Preschool Children's Attention to Environmental Messages about Groups: Social Categorization and the Origins of Intergroup Bias

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Abstract:

The present study was designed to examine the effects of adults' labeling and use of social groups on preschool children's intergroup attitudes. Children (*N* = 87, aged 3 to 5) attending daycare were given measures of classification skill and self-esteem and assigned to membership in a novel ("red" or "blue") social group. In experimental classrooms, teachers used the color groups to label children and organize the classroom. In control classrooms, teachers ignored the color groups. After three weeks, children completed multiple measures of intergroup attitudes. Results indicated that children in both types of classrooms developed ingroup-biased attitudes. As expected, children in experimental classrooms showed greater ingroup bias on some measures than children in control classrooms.

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Young children are often considered to be free of the negative social biases exhibited by adults. This view is undermined, however, by a good deal of developmental research. Children show many forms of social stereotyping and prejudice before the age of five. For example, children exhibit racial, gender, and attractiveness biases in their trait attributions and peer preferences by the age of three or four (Aboud, 1988; Levy & Carter, 1989; Langlois et al., 2000; Ruble & Martin, 1998; Sanders & Lee, 2005; Williams, Best, & Boswell, 1975). It is important, therefore, that theoretical accounts of the origins of social stereotyping and prejudice are able to explain the very early onset of these phenomena. In this paper, we draw on intergroup and cognitive-developmental theories to explain the origins of intergroup bias and describe an experimental test of the hypothesis that adults' labeling and use of social groups is a causal factor in the formation of intergroup bias among preschool children.

Nearly every major theoretical account of the development of social stereotyping and prejudice argues that categorization plays a central role (e.g., Aboud, 1988; Billig & Tajfel, 1973; Martin & Halverson, 1981). Young children's ability to sort individuals along some dimension (e.g., gender, race) and associate attributes (e.g., objects, traits, roles) with the resulting categories is widely considered to result in the formation of social stereotypes and prejudice. Consider the case of gender. By their first birthday, most infants can categorize individuals by gender (Quinn, Yahr, Kuhn, Slater, & Pascalis, 2002). By 18 months of age, they can match voices to photographs based on gender (Poulin-Dubois, Serbin, & Derbyshire, 1998) and by 24 months of age, children show knowledge of the gender typing of common activities such as applying lipstick (Serbin, Poulin-Dubois, & Eichstedt, 2002). By three years of age,

children demonstrate extensive knowledge of gender stereotypes (Levy & Carter, 1989; Reis & Wright, 1982) and marked preferences for members of their own gender ingroups (La Freniere, Strayer, & Gauthier, 1984; Maccoby & Jacklin, 1987; Martin & Fabes, 2001).

Humans vary, however, along an enormous number of dimensions that one might use to classify individuals (e.g., gender, height, weight, clothing, hair color). Why do children develop stereotypes and prejudice along some but not others of these dimensions? Why, for example, do children use gender and race as the basis for peer preferences and beliefs about groups? We propose that authority figures' labeling and use of particular social categories leads children to adopt those particular dimensions as the basis for classifying individuals and, in turn, to develop stereotypes and prejudice on the basis of those dimensions. This process is discussed by Bigler and Liben (in press) in the context of a broad theory of the development of social stereotypes and prejudice (work that simultaneously informed, and was informed by, the empirical work reported here).

Research with infants and toddlers suggests that verbal labeling facilitates the process of classification within non-social domains. By 11 months of age, infants can use novel noun labels as the basis on which to categorize similar objects (Waxman & Booth, 2003). By 21 months of age, the ability to use novel labels as a basis for categorization extends to adjective labels (Waxman & Markow, 1998). Language continues to facilitate categorization in early childhood. Among preschool-aged children, hierarchical classification is achieved more readily when labels are given to novel objects than when similar objects are merely presented together (Waxman & Gelman, 1986).

We hypothesize that language facilitates categorization of people as well as objects and, furthermore, affects children's cognition in ways that are unique to social stimuli. For example, labels are thought to facilitate essentialist thought about natural (but not artificial or man-made) categories (Diesendruck, 2001; Diesendruck, Gelman & Lebowitz, 1998; Heyman & Gelman, 2000a, 2000b). Essentialist thought is characterized by the belief that members of a category share important, non-obvious properties, or essences, and that these essences give rise to observable similarities (see Gelman, 2003). So, for example, children infer that individuals who are labeled "Black" (or "African American") share similar internal characteristics (e.g., type of blood), and that these characteristics differ from those of individuals who are labeled "White" (Hirschfeld, 1996). Consistent with this notion, Gelman, Taylor, and Nguyen (2004) argued that authority figures' use of gender generics (i.e., terms that refer to entire gender groups such as "boys" or "ladies") leads children to develop the belief that males and females differ in significant and non-obvious ways. Gelman and her colleagues reported that mothers make frequent use of generic labels in their speech to young children, and called for research aimed at testing the hypothesis that such speech plays a *causal* role in the formation of gender stereotypes.

