

Gender Essentialism in Children and Parents: Implications for the Development of Gender Stereotyping and Gender-Typed Preferences

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Abstract Psychological essentialism is a set of lay beliefs about categories, according to which certain categories are seen as natural and arising from an inborn, causal force or “essence.” Social categories, including gender, are often essentialized by both adults and children. The current study examines how gender essentialism relates to other gender-relevant beliefs and preferences, in both a child sample (5- to 7-year-olds) and an adult sample (the children’s parents). Children’s and parents’ essentialism predicted children’s gender-typed preferences, but not children’s prescriptive stereotyping. In contrast, parents’ essentialism predicted their own prescriptive stereotyping, but not their gender-typed preferences. Implications of these findings are discussed in the contexts of (a) past findings linking essentialism with stereotyping and (b) the practical implications of developmental shifts in the correlates of essentialism, including ways in which stereotyping and rigid beliefs about gender may be reduced.

Keywords Psychological essentialism · Stereotyped behavior · Stereotyped attitudes · Development

Psychological essentialism is a lay theory about how categories are structured. Two main beliefs compose essentialism. First, essentialized categories are seen as richly structured natural kinds, with many similarities among category members that extend beyond superficial features to include deep and

non-obvious commonalities. Second, essentialized categories are believed to possess an underlying causal force, or “essence,” that is innate, stable, and immutable. This essence is assumed to be causally responsible for the emergence of category-typical features (Gelman 2003). Work in the social domain suggests that social groups are often essentialized and that viewing groups this way predicts a number of other important social inferences, including stereotype endorsement and certain forms of prejudice (Bastian and Haslam 2006; Gaunt 2006; Hoffman and Hurst 1990; Morton et al. 2009; Smiler and Gelman 2008; Yzerbyt et al. 1998, 2001). However, much less is known about the development of this association, and the full complexity of how essentialism, stereotyping, and other social judgments interrelate remains unclear. We address these issues in the current study. In the remainder of our introduction, we review key issues regarding social essentialism, including how social essentialism relates to social cognition more broadly and what is known about how this relationship develops. We end with an overview of the present study.

Social Essentialism

People often essentialize a range of categories, including biological species (e.g., tiger, dog) and social groups (e.g., woman, Jew). Rothbart and Taylor (1992) provided a seminal analysis of essentialism in the context of social categorization, observing that social categories are often treated *as if* they are natural kinds (e.g., they are often assumed to be united by a deep and natural underlying basis and inalterably similar to each other), despite their being more similar to human-made artifact categories (constructed by humans and culturally variable). Later empirical work confirmed Rothbart and Taylor’s observations; social categories and attributes—

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including gender, race, ethnicity, sexual orientation, mental illness, and caste—are often essentialized to some degree (Gil-White 2001; Haslam 2000; Haslam and Ernst 2002; Haslam et al. 2002; Hirschfeld 1996; Mahalingam 2007; Rhodes and Gelman 2009).

Children also display essentialist reasoning about many kinds of categories, including social groups such as gender. Young children often report that gender categories are discrete and immutable, consistent with the idea that gender is a natural kind (Diesendruck and Haber 2009; Rhodes and Gelman 2009). Preschool-aged children also often rely on gender category membership (“boy” vs. “girl”) to make predictions about an individual’s behaviors and qualities, and often privilege gender category membership over conflicting superficial perceptual appearances (Gelman et al. 1986). Likewise, at early elementary age, children privilege gender category over individuating information when making predictions about a person’s preferences (Biernat 1991), and they are more likely to attribute stereotypical gender differences to nature as opposed to socialization (Smith and Russell 1984). These findings all suggest that younger children are especially likely to believe that gender categories are organized around non-obvious bases and that gender is a reliable basis for generalization.

In another set of studies addressing children’s essentialism, Taylor and colleagues (Taylor 1996; Taylor et al. 2009) developed a measure of a core aspect of gender essentialism—a belief in inborn gender as a basis for inductive generalization. In these studies, children between the ages of 4 and 10 years were asked to predict whether a baby growing up exclusively with members of the other sex (e.g., a baby boy adopted into a community of women) would display behaviors typical of the baby’s inborn sex (e.g., playing with tools) or of the baby’s rearing environment (e.g., playing with dolls). Younger children (under 9 years of age) were especially likely to rely on the sex of the baby to make predictions about later behavior, demonstrating their reliance on initial category membership rather than external environmental factors in determining an individual’s attributes and preferences. This work again points to an early emergence of gender essentialism during development.

Social Essentialism and Social Cognition

The tendency to essentialize social groups can have consequences for social cognition more broadly, most notably stereotyping. Two phenomena are of particular interest here. First, essentialism can promote *descriptive* stereotyping, or generalizations about what social groups *are* like (e.g., women are emotional). This arises because essentialized categories are seen as highly and immutably similar, and once a specific quality or feature is observed in one member of a category, it may often be generalized across the entire category based on the essentialist assumptions of inductive richness and stability (Bastian and

Haslam 2006; Levy et al. 1998; Prentice and Miller 2006; Yzerbyt et al. 2001). Second, essentialism can strengthen *prescriptive* stereotyping, or beliefs about what social groups *should be* like (e.g., women should be nurturing). This form of stereotype promotion comes about because essentialism also involves the creation of an explanatory structure whereby the differences between categories are seen as natural. In the case of thinking about social groups, this assumption can then prompt legitimating ideologies that justify social group differences as inevitable, acceptable, and correct (Eagly et al. 2000; Hoffman and Hurst 1990; Yzerbyt et al. 1997, 1998).

Within research on gender specifically, findings with adults indicate that both descriptive and prescriptive stereotypes can be promoted by essentialist thinking. For example, endorsement of biological versus social causes of gender differences predicts greater perceived differences between men and women (Martin and Parker 1995), and experimentally introducing a biological explanation for gender differences promotes how strongly people endorse common descriptive gender stereotypes—even when the difference being described (i.e., skill in plant identification) was unrelated to the stereotypical qualities presented to the participants (e.g., being emotional) (Brescoll and LaFrance 2004). Gender essentialism has also been found to predict the strength of certain forms of sexism (Smiler and Gelman 2008), and being exposed to the idea that gender differences have a genetic basis can promote beliefs in the legitimacy and inevitability of male–female power inequality (Morton et al. 2009).

Viewing gender as an essentialized category also appears to guide individuals not just in their judgments of others, but also in how they behave and see themselves. In this way, essentialism may also be seen as a guiding set of beliefs that motivates an individual to adhere to gender norms. For instance, seeing gender differences as largely biologically driven is associated with one’s own endorsement of traditional gendered traits; furthermore, experimentally promoting an essentialist view of gender causes a corresponding strengthening of how gender-typical one views oneself (Coleman and Hong 2008). As well, being told that gender differences in math performance are largely genetically driven (vs. caused by cultural and social experiences) has been found to exacerbate stereotype threat effects in women’s math performance (Dar-Nimrod and Heine 2006).

