 1986).

1.3. The current studies

We conducted three studies to examine children's use of category and individuating information in making social judgments. As in past research (Conry-Murray & Turiel, 2012; Martin, 1989), we used toy choices to assess the gender-stereotyped nature of children's social judgments, but we built on this work in a couple of ways. Specifically,
some previous research on children's use of gender-related information uses only stereotype-consistent and -inconsistent options, meaning participants' decisions are not assessed with respect to a neutral option (Conry-Murray & Turiel, 2012; Martin, 1989; Raag & Rackliff, 1998). In this approach, a participant's high rating or choice of a masculine toy for a boy with feminine interests is interpreted as invoking a stereotype; the participant's high rating or choice of a feminine toy for the same boy is interpreted as using individuating information (e.g., Martin, 1989). Although this method provides clear experimental choices, it has two disadvantages. First, it might obscure instances in which children might consider both gender and individuating information. For example, when choosing for a boy with feminine interests, some children might opt for a neutral choice if one were present, which might reflect an attempt to balance stereotypical and individual preferences rather than defaulting to one or the other. Second, without a neutral category, whether children's preferences are owing to endorsement of a gender stereotype or avoidance of counter-stereotypes cannot be distinguished. Preferences for stereotyped choices alone constitute endorsement or adherence, whereas preferences for both stereotyped and neutral options suggest only avoidance of counter-stereotypes (Miller et al., 2006). The former might represent a gender identity defined by the stereotype—"what I am"—whereas the latter suggests that children's gender identity is defined by "what I am not." Consequently, we provided children with choices on a spectrum from highly gender-congruent to -neutral to highly -incongruent.

Another way that we expanded on previous work using toy choices was by conducting our investigation of children's social judgments and preferences as a function of their own gender. The interaction between children's own gender and a peer's gender in making social judgments seemed important in light of the evidence that it might influence children's focus on gender and adherence to stereotypes (Banerjee & Lintern, 2000; Brown & Stone, 2018; Dunham et al., 2016; Freeman, 2007; Giles & Heyman, 2004; Lobel & Menashri, 1993; Powlshita et al., 1994).

Our samples came from the US for Studies 1 and 2 and from China for Study 3. A few studies have found comparatively more endorsement and adherence to traditional gender roles among Eastern than Western cultures (Lobel et al., 2001; Nabbijohn et al., 2020), and as would be expected by DIT, with more gender differentiation, cultural differences in children's gender-related inferences and judgments have emerged in research with young children (Wang et al., 2021; Wong & VanderLaan, 2020). By testing a sample in China, we hoped to see whether the results obtained in a Western culture would replicate in an Eastern culture.

2. Study 1

We examined preschool-aged children's use of gender-related information in making social judgments using a variation of the method introduced by Martin (1989). Specifically, we presented preschool children with hypothetical peers whose interests were gender stereotype-congruent, -irrelevant, or -incongruent and asked participants to choose which toy each peer might most like from an array that also ranged in adherence to gender stereotypes. We reasoned that this method would provide information on children's balance of gender category versus individuating information across a spectrum from highly stereotype-congruent to gender-neutral to highly stereotype-incongruent. Although preschool-aged (3- to 4-year-old) children's gender preferences can be rigid, their stereotypes are still in formation and often more flexible than those of even kindergarten (5- to 6-year-old) children (Martin & Ruble, 2004). We hoped that the use of a spectrum including a neutral category would uncover that flexibility by identifying even subtle distinctions in children's balance of stereotypical versus individuating information. Moreover, while the gender of the hypothetical peer was made obvious through appearance, name, and pronouns, it was not otherwise mentioned, and emphasis was on the peer's favorite activity. While the tenets of DIT clearly identify gender as a generally salient category, this emphasis on a peer's preferred activity was meant to undermine the salience of gender and thus reduce the use of gender stereotypes in children's social judgments.

We measured toy choices along a spectrum in which gender-stereotyped toy choices were positive, gender-irrelevant choices were at zero, and counter-stereotyped choices were negative. We expected children's own favorites to be gender-stereotyped (Hypothesis 1; [H1]) as a function of gender identity, formed from myriad messages about the toys "for a person of their gender" (Tajfel & Turner, 1986) and by their own motivation to adhere to those messages (Leaper & Bigler, 2018). However, we hypothesized that children's toy choices for hypothetical peers would not invoke children's own gender identity, and the reduced salience of gender in this case would focus attention on hypothetical children's preferred activities as the basis for choices. Children's use of individuating information would be represented by differentiation between the toy choices for hypothetical children in each group, such that average choices for children with gender-congruent interests would be positive, average choices for children with gender-incongruent interests would be negative, and choices for children with stereotype-irrelevant interests would be closest to zero ([H2]). Lastly, we hypothesized that because of the asymmetry in the extent to which gender-typed toy play is reinforced (Brown & Stone, 2018), boys might invoke stereotypes in their toy choices more than girls (Banerjee & Lintern, 2000) ([H3]).

2.1. Method

2.1.1. Participants

Thirty-three children (18 boys, 15 girls; age range = 43 to 67 months) from two classrooms at a laboratory preschool associated with a small liberal arts college in New England participated in this study. This school professes a commitment to gender equity in line with the developmentally appropriate practices espoused by their professional organization (NAEYC, 2022) but does not follow a specific curriculum designed to reduce gender bias. The children were 84% white and 16% Asian and middle- to upper-class. Informed consent for children's participation was obtained prior to data collection.