The idea that children learn social stereotypes and prejudice as a result of environmental influences is consistent with previous socialization approaches (e.g., Skinner, 1969). Our account differs, however, from previous approaches in the mechanisms hypothesized to shape learning. Traditional and social learning theorists argue that children learn social stereotypes and prejudice via direct teaching, reinforcement, and imitation of models in the environment (Bussey & Bandura, 1999). Experimental support for the operation of such mechanisms in social stereotyping and prejudice is, however, weak (Martin, Ruble, & Szykrybalo, 2002). Children's

attitudes rarely mirror those held by authority figures in their environments (Aboud & Doyle, 1996; Tenenbaum, & Leaper, 2002). Rather than passively responding to reinforcement or models, it is now clear that children *construct* beliefs about social groups (e.g., Bigler & Liben, 1992, 1993; Martin & Halverson, 1981). Consistent with constructivist accounts, we propose that children are inherently motivated to determine which human attributes are important for grouping, and rely on adults' use of social categories as cues on which to base their construction of theories about, and preferences for, social groups. So, for example, traditional and social learning theorists would judge teachers who assign feminine chores to girls and masculine chores to boys as contributing to their pupils' sex typing, but would -- in contrast to our position -- fail to judge teachers who assign all chores to the members of one gender on a rotating basis (e.g., "it is the girls' turn to move the heavy tables") as contributing to their pupils' sex typing (Arthur, Bigler, Liben, Gelman, & Ruble, under review).

Constructivist accounts are consistent with one additional perspective on stereotyping and prejudice—intergroup theory. Beginning with the work of Sherif and his colleagues in the 1950s, numerous studies have found that adolescents and adults form attitudes toward, and preferences for, members of novel groups, even in the absence of socializing influences (e.g., modeling of attitudes) or preexisting differences between the groups (Sherif, Harvey, White, Hood, & Sherif, 1961). Although Sherif's studies involved segregation and competition between groups, other research indicates that "the mere existence of discrete, non-overlapping categories is sufficient to suggest, correctly or not, that members of different categories differ in some respects (Wilder, 1986, p. 50)."

According to intergroup accounts, individuals tend to show favoritism toward their ingroup even when such favoritism has no effect on personal outcomes (Brewer, 1979; Tajfel, 2001; Tajfel, Billig, Bundy, & Flament, 1971). In an influential study, Billig and Tajfel (1973) reported that referring to a collection of individuals as a "group" was sufficient to produce ingroup favoritism, even when group membership was random (referred to as "minimal groups"). Furthermore, when participants were told that they had an attribute in common with others (i.e., preference for a particular abstract painter), they failed to show ingroup favoritism unless the experimental situation included explicit reference to groups and group labels. Thus, social psychological research indicates that categorization is a sufficient and perhaps necessary condition for producing ingroup favoritism, whereas similarity is neither necessary nor sufficient. More recent work by intergroup theorists has outlined the motivational mechanisms driving such behavior. These theorists argue that preferential views of the ingroup allow for the creation and maintenance of positive self-esteem (Hogg & Hains, 1996; Tajfel & Turner, 1979), a point that we address in greater detail below.

Some research suggests, however, that children develop ingroup-biased attitudes less readily than adults within minimal group paradigms (Bigler, 1995; Bigler, Jones, & Lobliner, 1997). Two factors appear to be necessary for the formation of intergroup bias among children: (a) perceptual salience of groups and (b) labeling and use of groups by authority figures (Bigler et al., 1997; Bigler, Brown, & Markell, 2001; Patterson & Bigler, under review). That is, research suggests that children placed in novel social groups develop biased attitudes only when (a) they are able to visually detect group membership (perceptual salience), and (b) authority figures frequently label and use groups during routine interactions. Importantly, neither of these

conditions is *sufficient* to lead to the development of intergroup bias. Studies have shown, for example, that children fail to develop ingroup bias when perceptually salient groups are ignored by authority figures or when socially meaningful groups are perceptually indistinguishable (Bigler, 1995, Bigler et al., 1997).

It is important to note, however, that studies of children's intergroup attitudes have been conducted nearly exclusively with elementary-school-age children (for an exception, see Yee & Brown, 1992). Despite the scarcity of empirical work on the topic, there are theoretical reasons to expect that preschool-age children might readily develop intergroup biases when authority figures draw attention to perceptually salient groups. As noted earlier, preschoolers react to the presence of verbal labels by developing essentialist conceptions of people (e.g., Heyman & Gelman, 2000b). In addition, Aboud (1988) has argued that young children generalize their highly favorable self-views to similar (but not dissimilar) others, leading to the formation of ingroup bias (e.g., 'I'm smart, therefore, all white people are smart'). Furthermore, children in the preoperational stage of cognitive development lack sophisticated classification skills (see Piaget, 1924) and thus, may generalize their positive feelings about themselves to all other ingroup members in a simplistic and rigid fashion (Kohlberg, 1966).

The primary purpose of this study is to test the notion that preschool-age children look to authority figures for information about *which* dimensions of similarity, or bases for classification, are important. Thus, we manipulated the information about social groups available in children's environments. Specifically, preschool-age children were assigned to perceptually salient novel ("red" and "blue") groups in their regular day care classrooms. In experimental classrooms, teachers labeled and used the novel groups in daily classroom interactions. In control

classrooms, teachers ignored the presence of the novel social groups. We expected children in the experimental (but not control) condition to form ingroup-biased attitudes.

A secondary purpose of the study was to evaluate the role of two individual difference variables on ingroup bias: self-esteem and classification skill. With respect to self-esteem, Tajfel and Turner's (1979) social identity theory posited that ingroup bias is a method for acquiring positive self-views, and thus, predicted that individuals with low self-esteem might raise their self-esteem by derogating outgroup members. Empirical research on the links between self-esteem and intergroup bias suggests that higher (rather than lower) self-esteem is associated with ingroup bias among elementary-school-age children (Bigler et al., 1997; Gagnon & Morasse, 1995) and adults (Abrams & Hogg, 1988; Rubin & Hewstone, 1998). We sought to test whether high self-esteem would also be linked to ingroup bias among preschool children.

With respect to classification skill, we hypothesized that children's ability to categorize others consistently along a particular dimension should be relevant to their tendency to develop ingroup biases, consistent with the tenets of cognitive-developmental theory. Specifically, we expected that children who were unable to consistently classify people or objects along a single dimension would show less ingroup bias than children with more advanced classification skills.