Taken together, these studies point to a clear role for essentialist thinking in the strengthening of stereotypical beliefs and behaviors, at least as it has been studied in adults. In contrast, among studies of children, only a limited amount of prior research is relevant for evaluating the broad prediction that gender essentialism predicts stereotyping and preferences. Cognitive developmental approaches to gender development have long stressed the importance of achieving gender constancy (i.e., the belief in the permanence of gender category membership) in motivating children to attend to and acquire gendered norms (Bem 1989; Kohlberg 1966). The belief in

gender constancy is consistent with one element of essentialism: construing categories as stable and invariant. And indeed the development of this belief has been demonstrated to predict children's attention to gender categories and encoding of gender-relevant information (Slaby and Frey 1975; Weinraub et al. 1984; though see Huston 1983 for a discussion of mixed and null findings, and Gelman et al. 1986, for dissociations early in development between gender constancy and gender essentialism as reflected by belief in the inductive potential of gender). Of particular interest to the current study, the *reduction* of prescriptive stereotyping in early elementary-aged children (e.g., saying it would be acceptable for a boy to wear nail polish) appears to be associated with achieving what is often considered the final stage of gender constancy, namely consistency (i.e., the understanding that superficial changes do not alter an individual's gender category) (Ruble et al. 2007). Children's achievement of consistency also appears to predict children's greater gender-typed toy and activity preferences (Warin 2000).

Still unknown, however, is how additional aspects of gender essentialism relate to gendered beliefs and behavior more broadly, and in particular how a fuller notion of essentialism—including beliefs regarding the innate inductive potential of gender—predicts prescriptive stereotyping and adherence to stereotypical gendered behaviors. The idea that essentialism construed more broadly should positively associate with stereotyping in children is supported by such associations in adults, and it is additionally theorized by Bigler and Liben's (2006, 2007) developmental intergroup theory of stereotype and prejudice formation. This theory draws from a cognitive developmental perspective, according to which children's drive to understand their social world motivates an attempt to detect meaningful categories (e.g., gender) and to make predictions about how these category members behave. Developmental intergroup theory holds that three main processes contribute to stereotyping and prejudice in children: establishing psychological salience of certain social attributes, having the capacity to categorize individuals into groups based on these attributes, and acquiring beliefs about what traits and behaviors are characteristic of these groups. Essentialism is proposed as one bias that can shape a child's stereotypes and attitudes once group membership becomes salient; in particular, an essentialist construal of a category is proposed to increase stereotyping because it provides a basis to predict and explain group differences. The current study tests this prediction and additionally examines whether essentialism promotes gender-typing in one's own preferences and behaviors.

Parental Essentialism Influences Children

Another aim of the current study is to examine how parents' gender essentialism relates to children's gender-related beliefs

and preferences. This focus is relevant within the context of cognitive developmental views of gender development discussed previously, which also often stress the role of parents' gender schemas during this process (Martin 2000). Although several studies have addressed the general association between parents' and children's gender-related beliefs and preferences (see Tenenbaum and Leaper 2002, for review), none has focused specifically on parental gender essentialism. Additionally, this focus is important in light of several recent studies indicating the possibility of intergenerational transmission of social essentialism. Although parents appear to rarely articulate explicit essentialist beliefs (Gelman et al. 1998, 2004), language use consistent with essentialist views of categories (i.e., labeling, especially the use of kind-referring generics, as in "Girls like to play with dolls") appears to prompt essentialist construals on the part of children as early as preschool age. This phenomenon has been demonstrated regarding both familiar social categories (Segall et al. 2015) and novel animal and social categories (Gelman et al. 2010; Rhodes et al. 2012). Studying how parents' and children's gender essentialism relate will contribute to this issue.

Incorporation of an Implicit Measure

A final aim of the current study was to incorporate an implicit measure of gendered cognition in order to gain a fuller understanding of how gender essentialism might relate to gender-relevant cognition more broadly. For this measure, we elected to administer a developmentally appropriate Implicit Association Test (IAT) (Baron and Banaji 2006; Cvencek et al. 2011). Clarifying the relationship between implicit processes and explicit beliefs has been a generative topic of study within social psychology more broadly. The IAT can often provide better predictive validity of prejudicial behaviors and stereotyping compared to self-report or explicit measures (Greenwald et al. 2009). Studies with adult samples within the realm of gender have similarly demonstrated the added utility of including implicit measures in relation to explicit beliefs, preferences, and actions (Nosek et al. 2009; Rudman et al. 2001; Rudman and Kilianski 2000; White and White 2006). Although essentialist beliefs have been demonstrated on an implicit or less deliberate level (Diesendruck and Menahem 2015; Gould and Heine 2012), including essentialist beliefs about gender (Eidson and Coley 2014, no research to our knowledge examines how explicit gender essentialism relates to implicit measures of gender-relevant cognition. Moreover, because only a handful of studies have used an IAT with early elementary-aged children, inclusion of such a measure in the current study provided an opportunity to validate the adaptations used for developmental populations in the context of a new task (i.e., testing gender-toy associations, specifically "boy + truck, girl + doll").

The Present Study

The main goal of the present study was to examine how essentialism relates to stereotyping and preferences in early childhood. We focused on a social category that is highly salient to young children (gender) and selected an age group (5–7 year-olds) in which robust essentialism, stereotype knowledge and endorsement, and gender-typed behavior are often observed yet are also characterized by individual differences. Consistent with predictions from developmental intergroup theory (Bigler and Liben 2006, 2007) and findings from adult studies, we expected that children's gender essentialism would predict the strength of their explicit prescriptive stereotyping (Hypothesis 1) as well as the extent to which they expressed gender-typical preferences (Hypothesis 2). We likewise expected to see similar associations in a sample of parents, namely parents' essentialism predicting both their prescriptive stereotyping (Hypothesis 3) and their gender-typical preferences (Hypothesis 4). We also addressed two exploratory questions. First, for both child and parent samples, we explored whether there were cross-generational associations among the constructs under investigation, suggesting a role for parents' essentialism in the emergence of children's gender essentialism and gender development more broadly (Exploratory Analysis 1). Second, we included an implicit measure assessing the strength of a gender-toy association (boy + truck/girl + doll IAT) and examined its relation to essentialism (Exploratory Analysis 2).

Method

Participants

Participants were 80 children and 80 parents (one parent per child; 70 mothers, 10 fathers). Approximately equal numbers of boys and girls within each age group participated (5-year-olds: $n = 25$, $M = 5.48$ years, $SD = .29$, 13 girls; 6-year-olds: $n = 31$, $M_{\text{age}} = 6.40$ years, $SD = .28$, 13 girls; 7-year-olds: $n = 24$, $M_{\text{age}} = 7.53$ years, $SD = .26$, 12 girls). Data from one additional child were discarded due to experimenter error, and IAT data from three additional children were removed due to overly short response times (following exclusion criteria of Greenwald et al. 2003). (All children completed all trials of the IAT, however.) Participants were recruited either from a database of local families contacted via mail from a commercially available list or directly from community recruiting events. Only one child per family was tested (i.e., no children in the sample were siblings). Children had no diagnosed language or other cognitive delays. Participants were largely from middle- to upper-middle-class families, were primarily White ($n = 71$, 89%), and resided in the mid-western United

States. Demographic characteristics of the sample were reflective of the population from which participants were recruited.

Measures

Gender Essentialism in Children

The measure of essentialism for children consisted of the eight test items from Taylor et al.'s (2009) island adoption task. In this task, children were told about an infant taken to an island and raised exclusively by members of the other gender (e.g., a boy raised by women), and were then asked to predict whether the infant, when older, would display a series of behaviors/characteristics typical of the infant's inborn sex or its rearing environment. Behavior and characteristic options included play with a tea set/toy truck, play dress up/with baseball cards, be a preschool teacher/construction worker, collect dolls/tools and nails, like to sew/build things, like to put on make-up/go fishing, want to be a nurse/firefighter, and want to be a ballet dancer/football player (female/male stereotypes, respectively). Essentialist responses were considered those for which children used the infant's inborn sex as the basis for prediction because this indicated a belief in sex as an inborn and inductively potent basis for generalization. A score was obtained reflecting the proportion of test items for which children made sex category-based predictions (e.g., saying that a boy would grow up to collect tools and nails rather than dolls). Scores could range from 0 to 1, with higher numbers indicating more essentialism (Cronbach's $\alpha = .93$). Children were also asked four memory questions regarding events in the adoption story to ensure comprehension; all children answered these questions correctly, and thus these items were not further analyzed.

