

The Predictors, Correlates, and Development of Children's Prosocial Behavior toward
Diverse Others

by

(Sonya) Xinyue Xiao

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Approved April 2020 by the
Graduate Supervisory Committee:

Tracy L. Spinrad, Co-Chair
Carol Lynn Martin, Co-Chair
Nancy Eisenberg
Dawn DeLay

ARIZONA STATE UNIVERSITY

May 2020

ABSTRACT

Prosocial behavior refers to voluntary acts done to benefit another. To date, there is little work examining children's prosocial behavior toward outgroup members. Across several multi-method multi-informant data sets, I used various statistical methods (e.g., latent change score analysis, mediation and moderation analyses) to examine the predictors, correlates, and development of children's prosocial behavior toward various outgroup members (e.g., gender, race). In Study 1, I examined the relation between preschoolers' other-gender friendships and their prosocial behavior toward other-gender peers. Findings showed support for the hypothesis that cross-gender friendships are positively associated with children's prosocial behavior toward other-gender peers over time. Further, children's prosocial behavior toward other-gender peers positively predicted children's later gender attitudes suggesting that fostering intergroup prosocial behavior could be a potentially effective solution to reduce intergroup prejudice. To capture the multifaceted nature of social identities, in Study 2, I examined children's prosocial behavior toward various ingroup and outgroup members with the intention of exploring the degree of ingroup-ness and testing the transfer effect of intergroup contact. Findings showed that cross-gender friendships were positively predictive of school-age children's prosocial behavior toward diverse others. Further, cross-race friendships are related to children's diverse prosocial behavior indirectly through children's race-based sympathy. Study 3 extended the previous two studies by testing both Intergroup Contact Theory and Social Identity Theory and taking into consideration the social identity of oneself (versus the targets of prosocial behavior). Specifically, I examined the central component of gender identity: children's perceived same-gender similarity and other-

gender similarity, as well as children's same- and other-gender friendships. Results showed that only intergroup friendships, but not children's gender identity, were related to children's prosocial behavior toward same- and other-gender peers. In sum, this basic research has potential to shed light on ways to promote equity and inclusion across various social groups early in development.

DEDICATION

To my mother, Liying Zhao, who has always been supportive of me.

To my father, Jun Xiao, who loves me and wants the best for me.

To my uncle, Peng Zhao, whom I will miss forever.

ACKNOWLEDGEMENTS

The past four years at ASU have been the best time in my life for I have been able to pursue my passion wholeheartedly, under the care, support, and mentorship of a group of amazing scientists. I am most thankful to my advisor Tracy Spinrad for her tremendous support, guidance, and her faith in me, through thick and thin. Tracy encouraged me to think about my program of research when I started graduate school. This work (Study 2) is possible because she has kindly included measures of interests to me to the larger study she was running. I owe deep gratitude to Carol Martin for including me in her lab, nurturing me to grow both professionally and personally. Data for Studies 1 and 3 in this dissertation come from Carol's projects. I also greatly appreciate all the insightful feedback and unique perspectives Nancy Eisenberg and Dawn DeLay have provided for this dissertation. In addition, I want to thank Natalie Wilkens for her consistent statistical and professional support throughout this journey. My special thanks goes to my family (including the furry one), my friends and colleagues, and my boyfriend Weston Hale, for their endless encouragement, care, and support during this journey. This research was supported by several the T. Denny Sanford Foundation (Study 1), the Diversity Science Initiative Seed Grant in T. Denny Sanford School (Study 2), and by the Institute of Education Sciences through Grants R305A180028 and R305A180086 to Arizona State University (Study 3).

TABLE OF CONTENTS

	Page
LIST OF TABLES.....	vii
LIST OF FIGURES	viii
PREFACE	x
CHAPTER	
1 STUDY 1.....	1
Introduction	1
Method	9
Results.....	16
Discussion	21
2 STUDY 2.....	31
Introduction	31
Method	39
Results.....	47
Discussion	52
3 STUDY 3.....	62
Introduction.....	62
Method	71
Results.....	78
Discussion	88
GENDERAL DISCUSSION	99
REFERENCES	106

APPENDIX	Page
A TABLES	123
B FIGURES	127
C HUMAN SUBJECT IRB APPROVAL DOCUMENTS	146
D MEASURES	154

LIST OF TABLES

Table	Page
S1.1 Descriptive Statistics and Correlations among Main Study Variables for Study 1	124
S2.1 Descriptive Statistics and Correlations among Main Study Variables for Study 2	125
S3.1 Descriptive Statistics and Correlations among Main Study Variables for Study 3	126

LIST OF FIGURES

Figure	Page
1. The Overall Conceptual Model	128
2. Proposed Model for Study 1	129
3. Proposed Model for Study 2	130
4. Proposed Model for Study 3	131
S1.1. An Illustration of Gender Moderating the Relation between Other-gender Affective Attitudes and Other-gender Prosocial Behavior	132
S1.2. The Proposed Mediation Model	133
S1.3. Parameter Estimates of the Original Path Model Depicting All Hypothesized Paths	134
S1.4. Parameter Estimates of the Bidirectional Model	135
S2.1. The Conceptual Model of Study 2	136
S2.2. Proposed Model to Test in Study 2	137
S2.3. Parameter Estimates of the Direct Relations between Cross-group Friendships and Children’s Prosocial Behavior toward Diverse Others	138
S2.4. Significant Paths in the Mediation Model Testing Hypothesis 2a and 2b	139
S3.1. An Illustration of Gender Moderating the Relation between Perceived Other-gender Similarity and Other-gender Prosocial Behavior	140
S3.2. An Illustration of Gender Moderating the Relation between Other-gender Friendships and Other-gender Prosocial Behavior	141
S3.3. Proposed Model Predicting Same-gender Prosocial Behavior	142