We assessed ingroup bias with multiple measures used in, or adapted from, extant studies of gender, racial, and intergroup bias among children. In general, multiple measures of complex constructs such as prejudice are generally preferable over single assessments (Garner, Hake, & Eriksen, 1956; Sternberg & Grigorenko, 2001). In addition, the use of multiple measures allows for the detection of patterns; for example, biases might be found on measures of bias towards individuals but not groups. The use of multiple measures is especially important for topics in

which work is new or exploratory, as was the case in this study. Specifically, we included measures of: (a) trait ratings, based on research demonstrating that preschool children show gender and racial biases in assignment of traits to groups (Emmerich & Shepard, 1984; Williams et al., 1975), (b) behavioral and self-reported peer preferences, based on studies of gender (La Freniere et al., 1984; Maccoby & Jacklin, 1987; Martin & Fabes, 2001) and racial (Sanders & Lee, 2005; Smith, 2003) biases in children's friendship preferences, (c) toy preferences, based on children's demonstrated preference for same-sex-typed toys (Serbin, Poulin-Dubois, Colbourne, Sen, & Eichstedt, 2001; Martin, Eisenbud, & Rose, 1995), (d) person preferences, based on research indicating that children prefer same-sex and same-race others (Averhart & Bigler, 1996; Emmerich & Shepard, 1984; Katz & Zalk, 1978), and (e) group evaluation, based on research demonstrating biases in children's liking of, and perceived similarity to, ingroup and outgroup members (Egan & Perry, 2001; Verkuyten, 2002). Given the hypothesis that social categorization triggers the formation of ingroup biases, we expected that children in the experimental—but not control—condition would demonstrate ingroup bias on all of these measures.

Method

Participants

Participants were 87 preschool children (46 girls, 41 boys) attending two childcare centers in central Texas. One childcare center provided two participating classrooms (one experimental, one control); the other center provided five participating classrooms (two experimental, three control). All parents of children in the participating classrooms were informed of the experimental procedures and passive consent procedures were followed for

allowing participation in the classroom manipulation (i.e., wearing a t-shirt). If any parent objected to his or her child's participation, the child's classroom was not included in the study. (This occurred in one classroom.) Active parental consent was obtained in order to administer the questionnaires. Eighteen students who were enrolled in classrooms that participated in the experimental manipulation (i.e., wore t-shirts) were not included in the final sample because parental permission to give the pre- and posttest measures was not obtained.

Participants ranged in age from 3 years, 10 months to 5 years, 7 months (M = 4.79, SD = .39). The majority of the children (n = 64) were European American; 12 were Latino, 6 were Asian American, and 5 were African American. The experimental and control conditions were roughly equivalent in their gender and racial composition (experimental: 21 boys, 21 girls; 2 African American, 3 Asian American, 33 European American, 4 Latino; control: 20 boys, 25 girls; 3 African American, 3 Asian American, 31 European American, 8 Latino).

Overview of Procedure

Prior to the start of the experimental manipulation, children were given pretest measures of classification ability and self-esteem. Next, each child in the participating classrooms was randomly assigned a blue or red t-shirt to wear daily as a "work shirt." The experimenters and the children's classroom teachers explained that the work shirt would be worn each day. The work shirts were presented as part of a short presentation about the uniforms that characterize various occupations (e.g., nursing, fire fighting). Because young preschoolers sometimes have difficulty with color words (Bornstein, 1985) or prefer to classify based on shape rather than color (Pitchford & Mullen, 2001), each color was also associated with a geometric shape (blue shirts had triangles, red shirts had squares). Children wore the shirts for three weeks.

During this 3-week period, environmental messages about the novel social groups were manipulated following procedures used by Bigler and colleagues (e.g., Bigler, 1995; Bigler et al., 1997). Teachers in the control classrooms did not mention the novel color groups. In contrast, teachers in the experimental classrooms made frequent use of the color groups to label children (e.g., "Good morning, Blues and Reds"), and to organize the classrooms. For example, teachers in the experimental classrooms decorated children's cubbies with blue and red labels and lined up children at the door by color group. Teachers were instructed to treat groups equally and not to allow competition between groups. In addition, teachers were instructed to handle any negative or discriminatory statements based on color group membership in the way that they would handle any discriminatory statement (e.g., by stating that such statements are incorrect and unkind).

After 3 weeks in the experimental or control classroom, children were seen individually by a female experimenter and given a series of posttest measures. Posttest measures included a measure of the perception of trait variability between and within groups, a measure of group preference for toys and novel peers, a series of evaluative questions about the groups, and a peer preference task. Testing was divided into two sessions to minimize the possible fatigue or boredom young children might experience as a result of participating in a lengthy testing session. The order of the task presentation varied across children, with the exception that all children in the control condition received measures that did not make use of color labels (e.g., peer preference ratings) prior to those measures that made color group a salient dimension for responding. Order effects on similar measures have not been found in previous work (e.g., Brewer, 1979). A summary of measures is presented in Table 1.

After posttesting was complete, all children in the participating classrooms heard a short intervention/debriefing presentation in which the experimenter or classroom teacher discussed the classroom color groups with children. The discussion leader highlighted the ways in which the color groups were similar and stressed the positive qualities of both groups.

Pretest Measures

Classification Ability

The classification task required children to sort stimuli that varied systematically along several dimensions. Each child completed two sorting tasks, one with nonsocial stimuli (boats and cars of two different colors) and one with social stimuli (children who varied in gender, color of their t-shirt, and whether they were photographed indoors or outdoors). Each child was asked to sort the pictures into two piles based on a single dimension. The experimenter then scrambled the pictures and asked the child to sort the pictures again using a different dimension. After each trial, children were asked to explain their sorting. Children received a score of 0 (incorrect or no sorting), 1 (correct sorting, incorrect or no explanation), or 2 (correct sorting and explanation) on each classification task and thus, possible scores on each task ranged from 0 to 4.