Gender Essentialism in Adults

For adults, we used a 10-item scale from Rhodes and Gelman (2009), which asked adults to report the extent to which they believe a series of statements consistent with essentialism. Response options ranged from 1 (*Highly Disagree*) to 7 (*Highly Agree*). Statements included: "Gender is a very important part of what makes people who they are," "People that are the same gender have many things in common," "Knowing someone's gender tells you a lot about a person," "Males share an underlying property that causes them to have many similarities," "Females share an underlying property that causes them to have many similarities," "Gender is an all-or-none category; people are either male OR female, there is nothing in between," "Gender is a natural category," "Gender categories are important in all cultures around the world," "Men today are basically similar to men throughout human history," and "Women today are basically similar to women throughout human history." An average for the 10

items was then obtained, with higher scores indicating stronger essentialism (Cronbach's $\alpha = .83$).

As well, a subscale average was additionally calculated to reflect essentialist beliefs more parallel to those assessed by the child task (namely the innate potential and inductive strength of gender). Questions in the adult measure that contributed to this "innate/inductive potential subscale" included five of the original ten questions (the first five items listed in the previous paragraph). In addition to testing our hypotheses and exploratory questions using the overall average from the entire scale, the innate/inductive potential subscale average was also used in parallel secondary analyses (Cronbach's $\alpha = .78$).

Prescriptive Gender Stereotyping by Children

Stereotyping in children was assessed with the Occupations subscale of the Preschool Occupations, Activities, and Traits-Attitude Measure (POAT-AM) (Liben and Bigler 2002). This measure is appropriate for children between 3–7 years-old, and it asks children who they believe should engage in a series of traditionally gender-typed occupations (e.g., ship captain, nurse), with response options of "only men," "only women," or "both men and women." A stereotyping score was computed for children expressing the proportion of trials for which children provided responses of "only men" or "only women." Scores could range 0 to 1, with higher scores indicating stronger stereotyping. Reliability analyses were not conducted on the raw data for this measure because its ultimate purpose was to assess overall strength of stereotyping (via the proportion score), and thus it did not rely on internal consistency in the measure.

Prescriptive Gender Stereotyping by Adults

Explicit stereotyping in parents was measured with the Occupations and Activities subscales of the Occupations, Activities, and Traits-Attitude Measure. The Occupations subscale (OAT-AM) was the parallel adult form to that used for children in the POAT-AM, and similarly asked parents to report on who they believe should engage in a series of gender-typed occupations (e.g., *auto mechanic*, *secretary*, but with response options including "only men"; "mostly men, some women"; "both men and women"; "mostly women, some men"; and "only women." The Activities subscale (OAT-AM) asked the same questions regarding a series of gender-typed activities (e.g., fixing cars, reading romance novels). An overall stereotyping score similar to that used for children was computed by obtaining the average proportion of items (across both the Occupations and Activities subscales) for which respondents endorsed a belief that mostly or only men, or mostly or only women, should engage in the

occupation or activity. For the same reasons as with children, reliability statistics for these proportions were not calculated.

Gender-Typed Preferences of Children

Gender-typed preferences in children were measured with the Activities subscale of the Preschool Occupations, Activities, and Traits-Personal Measure (POAT-PM), which presented children with a series of gender-typical activities (e.g., playing dress-up, playing with robots) and asked them to report how much they liked that activity. Responses were given a score of 0–2, ranging from 0 (*not at all*) through 1 (*some*) to 2 (*a lot*). Reliability on both the feminine items (Cronbach's $\alpha = .91$) and masculine items (Cronbach's $\alpha = .83$) was excellent. A preference consistency score was computed by finding the difference between the average score for activities typical of the child's gender and the average score for activities typical of the other gender. Scores could range from –2 to +2, with positive scores indicating stronger self/gender-typed preferences relative to other/gender-typed preferences.

Gender-Typed Preferences of Adults

Adults' gender-typed preferences were measured with the Occupations and Activities subscales of the Occupations, Activities, and Traits-Personal Measure (OAT-PM & OAT-PM). These subscales asked, respectively, how much parents would want to engage in a series of gender-typed occupations (e.g., factory owner, daycare worker) and how often they engaged in a variety of gender-typed activities (e.g., wash a car, bake cookies). Responses ranged 0–3, including 0 (*never*), 1 (*rarely*), 2 (*sometimes*), and 3 (*often or very often*). Reliability analyses were conducted across items in both the subscales and were sufficient for both feminine (Cronbach's $\alpha = .75$) and masculine (Cronbach's $\alpha = .70$) items. An overall preference consistency score was computed by averaging (across the Occupations and Activities subscales) the same preference consistency score as described previously, reflecting the difference between scores for the participant's own gender and the other gender. Scores ranged from –3 to +3, with positive scores again indicating stronger gender-typed preferences relative to other-gender-typed preferences.

Implicit Association Test

Developmentally appropriate IATs were constructed to assess a boy + truck/girl + doll association. To make the task appropriate for children, we made three main modifications similar to those detailed in Baron and Banaji (2006) and Cvencek et al. (2011): stimuli in the IAT were pictures rather than printed words, two large response buttons were provided, and total number of trials was reduced by 20 % (from 180 to 144 trials). Boy and girl images were black-and-white

photographs of children's faces (5 boys and 5 girls; one boy and one girl were "targets," and the remaining images were test pictures), and truck and doll images were black-and-white photographs of each type of toy (5 trucks and 5 dolls; one truck and doll were "targets," and the remaining images were test pictures). Dolls were selected to be gender ambiguous (i.e., dolls did not feature male- or female-typed hair, accessories, or clothing).

The task consisted of seven blocks. In Block 1, target pictures of a boy's face and a girl's face appeared on either side of the screen. The test faces of boys and girls were then presented one at a time in random order in the middle of the screen. Correct categorization was accomplished by pressing the button associated with the side of a face's gender category match (e.g., if the target boy's face was on the right, a correct response to a picture of a boy in the middle would be pressing the button on the right). In Block 2, the same structure was used for categorization of toys as either dolls or trucks. As in standard adult and child-adapted IATs, these warm-up blocks were included as practice.

Four test blocks (Blocks 3, 4, 6, and 7) followed, in which two targets appeared together on each side of the screen. Pairings of targets were either consistent with the predicted association (boy + truck, girl + doll) or inconsistent (boy + doll, girl + truck). As in the warm-up blocks, gender and toy stimuli (faces and toys) appeared one at a time in the middle of the screen in random order, and correct categorization was accomplished by a button press on the side of the category match. Block 5 appeared after the first two test blocks. Block 5 consisted of a single-picture categorization task in which the side of boy/girl target presentation was opposite from that seen previously; this allowed participants to familiarize themselves with a new location of the gender target pictures, necessary for the remaining two test blocks.

There were 16 trials on each of the three single categorization blocks and 24 trials on each of the four test blocks, yielding a total of 144 trials. Visual feedback in the form of an X displayed for 500 ms was provided for incorrect responses on all trials, and trials then advanced automatically. No feedback was provided for correct responses (i.e., matching a girl's face to the girl target, a boy's face to the boy target, a doll to the doll target, or a truck to the truck target); trials advanced automatically after a correct response. A D score (Greenwald et al. 2003) was computed reflecting association strength. D scores can range from -2 to $+2$, with positive scores indicating the predicted association.