Figure	Page
S3.4. Parameter Estimates for the Unidimensional Same-gender Prosocial Behavior Model	143
S3.5. Parameter Estimates for the Bidirectional Other-gender Prosocial Behavior Model	144
S3.6. Parameter Estimates for the Bidirectional Intergroup Prosocial Behavior Final Model	145

PREFACE

General Introduction

The Multidimensional Nature of Prosocial and Moral Behavior

With the onset of research focusing on youth's positive development, children's prosocial behaviors have received considerable research attention. Prosocial behavior refers to voluntary acts to benefit another (Eisenberg, Spinrad, & Knafo-Noam, 2015). Researchers have been interested in identifying factors contributing to children's global prosocial behavior (see Eisenberg et al., 2015 for a review). However, it is important to treat prosocial behavior as a multidimensional construct, as there are many types of prosocial behaviors (e.g., sharing, comforting, helping; see Eisenberg & Fabes, 1998), and prosocial behavior might be enacted toward various targets (e.g., family, friends, strangers; see Padilla-Walker, & Christensen, 2011). Because the types of prosocial behavior, as well as prosocial behavior towards various recipients, might be motivated by unique concerns, unpacking prosocial behavior (i.e., types, recipients) could provide valuable information for researchers, practitioners, socializers, and policymakers to foster positive behavior and positive peer relationships.

Recently, there has been increasing research on prosocial behavior towards different recipients; however, the bulk of this work has been with adolescents, and recipients studied mainly included family, friends, and strangers (e.g., Padilla-Walker, & Christensen, 2011). There is less work examining another aspect of recipients: ingroup vs. outgroup membership (e.g., Dunham, Baron, Carey, 2011), and it remains understudied how children's differential prosocial behavior develops in childhood.

Adding to the growing literature in intergroup prosocial behavior, I examined prosocial behavior toward gender and racial ingroup and outgroup members. In addition, I examined specific types of prosocial behavior including sharing and helping as well as global prosocial behavior.

Why Gender and Race?

Gender and race are among the most basic group memberships that children learn about themselves and others (Maccoby, 1986; Katz & Kofkin, 1997). Due to the salience of these categories, structural inequality, and the increasingly diverse social context, many children in the U.S. experience and engage in gender- and/or race-based stereotyping, prejudice, discrimination, and social exclusion (Brown & Bigler, 2005; National Center for Education Statistics, 2018; Ruble & Martin, 1998; Rutland & Killen, 2015). Because prosocial behavior in general has been found to be associated with a host of social emotional outcomes, such as positive peer relationships (Narjuewucz, Doyle, & Bredgen, 2001) and lower aggressive behaviors and deviance (Carlo, Mestre, Samper, Tur, & Armenta, 2010), prosocial behavior toward outgroup members could offset negative intergroup dynamics and improve equity.

Further, various identities do not exist independently as individuals have multiple identities (e.g., white male); thus, it is important to examine various identities together to understand the mechanisms, development, and predictors of, prosocial behavior toward ingroup and outgroup members. Developmentally, children's understanding of gender and race emerge very early (age two to three for gender, and age four to five for race/ethnicity; see Martin & Ruble, 2009; Slaughter-Defoe, 2012). Thus, understanding

the mechanisms underlying these basic intergroup processes could shed light on other intergroup dynamics (e.g., those based on religion).

Theoretical Background

The current studies are guided by two broad theories central to intergroup research: Intergroup Contact Theory (ICT; Allport, 1954) and Social Identity Theory (SIT; Tajfel, 1978). Central to intergroup relations is oneself (and/or one's groups) and another (person or group of people) who is of the same or different social group(s). In this sense, ICT and SIT each attend to one aspect of intergroup relations: ICT focuses on social interactions with others and their impact on one's own attitudes, whereas SIT focuses on cognitions about the self. Together, these theories provide a comprehensive framework for intergroup research.

Intergroup contact theory. According to ICT, positive intergroup contact, particularly intergroup friendships, facilitates favorable intergroup attitudes toward members of that group (Fabes, Hanish, & Martin, 2003; Knifsend & Juvonen, 2017; Rutland, Killen, & Abrams, 2010; Rutland & Killen, 2015). In addition, researchers argued that the effect of intergroup friendships might be generalized and transferred to individuals' intergroup attitudes toward members of other groups as well (Pettigrew, 2009). Work in this area has largely focused on cognitive and negative aspects of intergroup relations (e.g., attitudes, prejudice, stereotyping; Davies, Tropp, Aron, Pettigrew, & Wright, 2011; Pettigrew & Troop, 2006); it remains important to examine the positive and behavioral aspects of intergroup behaviors such as prosocial behavior (Fiske, 2000). Further, although there are numerous intergroup studies guided by ICT, gender has rarely been treated as a social group category in this literature (see Pettigrew

& Troop, 2006, a meta-analysis). Due to the pervasiveness of gender segregation in early childhood, the role of other-gender friendships in relation to their prosocial behavior toward other-gender peers might differ for younger and older children. Specifically, it might be more beneficial for younger children to have other-gender friendships than for older children as other-gender interactions become more common approaching adolescence. Thus, it is important to examine these relations across a wide age span in childhood. Lastly, the majority of work in this area was conducted with adults, and there is little empirical work directly assessing children's gender-based intergroup relations (e.g., Halim et al., 2017; Zosuls et al., 2011). In three studies, I examined the role of children's cross-gender friendships in relation to children's gender-based prosocial behavior, as well as how having these friendships might transfer to children's prosocial behavior toward various ingroup and outgroup members.