Self-Esteem

The peer acceptance and cognitive competence subscales of the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (Harter & Pike, 1984) were used to assess self-esteem. Children were shown two line drawings of a same-gender child performing a task or interacting with others, with one child being highly successful and one being less successful (e.g., a child with most of a puzzle completed versus a child with only a small part of a puzzle completed). The child was asked which of the children he or she most

resembled, and whether he or she was “a lot” or “a little” like that child. Scores on each item ranged from 1 to 4, with possible total subscale scores ranging from 6 to 24.

Posttest Measures

Perception of Trait Variability Between Groups

Children’s perception of the trait variability between the color groups was assessed using a procedure developed by Bigler and colleagues (Bigler, 1995, Bigler et al., 1997). Participants rated how many of the children in each color group were characterized by five positive (friendly, good, nice, pretty/handsome, smart) and five negative (dirty, mean, naughty, selfish, unfriendly) attributes taken from the Preschool Racial Attitude Measure II (Williams, Best, Boswell, Mattson, & Graves, 1975). Children responded using a 4-point scale that included “all of the blue [red] group (4),” “most of the blue [red] group (3),” “some of the blue [red] group (2),” or “none of the blue [red] group (1).” Response options were depicted with a visual scale consisting of four clear cups filled with varying amounts of colored pebbles (completely full, two-thirds full, one-third full, and empty, respectively). Before answering trait questions, children completed a training session in which they rated the number of children in their classroom who had two legs (all), blonde hair (some or most), and two heads (none).

Evaluation of Ingroup Versus Outgroup

Children were asked two questions about *group choice*: (a) which group they would choose (i.e., red or blue) if they could select a new group membership and (b) which group they thought that a new student would choose. In addition, children were asked additional questions about *group satisfaction*: “How important is being a blue [red] group member to you?” with response options ranging from *not important* (1) to *very important* (4), and “How happy are you

to be in the blue [red] group?" with response options ranging from *not happy* (1) to *very happy* (4). Children were also asked a series of questions about hypothetical classroom events designed to assess views of *group performance*. Two of these events were positive (i.e., winning a foot race, drawing the best pictures) and one was negative (i.e., receiving the most time-outs). Responses were considered ingroup biased if children attributed the positive outcomes to their ingroup, or the negative outcome to their outgroup. Thus, possible scores on the hypothetical events ranged from 0 (all judgments favoring the outgroup) to 3 (all judgments favoring the ingroup).

Peer Preference

Peer preference was assessed with a picture sorting task developed by Asher and colleagues (1979). Children were shown photographs of each child in their classrooms and asked to rate how much he or she liked to play with that child. To do so, children placed the photograph into one of three boxes. The boxes displayed schematic drawings of faces that differed in expression (large smile, small smile, and small frown) and were verbally labeled "a lot," "kind of," and "not much."

We also assessed children's peer preferences using observational data. During the second and third weeks of the experimental manipulation, classroom observations took place during indoor free playtime. Following the procedures of Martin and Fabes (2001), a randomly ordered list of children was observed for 10-second intervals. After all children were observed, the observer moved to another classroom or waited 15 minutes before observing the same group of children again. For each interval, the observer recorded whether the child was playing individually, interacting with an adult, or playing with other children. If playing with other

children, the observer noted if the play included ingroup, outgroup, or both ingroup and outgroup members. For each child's set of observations, the percentage of interactions with ingroup members, outgroup members, and groups of both ingroup and outgroup members was calculated. Each interaction was also rated as (a) positive/active (i.e., facilitating play actively), (b) negative (i.e., teasing, fighting, threatening, or crying), or (c) neutral (i.e., interacting with others but not actively facilitating play). To check reliability, two observers were paired together to code the same child's behavior independently for a sub-sample of sessions (222 observations of 1226 total, or 18.1%) and their results were compared. Raters agreed 95.5% of the time on play status (i.e., whether the target child was alone, with a teacher, or with one or more peers; Cohen's kappa = .92, $p < .01$), 92.9% on peers' group membership (Cohen's kappa = .83, $p < .01$), and 80.0% on interaction quality (Cohen's kappa = .57, $p < .01$). In the small number of instances in which the two observers' ratings differed, ratings of the primary rater were used in data analysis.

Toy Preference

Toy preference was assessed with a forced-choice task. Participants were told that children from another class had been asked to name their favorite toys and that the experimenter had brought pictures of these favorite toys. Children were then shown three pairs of color photographs of toys. Toys were selected from a list of toys rated as gender-neutral by children and parents (Campenni, 1999). Toys were rated by a separate sample of 4-year-old children, and pairs of similarly rated toys were presented together. Within each pair, one photograph was mounted on a red background and labeled as the red group's favorite and another was mounted on a blue background and labeled as the blue group's favorite. Color group labeling was counterbalanced such that half of the children saw each toy labeled as the blue group's favorite

and the other half saw the same toy labeled as the red group's favorite. Children were asked with which toy they would prefer to play. The number of ingroup choices was recorded.

Novel Person Preference

Children were shown three consecutive pairs of photographs of unfamiliar people wearing red or blue t-shirts and asked which group of individuals they would prefer to join. The first pair of photographs showed mixed-sex groups of children reading books and children were asked which reading group they would prefer to join. The second pair of photographs showed a boy and a girl seated at a table and children were asked at which table they would prefer to sit for snack time. The third pair of photographs showed one adult woman and children were asked which woman they would prefer to have as their teacher. Photographs were counterbalanced so that half of the children saw the individuals wearing red t-shirts and the other half saw the identical individuals wearing blue t-shirts.

