Being Helpful to Other-Gender Peers: School-Age Children's Gender-Based Intergroup Prosocial Behavior

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Abstract

Promoting prosocial behavior toward those who are dissimilar from oneself is an urgent contemporary issue. Because children spend much time in same-gender relationships, promoting other-gender prosociality could help them develop more inclusive relationships. Our goal in the present research was to better understand the extent to which elementary-school age children consider their own and the recipient's gender in prosocial behavior. Participants included 515 3rd, 4th, and 5th graders (263, 51.1% boys, $M_{\text{ageinyears}}$ = 9.08, *SD* = 1.00) surveyed in the fall (T1) and spring (T2). We assessed children's prosociality using peer nominations. We found that gender mattered: children showed an ingroup bias in prosociality favoring members of their own gender group. Having other-gender friendships positively predicted children's prosocial behavior toward other-gender peers. Children's felt similarity to other-gender peers was not directly, but indirectly, related to their prosocial behavior toward other-gender peers. Findings shed light on potential pathways to fostering school-age children's gender-based prosociality.

Keywords: prosocial behavior, gender, gender similarity, intergroup relations, intergroup contact, cross-group friendships

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Given the current sociopolitical and cultural climate of divisiveness among groups, promoting youth's prosocial behavior – or voluntary behaviors aimed to benefit others – toward diverse others is vital to promote belongingness, harmony, and to offset hostility. In this study, we focused on children's gender-based prosocial behaviors. Gender is one of the earliest social groups with which children identify (Bennett et al., 2000; Martin & Halverson, 1981; Zosuls et al., 2009). During early childhood, children show strong behavioral preferences for their own gender group (Martin & Fabes, 2001; Xiao et al., 2021), and by middle childhood, gender-based biases are quite engrained and robust (Maccoby, 1998). Given the relevance of gender during childhood, it is important to promote children's prosocial behavior toward both same-gender and other-gender peers.

School-age children exhibit greater prosocial behavior toward same-gender than other-gender peers (Dunham et al., 2011; Peplak et al., 2017; Renno & Shutts, 2015) but how these patterns develop during childhood remains unknown. Thus, our first goal was to examine how children's prosociality toward same- and other-gender peers changes over time. To do this, we explored longitudinal changes (within-person change over one year) and cross-sectional differences (between-person differences across three age groups) for prosociality directed to both same- and other-gender peers. It is worth noting that vignettes or survey questions have often been used in prior research (e.g., Carlo et al., 1992; 2003; Ladd & Profilet, 1996; Weller & Lagattuta, 2014); in this study, we used peer nomination methods, which are relatively novel for studying prosociality and have good ecological validity by capturing children's prosociality in real life.

Our second goal was to examine factors related to individual differences in prosociality toward same- and other-gender peers because a deeper understanding of this issue could inform strategies to enhance children's gender-based prosociality. To do so, we drew on Social Identity Theory (SIT; Tajfel, 1978; Turner et al., 1987) and Intergroup Contact Theory (Allport, 1954). In particular, SIT led us to consider both categorical gender (e.g., being a girl) and the subtler variations in perceived gender similarity in predicting prosociality. For instance, if a girl feels similar to both same- and other-gender peers, she may be less biased in her gender-based prosocial behavior compared to a girl who feels similar only to same-gender peers. Drawing on ICT, we explored whether having more vs fewer other-gender friends may predict prosociality directed to other-gender peers.

Change Over Time: Gender-based Prosociality

Group identity plays a role in many intergroup decisions. Researchers have shown that young children prefer ingroup over outgroup members based on ephemeral similarities (e.g., same T-shirt color; Dunham et al., 2011) or on more stable group memberships, such as gender (Weller & Lagattuta, 2014). These preferences are seen in the research on prosocial behavior, too: Experimental studies illustrated that preschoolers (Renno & Shutts, 2015), kindergarteners (Dunham et al., 2011), and school-age children (Weller & Lagattuta, 2014) consistently distribute more resources to same-gender than to other-gender peers (cf. Benenson et al., 2007). But how does children's gender-based prosocial behavior *change* over time?

Young children's prosocial decisions are primarily driven by egocentric concerns (Eisenberg et al., 1983), and when the target of prosocial behavior was unspecified, researchers have found that children generally become more prosocial over childhood (Eisenberg et al., 1983; 1987; Eisenberg & Fabes, 1998). What happens over time for target-specific prosocial

behavior is less clear. Researchers have theorized that children's prosociality might become more selective with age because children become more differentiating as their cognitions and attitudes about behavioral norms mature (see Caplan, 1993; Hay, 1994). Specifically, older children are more likely than younger children to consider the cost, contexts, and recipients of prosocial behavior, as well as their self-interest. Thus, during middle to late childhood, a crucial developmental stage for intergroup relations (Raabe & Beelmann, 2011), the balance between costs and benefits for prosociality may become more strongly related to whether the target is a member of the ingroup or outgroup. For instance, children's prosociality toward same-gender peers may increase as the benefits associated with ingroup bias become more salient, whereas their other-gender prosociality might decrease as children's intergroup attitudes become more mature during middle to late childhood (Caplan, 1993; Flook et al., 2019; Hay, 1994; Killen et al., 2002). Indeed, researchers have found that 11- to 13-year-olds were significantly less likely to want to help a needy unfamiliar child, who is arguably an outgroup member compared to familiar children, than younger children (5- to 10- year olds; Weller & Lagattuta, 2014). Further, this hypothesis maps on to findings concerning gender biases; researchers have shown that young children engage in gender-segregated activities and exhibit strong same-gender preference (Martin & Fabes, 2001; Rose & Rudolph, 2006) and this bias grows considerably over elementary school years (Maccoby & Jacklin, 1987).