2.1.2. Materials

A small group of undergraduate students and preschool teachers (N = 9) were presented with an array of 30 activities and asked to rate each as whether it was gender-neutral or gender-stereotypical for males or for females. The three activities that were rated most stereotyped for each gender and most gender-neutral (nine total) were used to create 18 stories about hypothetical children and their favorite activities. Each activity was paired with a girl for one story and a boy for another, so that six stories fit into each of three categories: gender stereotype-congruent (e.g., "Abigail likes to play fairies"), stereotype-incongruent (e.g., "Donna likes to play police"), or stereotype-irrelevant (e.g., "Sophia likes to paint"). Black-and-white stick figure drawings of a child on the left and a full-color activity on the right accompanied each story. The hypothetical children appeared in gender-stereotypical ways (e.g., hair, clothing), as gender-nonconforming appearances could have negatively influenced children's responses (Boseovski et al., 2016). See Appendix A for stories and images.

Color photos of five toys were printed on 4" x 6" cards (see Appendix A). The toys each represented one of five categories from strongly masculine to strongly feminine, as characterized by Blakemore et al. (2005), and included a toy helicopter (strongly masculine), a plastic dinosaur figure (moderately masculine), an alphabet puzzle (neutral), a Beanie Baby bear (moderately feminine), and children's jewelry (strongly feminine).

2.1.3. Procedure

Children were tested individually in a quiet space separate from the classroom. Two familiar experimenters were present for each testing session. One recorded the child's responses while the other (E) interacted with the child introducing the study by saying, "This is a game about..."
toys and stories. Children in the stories are celebrating their birthdays. You will be picking toys for them.” E then laid out the pictures of toys and presented each story and picture. For example, for a stereotype-congruent story, the experimenter said, “Today is Abigail’s birthday. She likes to pick flowers. Which toy would you pick for her?” A story order was created that alternated child gender and counterbalanced story type such that children heard one of each type of story before a type was repeated. This order was reversed to create a second order, so half of the children received each order. After the last story, the experimenter asked the child to pick their own favorite of the toys. Finally, the child was thanked for participating and given a sticker.

2.2. Results and discussion

2.2.1. Favorite toys
A chi-square analysis revealed that our first hypothesis (H1) was supported in that the toys that children identified as their favorites were gendered, \( \chi^2(4, N = 33) = 24.93, p < .001 \). Feminine toys were chosen by 100% of girls, and 77.8% of boys chose masculine toys (5.6% chose the neutral toy; 16.7% chose the moderately feminine toy), suggesting that children’s gender identity plays a role in their toy choices (Leaper & Bigler, 2018). As a manipulation check, we counted the number of times children chose their own favorite toy when choosing for hypothetical children. One child’s responses were excluded from data analysis because he selected his own favorite toy for more than half of the trials, indicating that his responses might have been based on his own toy preference and not on the presented information.

2.2.2. Use of gender versus individuating information

Our next hypothesis (H2) was that children’s toy choices for hypothetical peers would be differentiated as a function of peers’ activity preferences, such that choices for children with stereotype-congruent preferences would be on the positive end of the spectrum, close to the zero for the stereotype-irrelevant condition, and negative for children with stereotype-incongruent interests. We also expected boys to make more stereotyped choices than girls (H3). We ran a repeated measures analysis of variance (RMANOVA) using the three conditions as the within-subjects factor, participant gender as a between-subjects factor, and stereotypicality of toy choices as the dependent measure. The main effect of condition was significant \( F(2, 60) = 26.23, p < .001, \eta^2_p = 0.466 \). Planned pairwise comparisons revealed support for H2 in that all three conditions differed \( p \leq 0.009 \); scores for the stereotype-congruent condition were the most stereotyped (\( M = 0.77, SD = 0.80 \)), scores for the stereotype-irrelevant condition were closer to neutral (albeit still positive; \( M = 0.29, SD = 0.55 \)), and scores for the stereotype-incongruent condition were negative (\( M = -0.51, SD = 0.74 \)). Condition did not interact with gender \( F(2, 60) = 0.50, p = .607, \eta^2_p = 0.017 \), nor did a main effect of gender emerge, \( F(1,30) = 0.90, p = .350, \eta^2_p = 0.029 \), meaning that H3 was not supported: no difference emerged by participant gender.

As we had no basis in the literature for running an a priori power analysis, we ran a sensitivity analysis using our \( N \), our design, and small correlations observed between repeated measures (\( r = 0.02 \) to 0.10) in G’Power3 (Faul et al., 2007). Parameters were set to an alpha level of 0.05 and power of 0.80, and indicated that the minimum detectable effect size was a moderate to large effect (\( f = 0.30 \)). This result suggests that our sample size was sufficient to detect the large effect we observed for the RMANOVA but not that observed for the interaction.

Although the small sample size compromises generalization to the population of young children, these findings are consistent with the idea that preschool children might be able to use individuating information in their social judgments. Not only did children choose counter-stereotyped options for children with gender-incongruent interests, they also showed significantly greater adherence to stereotypes in the congruent than irrelevant conditions. This use of a spectrum of choices suggests a level of nuance heretofore undetected in children’s social judgments. However, children used both individuating information and stereotypes in social judgments (Martin, 1989), as a one-sample \( t \)-test revealed that the gender-irrelevant choices were statistically greater than zero, \( t(32) = 3.00, p = .005, d = 0.53 \). Children thus appeared to use peer gender as a factor in decision-making when interests were gender-neutral. Likewise, children’s average choices for the gender-incongruent children were modestly negative, suggesting that gender might have influenced these decisions, rather than hypothetical peers’ activity preferences alone. Although no main effect or interaction occurred with respect to participant gender, these analyses were likely underpowered and are therefore inconclusive.