Procedure

All measures were administered in fixed order. Because the IAT placed high demands on children's attention and engagement for successful completion, the task was always administered first to reduce child attrition. This order was also

appropriate in light of findings indicating that task order typically has a minimal effect on performance on either the IAT or explicit measures, so long as concepts are familiar and the measures are short (Nosek et al. 2005). For the measures addressing gender-typed preferences and stereotyping (i.e., the OAT/POAT attitude and personal subscales), the personal measure(s) were administered first, followed by the attitudes measure(s). This order is recommended to avoid the potential biasing effect of activating gender-typed attitudes prior to reporting on one's own gender-typed behavioral preferences (Liben and Bigler 2002). Essentialism measures were administered last (also to avoid biasing participants' responses to the explicit personal measure/s).

Parents participated in the IAT directly before their children, and then they completed the other measures while their children were being tested. Children were not present in the testing room while parents completed any of the measures and vice versa. One of two female experimenters was present during IAT administration for both parents and children and provided instructions orally. The IAT was administered using Inquisit 3 (Millisecond) presentation software. Left–right presentation of faces and toys during the single categorization blocks was counterbalanced, with approximately equal numbers of children participating in each of four orders (as well as their parents, who participated in the same order as their children). (Cell sizes for both children and parents ranged from 18–22.) Approximately twice as many children and parents received the consistent test blocks first (53 parents and 53 children) than the inconsistent test blocks first (27 parents and 27 children). To maintain children's interest, star stickers were provided to children at the completion of each block.

Parents provided responses in paper-and-pencil format to the OAT-PM, OAT-PM, OAT-AM, OAT-AM, and essentialism measures. The experimenter administered the POAT-PM, POAT-AM, and essentialism measures for children. Items in the OAT and POAT subscales were in fixed order. Items in the child gender essentialism task were presented in random order with the constraint that a memory check question came after every two test (behavioral/characteristic prediction) questions. For the essentialism task, assignment of female versus male infant character was roughly evenly distributed across child gender and age group. (Cell sizes ranged from 4–5.) Items in the parent essentialism survey were in fixed order.

Results

Preliminary Analyses

As preliminary analyses, we first describe treatment of the IAT data and provide analyses of our main variables in isolation. For IAT data treatment, we followed conventions from Greenwald et al. (2003). First, participants were excluded if

greater than 10 % of their response times on test block trials were under 300 ms; this resulted in the exclusion of three child participants and no parent participants. Second, all trials for test blocks with response times greater than 10,000 ms were removed from analysis; only one trial, for a parent, met this exclusion criterion. Finally, response times for incorrect trials were replaced by an error penalty score, specifically the mean of correct response latencies in the block in which the trial appeared +2 *SD* of the correct response latencies for that block. Prior to calculation of *D* scores (for use in addressing our main hypotheses and exploratory analyses), we examined response times in the consistent and inconsistent test blocks.

Response times for the child sample were examined using a 2 (condition: consistent vs. inconsistent) x 2 (condition order: consistent-first vs. inconsistent-first) x 2 (child gender: male vs. female) x 3 (age group: 5-year-olds, 6-year-olds, 7-year-olds) mixed between-within ANOVA. Condition was a within-subjects factor, and the remaining factors were between-subjects factors. A main effect for age group, $F(2, 65) = 8.06, p = .001, \eta_p^2 = .20$, indicated that response times became faster across age (5-year-olds: $M = 1329.25$ ms, $SD = 245.84$; 6-year-olds: $M = 1192.06$ ms, $SD = 417.18$; 7-year-olds: $M = 947.95$ ms, $SD = 154.92$). The predicted main effect for condition was also significant, indicating a positive boy + truck/girl + doll association, $F(1,65) = 46.86, p < .001, \eta_p^2 = .42$. A condition x condition order interaction was also significant, $F(1,65) = 16.19, p < .001, \eta_p^2 = .20$. This interaction was due to an attenuation of the condition difference in the inconsistent-first order, a well-known feature of IATs (Nosek et al. 2005). (inconsistent-first order: consistent $M = 1137.56$ ms, $SD = 249.53$, inconsistent $M = 1238.96$ ms, $SD = 311.81$; consistent-first order: consistent $M = 961.57$ ms, $SD = 278.55$, inconsistent $M = 1318.52$ ms, $SD = 496.66$). However, separate paired-sample *t*-tests within each order comparing response times on consistent versus inconsistent trials indicated that the response time differences for both orders were consistent with the presence of an association, although this reached significance only for the consistent-first condition, $t(50) = 9.26, p < .001$, but not for the inconsistent-first condition, $t(26) = 2.00, p = .056$. No other main effects or interactions were significant. Children's data thus indicate the presence of a boy + truck/girl + doll association regardless of block order, although a strong block order effect was also observed.

Response times for the parent sample ($n = 80$) were examined using a 2 (condition: consistent vs. inconsistent) x 2 (condition order: consistent-first vs. inconsistent-first) mixed between-within ANOVA, with condition as a within-subjects factor and condition order as a between-subjects factor. There was a main effect for condition, $F(1,78) = 94.95, p < .001, \eta_p^2 = .55$ (consistent: $M = 548.16$ ms, $SD = 80.46$; inconsistent: $M = 656.66, SD = 108.04$). The main effect for condition order was not significant, $p = .62$, but a condition x condition

order interaction was significant, $F(1,78) = 19.62, p < .001, \eta_p^2 = .20$. As with the child sample, the difference in response times between consistent and inconsistent conditions was smaller in the inconsistent-first order (inconsistent-first order: consistent $M = 570.34, SD = 81.45$, inconsistent $M = 621.69, SD = 81.56$; consistent-first order: consistent $M = 536.96, SD = 78.34$, inconsistent $M = 674.47, SD = 114.90$). Despite the attenuation of the predicted condition difference for participants who completed the inconsistent blocks first, however, two separate paired-sample *t*-tests comparing response times on consistent versus inconsistent trials indicated that the response time differences in both orders were indicative of the predicted association (consistent-first: $t(52) = 10.70, p < .001$; inconsistent-first: $t(26) = 5.18, p < .001$). With the parents as with the children, data thus again indicate the predicted boy + truck/girl + doll association.

We next assessed the remaining three variables of interest (essentialism, prescriptive stereotyping, and gender-typed preferences). Means and standard deviations for both child and parent samples for all measures are provided in Table 1. Within children's data, we used a series of 2 (gender: female vs. male) x 3 (age group: 5-year-olds, 6-year-olds, and 7-year-olds) ANOVAs to separately assess each of the three variables. There were no main effects or interactions in any of the analyses, all $ps > .05$. We also examined children's responses to the essentialism test items, comparing responses against chance. Within all three age groups, essentialist responding (i.e., responding using inborn sex as the predictive basis) was at above-chance levels according to binomial tests (all $ps < .01$; 5-year-olds: $M = .87, SD = .18$; 6-year-olds: $M = .76, SD = .37$; 7-year-olds: $M = .78$), indicating high levels of essentialism.