Gender Similarity as a Predictor

The second goal of this work was to examine the predictors of children's gender-based prosociality. To our knowledge, this study is the first investigation of the predictors of children's gender-based prosociality. Social identity theorists (Turner et al, 1987) suggest that identity processes are more complex than simply being determined by one's group membership (e.g.,

being a boy); Instead, they are also based on individuals' subjective identification with members of a group because individuals' emotional connectedness with their group motivates their self-defining processes (Ashmore et al., 2004). Therefore, whereas one's gender provides a global view of identity, recent research using a new measure of gender identity has illustrated that individuals also vary in the extent to which they perceive themselves as being similar to each gender group. This research also illustrates that variations in these feelings of similarity are predictive of children's intergroup behavior and adjustment (Martin et al., 2017). Research with adults indicated that bias is reduced when individuals perceive higher levels of intergroup similarities on race/ethnicity/nationality (Cocker, 2004; Crisp & Beck, 2005), and when they create common ingroup identities (Crisp et al., 2010). Additionally, one study illustrates that children are attentive to intergroup information and that they relate this to their own identity: Brown and colleagues (2010) found that White children who identified with racial/ethnic minority labels (e.g., Italian-American) showed more positive attitudes toward racial outgroups than children who identified as White or American. Nevertheless, it remains an open question whether children attend to variations in their felt gender similarity and whether this information relates to their prosocial ingroup biases.

Other-gender Friendship as a Predictor

What factors might change one's view of an outgroup, thereby decreasing bias toward the group? Intergroup Contact Theory (ICT) posits that contact with outgroup members should be effective in reducing prejudice toward those groups (Allport, 1954). Hundreds of studies have confirmed the power of intergroup contact to reduce negative attitudes and increase trust in the outgroup (Pettigrew & Tropp, 2006). However, it is only recently that researchers have considered that these same intergroup contact processes would be effective for gender groups.

The initial hesitancy in considering this possibly was the idea that gender groups intermingle more than racial/ethnic/nationalities that are commonly studied using ICT. However, likely due to high levels of gender segregation across the lifespan (Mehta & Strough, 2009), gender has been found to act similarly to other groupings at least under certain circumstances, such as when children are assigned other-gender "buddies" with whom they engage in fun activities (Hanish et al., 2021; Martin, Fabes, et al., 2017) or when they have prolonged and high-quality contact through friendships (Halim et al., 2021). Indeed, other-gender friendships likely positively predict children's gender-based prosocial behavior because friendships generally involve prolonged contact over time and positive affect, and have been found to be conducive to better intergroup attitudes across racial categories (Graham et al., 2014; Pettigrew, 1997).

In the present study, we assess two levels of other-gender friendships. We examined one-sided, non-reciprocated friendships and reciprocated mutual friendships in which both parties claim the friendship. There is reason to think both types of relationships will serve to bolster ingroup biases. One-sided friendships may bolster ingroup biases as the person perceives that the other person is a friend (regardless of gender). This idea is supported by research showing that even short-term positive other-gender interactions had positive impact on children's attitudes and behaviors (Hanish et al., 2021). For reciprocated mutual friendships, these effects likely are even stronger because these friendships are generally characterized by greater emotional support (e.g., Ladd & Troop-Gordon, 2003; Vaquera & Kao, 2008). Indeed, other-gender friendships likely positively predict children's gender-based prosocial behavior because friendships generally involve prolonged contact over time and positive affect, and have been found to be particularly conducive to better intergroup attitudes across racial categories (Graham et al., 2014; Pettigrew, 1997).

The Current Study

Our current goals were to examine developmental changes in, and predictors of, children's gender-based prosocial behavior. To address the developmental question, two patterns were analyzed: First, the intraindividual developmental pattern (Research Question 1; RQ1), was assessed by examining changes in children's prosocial behavior toward same- and other-gender peers over one school year. We hypothesized that children's prosociality toward same-gender peers would increase over time. However, prosociality toward other-gender peers might decline over time (Hypothesis 1; H1). Second, we assessed age-related differences (RQ2) by comparing mean-level grade differences on same- and other-gender prosociality across Grades 3 to 5. We expected older children to be more biased in their prosociality (i.e., higher same- and lower other-gender) than younger children (H2).

As for the predictors of children's gender-based prosociality (RQ3), three predictors were examined: children's gender, their perceived similarity to same- and other-gender peers (which is a more nuanced perspective of gender identity), and other-gender friendships. Based on SIT and ICT, we predicted gender-matching patterns such that children would be more prosocial to same- than to other-gender peers (H3a). Further, children's other-gender similarity should positively predict their other-gender prosociality (H3b), and children's other-gender friendships should positively predict other-gender prosociality (H3c). Importantly, we expected that mutual friendships would be a stronger predictor than one-sided friendships in relation to children's other-gender prosociality.

The final exploratory question concerned potential moderators. Specifically, we tested potential moderation effects of gender and grade for the proposed relations among gender, gender similarity, other-gender friendships, and gender-based prosociality (RQ4 & RQ5).

Method

Participants

Participants were 515 elementary school students from a larger study designed to understand how children's gender-based peer relationships are related to their academic outcomes. Students were recruited from 26 classrooms in three public, co-educational, elementary schools in the Southwest U.S. Among them, 262 (51.1%) were identified by parents as boys, 1 child identified as a transgender boy was included as a boy, and the remainder were identified as girls. Participating students were elementary school-aged (M_{age} = 9.08 years, *SD* = 1.00, ranged from 7 years to 12 years). Students were from economically diverse backgrounds with 54%, 32%, and 40% of students (in each school) eligible for free lunch, and 11%, 7%, and 11% of students eligible for reduced lunch, similar to state average. Students were relatively equally divided among grades 3 (33.8%), 4 (34.4%), and 5 (31.8%). Further, 42.9% were Hispanic/Latino. Racially, 47.2% were White, 14% were African American, 8.7% were American Indian or Alaska Native, 1.7% were Asian, .4% were Native Hawaiian or Pacific Islander, 9.9% were multiracial, .4% were other, and 17.7% were unknown. In this study, 48 parameters were estimated in the main path analyses. Following Kline's (1998) suggestions, a sample size of 515 is sufficient because it exceeds ten times of estimated parameters (i.e., 480).