Predictors of intergroup prosocial behavior. Numerous studies on ICT have shown that intergroup friendships predict changes in intergroup attitudes (see Davies et al., 2011 a meta-analysis). Thus, the relation between intergroup friendships and intergroup prosocial behavior might be explained by the role of intergroup attitudes, as attitudes are commonly closely linked to behaviors (e.g., Dovidio, Brigham, Johnson, & Gaertner, 1996). Specifically, this relation might vary depends on the type of attitudes examined because various attitudes might function differentially (Amodio & Devine, 2006; Hofmann, Gawronski, Gschwendner, & Schmitt, 2005). Researchers can gain a comprehensive understanding of the predictors of children's intergroup prosocial behavior by including different types of attitudes. I examined both cognitive (e.g.,

judgments, beliefs, and stereotypes about a group) and affective (e.g., the degree of liking a group) attitudes in these studies.

In addition, I distinguished moral emotions (i.e., sympathy, empathy) from intergroup attitudes (i.e., positive feeling towards groups, stereotyped attitudes) and to examine the intermediate role of intergroup moral emotions (e.g., sympathy) in explaining the relation between children's intergroup friendships and intergroup prosocial behavior. As ICT posits, by spending time or developing friendships with members of the outgroups, individuals could expand their emotion understanding of others (e.g., sympathy), which in turn would foster their prosocial behavior toward others. Thus, moral emotions such as sympathy might mediate the relation between intergroup friendships and intergroup prosocial behavior.

Social identity theory. Broadly, SIT posits that individuals' social identities are directly related to their intergroup attitudes and behaviors (e.g., Abrams, Rutland, & Cameron, 2003) although to my knowledge there has been no work examining children's social identities (e.g., gender identity) and their intergroup behavior. Further, the identification process is not dichotomous (at least not for all group memberships). For example, children's thinking of gender in-group vs. out-group may become more nuanced depending on their perceived similarities with the genders (Martin, Andrews, England, Zosuls, & Ruble, 2017). Therefore, it is of theoretical and empirical importance to examine the associations between children's group identities and their intergroup attitudes and behaviors (Figure 1 presents the conceptual model).

Processes of intergroup prosocial behavior. In thinking about the relation between social identity and intergroup prosocial behavior, it is important to consider the potential

mediating role of intergroup attitudes and intergroup moral emotions. According to SIT, the group identification process often leads to biased cognitions and attitudes about members of the ingroup and the outgroup. Regarding intergroup moral emotions (e.g., sympathy), because group identification process determines individuals' felt closeness to others (e.g., psychological distance toward their outgroup members; Stephan & Finlay, 1999), individuals might be less in tune with, or sympathetic to, the experiences of outgroup members than ingroup member (Batson et al., 1997; Staub, 2003). Therefore, it would be important to test these processes in empirical research to deepen our understanding of how social identities might influence intergroup prosocial behavior.

Three Dissertation Studies

It is necessary to carry out multiple studies in order to gain a comprehensive understanding of the processes and predictors of children's intergroup prosocial behavior. Specifically, I examined developmental periods spanning across childhood (e.g., from preschool to elementary age, both cross-sectionally and longitudinally). I also included both focused examination of individual group memberships, as well as exploratory examination of multiple group memberships. In addition, I examined various dimensions of prosocial behavior (e.g., costly and non-costly, global and specific types), sympathy (e.g., global versus target specific), and intergroup attitudes (e.g., cognitive and affective).

In three studies, I examined several paths presented in the conceptual model including the direct relations between group identities and intergroup prosocial behavior, and between friendships and intergroup prosocial behavior. I also examined the mediating processes in explaining these proposed direct relations.

The first study focuses on testing parts of ICT by examining children's intergroup attitudes (i.e., cognitive and affective attitudes) as mediators of the longitudinal relation between intergroup friendships to prosocial behavior. Specifically, I examined 1) the development of preschoolers' global prosocial behavior toward same- and other-gender peers, and 2) the associations among children's cross-gender friendships, their gender-based attitudes, and prosocial behavior toward other-gender peers both concurrently and longitudinally (See Figure 2).

The second study extended the first study by including two group memberships: gender and race. In this study, I focused on a specific type of prosocial behavior: costly sharing behavior. In addition to examining the direct relations between intergroup friendships and intergroup prosocial behavior (both gender and race), I also tested the potential transfer effect from cross-gender friendships to prosocial behavior toward other outgroups (e.g., race), and from cross-race friendships to prosocial behavior toward other outgroups (e.g., gender). Lastly, I tested the roles of gender-based intergroup attitudes (i.e., stereotype beliefs) and race-based intergroup moral emotions (i.e., sympathy) to explain the potential indirect relation between intergroup friendships and intergroup prosocial behavior (See Figure 3).

In the third study, I tested both SIT and ICT by examining the unique role of gender-identity and cross-gender friendships in school-age children's helping behavior toward same- and other-gender peers. Specifically, I focused on the central component of gender identity: children's perceived same-gender similarity and other-gender similarity (Martin, Andrews, et al., 2017). This study extended the first two studies by examining changes over time (two-wave longitudinal assessment) as well as age differences (i.e.,

third, fourth, and fifth graders) of school-age children's intergroup prosocial behavior (See Figure 4).

In summary, these studies can provide informative findings regarding the predictors, changes, and age differences in children's prosocial behavior toward various ingroup and outgroup members.

STUDY 1

Preschoolers' Cross-Gender Friendships and Their Gender-Based

Intergroup Prosocial Behavior: A Longitudinal Study

Prosocial behavior refers to voluntary acts to benefit another (Eisenberg, Spinrad, & Knafo-Noam, 2015). In addition to benefiting others directly, prosocial behavior is also an important social skill which is positively related to a host of social emotional outcomes including perspective taking ability (Caprara & Steca, 2005), peer acceptance (Layous, Nelson, Oberle, Schonert-Reichl, & Lyubomirsky, 2012), academic achievement (Caprara et al., 2000), as well as lower aggressive behaviors and deviance (Carlo, Mestre, Samper, Tur, & Armenta, 2014; Padilla-Walker, Coyne, Collier, & Nielson, 2015). Promoting prosocial behavior is particularly important for children from low-income families for their lack of resources (i.e., health care, food and housing instability) and high risks of family stress (Currie, 2005; Duncan, Brooks-Gunn, & Klebanov, 1994).