3. Study 2

Study 1 suggested that young children might use individuating information in their social judgments for hypothetical peers. We saw two ways in which we could expand upon this work. First, we repeated Study 1, improving our materials (see Methods) and collecting a bigger sample. We hypothesized that children would choose gender-typed toys as their favorites (repeat of H1) and factor in individuating information in their predictions of peers’ preferences (repeat of H2). Second, because we were interested in the difference between the role of gender stereotypes in making choices for others versus for the self, we expanded our investigation to include questions about children’s preferences for a) hypothetical peers, as a function of the peers’ gender and gender conformity, and b) activities, as a function of gender-typing.

3.1. Playmate and activity preferences

Study 1 suggested that when making choices for others, children’s own gender identity and stereotype knowledge did not overwhelm their attention to peers’ preferences, so they could use individuating information to choose a stereotype-incongruent toy for a child who enjoys stereotype-incongruent activities. However, we considered the possibility that the finding might not replicate. The small sample in Study 1 might have been atypically flexible with respect to gender identity or stereotypes and might have made choices for hypothetical peers that reflected that flexibility rather than an ability to use individuating information. In Study 2, we added questions to evaluate whether, as a group, children used individuating information in making social judgments but still preferred stereotype-congruent toys, peers, and activities. When choosing for themselves, children’s gender—as a significant social identity—likely becomes central and salient (Halim & Ruble, 2010). As such, preschool children might evaluate which options are “for” or “not for” them, (i.e., which are appropriate for their gender) based on self-socialization and messages from their social environments (Brown & Stone, 2018; Leaper, 2015) and focus their preferences within the set of options consistent with their gender identity. This idea is borne out by young children’s preferences for gender-typed toys and activities (Miller et al., 2006), playmates of their own gender (Leaper, 2015), and peers that adhere to stereotypes (Kwan et al., 2020; Nabbijohn et al., 2020; Qian et al., 2021). Such preferences are also consistent with the in-group favoritism predicted by DIT (Bigler & Liben, 2007) and social identity theory (Tajfel & Turner, 1986).

Preferences for same-gender and gender-conforming peers are consistent in both genders, but some evidence also suggests gender differences in degree. For example, girls demonstrate more gender bias, in that their own-gender preference is typically stronger than that of
boys (Halim et al., 2017; Powlishta et al., 1994), but they show equivalent preference for others who demonstrate masculine versus feminine traits (Qian et al., 2021). In contrast, boys tend to be closer to neutral in their preference for other boys over girls (Powlishta et al., 1994) but show significant preference for masculine over feminine others (Qian et al., 2021) and present themselves in more gender-typed ways than girls (Banerjee & Lintern, 2000). They also respond more negatively than girls to peers demonstrating cross-gender behavior—especially other boys (Lobel & Menashri, 1993). The reasons for these differences in degree are unclear (Leaper, 2015) but might relate to differences between boys and girls in the manifestation of gender as a social identity. Greater societal reinforcement for gender-typed behavior in boys than girls (Brown & Stone, 2018) could account for boys' greater rejection of cross-gender behavior, and children's growing awareness of status differences between males and females might heighten girls' ingroup favoritism (Halim et al., 2017).

By investigating children's preferences for peers and activities along a spectrum using a neutral condition, we hoped to disentangle whether preferences were characterized by an approach orientation toward gender stereotypes and identity, as would be predicted by DIT and social identity theory, or merely avoidance of the opposite gender. A tendency to prioritize gender-conformity over neutrality and non-conformity would constitute an approach orientation (adherence to gender stereotypes), and prioritization of gender-conformity and neutrality while rejecting gender-nonconformity would demonstrate an avoidance orientation (rejection of counter-stereotypes). Based on the extant literature, we hypothesized that children would prefer same-gender peers (H4) and gender-conforming peers within their own gender (H5). However, we expected girls to show approach toward gender-conformity by preferring hypothetical girls with gender-conforming interests over girls in either of the other two groups (H5a), and boys to show avoidance of gender-nonconformity by preferring hypothetical boys with gender-conforming or neutral interests over boys with gender-nonconforming interests (H5b).

Activities provided another important domain for examining gendered patterns in children's preferences. Although gender nonconformity might be generally socially costlier for boys than girls (Lobel & Menashri, 1993), gender nonconformity in activities specifically results in more negative evaluations for girls than for boys (Blakemore, 2003). Consequently, we hypothesized an avoidance orientation for girls, in that they might prefer feminine and neutral over masculine activities (H6); our analyses were exploratory for boys.

3.2. Method

3.2.1. Participants

Based on Study 1, an a priori power analysis using G*Power3 (Faul et al., 2007) for RMANOVA with one between-subjects factor, alpha of 0.05, and power of 0.80 to observe a large effect size showed that we needed a minimum sample size of $N = 22$. The sample size required to detect an interaction with even a medium effect size, however, was larger than that available to us, so we did not use gender as a between-subjects variable. The final sample included 44 US children from one half-day ($n = 15$) and one full-day ($n = 29$) preschool program (21 boys, 23 girls; range = 36 to 65 months). These preschools explicitly espoused gender-neutral values. The children from the half-day program were 81% white, 16% Asian, and 3% Black, and middle-to upper-middle class. Demographic data were not available from the full-day program; however, it serves the same community and has similar demographics. Informed consent for children's participation was obtained prior to data collection.

3.2.2. Materials

Based on our experience from Study 1, we made a few changes to toys and activities but retained the same basic protocol (see Appendix A for all changes). In conducting Study 1, a few children remarked on the “match” between the activity “playing dragon,” which featured a green dragon, and the photo of the green toy dinosaur, so this correspondence was eliminated. Also, instead of relying on the toy classifications provided by Blakemore and Centers (2005), we conducted our own survey of 48 toys and obtained ratings of stereotypicality on a 5-pt. scale from 14 experts in child development and early childhood education who were familiar with children's perceptions of toys. The toys included were those closest in ratings to the appropriate point on the scale, and included small matchbox cars (strongly masculine), a toy drum (moderately masculine), Play-Doh (neutral), a toy food basket (moderately feminine), and a doll house (strongly feminine).