Procedures

Study procedures were approved by the University's Institutional Review Board (IRB) and participating school districts. Parents were given information about the study and asked to provide consent to have their child involved in the study. Only students with parental consent and child assent participated. Teachers also provided consent. There were 20 (out of 26) participating classes that had at least a 60% consent/participation rate, with an average consent

rate of 75.7%. The other six classes had lower consent rates that ranged from 40% to 58.6%, with an average consent rate of 52.9%. The number of participating students across the 26 classrooms ranged from 10 to 25 (M = 18.9, SD = 3.79).

In October (T1) and May (T2), students filled out a paper-and-pencil survey about themselves for approximately one hour in grade-level large group settings within the school. Students who were absent completed the survey at a later date. To enhance privacy, each student had a privacy board and the research team mixed the seating for students from different classrooms and children were seated apart at a distance when possible. The surveys included self-report measures as well as peers' ratings and nominations. One research staff person read the questionnaires aloud and students were instructed to follow along and answer the questions. Several trained research assistants answered students' questions and facilitated the assessment process (e.g., ensured students' privacy). At both time points, teachers filled out an online survey about their students. Students received a small gift for their time. Teachers and schools received modest compensation for their participation.

Measures

Gender Identity Measures

Gender (categorical). Parents identified the gender of their children. Children also reported their gender. We used parents' reports of gender because there were more parent reported data than student reported data.

Gender Similarity. Using the 5-point Perceived Similarity to Own-gender and Other-gender Peers measure (Martin, Andrews, et al., 2017), children rated how similar they felt to girls and to boys with five items (e.g., "How similar do you feel to [girls/boys]?") on a five-point scale (*0 = not at all* to *4 = a lot*). Composite scores assessing perceived similarity to same- and

other-gender peers were created by recoding (from girl/boy to same-/other-gender items based on parent-reported gender) and averaging the relevant items. Cronbach's alphas were .86 and .88 for T1 and T2 same-gender similarity, and .82 and .82 for T1 and T2 other-gender similarity, respectively (see more details in Table 3). This measure has been used widely with children and adolescents (including gender diverse youth) since its development (e.g., Andrews et al., 2019; Endejik et al., 2019; Fast & Olson, 2018; Gülgöz et al., 2019).

Prosociality toward Same- and Other-Gender Peers

At each time point, children's prosocial tendencies toward same- and other-gender peers were assessed with peers' nominations, a method commonly used to examine children's social behaviors and social relations (Coie et al., 1990; Jiang & Cillessen, 2005), including prosocial behavior (e.g., Eisenberg et al., 1997; van Rijsewijk et al., 2016). Students were given a roster (in alphabetical order) of all students in the classroom and were asked to write down the names of students in their class who liked to help them (e.g., share a pencil, help figure out a problem) if they need it (i.e., incoming nominations). Specifically, the prompt read "When you are working together in class on a project, some kids help others and some do not. For instance, some kids would share a pencil or help figure out a problem when they are working together in class. Tell us the boys or girls in your class who like to help you if you need it. Write their names below." There were 10 blank slots for children to write down names. Students were told that they could write down as many names as they wanted.

To assess students' prosociality *toward* same- and other-gender peers, we recoded the nominations such that the nominees of prosociality would be the actor/participant of this study. It is worth noting that asking the question this way (versus directly ask students to nominate who they would help) helps to avoid issues related to social desirability. Further, wording the item as

"likes to help" versus "help" could better capture children's spontaneous prosocial tendencies because "help" itself may reflect compliant prosocial behavior (e.g., help when the teacher asks) in addition to spontaneous behaviors. We computed two continuous scores of prosociality toward same- and other-gender peers, both of which accounted for class size and class gender composition. Same-gender prosocial tendency was created by dividing the number of same-gender nominations received by the number of participating same-gender peers within a class (i.e., the number of same-gender peers making nominations) minus one (self-nominations were removed from analyses) which allowed for classroom standardization. Other-gender prosocial tendency was created similarity with the exception that self-nomination was not removed (since one is the same-gender as themselves). Children who received no nominations received zeros for same- and other-gender prosociality. These scores represented the levels of prosociality with higher scores indicating greater same- or other-gender prosociality.

Friendships with Same- and Other-Gender Peers

Similar to the procedure for prosocial nomination, at each time point, children were asked to write down the names of up to 10 of their friends in the classroom. We calculated children's same- and other-gender friendships (two continuous variables) based on the nominations they made. Specifically, the same- or other-gender friendships variable was created by dividing the number of same- or other- gender nominations a child made by the number of same- or other-gender peers in their classroom (i.e., including both participating and nonparticipating students), and minus one for same-gender but not other-gender calculations. Only reciprocated nominations were included when calculating reciprocal nominations. Children who made no nominations (for friendships) received zeros for both same- and other-gender friendships. Because peer nominations were obtained at the end of the survey, children who left all nomination sections of

the survey blank received missing codes for these variables (*ns* = 11 and 10 at T1 and T2). These scores can be interpreted as amount/levels of same- and other-gender friendships a child has, with higher scores indicating more same- or other-gender friendships. Finally, 39.7% and 39.5% of friendship nominations were reciprocal at T1 and T2.

Results

Attrition Analyses

Using a Pearson chi-square test, we found that the 27 students who had data at T1 but attrited from the study at T2 did not differ from other students in race (i.e., White versus all Other), ethnicity (i.e., Hispanic/Latino versus non-Hispanic/Latino/Other), gender, or grade. Independent sample *t*-tests showed that attrited children had higher T1same-gender similarity than non-attrited children, $t(36) = -3.97$, $p < .001$, Cohen's $d = .58$, *M*s = 3.58 and 3.09, *SD*s = .57 and 1.05 for attrited and non-attrited children, respectively, suggesting missing was at random (MAR), but not completely at random (Enders, 2010).