Prosocial behavior is a multidimensional construct and various types of prosocial behavior are driven by different concerns (Eisenberg, Vanschyndel, & Spinrad, 2016). Specifically, researchers have shown that adolescents engage in differential prosocial behavior toward family, friends, and strangers (Padilla-Walker & Carlo, 2014; Padilla-Walker & Christensen, 2011). However, there is little work on prosocial behavior toward various recipients in early childhood, particularly prosocial behavior toward ingroup and outgroup members.

Early childhood is a period when children rapidly develop their cognitions about social categories (Ruble & Martin, 1998; Shutts, Roben, & Spelke, 2013) and engage in

more selective behavior than in toddlerhood (see Caplan, 1993, Hay, 1994). Thus, preschool is an important period for children to start engaging in differential prosocial behavior toward ingroups and outgroups based on salient group categories, and such early differential behavior may persist throughout development and have important implications for individuals' treatment of others based on their group memberships. The goal of this study is to investigate the development and predictors of preschoolers' prosocial behavior toward gender outgroup members.

Gender: A Salient Group Category for Preschoolers

The current study focuses on one particular social category: Gender. Gender is one of the earliest group memberships with which children identify, and it is one of the most salient group categories in young children's lives (Maccoby, 1986; Rogers & Meltzoff, 2017). Children in early childhood spontaneously categorize others by gender (Bennett & Sani, 2003; Bennett, Sani, Hopkins, Agostini, & Mallucchi, 2000). Therefore, children's relationships with, and behaviors toward, same and other-gender peers are likely the earliest forms of intergroup relations.

Decades of research has shown that gender segregation starts from early childhood and persists into adulthood, and it has been demonstrated across diverse contexts (Maccoby, 1998; Mehta & Strough, 2009; Whiting & Edwards, 1988). Numerous researchers have shown that children exhibit strong behavioral (e.g., Martin & Fabes, 2001; Peplak, Song, Colasante, & Malti, 2017) and cognitive (e.g., Gasparini, Sette, Baumgartner, Martin, & Fabes, 2015; Martin, 1989; Xiao, Cook, Martin, Nielson, & Field, 2019; Zosuls et al., 2011; Zucker, Wilson-Smith, Kurita, & Stern, 1995) preferences for their own gender group. Through repeated interactions with same-gender

peers in gender-segregated activities, what Maccoby (1998) referred to as “boys’ and girls’ cultures” are formed and gender norms arise in these peer groups.

Further, the segregated gender norms are also accepted and further reinforced by various socializers such as peers (e.g., Xiao, Cook, Martin, & Nielson, 2019), parents (e.g., Gelman, Taylor, & Nguyen, 2004), and teachers (e.g., Hilliard & Liben, 2010) likely because gender-segregated activities are not commonly considered as group-based exclusion by socializers. For example, in a series of studies, Killen and colleagues showed that children were more likely to accept exclusion based on gender than exclusion based on race (Killen, Lee-Kim, McGlothlin, Stangor, & Helwig, 2002). Due to the pervasive and entrenched nature of children’s gender-segregated peer relationships, it is likely that children engage in differential prosocial behavior toward same- and other-gender peers. To date, there are only a few studies have focused on young children’s gender-based intergroup prosocial behavior, and results indicated that both boys and girls share more with same-gender peers than with other-gender peers in middle childhood (e.g., Dunham, Baron, & Carey, 2011; Renno & Shutts, 2015; Weller & Lagattuta, 2014). Further, consistent with theorists’ rationale on the development of intergroup prosocial behavior (see Caplan, 1993; Hay, 1994), Weller and Lagattuta (2014) showed some evidence that older children were less likely to make helping predictions toward outgroup members than younger children. However, it remains unclear how young children’s prosocial behavior toward other-gender peers develops over time using longitudinal data. Further, participants of these studies were primarily children from White, educated, middle-class, families. It is possible that prosocial behavior toward outgroup members

are not very adaptive for children from low income families given their limited resources (White, Nair, & Bradley, 2017).

Other-Gender Friendships and Gendered Intergroup Prosocial Behavior

To investigate children's prosocial behavior toward other-gender peers, I draw from the literature on intergroup relations, specifically, Intergroup Contact Theory (ICT; Allport, 1954). ICT is an important theory in understanding intergroup relations and has been empirically tested in numerous studies across developmental stages (see Pettigrew & Tropp, 2006, a meta-analysis). Originally, Allport (1954) proposed that contact with outgroup members would mitigate negative attitudes toward outgroups (e.g., prejudice) if it involved equal status, common goals, no competition, and institutional support.

Expanding Allport's theory, Pettigrew (1997) argued that cross-group friendship is a particularly effective type of contact as it involves contact over time and across situations for individuals to develop meaningful and close relationships with members of outgroups. Although much work in intergroup relations focuses on the cognitive aspects of intergroup attitudes, it is possible that cross-group friendships might also improve the behavioral aspects of intergroup attitudes such as intergroup prosocial behavior.