We also changed three of the activities to provide consistency within categories and to use activities that were as common as possible, according to the educational experts with whom we conferred. For example, “picking flowers,” a feminine activity, was replaced with “playing ballerinas” to match the role-play characteristics of the other two feminine activities (playing “fairies” and “princesses”), and “playing astronauts,” a masculine activity, was replaced with “playing pirates.” Consequently, Study 2 was not an exact replication of Study 1. As before, each peer/activity pair was presented on a page. We also created smaller ($4 \times 6$) versions of each peer/activity pair and each activity alone for children to sort in our evaluation of preferences.

3.2.3. Procedure

As in Study 1, children were tested individually by a familiar experimenter (E) in a space separate from the rest of their class. E introduced the study by saying, “Today we are going to play a game about toys and stories. The game has three parts.” The first part followed the procedure of Study 1. In part two, E showed the child pictures of the activities one at a time and asked whether the child liked to engage in that activity a lot, sometimes, or not so much, associating each option with a colored basket. Each activity was then placed into the basket chosen. Lastly, the experimenter asked the child to sort the small pictures of the hypothetical children (and their activities) into the baskets according to how much s/he would like to play with that child. Finally, the child was thanked and escorted back to the classroom.

3.3. Results and discussion

3.3.1. Favorite toys

As in Study 1 (H1), toys children identified as their favorites were highly gendered $\chi^2(4, N = 44) = 24.82, p < .001$. Feminine toys were chosen by 82.6% of girls (the remainder chose the neutral option) and 66.6% of boys chose masculine toys. The neutral option was chosen by 14.3% of boys, and the remainder chose toys categorized as feminine (4.8% moderately; 14.3% strongly). Girls thus appeared to be avoiding toys stereotyped for the other gender, whereas the boys showed some flexibility. These results run contrary to boys' rigidity with respect to stereotypes and preference for male-typed toys found in other studies (Banerjee & Lintern, 2000; Lobel & Menashri, 1993; Martin et al., 1995). Comparison of children's favorite toys against the choices they made for the hypothetical children revealed two children who selected their favorite toys for more than half of the trials; these children were removed from the analyses.

3.3.2. Use of stereotypes versus individuating information

We began by retesting the hypothesis (H2) that children's toy choices for hypothetical peers would be differentiated as a function of peers' activity preferences. We dropped gender as a between-subjects variable since the analysis was underpowered. A RMANOVA using the three conditions as the within-subjects factor and stereotypicality of toy choices as the dependent measure showed that children's prediction of peers' preferences was again significantly associated with condition in the hypothesized directions, $F(2, 82) = 24.48, p < .001$, $\eta_p^2 = 0.374$. Planned pairwise comparisons revealed significant differences between the stereotype-congruent condition and both of the other conditions (ps
≤ 0.001), but only a marginal difference between stereotype-irrelevant and stereotype-incongruent conditions (p = .096). Means were in the expected directions (congruent: M = 0.69, SD = 0.64; irrelevant: M = 0.01, SD = 0.45; incongruent: M = −0.20, SD = 0.74), and the mean for the irrelevant condition was not significantly different from zero (the neutral point), t(41) = 0.17, p = .866, d = 0.03.

As in Study 1, children appeared to use individuating information in making choices. However, relative to the average for children in the stereotype-irrelevant condition, choices in the stereotype-congruent condition were more positive than choices in the stereotype-incongruent were negative. On the whole, participants' choices were only mildly counter-stereotype for hypothetical children with such interests, but they still suggest some use of individuating information in decision-making as the means are in the expected directions.

3.3.3. Playmate and activity preferences

With respect to children's preferences for hypothetical playmates, we expected an interaction between participant gender and gender of hypothetical peer. In previous literature (Kwan et al., 2020; Nabbijohn et al., 2020), similar interactions between participant gender and preference for same-gender peers and gender conforming peers have found medium to large effect sizes (η² ≥ 0.14), albeit with slightly older participants. An a priori power analysis in G*Power (Faul et al., 2007) for RMANOVA with interactions among within- and between-subjects factors, using an alpha of 0.05 and power of 0.80, indicated that our total sample size provided sufficient power to detect such effects (η² ≥ 0.07).

In testing the hypothesis that children would prefer same-gender playmates (H4), we ran a RMANOVA using hypothetical boys' and girls' peer acceptance scores as the within-subjects factor and child gender as the between-subjects factor. A main effect emerged, F(1, 40) = 5.92, p = .029, η² = 0.129, in that children showed greater peer preference for hypothetical girls than hypothetical boys, but this finding was driven by an interaction between gender of the hypothetical child and gender of participant, F(1, 40) = 7.70, p = .008, η² = 0.161. Consistent with the hypothesis, participant girls demonstrated a preference for hypothetical girls (M = 2.24, SD = 0.50) over boys (M = 1.83, SD = 0.57) (p < .001), but participant boys' scores did not differ (hypothetical girls: M = 2.03, SD = 0.49; hypothetical boys: M = 2.07, SD = 0.53; p = .744).