Descriptive Analyses

First, we provided the average numbers of nominations for both prosociality and friendship with the overall sample, by child gender, and by grade in Table 1. Table 2 presents correlations, means, and standard deviations for the main variables. Overall, there is a gender-matching pattern among focal variables in expected directions (e.g., same-gender friendships were positively correlated with same-gender prosocial behavior). However, children's gender similarities were not always correlated with their prosociality in the expected manner (e.g., other-gender similarity at T2 was positively correlated with both same- and other-gender prosociality). Though both friendships and prosociality were based on peer-nominations, they were only weakly correlated.

We tested for gender differences. There were some gender differences in prosociality, girls scored higher on same-gender prosociality than did boys at T1 and T2. For other-gender prosociality, at T1 but not T2, girls scored higher than did boys (see Figure 1). Further, as Table 3 shows, at both assessments, girls (*Ms* = 2.84 and 2.96, *SDs* = 1.06 and .91 at T1 and T2) scored lower on same-gender similarity than boys (*Ms* = 3.40 and 3.45, *SDs* = .92 and .84 at T1 and T2); girls (*Ms* = 1.07 and 1.23, *SDs* = .96 and .88 at T1 and T2) also scored higher on other-gender similarity than boys (*Ms* = .62 and .63, *SDs* = .76 and .71 at T1 and T2). Thus, gender was included as a covariate in all path analyses. Grade was also considered as a covariate in inferential analyses: Grade differences for same- and other-gender prosociality are presented under RQ2. Further, Hispanic children (*M* = .81, *SD* = .78) reported lower T2 other-gender similarity than non-Hispanic children (*M* = 1.01, *SD* = .89), $F(1, 416) = 5.75$, $p = .017$. And Hispanic children (*M* = .08, *SD* = .12) also reported lower T2 other-gender friendship than non-Hispanic children (*M* = .11, *SD* = .15), $F(1, 444) = 4.52$, $p = .034$. Thus, grade and ethnicity were included as covariates in all models. There were no significant ethnic differences for same- and other-gender prosociality.

Inferential Analyses

We used *Mplus* 8.4 for inferential analyses with the Robust Maximum Likelihood estimator (MLR) to handle missing data. We accounted for the 7.3% and 11.1% of class-level variance on same- and other-gender prosociality using the TYPE = Complex function.

RQ1. Within-Person Rate of Change

To examine within-person rate of change in children's prosociality (RQ1), we estimated two-wave latent change score models (2W-LCS; Henk & Castro-Schilo, 2015), which are less biased than difference score approaches, by creating an error-free latent variable of change and

avoiding the direct calculation of difference scores. We found partial support for H1 that prosociality toward same-gender would increase and prosociality toward other-gender would decrease. Specifically, there was a within-person increase in same-gender prosociality across the school year ($\mu_{\Delta same} = .06$, $p < .001$). However, we found that there was no change in other-gender prosociality ($\mu_{\Delta other} = .02$, $p = .079$).

RQ2. Mean-level Differences among 3rd, 4th, and 5th Graders

Using Analysis of Variance (ANOVA), we found partial support for H2 that children in higher grades would be more prosocial toward same-gender and less prosocial toward other-gender peers than lower-grade children. As shown in Figure 2, 4th and 5th graders had higher same-gender prosociality than did 3rd graders, although 4th and 5th graders did not differ from each other. As for other-gender prosociality, 4th graders scored significantly higher than 3rd graders and 5th graders, although 3rd and 5th graders did not differ. In summary, older children (i.e., 4th and 5th graders) had higher same-gender prosociality than did younger children (i.e., 3rd graders) as expected, but 4th graders had the highest other-gender prosociality.

RQ3. Predictors of Other-gender Prosocial Behavior

H3a was supported: At both time points, children showed higher same-gender than other-gender prosociality (i.e., a gender ingroup bias pattern), $t(514) = 12.75$, $p < .001$, at T1, and $t(507) = 15.42$, $p < .001$, at T2 (see Table 2). Further, within gender, both girls and boys exhibited more same- than other-gender prosociality, at T1, $t(251) = 13.25$ and $t(262) = 4.81$, $ps < .001$, for girls and boys, respectively. At T2, $t(248) = 14.40$ and $t(258) = 7.75$, $ps < .001$, for girls and boys, respectively.

As for H3b and H3c, we estimated a path model including construct stability and covariates for both same-gender and other-gender prosociality because they were expected to be

correlated. Such specifications allowed for stringent tests of unique predictions. We found partial support for the role of other-gender similarity: T1 other-gender similarity (β = -.01, p = .806, *S.E.* = .04) did not predict T2 other-gender prosociality although they were correlated concurrently at T2. Similarly, H3c was partially supported: both outgoing and reciprocal other-gender friendships positively related to other-gender prosociality concurrently at both assessments. T1 outgoing other-gender friendships were not related to T2 other-gender prosociality (β = .09, p = .092, *S.E.* = .05), however, T1 reciprocal other-gender friendships positively predicted T2 other-gender prosocial behavior (β = .22, p < .001, *S.E.* = .05).

In summary, for the overall sample, other-gender similarity did not predict children's gender-based prosociality, only reciprocal/mutual other-friendships but not outgoing other-gender friendships, positively predicted T2 other-gender prosociality.

RQ4 and RQ5. Child Gender and Grade as Moderators

To explore the moderating role of child gender (e.g., boys) and grade (RQs 4 & 5) on the proposed relations, we conducted two multiple group analyses with child gender, and with grade, as the grouping variables. First, an unconstrained model was estimated in which all parameters of path coefficients were allowed to be freely estimated for each subgroup (e.g., boys and girls). We then used the Wald chi-square test to examine subgroup differences.