Results

Pretest Measures

Classification Ability

Classification scores ranged from 0 to 4, with a mean of 2.28 for nonsocial stimuli and 1.74 for social stimuli. Scores for classification of social and nonsocial stimuli were significantly correlated, $r(84) = .63$, $p < .01$, and thus scales were combined to form a single classification ability score. A one-way ANOVA by condition revealed no significant differences between the classification skill of children within the experimental and control conditions, $F(1,84) = 1.68$, $p > .10$.

Self-Esteem

Means (and standard deviations) for the cognitive competence and peer acceptance subscales of the Perceived Competence Scale for Young Children were 21.35 (*SD* = 2.32) and 18.81 (*SD* = 3.72), respectively. Scores on the two subscales were correlated, $r(84) = .40$, $p < .01$, and thus scales were combined to form a single self-esteem score. A one-way ANOVA by condition revealed no significant differences in the overall perceived self competence of children within the experimental and control conditions, $F(1,84) = 1.10$, $p > .10$.

Posttest Measures

Overview

The primary question of interest was whether preschool children's intergroup attitudes are affected by adults' labeling and use of social categories. To examine whether children in the experimental condition developed more ingroup-biased attitudes than children in the control condition, we first performed a 2 (condition: experimental vs. control) X 2 (gender of participant) MANOVA using all of the measures of intergroup bias for which the analysis was appropriate (i.e., trait ratings, peer ratings, happiness ratings, importance ratings, hypothetical events, toy preference, and novel person preference). As predicted, MANOVA results indicated a significant overall effect of condition, $F(3,67) = 2.29$, $p < .05$, though effects varied across measures. Univariate follow-up contrasts are not reported here (they can be obtained from the authors), but they are entirely consistent with the results of separate ANOVAs computed for each dependent measure. Separate ANOVAs were more informative because the nature of data prevented some dependent measures (e.g., group choice) and some variables (e.g., ingroup versus outgroup ratings) from being included in the general MANOVA. Because we held a priori expectations concerning the direction of the predicted effects (i.e., the experimental condition

was expected to show greater ingroup bias than the control condition), one-tailed levels of significance were used for tests of condition.

Whether or not significant differences between conditions appeared on a given dependent measure, we examined whether children's overall responses showed evidence of ingroup bias. That is, we used t-tests to compare children's observed levels of responding to chance levels, and we report whether responding was significantly above chance (indicative of ingroup bias), below chance (indicative of outgroup bias), or not significantly different from chance (indicative of non-biased attitudes) for each of the dependent variables. A complete list of the intergroup bias measures, as well as means, standard deviations, and effects by condition (when possible), is presented in Table 2.

A secondary question of interest was whether individual differences in classification skill and self-esteem were related to children's levels of ingroup bias. Because these variables were continuous variables and because they were associated with age, hierarchical multiple regression analyses (rather than ANOVAs) are used to examine their unique contributions (if any) to each of the measures of ingroup bias. Effects of participant age are also examined in the section on individual difference factors (described below).

Preliminary Analyses

As noted earlier, a 2 (condition: experimental vs. control) X 2 (gender of participant) MANOVA was conducted on all appropriate measures of intergroup attitudes. Results indicated no significant gender by condition interactions, and thus this variable was not included in subsequent analyses.

Possible effects of classroom within condition were also evaluated via preliminary MANOVAs. There was no significant effect of classroom within either the experimental group, $F(2,32) = 0.64$, $p > .10$, or the control group, $F(3,32) = 1.22$, $p > .10$, and thus data were pooled across classrooms.

Perception of Trait Variability Between Groups

Children's ratings of peers' positive and negative traits were analyzed using 2 (condition: experimental vs. control) X 2 (target: ingroup vs. outgroup) repeated measures ANOVAs, with the last factor as a within-subjects variable. Separate ANOVAs were conducted for positive and negative trait ratings, as in earlier research (Bigler, 1995; Bigler et al., 1997; Bigler et al., 2001) Results indicated no significant main effects or interactions.

In order to compare children's trait ratings to chance, bias scores were calculated. To calculate *positive* trait bias, positive trait ratings of the outgroup were subtracted from positive trait ratings of the ingroup. To calculate *negative* trait bias, negative trait ratings of the ingroup were subtracted from negative trait ratings of the outgroup. Thus, higher positive scores indicate greater ingroup bias for both positive and negative traits. Overall, children's ratings of positive and negative traits were not significantly biased (i.e., did not differ from 0), $ts(78) = .81$ & $.46$, $ps > .10$ (see Table 2 for means).

Evaluation of Ingroup Versus Outgroup

In response to the question of whether they would like to change their group membership, 51% of the children stated that they would like to keep their group membership. A chi-square test of independence indicated that more children in the experimental condition (57%) than in the control condition (45%) stated a desire to keep their group membership, although the

difference did not reach statistical significance, X^2 (1, N = 77) = 1.06, $p >$ .10. Overall, children did not differ from chance (50%) in desire to keep their group membership, t(76) = .11, $p > .10$.

In response to the question of which group a new student would choose, 67% of the children stated that the new student would select their own group. A chi-square test of independence indicated no significant differences across condition, X^2 (1, N = 78) = 0.31, $p > .10$, with the majority of children in both the experimental (65%) and control conditions (71%) stating that a new child entering their classroom would choose to join their own group. Overall, children stated that a new child would choose their group at levels significantly above chance (50%), t(77) = 3.37, $p < .01$.