Hypotheses and Exploratory Analyses

Bivariate correlations between all child variables, all parent variables, and parent essentialism and child variables are provided in Table 2. Counter to Hypothesis 1, children's essentialism was not related to their levels of prescriptive stereotyping, $r(78) = -.08, p = .48$. However, supporting Hypothesis 2, children's essentialism did predict their gender-typed preferences, $r(78) = .31, p < .01$. A regression analysis including child gender and age (as a continuous variable) examined whether gender essentialism uniquely predicted children's preferences. The model was significant, $F(3,79) = 3.29, R^2 = .11, p = .03$, and gender essentialism was the sole significant predictor, $\beta = .30, p = .01$; stronger essentialism was associated with higher levels of gender-typical preferences, independent of gender ($\beta = .13, p = .23$) and age ($\beta = .01, p = .90$) which were non-significant. (Parallel regressions examining the relation of essentialism with prescriptive stereotyping and implicit associations were non-significant, consistent with the non-significant bivariate

Table 1 Descriptive statistics for study variables

Variables	Measures	Possible Range	Gender	5-year-olds <i>M (SD)</i>	6-year-olds <i>M (SD)</i>	7-year-olds <i>M (SD)</i>
Child Constructs						
Essentialism	Island Adoption Task	0 to 1	Female	.90 (.17)	.72 (.42)	.65 (.46)
			Male	.83 (.20)	.78 (.33)	.92 (.29)
Stereotyping	POAT-AM	0 to 1	Female	.56 (.23)	.61 (.21)	.60 (.15)
			Male	.47 (.16)	.57 (.21)	.48 (.22)
Preferences	POAT-PM	−2 to 2	Female	1.06 (.62)	.42 (.88)	.72 (.34)
			Male	.89 (.89)	.84 (.45)	1.16 (.46)
Implicit association	IAT D score	−2 to 2	Female	.49	.56	.52
			Male	.55	.60	.54
Parent Constructs						
Essentialism	Gender Essentialism Scale	1 to 7		4.55 (.88)		
Stereotyping	OAT-AM & OAT-AM	0 to 1		.31 (.28)		
Preferences	OAT-PM & OAT-PM	−3 to 3		.66 (.45)		
Implicit association	IAT D score	−2 to 2		.69		

Higher scores for all variables represent higher levels of the construct measured; for preferences, higher scores indicate more gender-typed consistency

correlations between essentialism and these variables: for prescriptive stereotyping, $F(3,79) = 1.02$, $R^2 = .001$, $p = .39$; for implicit association, $F(3,76) = .50$, $R^2 = .02$, $p = .69$.)

Consistent with Hypothesis 3, parents' gender essentialism positively predicted their own prescriptive stereotyping, both when essentialism was operationalized as the overall average for the gender essentialism scale, $r(78) = .39$, $p < .01$, and when it was operationalized as the average on the innate/inductive potential subscale, $r(78) = .31$, $p < .01$. However, counter to Hypothesis 4, parents' essentialism did not relate to their levels of gender-typed preferences, either when using the overall average for gender essentialism, $r(78) = .14$, $p = .23$, or when using the innate/inductive potential subscale average, $r(78) = .04$, $p = .74$. Thus, gender essentialism in children and parents related in different ways to prescriptive stereotyping and personal gender-typed preferences; whereas children's essentialism predicted their gender-typed

preferences, parents' essentialism predicted their gender stereotyping.

Confirming patterns using the innate/inductive potential subscale for essentialism was one important step in assuring that measures between parents and children were parallel. It is also the case, however, that the correlations in the parent sample—but not the child sample—made use of composite scores to provide levels of prescriptive stereotyping (combining responses from measures assessing both occupational and activity stereotypes) as well as gender-typed preferences (combining responses from measures assessing both occupational and activity preferences). In evaluating the differences between children (whose essentialism predicted preferences but not stereotyping) and parents (who showed the opposite pattern), another concern might be that parent and child measures were not sufficiently parallel in this domain to draw comparisons between the two samples. To address this possibility, another

Table 2 Bivariate correlations among study variables for children and parents

Variables	1	2	3	4	5	Parent Essentialism ^a
1. Essentialism	–	.39**	.14	.10	–	.10
2. Stereotyping	−.08	–	.38**	.28*	–	.11
3. Preferences	.31**	.25*	–	.08	–	.21
4. Implicit Association	.14	.12	.10	–	–	.06
5. Gender (child analyses only)	.11	−.18	.17	.03	–	
6. Age (child analyses only)	−.03	.07	< .01	.05	−.04	

Correlations in the matrix below the diagonal are for children; above, for parents. Parent essentialism refers to overall average on the measure; innate/inductive potential subscale results are reported in the main text

$df = 78$ for correlations not involving child IAT D score, and $df = 75$ for correlations involving child IAT D score

^a Correlations reported in this column are for Parent Essentialism with the four Child Variables

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

set of analyses examined the relationships in the parent sample using measures of parental prescriptive stereotyping and preferences that were more parallel to those used for the child sample.

Specifically, we first examined whether essentialism predicted prescriptive stereotyping as indicated only by scores on the occupational stereotyping scale (the OAT-AM), the single measure most similar to that used for children (the POAT-AM). We also examined whether parent essentialism predicted parent gender-typed behavior as indicated only by scores on the activities preference measure (OAT-PM), the single measure most directly parallel to that used for children (the POAT-PM). Parents' essentialism again predicted their prescriptive stereotyping: overall essentialism measure, $r(78) = .39, p < .01$; innate/inductive potential essentialism measure, $r(78) = .31, p < .01$. Also replicating the original findings, parents' essentialism again did not relate to their gender-typed preferences, $r(78) = .02, p = .83$, or to the innate/inductive potential essentialism measure, $r(78) < .01, p = .93$. Thus, the difference between parent and child findings does not appear to be due to lack of parallelism in either stereotyping or preference measures.

We next addressed our exploratory analyses. We first examined how parents' essentialism related to child-level variables. Overall parents' essentialism was positively correlated with children's preferences, although this did not achieve significance, $r(78) = .21, p = .06$. No other child-level variable was related to parents' essentialism (for children's essentialism: $r(78) = .10, p = .38$; for stereotyping: $r(78) = .11, p = .34$; for implicit association: $r(75) = .06, p = .58$). Likewise, when using the innate/inductive potential subscale as our measure of essentialism, essentialism again did not significantly predict preferences, $r(78) = .22, p = .06$, nor did other child-level variables (for children's essentialism: $r(78) = .07, p = .55$; for stereotyping: $r(78) = .07, p = .53$; for implicit association: $r(75) = .10, p = .37$).

When assessing parents' essentialism as an independent predictor, the two versions of the parent essentialism measures (in separate regressions) were added to the model testing the role of child essentialism, gender, and age as predictors of children's gender-typed preferences. The model was significant when including overall parent essentialism, $F(4, 79) = 3.47, p = .01, R^2 = .16$, although overall parent essentialism did not achieve significance ($\beta = .21, p = .06$). Child essentialism remained a significant predictor ($\beta = .28, p = .01$). Neither gender (0 = male; $\beta = .16, p = .14$) nor age ($\beta = .04, p = .73$) was significant. The model was also significant including innate/inductive potential essentialism, $F(4, 79) = 3.68, p = .01, R^2 = .16$, and both innate/inductive potential parent essentialism ($\beta = .23, p = .04$) and child essentialism ($\beta = .28, p = .01$) were significant predictors. Neither gender ($\beta = .17, p = .11$) nor age ($\beta = .01, p = .92$) was significant.