Multigroup analyses yielded no gender moderations (with unidirectional and mutual friendship nominations). However, there was a grade difference: T1 outgoing other-gender friendships and T2other-gender prosociality were positively related for 5rd graders (β = .19, p = .01) and 4th graders (β = .19, p = .04) but not 3rd graders (β = -.11, p = .16). Further, this path differed significantly between 3rd and 4th graders (z = -.42, p = .03) and between 3rd and 5th graders (z = -.35, p = .01). The difference between 3rd and 5th graders remained significant after

adjusting for Bonferroni correction ($\alpha < .05/3 = .017$). These grade moderation findings were replicated with mutual friendship nominations but with larger magnitude (βs = .10, .19, .36 and *ps* = .354, .000, .000 for 3rd, 4th, and 5th graders, respectively).

In sum, T1 other-gender friendships positively predicted T2 other-gender prosociality for older children (4th and 5th graders) only using both outgoing and mutual/reciprocal friendship nominations. Further, with outgoing friendship nominations only, for 5th graders, other-gender similarity predicted greater outgoing friendship nominations, which in turn predicted greater other-gender prosociality.

Post-hoc Analyses

We further explored the relation between gender similarity and prosociality in post-hoc analyses by considering the possibility that other-gender similarity might be related to prosociality not directly, but indirectly, via increased friendships. We tested this mediation link using bias-corrected bootstrapping method and resampling 1,000 samples (MacKinnon, 2008). The model was set up similar to the previous model with an additional contemporaneous path from T2 friendship to T2 prosociality (Valente & MacKinnon, 2017). There was no significant longitudinal indirect effects linking T1 gender similarity and T2 other-gender prosociality through T2 other-gender friendships for the overall sample. However, a different picture emerged when we explored gender and grade as moderators of the indirect relations. As Table 4 shows, T1 other-gender similarity predicted T2 other-gender prosociality via T2other-gender outgoing friendships for 5th graders only.

Discussion

Our goals in the present research was to better understand the development of elementary-school age children's prosocial behavior toward same- and other-gender peers. We

expected prosociality toward same-gender peers to increase with grade and over time, and these expectations were largely confirmed. However, children's prosocial behavior toward other-gender peers remained stable. We also tested two theory-driven predictors of other-gender prosocial behavior and found some supportive evidence. The implications of these findings are discussed below.

Developmental Patterns: Cross-Sectional and Longitudinal Evidence

As expected, both within-person longitudinal analyses across one year and cross-sectional analyses across three grades indicated that same-gender prosociality increased over time and was generally higher for students in higher grades. This pattern is congruent with prior work on the developmental pattern of children's global prosociality when the targets of prosociality are unspecified (Eisenberg et al., 2015). Interestingly, children did not show a decrease in other-gender prosociality over time. That is, while children became more biased in their gender-based prosocial behavior, such change was driven by the increase in same-gender prosocial behavior and not by a decrease in other-gender prosocial behavior. A closer examination of other-gender prosociality showed unexpected grade differences: Children reported low levels of other-gender prosociality overall. Why 4th graders had the highest other-gender prosociality is perplexing, thus, replication of these findings is important in future work.

Gender Identity and Intergroup Prosociality

Children at all grade levels favored same-gender peers in prosociality. This finding is not surprising because gender is highly salient for children (Leaper, 2014). However, the continuous gender similarity measure was not a strong predictor of prosociality for children of every grade as we expected. Gender identity is a measure of more subtle variations of gender and for that reason may be a less clear motivator for intergroup behavior than very salient, clearly bounded

group memberships. As children get older, they become more capable of making decisions on the basis of more nuanced information than they can in the earlier years, including that related to gender (Martin et al., 1990). Our post-hoc analyses of mediation processes suggested that, despite the lack of direct associations, gender similarity was indirectly related to prosocial behavior through increased other-gender, unidirectional (rather than mutual), friendships for the oldest group –5th graders. To the extent that this finding holds in future research, it may provide a way to effectively foster children and adolescents' friendships toward other-gender peers by emphasizing the similarities, rather than differences, across genders.

As for the difference in outgoing and mutual friendships, this is likely because similarity to other-gender peers may begin the initiation of friendship toward someone even if both parties do not yet see the relationship as a friendship. A longitudinal design that follows children into adolescence would clarify whether a model that includes mutual friends as mediators is evident for older youth.

Other-gender Friendships Promote Intergroup Prosociality

Perhaps the most important finding is that, for older children (4th and 5th graders), having more other-gender friendships, even when such friendships were one-sided and not mutual, were related to greater other-gender prosocial behavior regardless of the amount of same-gender friends. This finding extends previous research: Although many studies have tested the intergroup contact hypothesis (Pettigrew & Tropp, 2006), most focused on how contact with outgroup members can improve attitudes rather than change behaviors, as demonstrated here. Whether other-group friendships might influence intergroup behaviors, particularly positive behaviors, has rarely been examined with children (cf. Graham et al., 2014). The current findings suggest that other-gender friendships might not only reduce negative attitudes toward one's

outgroup (other-gender) members (as prior research shows), but also foster positive behavioral tendencies towards them. Fostering prosociality may be particularly effective in promoting overall harmonious social interactions because bias in positive behaviors (i.e., consistently more toward ingroup members) is more pervasive than bias in negative behaviors such as discrimination (Otten & Mummendey, 1999). Given the importance of gender to children (Rogers & Meltzoff, 2017), and the segregated nature of gender-based peer relationships during childhood (Martin & Fabes, 2001), fostering children's other-gender friendships in future intervention work, and in practice, could benefit children's social emotional well-being and promote inclusive and harmonious social interactions. Notably, no gender differences were found in the relations between other-gender friendship and prosociality.