Children were also asked to rate (a) the importance of their group membership and (b) their happiness with their group membership. A one-way ANOVA by condition of ratings of group importance indicated a significant main effect of condition, F(1,75) = 2.80. $p < .05$, with children in the experimental condition rating their group membership as more important than children in the control condition (M_{EXP} = 3.00, SD = 1.22; M_{CON} = 2.53, SD = 1.26). A one-way ANOVA by condition of ratings of happiness with group membership also indicated a significant main effect of condition, F(1,75) = 4.74, $p < .05$, with children in the experimental condition rating themselves as happier with their group membership than children in the control condition (M_{EXP} = 3.35, SD = 1.08; M_{CON} = 2.75, SD = 1.32).

Finally, children predicted which group would win a series of hypothetical events (e.g., a foot race). Children received one point for each ingroup-biased response, and thus scores ranged from 0 to 3. A one-way ANOVA by condition indicated no significant main effects or

interactions, $F(1,76) = .004$, $p > .10$. Overall, children associated the ingroup with the favorable outcomes at a level above chance, $t(77) = 7.24$, $p < .01$ (see Table 2 for means).

Peer Preference

Children's peer preferences were examined with both ratings of individual peers and observations of play behavior. To examine possible ingroup biases in children's ratings of peers, a 2 (condition: experimental vs. control) X 2 (peer type: ingroup vs. outgroup) repeated measures ANOVA was conducted, with the last factor as a within-subjects variable. The ANOVA revealed a significant peer type by condition interaction, $F(1,80) = 3.22$, $p < .05$. Children in the experimental condition showed significantly higher levels of ingroup bias than children in the control condition (see Table 2 for means). Further, children in the experimental condition (but not control condition) chose ingroup members as preferred at rates significantly above chance, $t(36) = 1.83$, $p < .05$ and $t(44) = 0.13$, $p > .10$, respectively.

To examine possible ingroup biases in children's *behavior* toward peers, we examined (a) the percentage of interactions with ingroup peers, outgroup peers, and groups of both ingroup and outgroup peers, and (b) the quality of play with same- and other-group peers. Only the observations in which the target child was playing with another child or children were considered in this analysis (628 observations). Eight children were dropped from the analyses because they did not play with other children for the minimum required number of instances (3). Because gender is known to affect peer preferences, preliminary analyses included peer gender as a predictor variable. As expected, there were some effects of peer gender (e.g., children played with same-gender more than other-gender peers). In no instance, however, did peer gender

interact with group membership. For clarity of presentation, this variable was dropped from subsequent analyses.

The percentage of observed interactions between group members were analyzed using a 2 (condition: control vs. experimental) X 3 (group: ingroup, outgroup, mixed) repeated-measures ANOVA, with the second factor as within-subjects. There were no significant differences between control and experimental conditions in percentage of time spent with ingroup, outgroup, or mixed groups, $F(2,77) = .57$, $p > .10$. Chi-square analyses that corrected for number of possible play partners in the room indicated that children played with ingroup and outgroup members at rates that would be expected by chance in both the experimental and control conditions.

The quality of play with group members was also analyzed using a 2 (condition: control vs. experimental) X 3 (quality: positive/active, negative, neutral) repeated-measures ANOVA, with the second factor as within-subjects. Results indicated no significant quality by condition interaction, $F(2,77) = 1.38$, $p > .10$.

A MANOVA analysis of all coded combinations of peer behavior (ingroup positive, outgroup negative, etc.) was also conducted. Results indicated there was not a significant overall effect of condition, $F(1,82) = 1.22$, $p > .10$, or an effect of condition on any subtype of peer behavior, all ps $> .05$.

Toy Preference

Children were shown three pairs of photographs of toys (one labeled as the ingroup's favorite and one labeled as the outgroup's favorite) and asked to choose the toy that they preferred. The number of ingroup choices was recorded and thus, scores ranged from 0 to 3. A

one-way ANOVA by condition was not significant. Overall, children selected the ingroup toy at a rate significantly higher than that expected by chance, $t(81) = 3.73$, $p < .01$ (see Table 2 for means).

Novel Person Preference

Children were shown three pairs of photographs of people wearing either red or blue shirts and asked to choose the person or group that they preferred. The number of ingroup choices was recorded and thus, scores ranged from 0 to 3. A one-way ANOVA by condition was significant, $F(1,78) = 3.30$, $p < .05$. Children in the experimental condition chose their ingroup members as preferred more often than children in the control condition (see Table 2 for means). Further, children in the experimental, but not control, condition chose ingroup members at rates significantly above chance, $t(35) = 2.88$, $p < .01$ and $t(43) = .13$, $p > .10$, respectively.

Effects of Developmental and Individual Differences

Hierarchical regression analyses were conducted for each of the dependent variables using classification skill, self-esteem, and age as predictor variables. For those measures in which children in the experimental and control conditions showed different levels of bias, regression models were run separately for the two conditions.

Perception of Trait Variability Between Groups

In order to examine the effects of individual difference variables on children's intergroup attitudes, bias scores were calculated (as described above). For both positive and negative traits, higher positive scores indicate greater ingroup bias.

Positive trait ratings. The overall model was nonsignificant. Neither age, classification skill, nor self-esteem predicted children's degree of positive trait bias.

Negative trait ratings. The overall model was nonsignificant. Neither age, classification skill, nor self-esteem predicted children's degree of negative trait.

Peer Preference

To examine possible ingroup biases in children's ratings of peers, bias scores were calculated by subtracting the average outgroup peer rating from the average ingroup peer rating. Within the control condition, the overall model was nonsignificant. Neither age, classification skill, nor self-esteem predicted children's degree of peer preference bias in the control condition. Within the experimental condition, the overall model was significant, $F(3,33) = 4.84$, $p < .01$. Age, $\beta = -.36$, $t(32) = -2.40$, $p < .05$, and self-esteem, $\beta = .34$, $t(32) = 2.22$, $p < .05$, were significant predictors of children's peer preference bias in the experimental condition. Younger children and children with higher self-esteem showed higher levels of ingroup bias in their peer ratings.