Discussion

The present study investigated how gender essentialism in both adults and children related to broader gender-relevant social cognition and preferences. Our results include several major findings. Children's gender essentialism was unrelated to either their prescriptive gender stereotyping or implicit gender-relevant associations; instead, it predicted the strength of their gender-typed preferences (i.e., more essentialist girls preferred female-typed activities over male-typed activities, and more essentialist boys preferred male-typed activities over female-typed activities). In contrast, parents' gender essentialism was unrelated to their gender-typed preferences or implicit gender-relevant associations, but instead it predicted the strength of their prescriptive stereotyping (i.e., believing that certain occupations and activities should be pursued by one gender more than by the other). Finally, parents' gender essentialism (when measured as belief in the innate and inductive potential of gender) was also predictive of their children's gender-typed preferences, but not of other child-level variables, including children's own essentialism.

Findings within the parent sample are consistent with past research suggesting a tight link between adults' social essentialism and stereotyping, including prescriptive stereotyping. Although our results are correlational and thus limit conclusions regarding causal influence, the pattern uncovered here reinforces the idea that the assumption of categories as natural, stable, and inductively rich contributes to the added inference that observed category differences (such as gender differences in work- or leisure-related activities) are appropriate and correct and that violation of these norms should be avoided.

In contrast to our findings with adults, essentialism in the current study appeared unrelated to children's stereotyping. It may be that other factors play a more influential role in the development of gender stereotyping at this age, most notably three additional factors predicted by developmental intergroup theory to impact stereotype formation: ingroup bias, learning from adults or peers about the characteristics of certain groups, and detection of group-attribute covariations (learning statistical regularities or probabilities in group differences) (Bigler and Liben 2007). Another possibility is that children's stereotypes may be qualitatively distinct from those of adults, and thus in the current study may not show the same association with essentialism that is observed in the parent sample. Specifically, early elementary-aged children are known to develop prescriptive stereotypes that are relatively rigid in comparison to those of older children. This stereotyping tends to reach its peak between 5–7 years-old (the age of the current sample), and then relax during middle-elementary years (Martin and Ruble 2004).

These early stereotypes are described as the output of children perceiving group differences and then readily inferring that these differences are correct or appropriate. This type of

inference may not require essentialism as a license, instead relying on some other kind of reasoning process or heuristic (e.g., the inherence heuristic proposed by Cimpian and Salomon 2014). Again, perhaps it is children's experiences in detecting gender differences in their environment, along with their ready acceptance of observed patterns as rules—and not their gender essentialism—that is sufficient to acquire prescriptive beliefs about what men and women “should” be like. Later in development, perhaps essentialism may emerge as a more important factor in promoting and fueling prescriptive gender stereotypes, becoming integrated with stereotyping by providing an articulated causal story that legitimates and encourages enforcement of group differences.

Children's essentialism, although unrelated to their stereotyping, did predict children's self-reported behavioral preferences. Again, causal inferences are limited by the correlational nature of our design. One possibility is that children's early essentialism guides their preferences, such that an essentialist view of gender promotes beliefs about what kinds of activities are appropriate or desirable for a boy or girl to pursue. If this were true, however, it seems sensible to also predict that children would form beliefs about what is appropriate for others, and yet they did not (as indicated by the lack of association between essentialism and prescriptive stereotyping).

An alternative possibility is that having strong gender-typed behavioral preferences promotes essentialist thinking; children with strong gender-typed preferences may interpret these preferences as determined by their gender, and thus immutable and beyond their own control, whereas children with weaker gender-typed preferences may be likely to interpret them as reflecting individual choice. For example, a very “girly” girl who dresses in pink, takes ballet lessons, and plays with dolls may see her choices as determined by her gender and thus consistent with essentialism, whereas a girl with less gender-typed preferences and activities may see her choices as determined by her individual preferences and choices and thus inconsistent with essentialism. Indeed, children who display low gender-typed preferences may be prompted to engage in causal reasoning that brings to light evidence against gender essentialism (e.g., a girl who enjoys playing with toy cars might be more likely to recognize that inborn sex does not determine behavioral preferences, as she reflects on her own “mismatch” between sex and what she enjoys doing).

A final association revealed by the current study was between parents' essentialism and children's gender-typed preferences; stronger parent essentialism was associated with more typical behavioral preferences on the part of children. Although parents with stronger essentialist beliefs about gender may subtly (or overtly) reinforce and shape children's behaviors such that they become more gender-typical in the kinds of activities they enjoy, it is also possible that strongly gender-typed children provide parents with “evidence” for gender essentialism. Thus, rather than (or in addition to)

parents influencing their children's preferences, it may be that children's preferences influence their parents' essentialist beliefs. This possibility is anecdotally supported by remarks from one parent in the current study who spontaneously indicated that her answers to the essentialism survey would have been different (namely less essentialist) prior to having her child, but that in observing her strongly gender-typed child develop and express gendered interests apparently independent of her influence, her ideas about the origins of gendered behavior shifted to a more essentialist viewpoint.

A final notable result in the current study was the lack of a relationship between essentialism and implicit gender-toy associations. Though null findings are inherently difficult to explain, some possible reasons can be discussed. First, children's IAT data featured higher variance than did adults' data and were more prone to condition order effects, and these features may have obscured relationships within the child sample. Yet parents' implicit associations similarly did not relate to their essentialism, meaning additional explanation is required. Another possibility is that essentialism truly has no relationship with the implicit association under investigation. In the current study, we assessed the strength of a culturally common gender + toy association. Debate surrounds the interpretation of such tests, with some researchers claiming that these tests reveal relatively shallowly processed cultural associations rather than personally held stereotypes or beliefs (Arkes and Tetlock 2004; Lynott et al. 2012). Perhaps the associations revealed in the current study are more so reflections of a cultural stereotype readily available to all of our participants, and future studies might benefit from the inclusion of a personalized IAT that is less prone to cultural influences and better assesses self-relevant associations (Olson and Fazio 2006) (e.g., a “me/not-me” test assessing self associations with gender typical toys or behaviors).

Limitations and Future Research Directions

The clearest limitation of the current research is that the results are correlational and thus limit conclusions regarding causal influence. For these reasons, in future research, it would be informative to make use of alternative approaches to provide more direct tests of causal influence. For example, one possibility is to provide participants with either essentialist or anti-essentialist information about gender (see Ho et al. 2015, for methods for manipulating race essentialism) and assess the implications for levels of stereotyping and gender-typed preferences. Another approach would be to examine patterns of relations longitudinally. For example, to help resolve the question of why parent essentialism links to children's gender-typed preferences, future work could measure expectant parents' essentialism and then track these beliefs across time as their children develop and acquire gender-typed behaviors and preferences. The correlational aspect of the data also limits an

understanding of why children's essentialism links to their self-reported activity preferences. Future research can begin to evaluate this possibility by addressing how children reason about their own norm-consistent and norm-inconsistent preferences.

Another limitation of our work is the focus on a limited age range of children. In future research, it would be informative to track the developmental trajectory of how the various measures interrelate across childhood and into adolescence, and to discover when in development patterns shift from the child constellation of results, found here 5–7-year-olds, to the adult constellation of results. Additionally, the inclusion of parents as our adult sample is a strength (allowing direct comparison of children with those who are raising them) but also a weakness, in that we cannot determine if parents view gender concepts differently than non-parents. This question could be directly addressed in future research.