We also hypothesized that within their own gender, participants would prefer hypothetical peers whose interests conformed to gender stereotypes over those with nonconforming interests (H5). We ran two RMANOVAs, one within each gender of hypothetical child, using stereotype condition as the within-subjects factor, participant gender as the between-subjects factor, and averaged peer acceptance as the dependent variable. For hypothetical girls, a marginal main effect of condition emerged, F(2, 80) = 2.77, p = .069, η² = 0.065, but the interaction with participant gender was significant, F(2, 80) = 6.88, p = .002, η² = 0.147. Contrary to hypothesis (H5a), no significant differences emerged between groups in girls' preferences (see Table 1 for means). Boys preferred nonconforming girls and girls with neutral interests over those with gender-conforming interests (p = .005 and < .001, respectively); the former two groups did not differ (p = .713). For hypothetical boys, a main effect of stereotype condition emerged, F(2, 80) = 3.22, p = .045, η² = 0.074 but no interaction with participant gender, F(2, 80) = 0.77, p = .466, η² = 0.019. Participant girls showed a dispreference for gender-conforming boys compared to boys with neutral (p = .025) interests and marginally in relation to boys with nonconforming (p = .097) interests; the latter two groups did not differ. Contrary to expectations (H5b), no differences emerged for participant boys (see Table 1 for means).

Our last hypothesis (H6) was that girls would prefer feminine and neutral activities over masculine ones; our investigation was exploratory for boys. Similar analyses in the literature (Goble et al., 2012) have reported large effect sizes (η² = 0.26), and an a priori analysis using G*Power for a RMANOVA with a within-between interaction, alpha of 0.05, and power of 0.80 suggested our sample was sufficient to detect medium to large interactions (η² ≥ 0.07). We recoded the activities as feminine, masculine, and neutral and ran a RMANOVA with participant gender as a between-subjects factor. Both the main effect F(2, 80) = 8.37, p < .001, η² = 0.173, and the interaction F(2, 80) = 10.68, p < .001, η² = 0.211 were significant. For girls, this differentiation was not driven by preference for feminine activities as it was by rejection of masculine activities, in line with research suggesting stereotype-incongruent activities are judged negatively for girls (Blakemore, 2003). Mean preferences for feminine (M = 2.29, SD = 0.58) and neutral (M = 2.39, SD = 0.46) activities did not differ, but both were significantly preferred over masculine activities (M = 1.70, SD = 0.59; ps ≤ 0.003). The pattern was analogous for boys. Neutral (M = 2.35, SD = 0.51) and masculine activities (M = 2.15, SD = 0.69) did not differ (p = .245), but both were preferred over feminine activities (M = 1.60, SD = 0.67; ps ≤ 0.008).

As in past research in both Asia and North America (Kwan et al., 2020; Nabbijohn et al., 2020), girls showed a distinct preference for same-gender peers, which combined with their rejection of gender-conforming boys and masculine activities, is consistent with the gender bias among girls found in slightly older children (Powlisha et al., 1994) and a general avoidance orientation toward the stereotypically male. Boys also demonstrated an avoidance orientation in their rejection of gender-conforming girls and feminine activities relative to the other categories, but they were equivocal with respect to peer gender. Neither gender rejected nonconforming peers. However, the children in this sample were a bit younger than those in samples that demonstrate clear preferences for gender-conformity (e.g., Kwan et al., 2020; Nabbijohn et al., 2020). Overall, children's preferences did not conform to an approach orientation—a preference for gender-typed over neutral peers and activities (Miller et al., 2006)—suggesting that young children's gender identities are defined by what they are not, rather than what they are.

4. Study 3

An opportunity arose to gather data from a sample of children at a preschool in China. Although this sample was small, it afforded repetition of the Study 2 protocol in a non-Western context. This effort seemed worthwhile, as the findings of preferences for same-gender peers and for gender conformity are robust across cultures (Banerjee & Lintern, 2000; Lobel & Menashri, 1993; Nabbijohn et al., 2020; Qian et al., 2021), but differences have emerged as well. For example, more adherence to gender stereotypes is sometimes found in Asian versus Western cultures.

Table 1

<table>
<thead>
<tr>
<th>Participant gender</th>
<th>Hypothetical girls</th>
<th>Hypothetical boys</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stereotype condition</td>
<td>Stereotype condition</td>
</tr>
<tr>
<td></td>
<td>Congruent</td>
<td>Irrelevant</td>
</tr>
<tr>
<td>Girls</td>
<td>2.33 (0.67)</td>
<td>2.26 (0.60)</td>
</tr>
<tr>
<td>Boys</td>
<td>1.67 (0.60)</td>
<td>2.23 (0.61)</td>
</tr>
<tr>
<td>Total</td>
<td>2.02 (0.72)</td>
<td>2.25 (0.60)</td>
</tr>
</tbody>
</table>
but differences in preferences for gender-conforming versus -variant peers appears limited to a matter of degree, with Asian children showing greater preferences for conformity than Western children (Kwan et al., 2020; Lobel et al., 2001; Nabbijohn et al., 2020). Qian et al. (2021) point to several cultural differences between the US and China, such as a Chinese preference for male children and male privilege, that according to DIT might communicate a level of importance for gender differentiation that is greater than in the US. Indeed, some Chinese preschool teachers emphasize traditional gender roles in classrooms (Chen & Rao, 2011), whereas many US preschools attempt to downplay the importance of gender or emphasize gender equality (NAEYC, 2022).

The sample size provided sufficient power for a RM ANOVA (see power analysis described for Study 2) using an alpha of 0.05 and power of 0.80. Moreover, the effect sizes of the interactions that emerged in the analyses of peer and activity preferences were mostly large enough ($\eta^2 > 0.15$) to suggest that the sample size would be sufficient to detect interactions that used participant gender as a between-subject variable in these analyses. Thus, in the interest of repeating the protocol for Study 2, we gathered the same data and tested the same hypotheses, but we interpret the interactions in particular with caution.

4.1 Method

4.1.1 Participants

The sample included 21 children from a preschool in China (9 boys, 12 girls; range = 34 to 63 months). This preschool did not espouse gender-neutral values and served middle-class, military families in a mainland city. Informed consent was obtained prior to data collection.