Children's friendships with other-gender peers might directly and positively predict their prosocial behavior toward other-gender peers. Friendship, by definition, implies prosociality and reciprocity (Caplan & Hay, 1989; Levitt, Weber, Clark, & McDonnell, 1985). Researchers have shown that children are more prosocial toward friends than non-friends or strangers and other ingroup members than non-friends and outgroup members (Buhrmester, Goldfarb, & Cantrell, 1992; Fujisawa, Kutsukake, & Hasegawa, 2008; Moore, 2009; Paulus & Moore, 2014). Perhaps because children mostly

befriend same-gender peers, their higher levels of sharing behavior toward same-gender peers likely stem from the expected reciprocity from same-gender peers, as Renno and Shutts (2015) showed in their study. Cross-gender friendships might also be predictive of increased opportunities to engage in prosocial behavior toward other-gender peers. Further, children who have other-gender friends (in addition to same-gender friends) might have broader repertoire of social skills than children who only have same-gender friends because boys and girls develop different interaction styles and behavioral preferences (Rose & Rudolph, 2006). For example, friendships with boys might provide girls the opportunities to learn agentic prosocial behavior because boys tend to exhibit prosocial behavior characterized by agency and masculinity such as physical helping and defending (Hine & Leman, 2013).

To my knowledge, there is no research examining the relation between other-gender friendships and children's gender-based intergroup prosocial behavior. However, there is some evidence that children's mixed-gender play (i.e., play with both same- and other-gender peers) at preschool positively predicted their global prosocial behavior at kindergarten (Xiao, Alexander, & Fabes, 2018). This finding indicates that children who play with both same-and other-gender peers might be more prosocial toward both same- and other- gender peers over time. For example, researchers showed that imagined intergroup contact was positively related to positive intergroup behaviors such as the willingness to sit closer to and work with outgroup members (see Miles & Crisp, 2014, a meta-analysis).

Gendered intergroup attitudes as mediators. In addition to the direct relation between other-gender friendships and children's gendered intergroup prosocial behavior,

this relation might also be explained by children's attitudes about same- and other-gender peers. Consider the relation between cross-group friendships and attitudes: Although there is some evidence that the relation between cross-group friendships and intergroup attitudes is bidirectional, researchers generally showed a stronger prediction from contact to attitudes in experimental studies as well as longitudinal studies (see Pettigrew & Tropp, 2006, a meta-analysis). Further, the directionality of the relation is supported by the effectiveness of intervention studies (at least regarding race/ethnicity; see Lemmer & Wagner, 2015 a meta-analysis).

In various meta-analyses across hundreds of studies, researchers rarely examined gender as a group category in intergroup research. Specifically, in these studies, group categories generally include race/ethnicity, religion, physically disabled, mentally disabled, elderly, and sexual orientation (e.g., Davies et al., 2011; Pettigrew & Tropp, 2006). Gender has not been considered as an intergroup category perhaps because males and females generally are considered in "contact" throughout the lifespan and across contexts, unlike members of other group memberships (e.g., Whites and Blacks). Even though individuals are no doubt exposed to both genders across development (Mehta & Strough, 2009), the pervasiveness of gender segregation underscores the potential benefit of intergroup contact to improved gender relationships (see Martin, Fabes, et al., 2017 for an intervention). Thus, friendships with other-gender peers might be particularly effective in improving gendered intergroup relations such as attitudes toward other-gender peers and prosocial behavior toward other-gender peers over time. For example, one recent study showed that cross-gender friendships were positively related to school-age children's positive attitudes toward other-gender peers (Halim, Martin, Andrews, Zosuls,

& Ruble, under review) Thus, it is promising and important to examine how friendships with other-gender peers are related to prosocial behavior toward other-gender peers, and whether children's attitudes toward other-gender peers might mediate this relation.

In terms of attitudes, based on prior work, other-gender friendships likely improve both affective and cognitive attitudes toward other-gender peers although the effects are likely stronger for affective attitudes than for cognitive attitudes (see Davies et al., 2011). Affective attitudes refer to one's emotional responses to a group (e.g., degree of liking). Cognitive attitudes, however, refer to one's perceptions, judgments, beliefs, and stereotypes about a group (Bigler & Liben, 2007; Eagly & Chaiken, 1998; Stangor, Sullivan, & Ford, 1991). Thus, affective attitudes toward other-gender peers might be a particularly important factor explaining the relation between other-gender friendships and gendered intergroup prosocial behavior.

Gender as a moderator. Given the segregated gender norms of young children's social lives (Maccoby, 1998), and given the relatively more rigid gender norms in boys' peer groups compared to girls' groups (Banerjee & Lintern, 2000), it is possible that boys encounter more barriers, and more peer criticism, to approach other-gender peers, and to act prosocially toward other-gender peers, than do girls (in interacting with boys). In other words, perhaps girls' prosocial acts toward boys are not considered cross-gender behaviors (which elicits peer policing behaviors) but instead it might be considered a gender-typed (i.e., appropriate) behavior by peers because being nice is consistent with traditional female gender roles (Tisak, Holub, & Tisak, 2007). Therefore, the positive relation between gendered intergroup attitudes (e.g., liking other-gender peers) and

intergroup prosocial behavior is likely stronger for girls than for boys (see Figure S1.1 for an example).

The Current Study

Given the increasing diversity in our society, intergroup prosocial behavior becomes an important aspect of children's social competence and can have important implications for children's social relationships and well-being. However, prior research on children's prosocial behavior has generally focused on global prosocial behavior, and there are only several experimental studies focused on children's prosocial behavior toward ingroup and outgroup members. These studies did not examine these associations over time and were conducted primarily among White children from middle-class families. In this study, I will examine the correlates and predictors of prosocial behavior toward other-gender peers in a group of preschoolers from low income families.