Practice Implications

Parents and researchers alike have long observed that children are “gender detectives” (Martin and Ruble 2004), searching for differences between boys and girls and constructing stubborn gender stereotypes from an early age. This tendency has implications for children's own choices, aspirations, and motivations (Halim and Ruble 2010). The current findings indicate ways in which different aspects of gender concepts interrelate, with implications for potential interventions to counter unwarranted gender stereotypes. The finding that adult gender stereotyping correlates with adult gender essentialism may have implications for interventions designed to reduce stereotyping. For instance, weakening essentialist construals of gender (e.g., by focusing on historical, social, or cultural causes of gender differences) may be effective in reducing the kinds of prescriptive assumptions that people justify on the basis of an essentialized view of gender.

Implications from the child sample, in contrast, indicate a strong and consistent tendency to engage in gender essentialism, gender stereotyping, and implicit gender associations across the board in the early elementary school years. The consistency of these beliefs throughout the age range that we studied (5–7 years-old) corroborates prior research and suggests that gender is a particularly salient and immediate basis on which to frame their own preferences and behaviors, as well as on which to evaluate others. We therefore suggest that reminding children that gender-linked patterns do not necessarily reflect inborn, immutable differences, but rather can have their roots in historical, social, or cultural (i.e., non-essentialist) forces. In this way, adults can provide children with an alternative, new way of thinking about the gender differences of which they are so aware.

Conclusions

The current study provides several important first steps in situating gender essentialism within a broader network of gendered preferences and beliefs. First, ours was one of the first known studies to address how individual differences in children's gender essentialism relate to their gendered preferences and stereotyping. Second, our study was the first known to investigate the interrelations between essentialism and other aspects of gender for children and their parents simultaneously, and thus it offers valuable information on the potential role of parents in gender concept development.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that there are no conflicts of interest associated with our involvement in this research, or its publication.

References

- Arkes, H. R., & Tetlock, P. E. (2004). Attributions of implicit prejudice, or “would Jesse Jackson ‘fail’ the implicit association test?” *Psychological Inquiry*, *15*, 257–278.
- Baron, A. S., & Banaji, M. R. (2006). The development of implicit attitudes. *Psychological Science*, *17*, 53–58.
- Bastian, B., & Haslam, N. (2006). Psychological essentialism and stereotype endorsement. *Journal of Experimental Social Psychology*, *42*, 228–235. doi:10.1016/j.jesp.2005.03.003.
- Bem, S. L. (1989). Genital knowledge and gender constancy in preschool children. *Child Development*, *60*, 649–662.
- Biernat, M. (1991). Gender stereotypes and the relationship between masculinity and femininity: A developmental analysis. *Journal of Personality and Social Psychology*, *61*, 351–365. doi:10.1037/0022-3514.61.3.351.
- Bigler, R. S., & Liben, L. S. (2006). A developmental intergroup theory of social stereotypes and prejudice. In R. V. Kail (Ed.), *Advances in child development and behavior* (Vol. 34, pp. 39–89). San Diego, CA: Elsevier Academic Press.
- Bigler, R. S., & Liben, L. S. (2007). Developmental intergroup theory: Explaining and reducing children's social stereotyping and prejudice. *Current Directions in Psychological Science*, *16*, 162–166.
- Brescoll, V., & LaFrance, M. (2004). The correlates and consequences of newspaper reports of research on sex differences. *Psychological Science*, *15*, 515–520. doi:10.1111/j.0956-7976.2004.00712.x.
- Cimpian, A., & Salomon, E. (2014). The inheritance heuristic: An intuitive means of making sense of the world, and a potential precursor to psychological essentialism. *Behavioral and Brain Sciences*, *37*, 461–480.

- Coleman, J. M., & Hong, Y. (2008). Beyond nature and nurture: The influence of lay gender theories on self-stereotyping. *Self and Identity*, 7, 34–53. doi:10.1080/15298860600980185.
- Cvencek, D., Greenwald, A. G., & Meltzoff, A. N. (2011). Measuring implicit attitudes of 4-year-olds: The preschool implicit association test. *Journal of Child Experimental Psychology*, 109, 187–200.
- Dar-Nimrod, I., & Heine, S. J. (2006). Exposure to scientific theories affects women's math performance. *Science*, 314, 435. doi:10.1126/science.1131100.
- Diesendruck, G., & Haber, L. (2009). God's categories: The effect of religiosity on children's teleological and essentialist beliefs about categories. *Cognition*, 110, 100–114. doi:10.1016/j.cognition.2008.11.001.
- Diesendruck, G., & Menahem, R. (2015). Essentialism promotes children's inter-ethnic bias. *Frontiers in Psychology*, 6, Article 1180. doi:10.3389/fpsyg.2015.01180.
- Eagly, A. H., Wood, W., & Diekmann, A. B. (2000). *Social role theory of sex differences and similarities: A current appraisal*. Mahwah, NJ: Erlbaum.
- Eidson, R. C., & Coley, J. D. (2014). Not so fast: Gender essentialism in young adults. *Journal of Cognition and Development*, 15, 382–292.
- Gaunt, R. (2006). Biological essentialism, gender ideologies, and role attitudes: What determines parents' involvement in child care. *Sex Roles*, 55, 523–533. doi:10.1007/s11199-006-9105-0.
- Gelman, S. A. (2003). *The essential child: Origins of essentialism in everyday thought*. New York: Oxford University Press.
- Gelman, S. A., Collman, P., & Maccoby, E. E. (1986). Inferring properties from categories versus inferring categories from properties: The case of gender. *Child Development*, 57, 396–404. doi:10.2307/1130595.
- Gelman, S. A., Coley, J. D., Rosengren, K., Hartman, E., & Pappas, T. (1998). Beyond labeling: The role of parental input in the acquisition of richly structured categories. *Monographs of the Society for Research in Child Development*, Serial No. 253. Vol., 63, 1–157.
- Gelman, S. A., Taylor, M. G., & Nguyen, S. P. (2004). Mother-child conversations about gender: Understanding the acquisition of essentialist beliefs. *Monographs of the Society for Research in Child Development*, 69, 1–127.
- Gelman, S. A., Ware, E. A., & Kleinberg, F. (2010). Effects of generic language on category content and structure. *Cognitive Psychology*, 61, 273–301. doi:10.1016/j.cogpsych.2010.06.001.
- Gil-White, F. J. (2001). Are ethnic groups biological "species" to the human brain? Essentialism in our cognition of some social categories. *Current Anthropology*, 42, 515–554.
- Gould, W. A., & Heine, S. J. (2012). Implicit essentialism: Genetic concepts are implicitly associated with fate concepts. *PLoS One*, 7, e38176. doi:10.1371/journal.pone.0038176.
- Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the implicit association test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, 85, 197–216.
- Greenwald, A. G., Poehlman, T. A., Uhlmann, E., & Banaji, M. R. (2009). Understanding and using the implicit association test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology*, 97, 17–41.
- Halim, M. L., & Ruble, D. (2010). Gender identity and stereotyping in early and middle childhood. In J. C. Chrisler & D. R. McCreary (Eds.), *Handbook of research in gender psychology* (pp. 495–525). New York, NY: Springer.
- Haslam, N. (2000). Psychiatric categories as natural kinds: Essentialist thinking about mental disorders. *Social Research*, 67, 1031–1058.
- Haslam, N., & Ernst, D. (2002). Essentialist beliefs about mental disorders. *Journal of Social and Clinical Psychology*, 21, 628–644. doi:10.1521/jscp.21.6.628.22793.
- Haslam, N., Rothschild, L., & Ernst, D. (2002). Are essentialist beliefs associated with prejudice? *British Journal of Social Psychology*, 41, 87–100. doi:10.1348/014466602165072.
- Hirschfeld, L. A. (1996). *Race in the making*. Cambridge, MA: MIT Press.
- Ho, A. K., Roberts, S. O., & Gelman, S. A. (2015). Essentialism and racial bias jointly contribute to the categorization of multiracial individuals. *Psychological Science*, 26, 1639–1645.
- Hoffman, C., & Hurst, N. (1990). Gender stereotypes: Perception or rationalization? *Journal of Personality and Social Psychology*, 58, 197–208. doi:10.1037/0022-3514.58.2.197.
- Huston, A. C. (1983). Sex typing. In P. H. Mussen (Series Ed.) & E. M. Hetherington (Vol. Ed.), *Handbook of child psychology: Vol. 4. Socialization, personality, and social development* (4th ed., pp. 388–441). New York: Wiley.
- Kohlberg, L. (1966). A cognitive-developmental analysis of children's sex-role concepts and attitudes. In E. E. Maccoby (Ed.), *The development of sex differences* (pp. 82–173). Stanford, CA: Stanford University Press.
- Levy, S. R., Stroessner, S. J., & Dweck, C. S. (1998). Stereotype formation and endorsement: The role of implicit theories. *Journal of Personality and Social Psychology*, 74, 1421–1436.
- Liben, L. S., & Bigler, R. S. (2002). The developmental course of gender differentiation. *Monographs of the Society for Research in Child Development*, 269, 1–187.
- Lynott, D., Kansal, H., Connell, L., & O'Brien, K. S. (2012). Modelling the IAT: Implicit association test reflects shallow linguistic environment and not deep personal attitudes. In N. Miyake, D. Peebles, & R. Cooper (Eds.), *Proceedings of the 34 annual conference of the cognitive science society* (pp. 1948–1953). Austin, TX: Cognitive Science Society.
- Mahalingam, R. (2007). Essentialism, power, and the representation of social categories: A folk sociology perspective. *Human Development*, 50, 300–319. doi:10.1159/000109832.
- Martin, C. L. (2000). Cognitive theories of gender development. In T. Eckes & H. M. Trautner (Eds.), *The developmental social psychology of gender* (pp. 91–121). Mahwah, NJ: Erlbaum.
- Martin, C. L., & Parker, S. (1995). Folk theories about sex and race differences. *Personality and Social Psychology Bulletin*, 21, 45–57. doi:10.1177/0146167295211006.
- Martin, C. L., & Ruble, D. N. (2004). Children's search for gender cues: Cognitive perspectives on gender development. *Current Directions in Psychological Science*, 13, 67–70.
- Morton, T. A., Postmes, T., Haslam, S. A., & Hornsey, M. J. (2009). Theorizing gender in the face of social change: Is there anything essential about essentialism? *Journal of Personality and Social Psychology*, 96, 653–664. doi:10.1037/a0012966.
- Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2005). Understanding and using the implicit association test: II. Method variables and construct validity. *Personality and Social Psychology Bulletin*, 31, 166–180.
- Nosek, B. A., Smyth, F. L., Sriram, N., Lindner, N. M., Devos, T., Ayala, A., et al. (2009). National differences in gender-science stereotypes predict national sex differences in science and math achievement. *Proceedings of the National Academy of Sciences*, 106, 10593–10597. doi:10.1073/pnas.0809921106.
- Olson, M. A., & Fazio, R. H. (2006). Reducing automatically-activated racial prejudice through implicit evaluative conditioning. *Personality and Social Psychology Bulletin*, 32, 421–433.
- Prentice, D. A., & Miller, D. T. (2006). Essentializing differences between women and men. *Psychological Science*, 17(2), 129–135. doi:10.1111/j.1467-9280.2006.01675.x.
- Rhodes, M., & Gelman, S. A. (2009). A developmental examination of the conceptual structure of animal, artifact, and human social categories across two cultural contexts. *Cognitive Psychology*, 59, 244–274. doi:10.1016/j.cogpsych.2009.05.001.
- Rhodes, M., Leslie, S. J., & Tworek, C. (2012). Cultural transmission of social essentialism. *Proceedings of the National Academy of Sciences (PNAS)*, 109, 13526–13531.