4.1.2 Materials

The materials used matched those of Study 2 with a few exceptions. Preschool teachers in China suggested that a few of the activities were not culturally salient, so, for example, playing “pirates” was changed to “army” and “ballerinas” was changed to “teacher” (see Appendix A for all changes).

4.1.3 Procedure

The procedure of Study 3 was identical to Study 2.

4.2 Results and discussion

4.2.1 Favorite toys

As expected (H1), toys children identified as their favorites were highly gendered, $\chi^2(4, N = 21) = 21.00, p < .001$. Feminine toys were chosen by 83.4% of girls (the remainder of whom chose the neutral option), and 100% of boys chose masculine toys. These results are consistent with previous work noting boys’ rigidity with respect to preference for male-typed toys found in other studies (Banerjee & Linttern, 2000; Lobel & Menashri, 1993; Martin et al., 1995).

4.2.2 Use of stereotypes versus individuating information

We began by retesting the hypothesis (H2) that children’s toy choices for hypothetical peers would be differentiated as a function of peers’ activity preferences. As in Study 2, we did not use gender as a between-subjects variable since that analysis was underpowered. A RM ANOVA using the three conditions as the within-subjects factor and stereotypicality of toy choices as the dependent measure showed that children’s use of gender stereotypes as a basis for predicting peers’ preferences was again significantly associated with condition, $F(2, 40) = 6.11, p = .005, \eta^2_p = 0.234$, and planned pairwise comparisons showed a significant difference between the congruent and incongruent conditions ($p = .007$). The stereotypical-irrelevant condition was only marginally different from the congruent ($p = .073$) and -incongruent ($p = .066$) conditions. Means were again in the expected directions (congruent: $M = 0.61, SD = 0.65$; irrelevant: $M = 0.25, SD = 0.64$; incongruent: $M = -0.17, SD = 0.80$), and the mean for the irrelevant condition was only marginally different from zero, $t(20) = 1.82, p = .083, d = 0.40$. These results suggest that children used individuating information in making choices.

4.2.3. Playmate and activity preferences

As in Study 2 we predicted that children would prefer hypothetical playmates of their own gender (H4). We ran a RM ANOVA using hypothetical boys’ and girls’ peer acceptance scores as the within-subjects factor and participant gender as the between-subjects factor. A marginal main effect emerged, $F(1, 19) = 4.14, p = .056, \eta^2_p = 0.179$, in that children showed greater peer preference for hypothetical girls than hypothetical boys, but again this finding was driven by a marginal interaction of large effect size between gender of the hypothetical child and gender of participant, $F(1, 19) = 4.20, p = .054, \eta^2_p = 0.181$. Participant girls demonstrated a preference ($p = .01$) for hypothetical girls ($M = 2.42, SD = 0.54$) over boys ($M = 1.98, SD = 0.58$) as predicted, but participant boys’ scores did not differ (hypothetical girls: $M = 2.21, SD = 0.51$; hypothetical boys: $M = 2.25, SD = 0.41, p = .831$).

Our next hypothesis was that participants would prefer same-gender playmates whose interests conformed to gender stereotypes (H5). We ran two RM ANOVAs, one within each gender of hypothetical child, using stereotype condition as the within-subjects factor, participant gender as the between-subjects factor, and averaged peer acceptance as the dependent variable. For hypothetical girls, no main effect of condition emerged, $F(2, 38) = 2.09, p = .138, \eta^2_p = 0.099$, but the interaction with participant gender was significant, $F(2, 38) = 5.57, p = .008, \eta^2_p = 0.227$. Girls demonstrated a distinct preference for gender-conforming hypothetical girls and a marginal preference for girls with neutral interests over those with nonconforming interests ($p = 0.003$ and 0.064, respectively), but the former two groups did not differ (see Table 2 for means). Boys preferred girls with neutral interests over those with gender-congruent interests ($p = .046$), but otherwise the groups did not differ. For hypothetical boys, a main effect of stereotype condition emerged, $F(2, 38) = 3.40, p = .044, \eta^2_p = 0.152$ but no interaction with participant gender, $F(2, 38) = 1.98, p = .152, \eta^2_p = 0.094$. Planned pairwise comparisons suggested that participant girls significantly preferred boys with neutral interests over gender-conforming boys ($p = .009$) but no other differences emerged. Likewise, participant boys preferred hypothetical boys with neutral interests over gender-nonconforming boys ($p = .045$), but gender-conforming boys did not differ from either of the other two groups (see Table 2 for means).

Our last hypothesis was that girls would show a preference for feminine and neutral activities relative to masculine activities (H6); we did not have an a priori hypothesis for boys. We ran a RM ANOVA using masculine, feminine, and neutral activities as the within-subjects variable and gender between-subjects. Both the main effect $F(2, 38) = 10.22, p < .001$, $\eta^2_p = 0.350$, and the interaction $F(2, 38) = 18.48, p < .001$, $\eta^2_p = 0.493$ were significant. For girls, feminine activities ($M = 2.64, SD = 0.33$) were preferred over neutral activities ($M = 2.25, SD = 0.51, p = .039$), and both were significantly preferred over masculine activities ($M = 1.53, SD = 0.59, ps < 0.004$). For boys, the pairwise comparisons also revealed significant differences between all three activity types, with neutral activities ($M = 2.63, SD = 0.33$) rated even higher than masculine activities ($M = 2.04, SD = 0.54, p = .032$) and feminine rated lowest ($M = 1.56, SD = 0.62, ps < 0.024$).