I aimed to examine four research questions. First, how does preschoolers' prosocial behavior toward other-gender peers change over time? I hypothesized that children's prosocial behavior toward outgroup members might decrease over time because it is thought that children's behavior become increasingly selective (Hypothesis 1; Hay, 1994). Second, how do other-gender friendships relate to children's prosocial behavior toward gender outgroups? Drawing from the rich literature on intergroup relations, cross-group friendships are effective in improving intergroup relations across various types of group memberships, thus, other-gender friendships might also be positively related to children's prosocial behavior toward other-gender peers both concurrently and longitudinally (Hypothesis 2a). Further, how are children's attitudes about gender, both affective and cognitive, related to their gendered intergroup prosocial

behavior? I expected that both affective and cognitive attitudes about other-gender peers would be positively related to children's prosocial behavior toward other-gender peers both concurrently and longitudinally. However, based on prior work (Davies et al., 2011), affective attitudes might be more strongly related to prosocial behavior than cognitive attitudes (Hypothesis 2b). Furthermore, I expected that attitudes about gender would mediate the relation between other-gender friendships and gendered intergroup prosocial behavior (Hypothesis 2c). And third, are the examined relations different for boys and girls? I hypothesized that the path from both cognitive and affective attitudes toward other-gender peers to prosocial behavior toward other-gender peers might be stronger for girls than for boys (Hypothesis 3).

Method

Participants

Participants of the study were from a larger intervention study designed to foster peer interactions at school. Two cohorts of preschool-age children (N = 140) were recruited from eight half-day public preschool classrooms in a large, metropolitan area of the Southwest. Five of the classrooms were selected as intervention groups and three were control groups. The research team collaborated with local school district representatives to invite preschool teachers to participate in the study. Teachers recruited families at parent-teacher meetings at the beginning of each semester, and 93% of parents consented in participation.

In this study, I utilized both pretest (T1) and posttest (T2) data. The final sample was 140 children (53% male), with a mean age at pretest of 56.45 months (SD = 4.66,

range from 37 to 63 months with 94% at least 50 months at pretest). Five children stopped attending school for idiosyncratic reasons and their data were not collected at T2. The majority of participants were Mexican or Mexican-American (77.8%), with relatively few reported as African-American (5.9 %), Anglo-American (4.4 %), Native-American (2.2 %), or Asian (0.7%), and race/ethnicity was indicated as “other” or unreported for the remaining 8.9% of the sample. Overall, the sample was low-income, with a relatively high percentage of children eligible for free and reduced lunch programs at each of the schools ($M = 91.58\%$, $SD = 5.01\%$), as reported by the school district.

Procedures

The project was reviewed and approved by Institutional Review Board of the university. The study was conducted during the spring semester each year so that children would have had adequate time to establish relationships with their classmates. Teachers (at both time points) and parents¹ (only at T1) filled out questionnaires about children’s characteristics and peer relationships. Measures focused on children’s peer attitudes, behaviors, and friendships with same- and other-sex peers. Children took part in peer nominations, interviews, and were observed throughout the spring semester, from January until early May. Specifically, trained observers (4-6 per year; female) conducted scan observations multiple times a day, two to three times each week for approximately 14 weeks to capture children’s moment-to-moment social behaviors and play partners. In addition to observing children, observers were also asked to complete questionnaires about children’s characteristics and social behaviors at both pretest and posttest given that

¹ Only 118 parents filled out the surveys; therefore, analyses with parent-report as the predictor had a smaller sample size of 118.

they spent extensive time observing the participating children. The present study analyses do not include observational data; however, observers' ratings of children's behaviors will be used. Teachers and parents received a modest stipend for filling out the questionnaire measures. Children received prizes for their time.

Measures

Children's friendships with other-gender peers reported by parents and teachers. At T1, parents reported children's other-gender friendships by answering questions about the number of [girl/boy] friends the participating child has in two settings: at school, and at home/neighborhood, separately (see Zosuls et al., 2014). There were four questions in total on a 5-point Likert scale ranging from 0 (none/almost none) to 4 (almost all/all). At both T1 and T2, teachers answered the same questions about children's other-gender friends at school (but not at home) because it is thought that teachers might not be aware of children's friendships beyond school setting. Two (single-item) variables were created for parents and teachers separately: other-gender friends at home, and other-gender friends at school. Parents' reports of children's friendships at home and at school were weakly correlated $r(107) = .197, p < .05$ and thus were treated as separate variables. Parents and teachers did not agree with each other, for example, parent's report of children's other-gender friendships at school was not correlated with teacher's report of children's other-gender friendships, $r(112) = .128, p = .175$.

Children's friendships with other-gender peers rated by observers. At both time points, classroom observers reported the gender of children's play partners around the middle of the semester to allow sufficient time for the observers to get familiar with participating children's behavior. Specifically, observers responded to the items "This

child plays with [girls/boys]" using a 5-point Likert scale (0 = not at all true, 4 = very true). This item was averaged with teacher-reported other-gender friendships to create the other-gender friendship composite because they were positively and significantly correlated at both time points ($r(136) = .186, p < .05$ and $r(132) = .194, p < .05$ at T1 and T2, respectively). I also note that observer reported other-gender friendships were either not correlated, or negatively correlated, with parent-reported other-gender friendships (see Footnote 4).

Children's affective gender attitudes toward other-gender peers. At both time points, children were asked to rate their feelings about other-gender peers on a 4-point smiley face response scale (from a frowny face to a smiley face indicating "not at all" to "a lot"; adapted from Yee & Brown, 1994). Higher scores indicate more liking. For example, a frowny face would be coded as "0 = not at all" which is interpreted as disliking. Specifically, there were two questions: "How do you feel about [boys/girls]?" I recoded the items to represent children's affective attitudes toward same/other-gender peers, and only other-gender affective attitudes were included in the current study.