- Rothbart, M., & Taylor, M. (1992). Category labels and social reality: Do we view social categories as natural kinds? In G. Semin & K. Fiedler (Eds.), *Language, interaction, and social cognition* (pp. 11–36). London: Sage.
- Ruble, D. N., Taylor, L. J., Cyphers, L., Greulich, F. K., Lurye, L. E., & Shrout, P. E. (2007). The role of gender constancy in early gender development. *Child Development, 78*, 1121–1136.
- Rudman, L. A., & Kilianski, S. E. (2000). Implicit and explicit attitudes toward female authority. *Personality and Social Psychology Bulletin, 26*, 1315–1328. doi:10.1177/01461672002630011136.
- Rudman, L. A., Greenwald, A. G., & McGhee, D. E. (2001). Implicit self-concept and evaluative implicit gender stereotypes: Self and ingroup share desirable traits. *Personality and Social Psychology Bulletin, 27*, 1164–1178.
- Segall, G., Birnbaum, D., Deeb, I., & Diesendruck, G. (2015). The intergenerational transmission of ethnic essentialism: How parents talk counts the most. *Developmental Science, 18*, 543–555.
- Slaby, R. G., & Frey, K. S. (1975). Development of gender constancy and selective attention to same-sex models. *Child Development, 46*, 849–856.
- Smiler, A. P., & Gelman, S. A. (2008). Determinants of gender essentialism in college students. *Sex Roles, 58*, 864–874. doi:10.1007/s11199-008-9402-x.
- Smith, J., & Russell, G. (1984). Development of gender constancy and selective attention to same-sex models. *Child Development, 46*, 849–856.
- Taylor, M. G. (1996). The development of children's beliefs about social and biological aspects of gender differences. *Child Development, 67*, 1555–1571. doi:10.1111/j.1467-8624.1996.tb01814.x.
- Taylor, M. G., Rhodes, M., & Gelman, S. A. (2009). Boys will be boys; cows will be cows: Children's essentialist reasoning about gender categories and animal species. *Child Development, 80*, 461–481. doi:10.1111/j.1467-8624.2009.01272.x.
- Tenenbaum, H. R., & Leaper, C. (2002). Are parents' gender schemas related to their children's gender-related cognitions?: A meta-analysis. *Developmental Psychology, 38*, 615–630.
- Warin, J. (2000). The attainment of self-consistency through gender in young children. *Sex Roles, 42*, 209–232.
- Weinraub, M., Clemens, L. P., Sockloff, A., Ethridge, T., Gracely, E., & Myers, B. (1984). The development of sex role stereotypes in the third year: Relationships to gender labeling, gender identity, sex-typed toy preference, and family characteristics. *Child Development, 55*, 1493–1503.
- White, M. J., & White, G. B. (2006). Implicit and explicit occupational gender stereotypes. *Sex Roles, 55*, 259–266.
- Yzerbyt, V., Rocher, S., & Schadrin, G. (1997). *Stereotypes as explanations: A subjective essentialistic view of group perception*. Malden: Blackwell Publishing.
- Yzerbyt, V. Y., Rogier, A., & Fiske, S. T. (1998). Group entitativity and social attribution: On translating situational constraints into stereotypes. *Personality and Social Psychology Bulletin, 24*, 1089–1103. doi:10.1177/01461672982410006.
- Yzerbyt, V., Corneille, O., & Estrada, C. (2001). The interplay of subjective essentialism and entitativity in the formation of stereotypes. *Personality and Social Psychology Review, 5*, 141–155. doi:10.1207/S15327957PSPR0502_5.

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