Evaluation of Ingroup versus Outgroup

We first examined children's ratings of (a) happiness with and (b) importance of group membership. Neither model was significant. Neither age, classification skill, nor self-esteem predicted children's happiness or importance ratings.

We next examined children's ratings of group performance in hypothetical events. The overall model was nonsignificant. Neither age, classification skill, nor self-esteem predicted children's degree of ingroup bias.

Toy Preference

The overall model was nonsignificant. Neither age, classification skill, nor self-esteem predicted children's degree of toy preference bias.

Novel Person Preference

Within both the control and experimental conditions, the overall model was nonsignificant. Neither age, classification skill, nor self-esteem predicted children's degree of bias in novel person preferences in either condition.

Discussion

Many researchers have suggested that intergroup processes may account for the formation of social stereotypes and prejudice in children (e.g., Bigler, 1995; Powlishta, 1995, 2004). Some empirical work supports the notion that social categorization produces intergroup biases among children. Bigler and her colleagues have reported, for example, that children develop biases toward novel social groups when those groups are perceptually salient and used by authority figures to label children and organize the environment (Bigler et al., 1997; Bigler et al., 2001). In addition, descriptive work by Gelman and her colleagues (2004) suggests that adults make frequent use of group labels (e.g., generics such as "girls" and "boys") in their speech to preschool children. No previous experimental work had, however, evaluated whether preschool-age children attend to, and are affected by, social categorization.

Overall, results indicated that preschool children, like older children, develop ingroup-biased attitudes toward novel social groups. We assessed children's intergroup attitudes using multiple measures, including tasks that assessed: (a) perceptions of trait variability between groups, (b) group desirability, (c) preference for people and objects associated with one's ingroup, and (d) behavior toward ingroup and outgroup members. Across these measures, the development of ingroup-biased responding was—at the group level—far more common than neutral or outgroup-biased responding. Of the eight measures of group attitudes used in the study

(summarized in Table 2), six measures showed ingroup bias on the part of children in at least one condition, whereas two measures showed non-biased responding. Interestingly, children never developed outgroup-biased responding, which might be expected if responding had been random.

There was also some (although only moderate) support for the notion that teachers' use of the groups to label children and organize classrooms affected children's attitudes. Specifically, children in the experimental classrooms (in which teachers labeled individuals and organized classrooms by the color groups) showed higher levels of ingroup bias than children in the control classrooms (in which teachers ignored the color groups), on two of the eight measures of group attitudes. In addition, children in the experimental classrooms (a) rated their group membership as more important and (b) stated that they were happier with their group membership than children in the control classrooms. The pattern of findings suggests a role of the environment in producing ingroup bias.

Unexpectedly, children in the control classrooms also showed evidence of ingroup-biased responding on some of the attitudinal measures. There are several possible explanations for this finding. One possibility is that the mere presence of visually salient groups in the environment is sufficient to produce ingroup bias among preschoolers. If so, the general proclivity to use any perceptually salient dimension as a basis for ingroup bias must decline across age, given that the mere presence of such groups is insufficient to produce bias in older children (e.g., Bigler et al., 1997). A decline in the use of visually salient characteristics would be consistent with Piagetian principles of cognitive development (Piaget, 2000) as well as research on children's perceptions of themselves and others; as children develop, they place less emphasis on concrete, observable

characteristics and greater emphasis on internal characteristics such as personality traits (Livesley & Bromley, 1973).

A second explanation for the development of bias among children in the control condition is that the use of group labels in testing was sufficient to elicit ingroup bias. That is, the administration of multiple measures that explicitly labeled the color groups may have been responsible for the formation of ingroup bias among children in the control classrooms. Indeed, inspection of Table 2 indicates that children in the control condition (unlike their peers in the experimental condition) showed ingroup biases *only* on those measures that made use of verbal labels. In other words, rather than using all perceptually salient differences as bases for ingroup bias, preschool children may be especially sensitive to the verbal labels supplied by adults as cues to the importance of social dimensions. Older children, in contrast, may be likely to reflect on their past experience when asked about "red" and "blue" group labels; if the group was infrequently labeled, they conclude that the dimension is unimportant.

Some earlier research with preschool-age children supports this explanation. In their study of children's understanding of atypical category members, Gelman and Coley (1990) found that labels facilitated categorization among 2 1⁄2-year-old children but not adults. Research with adjectives similarly provides evidence of labeling effects on preschool children. For example, Heyman and Gelman (2000a) report that novel adjective labels are able to override appearance information when preschool children are asked to draw conclusions about similarities between two individuals. In both of these studies, a single instance of labeling was sufficient for children to conclude that labeled individuals shared similar properties. Heyman and Gelman concluded that "children have a general assumption that unfamiliar words hold rich inductive

potential when applied to people but not when applied to [inanimate objects such as] dolls" (2000a, p. 263). Although the labels used in the current study (i.e., "reds" and "blues") were not novel words, they were novel ways of labeling *people*, and thus may have led children to make inferences about their peers in much the same way as the novel adjective labels in Heyman and Gelman's study.

It is also interesting to note that effects of condition were present on two measures concerning the relevance of the group to the self. That is, children in the experimental condition rated themselves as happier with their group membership and their group membership as more important than children in the control group. It seems possible that teachers' labeling of groups led children to incorporate the group into their personal identities. Self-related information may also be more readily accessible than other information (Ganellen & Carver, 1985), leading to effects of condition on these measures when more abstract measures of attitudes (e.g., trait ratings of groups) failed to show group differences.