Strengths, Limitations, and Future Directions

The study has several strengths. First, we examined developmental issues concerning children's gender-based intergroup prosocial behavior in two ways: Within-person rate of change (over one school years' time) and between-person cross-sectional differences by grade (across Grades 3 to 5). These analyses provided new insights into how children's intergroup prosocial behavior develops during middle to late childhood, an issue that has received little research attention. Second, we developed hypotheses based on central theories in intergroup research (SIT and ICT) and results provided valuable information expanding both theories. Third, we used state-of-the-art analytic approaches to analyze changes and to specify and estimate indirect effects with two-wave data (MacKinnon et al., 2008; Valente & MacKinnon, 2017). Fourth, we utilized a fine-grained assessment of gender identity thus allowing for understanding within-gender variations rather than between-gender comparisons. As findings showed, there were no gender differences in the relations tested, however, variations in how similar a child felt to other-

gender peers mattered in their other-gender friendships and prosociality highlighting the importance of examining within-gender variabilities in future research. Fifth, using a peer nomination method to assess children's prosocial behavior toward same- and other-gender peers has greater ecological validity than experimental tasks or self-reports and allowed us to capture children's prosocial behavior in daily life. Further, such a method is novel as researchers have often adopted vignettes (e.g., Carlo et al., 1992; Weller & Lagattuta, 2014) and survey questions (e.g., Ladd & Profilet, 1996; Carlo et al., 2003; Xiao et al., 2019) to assess prosociality. Lastly, we assessed two types of friendships – one-sided friendships and mutual/close friendships. Notably, even though both friendships and prosociality were based on peer nominations within the classroom, these constructs were only weakly correlated indicating that children are not simply more prosocial toward their friends.

There also were limitations: Even though we were able to capture within-person change over one academic year's time, to better understand the developmental processes of children's intergroup prosociality requires a long-term longitudinal design, for example, spanning from early childhood to late childhood. Another limitation is the assessment of prosociality: Although having multiple peer reporters is a fairly unbiased approach, peer ratings, like reports by teachers and parents, may be biased favoring girls, consistent with the gender stereotype that girls are more helpful than boys (Eisenberg & Fabes, 1998; Xiao et al., 2019). Further, because not all students participated in peer ratings, children's likelihood of being nominated for prosocial and mutual friendship variables is restricted. As such, there is a need to incorporate multi-method, multi-informant designs in future work. The prosociality measure also focused on school-based situations, including prosocial behaviors across other contexts or situations would allow for deeper understandings of children's intergroup prosocial behavior.

In this study, we examined intergroup prosociality based on gender because gender is one of the most salient and meaningful contexts for intergroup relations (Maccoby, 1998). Gender mattered in prosocial behavior. This work has the potential to inform interventions that promote positive behavior in diverse peer environments. Promoting children's friendships with other-gender peers may not only reduce the bias, discrimination, and victimization towards outgroup members as ICT suggests (Pettigrew & Tropp, 2006), our findings also suggest that this may enhance the likelihood of prosocial behaviors towards the outgroup. The gendered context of intergroup relations is crucial for fully understanding prosociality.

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Table 1

The Number of Outgoing, Incoming, and Reciprocal Nominations for Prosociality and Friendship

	Total			Girls			Boys			3rd graders			4th graders			5th graders		
	Mean (SD)	**Min**	**Max**	**Mean (SD)**	**Min**	**Max**	**Mean (SD)**	**Min**	**Max**	**Mean (SD)**	**Min**	**Max**	**Mean (SD)**	**Min**	**Max**	**Mean (SD)**	**Min**	**Max**
T1SGProsocial(I)	3.20 (1.98)	0.00	9.00	3.60 (1.90)	0.00	9.00	2.50 (1.03)	0.00	8.00	2.43 (1.75)	0.00	6.00	3.33 (2.00)	0.00	8.00	3.52 (2.02)	0.00	9.00
T1OGProsocial(I)	1.81 (1.70)	0.00	9.00	1.93 (1.90)	0.00	9.00	1.60 (1.26)	0.00	5.00	1.24 (1.26)	0.00	5.00	2.37 (1.94)	0.00	9.00	1.62 (1.49)	0.00	6.00
T2SGProsocial(I)	3.46 (1.97)	0.00	8.00	3.79 (1.90)	0.00	8.00	2.99 (1.96)	0.00	8.00	2.84 (1.84)	0.00	7.00	3.91 (1.99)	0.00	8.00	3.40 (1.89)	0.00	8.00
T2OGProsocial(I)	1.69 (1.52)	0.00	8.00	1.73 (1.65)	0.00	8.00	1.64 (1.32)	0.00	5.00	1.54 (1.27)	0.00	5.00	2.03 (1.76)	0.00	8.00	1.37 (1.25)	0.00	4.00
T1SGFriend(O)	3.10 (2.35)	0.00	10.00	3.35 (2.19)	0.00	10.00	2.84 (2.48)	0.00	10.00	2.46 (1.93)	0.00	8.00	3.35 (2.39)	0.00	10.00	3.49 (2.58)	0.00	10.00
T1OGFriend(O)	.73 (1.26)	0.00	8.00	.80 (1.22)	0.00	7.00	.66 (1.29)	0.00	8.00	.67 (1.14)	0.00	7.00	.67 (1.22)	0.00	7.00	.85 (1.40)	0.00	8.00
T1SGFriend(R)	1.80 (1.26)	0.00	7.00	2.02 (1.26)	0.00	7.00	1.52 (1.21)	0.00	7.00	1.44 (.88)	0.00	4.00	1.82 (1.18)	0.00	6.00	2.11 (1.54)	0.00	7.00
T1OGFriend(R)	.28 (.65)	0.00	6.00	.25 (.50)	0.00	2.00	.30 (1.21)	0.00	6.00	.22 (.53)	0.00	3.00	.30 (.73)	0.00	6.00	.30 (.65)	0.00	4.00
T2SGFriend(O)	3.69 (2.73)	0.00	13.00	4.00 (2.74)	0.00	13.00	3.40 (2.69)	0.00	10.00	3.20 (2.42)	0.00	10.00	4.37 (2.99)	0.00	13.00	3.49 (2.62)	0.00	13.00
T2OGFriend(O)	1.19 (1.87)	0.00	16.00	1.39 (2.14)	0.00	16.00	1.00 (1.54)	0.00	7.00	1.08 (1.62)	0.00	10.00	1.27 (1.96)	0.00	16.00	1.23 (2.02)	0.00	16.00
T2SGFriend(R)	2.05 (1.36)	0.00	7.00	2.13 (1.21)	0.00	6.00	1.97 (1.50)	0.00	7.00	1.79 (1.17)	0.00	6.00	2.33 (1.53)	0.00	7.00	2.02 (1.28)	0.00	6.00
T2OGFriend(R)	.40 (.77)	0.00	5.00	.39 (.72)	0.00	3.00	.42 (.82)	0.00	5.00	.44 (.83)	0.00	5.00	.38 (.74)	0.00	5.00	.39 (.74)	0.00	3.00