Girls’ preference for same-gender peers and rejection of nonconforming girls is consistent with an avoidance orientation and the gender bias among girls found in slightly older children (Powlishta et al., 1994). Boys’ preferences are difficult to interpret. Despite their approach orientation toward masculine toys, their other preferences emphasized gender neutrality. They were equivocal with respect to peer gender, and prioritized the gender-neutral category for peer and activity preferences, but the sample size makes these results inconclusive.
focused solely on young children's use of gender stereotypes in their social judgments. Studies 2 and 3 replicated Study 1 and also examined the role of gender stereotypes in children's own preferences for peers and activities in two different cultural contexts (US and China). Together, the three studies provide a nuanced picture of how young children employ gender stereotypes to make decisions about the self and others within the approach/avoidance orientation framework.

6.1. Young children's social judgments

The children in our studies appeared to take advantage of information specific to individuals when making social judgments, rather than relying solely on gender stereotypes, as the same pattern emerged across all three studies (see Table 3 and Fig. 1). Children this age recognize gender as a category and identify their own classification within it, but they did not rigidly apply stereotypes in their social judgments as is characteristic of slightly older children (Leaper, 2015). Instead, our findings appear to capture children's thinking at a moment in development in which gender does not operate as a default heuristic for social judgments. The discrimination that children made in their choices for hypothetical children with stereotype-congruent versus -irrelevant interests—significantly in Studies 1 and 2, and marginally in Study 3—provides evidence that individuating information is overriding early stereotypes as the basis for these choices, since children did not choose as consistently with gender stereotypes when the information provided included gender-neutral versus stereotyped activity preferences. In fact, in Studies 2 and 3, average choices for hypothetical children with neutral interests did not differ from the zero point of the scale. Similarly, children's average choices for peers with stereotype-incongruent interests were always negative (i.e., on the stereotype-incongruent end of the scale).

Our findings are in line with DIT's description of young children's gender stereotypes as developing, but not complex or solidified (Bigler & Liben, 2007). Children’s nascent knowledge of stereotypes is evident in our studies, in that average toy choices for hypothetical children in the stereotype-incongruent condition were closer to neutral (the zero point) than to the option that was even moderately counter-stereotyped (−1), and children's own toy preferences largely aligned with gender stereotypes. Approximately 85 % of children across the three studies chose favorite toys stereotyped for their gender, compared to about 6 % who chose counter-stereotyped favorites. However, cultural and gender-related differences emerged: whereas in the Chinese sample none of the children chose counter-stereotyped toys, in both US samples a non-negligible proportion of boys (17–19 %) chose feminine toys. Generally, these results correspond with work demonstrating that preschoolers expect others to have gender-typed preferences (Martin, 1989) and are aware of the gender-typing of toys and activities (Bigler & Liben, 2007; Freeman, 2007; Martin et al., 1995). The idea that gender stereotypes are forming at this age is not in doubt; nonetheless, young children's ability to attend to individuating information is cause for optimism. Early childhood might be an era in which interventions could capitalize on the nature of early cognition to disrupt the solidification of gender stereotypes and their use in social judgments.

### Table 3

Summary of hypothesis testing results by study.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Study 1 (US)</th>
<th>Study 2 (US)</th>
<th>Study 3 (China)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 Children will choose toys typed for their own gender</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>H2 Children's toy choices for hypothetical peers will be differentiated as a function of individuating information</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>H3 Boys might invoke stereotypes in their toy choices more than girls</td>
<td>Unsupported</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>H4 Children will prefer same-gender peers Within their own gender, children will prefer gender-conforming peers</td>
<td>NA</td>
<td>Unsupported</td>
<td>Unsupported</td>
</tr>
<tr>
<td>a) Girls will prefer gender-conforming girls relative to others</td>
<td>NA</td>
<td>Unsupported</td>
<td>Supported for gender-conforming girls but not gender-neutral girls</td>
</tr>
<tr>
<td>b) Boys will dislike gender-nonconforming boys relative to others</td>
<td>NA</td>
<td>Unsupported</td>
<td>Supported for gender-neutral but not gender-conforming boys</td>
</tr>
<tr>
<td>H5 In studies 1 and 2, children's toy choices for hypothetical peers with stereotype-congruent versus -irrelevant interests were always negative (i.e., on the stereotype-incongruent end of the scale).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H6 Girls will prefer gender-congruent/neutral activities over gender-incongruent activities</td>
<td>NA</td>
<td>Supported</td>
<td>Supported (but all conditions differentiated)</td>
</tr>
</tbody>
</table>

Note. NA = not applicable.

* Means for the stereotype-irrelevant condition differed only marginally from the stereotype-incongruent condition in Study 2 and both of the other conditions in Study 3.

1 Although the interaction effect was only marginally significant, the pairwise comparisons revealed a significant difference for girls in line with the hypothesis.
6.2. Implications for reducing the development of intergroup bias

If early childhood is an era in which children can overcome their knowledge of gender stereotypes and the salience of their own gender identities so as to attend to individuating information, then the preschool years might provide an opportunity for developing curricula that focus on individual differences and both intra-categorical and intra-individual variation. In particular, efforts to limit prejudice by maximizing children’s exposure to counter-stereotypic content and explaining differences as attributable to factors other than gender group membership (Arthur et al., 2008) might foster the attention to individual preferences that children appeared to apply in these studies. If young children have not yet learned to apply heuristic thinking in making these judgments, they might more easily develop and maintain a habitually generative and individual approach to attributions about others than older children whose stereotypes are entrenched. Similar efforts have successfully reduced adults’ use of stereotypes in social judgments (Prati et al., 2015), but developing habitual attention to individuating information through early childhood curricula is likely to be more successful over time than trying to undo or undermine the use of gender stereotypes once they are fully formed.