As in other research, we found little evidence of attitude-behavior consistency. Children in the experimental classrooms showed ingroup-biased ratings of their peers but showed no ingroup bias in their actual peer behavior. That is, although children in the experimental condition stated that they liked ingroup members more than outgroup members, observational data indicated that they did not spend more time playing with ingroup peers than outgroup peers. It is important to note, however, that unlike in previous studies using this research paradigm (Bigler, 1995; Bigler et al., 1997; Bigler et al., 2001), the children in this sample were acquainted with one another before the study began. Because children of this age have friendships and peer preferences that are relatively stable over time (Linsey, 2002; Uehara, 2004), the degree of

intergroup bias found here is likely to be smaller than that it would have been if children had been unacquainted at the beginning of the study. In other words, children's familiarity with the outgroup may have mitigated the development of ingroup preferences.

We also failed to find evidence that classification skill level affected children's intergroup attitudes. This may be because the development of intergroup bias requires only very basic sorting abilities. The vast majority of four-year-olds are probably capable of categorizing people into groups on the basis of a perceptually salient dimension well enough to support ingroup bias. Consistent with other research (Bigler et al., 2001), greater sophistication in classifying people and objects did not mitigate the development of ingroup bias. Future research should examine the responsiveness of younger preschoolers (whose basic categorization skills may be less well-developed) to intergroup manipulations.

Earlier work on the relation between self-esteem and intergroup bias reported that elementary-school-age children with high self-esteem developed stronger ingroup biases than their low self-esteem peers (Bigler et al. 1997; Gagnon & Morasse, 1995). Consistent with these previous findings, we found a positive relation between self-esteem and intergroup peer bias. However, we found little evidence of such a relation overall. The difference between our findings and those of previous research may be due to age; preschool-age children are widely known to have higher overall self-esteem than older children. Perhaps consistent patterns of nonbiased responding are characteristic only of children with distinctly modest self-views. Such children are rare among preschool samples (Marsh, 1990; Harter, 1999).

One limitation of this study is that labeling and use of groups were conflated, making it difficult to determine whether one or both of these would account for the observed effects on

intergroup bias. Some ongoing research on segregation (Bigler, Patterson, & Brown, in preparation) suggests that use of groups without verbal labeling may also encourage the development of intergroup bias in elementary school children. In most settings outside of the laboratory, however, labeling and use occur together. So, for example, public restrooms in the United States are gender segregated, which is a use of gender that requires labeling.

In summary, these data are important in that they suggest that even very young children show a general readiness to develop ingroup biases and, more importantly, may be attentive to environmental cues about the importance of social groups. Intuitively, we often believe that young children are taught their attitudes toward groups by parents or other authority figures. This research suggests that the teaching method is likely to be far more subtle and indirect than previously believed. Young children are likely to show preferences for groups that adults emphasize in their language and behavior, even in the complete absence of explicitly evaluative messages about groups.

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Table 1

Summary of Measures

Measure	Description	Range of Possible Scores
Pretest Measures		
Classification Ability	sorting and re-sorting tasks	0 to 8
Self-Esteem	ratings of one's competence and social acceptance	12 to 48
Posttest Measures		
Trait Ratings	ratings of the proportion of groups characterized by positive and negative traits	5 to 20
Evaluation of Ingroup Versus Outgroup		
Group Choice	selection of red or blue group membership	N/A
Happiness	ratings of happiness with one's group	1 to 4
Importance	ratings of the importance of one's group membership	1 to 4
Hypothetical Events	prediction of winners of group competitions	0 to 3

Table 1 (continued)

Summary of Measures

Measure	Description	Range of Possible Scores
Peer Preference		
Peer Ratings	ratings of liking of individual group members	1 to 3
Peer Observations	percentage of time spent with ingroup, outgroup, and mixed group members	0 to 100%
Toy Preference	forced choice preference for toys associated with groups	0 to 3
Novel Person Preference	forced choice preference for unfamiliar group members	0 to 3

Table 2

Summary of Major Findings

	Experimental		Control		Does Measure Label Groups?	Effect of Condition?	Ingroup Bias?	Effect of Individual Differences?
	M	*SD*	*M*	*SD*				
Trait Ratings					Yes	No	None	No
Ingroup Positive	17.31	(2.48)	15.76	(3.41)				
Outgroup Positive	16.42	(3.03)	16.08	(2.57)				
Ingroup Negative	10.53	(3.77)	10.14	(3.79)				
Outgroup Negative	10.53	(3.61)	10.32	(3.72)				
Group Choice					Yes	No	None	No
Projected Group Choice					Yes	No	E and C	No
Hypothetical Events	2.24	(1.06)	2.26	(0.77)	Yes	No	E and C	No

Table 2 (continued)

Summary of Major Findings

	Experimental		Control		Does Measure Label Groups?	Effect of Condition?	Ingroup Bias?	Effect of Individual Differences?
	M	*SD*	*M*	*SD*				
Peer Ratings					No	Yes	*E only*	A, SE
Ingroup	2.07	(0.46)	2.12	(0.46)				
Outgroup	1.94	(0.40)	2.16	(0.50)				
Peer Observations					No	No	None	N/A
Ingroup	38.53	(27.52)	35.36	(23.82)				
Outgroup	46.98	(30.03)	44.57	(25.15)				
Toy Preference	1.71	(0.84)	1.93	(0.76)	Yes	No	E and C	No
Novel Person Preference	1.94	(0.92)	1.52	(1.11)	No	Yes	*E only*	No

Note. E = experimental group, C = control group. A = age, SE = self-esteem.