Note. T1 = fall semester; T2 = spring semester; (O) = Outgoing nominations; (I) = Incoming nominations; (R) = Reciprocal nominations; SGProsocial = same-gender prosociality; OGProsocial = other-gender prosociality; SGFriend = same-gender friendships; OGFriend = other-gender friendships.

Table 2

Descriptive Statistics and Correlations among Main Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 T1SGSimilar	--															
2 T1OGSimilar	-.45***	--														
3 T2SGSimilar	.43***	-.28***	--													
4 T2OGSimilar	-.28***	.47***	-.50***	--												
5 T1SGFriend(O)	.10*	-.01	.10*	-.004	--											
6 T1OGFriend(O)	-.08^{+}	.25***	-.08^{+}	.17***	.19***	--										
7 T2SGFriend(O)	.06	-.04	.11*	.003	.35***	.01	--									
8 T2OGFriend(O)	-.02	.14**	-.12*	.24***	.07	.37***	.31***	--								
9 T1SGFriend(R)	.06	-.03	.09^{+}	-.03	.62***	-.11*	.25***	-.06								
10 T1OGFriend(R)	-.02	.16**	-.05	.16**	-.01	.59***	-.02	.28***								
11 T2SGFriend(R)	.10*	-.001	.09^{+}	-.06	.31***	.05	.59***	.10*	.32***	.02	--					
12 T2OGFriend(R)	-.03	.15**	-.06	.17***	-.05	.30***	-.07	.54***	-.09	.41***	-.03	--				
13 T1SGProsocial	-.05	.04	-.04	.06	.31***	.04	.18***	.02	.49***	.01	.26***	-.02	--			
14 T1OGProsocial	-.002	-.03	.02	.03	.08	.10*	.12**	.08^{+}	.16**	.16**	.20***	.10*	.42***	--		
15 T2SGProsocial	-.03	.02	-.01	.10*	.17***	-.004	.27***	.12**	.32***	.05	.40***	.03	.55***	.41***	--	
16 T2OGProsocial	-.04	.02	-.01	.08^{+}	.09^{+}	.13**	.07	.27***	.20***	.23***	.04	.45***	.30***	.43***	.35***	--
Mean	3.12	.84	3.21	.93	.26	.06	.30	.09	.20	.03	.24	.04	.19	.09	.25	.11
SD	1.03	.89	.91	.85	.19	.10	.22	.14	.14	/06	.15	.08	.19	.12	.20	.14
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	4.00	4.00	4.00	4.00	.83	.64	1.00	1.00	.71	.55	1.00	.63	.89	.82	1.00	.71
N	481	478	456	458	504	504	504	504	366	366	397	397	515	515	508	509

Note. T1 = fall semester; T2 = spring semester; (O) = Outgoing nominations; (R) = Reciprocal nominations; SGSimilar = same-gender similarity; OGSimilar = other-gender similarity; SGFriend = same-gender friendships; OGFriend = other-gender friendships; SGProsocial = same-gender prosociality; OGProsocial = other-gender prosociality.

$^{+}$ $p<.10$. * $p<.05$. ** $p < .01$. *** $p < .001$.

Table 3

Descriptive Information for Gender Similarity by Gender and Grade

	Girls				Boys			
	Mean (SD)	Min	Max	α	Mean (SD)	Min	Max	α
T1 Same-gender similarity	2.84 (1.06)	0.00	4.00	.85	3.40 (.92)	0.00	4.00	.86
T1 Other-gender similarity	1.07 (.96)	0.00	4.00	.83	.62 (.76)	0.00	4.00	.77
T2 Same-gender similarity	2.96 (.91)	0.00	4.00	.87	3.45 (.84)	0.00	4.00	.88
T2 Other-gender similarity	1.23 (.88)	0.00	4.00	.82	.63 (.71)	0.00	3.60	.78

	3rd graders				4th graders				5th graders			
	Mean (SD)	Min	Max	α	Mean (SD)	Min	Max	α	Mean (SD)	Min	Max	α
T1 Same-gender similarity	3.07 (1.15)	0.00	4.00	.86	3.13 (1.01)	0.00	4.00	.86	3.16 (.93)	0.00	4.00	.87
T1 Other-gender similarity	.87 (1.01)	0.00	4.00	.82	.78 (.81)	0.00	4.00	.79	.89 (.86)	0.00	3.40	.84
T2 Same-gender similarity	3.18 (1.03)	0.00	4.00	.91	3.30 (.77)	0.00	4.00	.84	3.15 (.91)	0.00	4.00	.88
T2 Other-gender similarity	.93 (.89)	0.00	4.00	.80	.89 (.82)	0.00	3.60	.83	.98 (.85)	0.00	3.40	.83