Children's cognitive gender attitudes toward other-gender peers. Children reported their attitudes toward boys and girls by answering four questions about girls and boys separately: "Do you think [boys/girls] are nice?" "Do you think [boys/girls] are mean?" (adapted from Doyle & Aboud, 1995). The questions were rated on a 3-point scale, children were first asked Yes/No ("No" was coded as 0) and if they answered Yes, were asked Just a Little (coded 1) or A Lot (coded 2). All items were recoded to other-gender items (e.g., think other-gender peers are nice/mean). At T1, other-gender "mean" item and other-gender "nice" items were not correlated, $r(132) = -.159, p = .067$, at T2,

they were correlated, $r(130) = -.228, p < .01$. Given these items are theoretically related, I reversed coded the “mean” item and averaged them to create the cognitive attitudes composites such that higher scores indicate more positive attitudes².

Children’s prosocial behavior toward other-gender peers. At both time points, teachers reported children’s intergroup gender-based prosocial tendencies using a total of seven items adapted from the Child Behavior Scale (CBS; Ladd & Profilet, 1996) to reflect the target of prosocial behavior. Each item was administered twice: toward girls and boys. The items were rated on three-point scales (0 = doesn’t apply, 1 = applies sometimes, 2 = certainly applies). Among them, only four items³ reflected prosocial behavior and were averaged to create the composite used in the analyses (the other three items reflected empathic concern and emotion recognition). These items showed high internal consistencies ($\alpha = .794$ and $.780$ at T1 and T2, respectively).

Analytic Plan

Due to the potential confounding role of the intervention on the study variables, I first examined whether there were significant intervention effects (i.e., whether the class was an intervention or control group) with independent samples t-tests. Further, I included intervention status as covariates in all analyses. All analyses were conducted using Mplus version 8.2 (Muthén & Muthén, 2017) with the Robust Maximum Likelihood (MLR) estimator to adjust for standard errors and account for missing data because about 13% of data were missing on parent-reported variables.

² I also tested all models with these items separated, results did not differ.

³ “This child is cooperative with [girls/boys]”; “This child helps [girls/boys]”; “This child offers help or comfort when [boys/girls] are upset”; “This child is kind toward [girls/boys]”.

To test the first research question regarding how children's prosocial behavior toward other-gender peers changes over time, I estimated a two-wave latent change score model (2W-LCS; Henk & Castro-Schilo, 2015; Valente & MacKinnon, 2017). Specifically, the autoregression path between T1 and T2 variables was fixed at 1, and the correlation of T1 and T2 variables was fixed at 0. The latent change score was specified to regress on T2 variable and this path coefficient was also fixed at 1. In addition, the residual and intercept of the T2 variable were fixed at zero. This method is deemed more appropriate (i.e., less biased) than traditional methods of differences score calculations. Specifically, by avoiding the direct calculation of difference scores, 2W-LCS results in an error-free latent variable of change. Further, the mean of the latent variable would indicate the change over time, and the variance of the latent variable would indicate the variability in within-person change. This strategy allows for further testing of within-person differences. The latent change score analysis was only used for this developmental question and was not used for subsequent analyses.

To test the second and the third research questions regarding the relations of other-gender friendships with gender attitudes (cognitive and affective), I followed the two-step approach to examine the proposed Structural Equation Model (SEM; Anderson & Gerbing, 1988). I first tried to form latent variables for other-gender friendships indicated by parent-report (only at T1), teacher-report, and observer rating. To do this, I performed confirmatory factor analysis (CFA) to estimate measurement models. To assess model fit, I used the Chi-Square statistic, the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Model fit was acceptable when the CFI was greater than .90,

the RMSEA had a value less than .08, and the SRMR had a value less than .10 (Hu & Bentler, 1999). Individual observed variables (i.e., teacher report, observer report, parent report of children's other-gender friendships at home, and parent report of children's other-gender friendships at school) were used when latent variables could not be formed. Then, I estimated the structural model by including all the proposed regression paths detailed below. In addition, bidirectional paths were tested to examine alternative models.

To examine the proposed multiple mediator model with two waves of data, I followed the recommendation of MacKinnon's by using bias-corrected bootstrapping method to estimate the significant indirect effect by resampling 1000 samples (MacKinnon, Lockwood, & Williams, 2004). I specified a model in which T2 other-gender prosocial behavior was the outcome variable, T1 other-gender friendships were the predictors, and T2 cognitive, and affective attitudes were mediators. In addition, I controlled for construct stabilities. Endogenous variables were allowed to covary.

Specifically, the direct relation from children's other-gender friendships to their gender-based intergroup prosocial behavior will be specified as path c, the path from T1 other-gender friendships to T2 cognitive attitudes, and T1 other-gender friendships to T2 affective attitudes as paths a1 and a2. The contemporaneous path from T2 affective attitudes to T2 other-gender prosocial behavior, and from T2 cognitive attitudes to T2 other-gender prosocial behavior were considered as paths b1 and b2 (see Figure S1.2).

Indirect effects (i.e., a1b1 and a2b2) were estimated by using the percentile bootstrapping method with 95% confidence intervals (CI) recommended by MacKinnon (2008). If zero is included in the CI, then I fail to reject the null hypothesis that there is

no significant mediation effect. If zero is not included in the CI, we reject the null hypothesis. That is, there are significant indirect effects.

To examine how the proposed relations differ for boys and girls, I tested child gender as a moderator and conducted multiple group analyses with gender as the grouping variable (0 = girl, 1 = boy). Specifically, I first estimated an unconstrained mediation model in which all parameters were freely estimated for boys and girls. Then, I set cross-group equality constraints and estimated a fully constrained model. I use Chi-Square difference test to examine the model fit and to make decisions to constrain certain paths by releasing one path at a time according to modification indices.