The account of stereotype formation described by Developmental Intergroup Theory (Bigler & Liben, 2007) aligns with recommendations for limiting gender stereotypes and their links to prejudice by reducing behaviors that emphasize gender as an important category, such as organizing the environment by gender or using gender labels (Arthur et al., 2008). Certainly, the idea that the environment teaches children about gender (Brown & Stone, 2018) is supported by the fact that the salience of gender both in preschools (Shutts et al., 2017) and at home (Mesman & Groeneveld, 2018) has been linked to children’s gendered behavior, including children’s avoidance of play with cross-gender peers (Martin & Ruble, 2010). Consequently, early childhood curricula that work to deemphasize gender as a salient category might have the benefit of undermining, or at least delaying, the development of stereotypes, bias, and prejudice.

6.3. Gender bias

Girls in Studies 2 and 3 demonstrated greater preference for same-sex peers and (to some extent) gender-typed activities, than boys. This tendency toward in-group favoritism among girls more so than boys is consistent with previous work and might be indicative of implicit messages that girls are receiving about females’ social status being lower relative to males’ (Halim et al., 2017). Typically, lower-status groups show more in-group favoritism than high-status groups (Powlishta et al., 1994), suggesting that even in early childhood, girls might be developing associations between gender and worth. However, with the exception of Chinese girls’ activity ratings, girls’ preferences were more consistent with an avoidance than approach orientation in that they showed less bias against neutral options than those gender-typed for boys.

The data regarding children’s preferences revealed that all children rejected gender-conforming peers of the opposite sex and gender-incongruent activities relative to the neutral options in Studies 2 and 3. Although exploratory, these findings raise the question of whether this avoidance orientation is accompanied by negative out-group attitudes (Martin & Ruble, 2010), which are predictive of behavioral expressions of prejudice (Halim et al., 2017). Such avoidance is likely one major way in which children self-socialize (Leaper, 2015), and the avoidance orientation suggests that children’s gender-related social identity at this age is defined by what they are not more so than what they are. Framing interventions to reduce this bias might thus be most successful if directed at mitigating children’s perceptions of certain choices as gender-incongruent rather than at widening the options deemed gender-congruent.

6.4. Limitations and future directions

Our samples were homogeneous and small, and we did not have detailed demographic data, so our results might not generalize. A large, cross-cultural sample that would allow for detection of interactions with gender and culture would add nuance and increase confidence in the results. We also relied on experts in child development and early childhood education, rather than children themselves, for categorizing...
toys and activities by gender. The categorization of toys according to gender is dynamic, and the neutral category might be expanding (Wood et al., 2002). The children in these studies showed some enthusiasm for toys and activities identified as gender-neutral, so further investigation into how children conceptualize various toys and activities might provide new insight into modern gender-typing and the dynamic nature of stereotypes as well. Additionally, our analyses of children’s preferences for playmates did not incorporate children’s own interests. Future work could tease apart to what extent children’s peer preferences are a function of shared interests versus gender-congruence.

We did not measure children’s understanding of gender, gender stereotypes, or gendered aspects of their social contexts, so we could not relate individual children’s social judgments to specific gender cognitions or gendered experience. However, the evidence presented here for children’s use of individuating information suggests potential for early childhood interventions in subverting the use of gender as a meaningful category in social judgments and reducing gender bias. Particularly if children have not yet acquired complex gender schema, the preschool years might provide a developmental era in which habitual consideration of individuating information might be fostered and preserved—for the self as well as for others. Such processes might be the underlying mechanism that has reduced gender bias in children attending early childhood programs with gender-neutral values (Shufts et al., 2017), in that the de-emphasis of gender as an important social category might afford space for consideration of individual differences. Of course, the use of individuating information is more cognitively taxing than reliance on stereotypes (Prati et al., 2015), and gender is salient as a category from infancy (Martin & Ruble, 2004). All the same, future research could seek ways to exploit children’s reliance on individuating information in early childhood as a way of eliminating gender as a meaningful category and of reinforcing individuals’ multifaceted interests and behaviors.

The data suggest a few directions in which cross-cultural work might be of particular interest. Boys’ choices of favorite toys in the three studies are consistent with work suggesting children have more latitude in expressing counter-stereotypic preferences in Western versus Eastern cultures (Lobel et al., 2001), but these results are best considered exploratory given the small sample of Study 3. Similarly, a stronger rejection of gender nonconformity has been noted previously in Asian versus Western cultures (e.g., Kwan et al., 2020; Nabbijohn et al., 2020) and the data from Studies 2 and 3 appear consistent with that pattern. But again, additional research with large samples would allow for true cross-cultural comparisons.

7. Conclusions

Even in early childhood, children have nascent gender stereotypes (Miller et al., 2006). They also have sufficient gender identification to self-socialize in line with these stereotypes (Leaper, 2015). However, the findings presented here emphasize children’s ability to attend to individuating information in their social judgments for others, despite their tendency to reject toys and activities typed for the opposite gender. The strength of children’s gender-typed preferences demonstrated in this study, coupled with the socio-environmental prevalence of gender stereotypes generally (Brown & Stone, 2018), raises the question of whether reducing the salience of gender as a social category will be sufficient for thwarting the development of gender bias and prejudice. Until we find ways to reduce children’s identification with gender—or more specifically, their rejection of the opposite gender—environments that do not explicitly contradict (and thus dismantle) gender stereotypes might have attitudinal effects differentiated by gender like the ones that we observed (i.e., girls’ gender bias). Our studies do suggest that children attend to individuating information in others even when they themselves show some gendered preferences. Still, disrupting the development of gender-based social hierarchies will likely require not only reduction of the salience of gender as a social identity category, but also vigilance in emphasizing individuating information as the basis for social judgments.

Declaration of competing interest

None.

Data availability

The authors do not have permission to share data.

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Appendix A. Supplementary materials

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References