Notes. T1 = fall semester; T2 = spring semester; α = Cronbach's alpha

Table 4

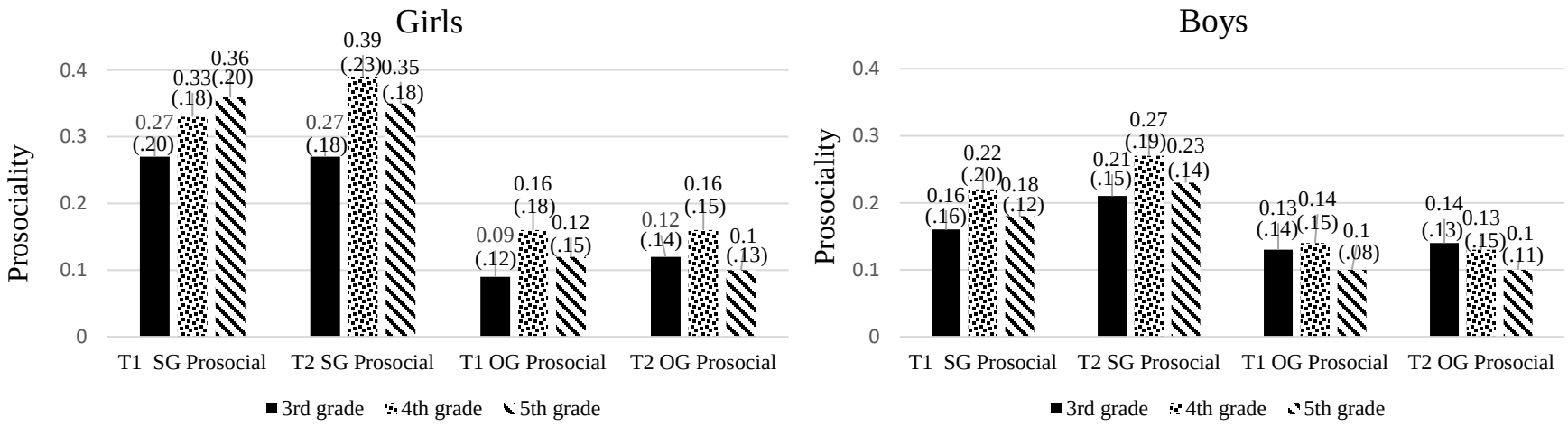
95% Confidence Intervals (CI) for Indirect Effects with T2 Other-Gender Friendships as a Mediator between T1 Other-Gender Similarity and T2 Other-Gender Prosocial Behavior

	Outgoing Friendship	**Mutual Friendship**
	95% CI	**95 CI**
Overall Sample	[-.004, .005]	[-.001, .012]
Gender Moderation		
Girls	[-.002, .011]	[-.002, .014]
Boys	[-.008, .003]	[-.005, .016]
Grade Moderation		
3rd graders	[-.003, .012]	[-.011, .017]
4th graders	[-.013, .003]	[-.009, .037]
5th graders	**[.004, .036]**	[-.016, .026]

Notes. Statistically significant indirect effects are in bold.

Figure 1

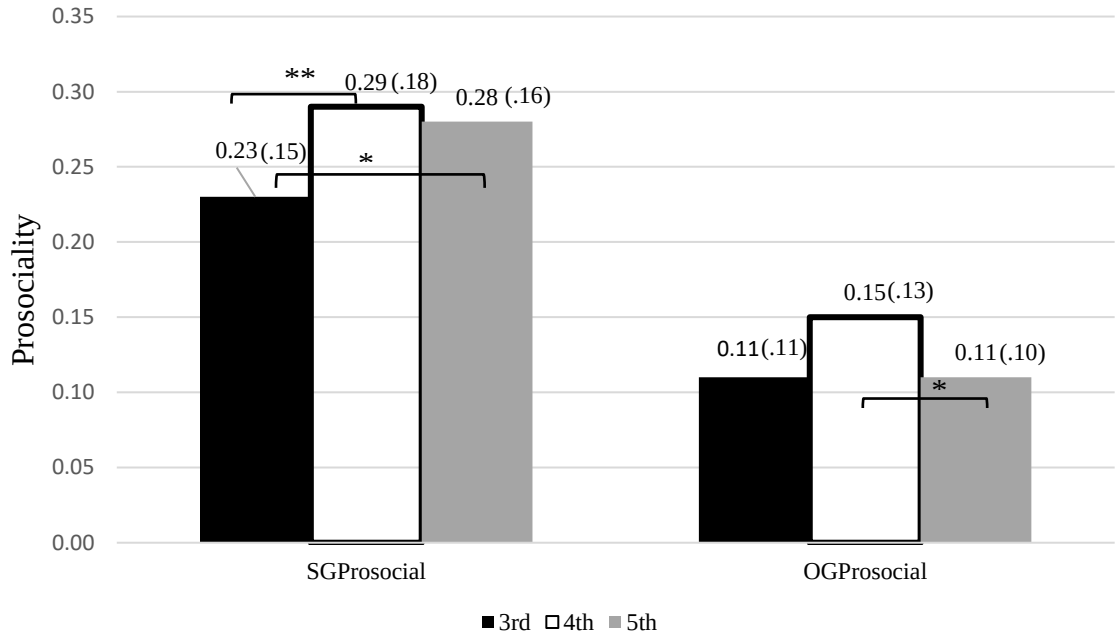
Means (SD) of Same- and Other-gender Prosociality by Gender and Grade



Note. T1 = fall semester; T2 = spring semester; SG Prosocial = same-gender prosocial behavior, OG Prosocial = other-gender prosocial behavior. The possible range of children's intergroup prosocial behavior ranged from 0-1; the y-axis is truncated to more clearly display the mean levels.

Figure 2

Grade Differences in the Means (SD) of Same- and Other-gender Prosociality



Note. * p<.05. ** p < .01.

SGProsocial = same-gender prosociality; OGProsocial = other-gender prosociality; the means were averaged over fall and spring assessments. the y-axis is truncated to more clearly display the pattern.