Results

Descriptive Analyses

Descriptive statistics (mean, standard deviation, normality and actual range) and correlations among the main variables are presented in Table S1.1. As can be seen, variables were mostly normally distributed with minimal missing data except parent-reported friendships. Overall, as expected, teacher/observer reported other-gender friendships were positively correlated with children's other-gender prosocial behavior at both time points; however, parent-reported other-gender friendships were not correlated with children's other-gender prosocial behavior. Children's cognitive and affective attitudes were sometimes, but not consistently, correlated with children's prosocial behavior toward other-gender peers.

Relations between potential control variables and the study variables were examined. Age in months (at T1) was positively correlated with prosocial behavior at both T1 and T2 and marginally positively correlated with T1 and T2 other-gender

friendships reported by teachers and observers; thus, age was included as a covariate predicting T2 prosocial behavior and friendships. Independent samples t-test showed that intervention group did not differ from control group in all study variables except T2 other-gender prosocial behavior, $t(133) = -2.04, p < .05$, such that the intervention group had significantly higher prosocial behavior than the control group. Thus, intervention effect was included as a covariate in all analyses. Further, although there were no statistically significant gender differences across all variables, there was a marginally significant gender difference for T2 prosocial behavior, favoring girls, $t(133) = 1.93, p = .056$, T2 other-gender friendships reported by teachers and observers favoring girls, $t(133) = 1.76, p = .080$, and T2 other-gender affective attitudes (i.e., liking) favoring boys, $t(131) = -1.68, p = .095$. As such, gender was included as a covariate predicting these three outcome variables.

Inferential Analyses

I first tested a measurement model to examine children's other-gender friendships as a latent variable at T1 and T2. Specifically, there were four indicators (i.e., teacher, observer, parent-home, parent-school). Results showed various estimation and convergence issues that were likely due to weak, and sometimes negative, correlation among teacher-, parent-, and observer- reported other-gender friendships⁴. Thus, I created two composites of other-gender friendships by standardizing and averaging teacher-report and observer-report of friendships, and by combining parent-report of children's

⁴ Observer and teacher rating of other-gender friendships were positively correlated, $r(136) = .19, p < .05$, parent reported children's other-gender friends at home and at school were positively correlated, $r(107) = .19, p < .05$. However, neither of the parent-reported variables was correlated with teacher-reported friendships. Further, parent-reported friendships at school was not correlated with observers' rating, and parent-reported friendships at home was negatively correlated with observer's rating, $r(113) = -.20, p < .05$.

friendships at home and school. Correlation analyses showed that parent-reported friendship was not significantly correlated with teacher-and-observer-reported friendship, $r(119) = -.07, p = .487$, and $r(115) = .02, p = .849$, at T1 and T2, respectively. Thus, these two composites of friendships were included in the same model as observed variables.

Other-gender friendships, attitudes, and prosocial behavior. The same path analysis was conducted to test Hypothesis 1 (i.e., other-gender friendships would be uniquely and positively related to children's prosocial behavior toward other-gender peers both concurrently and longitudinally) and Hypothesis 2a (i.e., both affective and cognitive gender attitudes would be positively related to children's other-gender prosocial behavior both concurrently and longitudinally, and affective attitudes would be more strongly related to prosocial behavior than cognitive attitudes). All hypothesized paths were included in this path model (see Figure S1.3), MLR was used as the estimator, endogenous variables were allowed to covary, further, to maximize sample size, I estimated the means of exogenous variables. Estimation terminated normally. This (unidimensional) model showed decent global fit and local fit, $\chi^2(23) = 20.17, p = .632$, CFI = 1.00, SRMR = .04, RMSEA = .00 [.00, .06]. No respecifications were applied. An alternative model was estimated to include bidirectional paths from other-gender prosocial behavior to attitudes and other-gender friendships (see Figure S1.4). Satorra-Bentler Chi-square difference test showed that the alternative model fit the data better than the first model, $\chi^2 \text{dif}(3) = 7.07, p = .07$, and thus, this model was kept as the final model. This final model showed satisfactory global fit and local fit, $\chi^2(20) = 12.03, p = .915$, CFI = 1.00, SRMR = .04, RMSEA = .00 [.00, .03], and therefore no respecifications were applied.

In the final model, at both time points, other-gender friendships and other-gender prosocial behavior were positively correlated for teacher/observer-reported friendships but not for parent-reported friendships; however, other-gender friendships (regardless of reporter) did not predict children's prosocial behavior toward other-gender peers across time (Hypothesis 1 partially supported). Interestingly, intervention effect (i.e., pairing children up with other-gender peers) was significantly related to children's prosocial behavior over time such that intervention group was higher on prosocial behavior than control group. I did not test intervention as a moderator because due to the small cell size for control group (i.e., five out of eight classrooms were in intervention group).

Although teacher/observer-reported other-gender friendships were positively correlated with children's cognitive attitudes at T1, these relations were not significant in the model. Furthermore, neither cognitive nor affective gender attitudes was predictive of children's prosocial behavior toward other-gender peers across time; However, cognitive attitudes were positively correlated with other-gender prosocial behavior at T1 (Hypothesis 2a partially supported). Lastly, results showed that T1 other-gender prosocial behavior was positively and significantly predictive of T2 affective gender attitudes ($\beta = .25, p < .01$) controlling for construct stability and covariates. Overall, covariates and predictors explained 57%, 36%, and 22% of variance for other-gender prosocial behavior, teacher/observer-reported other-gender friendships, and affective gender attitudes, respectively; however, only 3% of variance was explained for cognitive gender attitudes.

Testing indirect relations. Bootstrapping analyses yielded nonsignificant indirect effects and thus Hypothesis 2b was not supported: Neither cognitive nor affective gender attitudes mediated the relation between other-gender friendships and gendered intergroup

prosocial behavior regardless of reporters. Specifically, for cognitive attitudes, bootstrapping analyses showed 95% CI [-.021, .008] for teacher/observer report and 95% CI [-.006, .011] for parent report; for affective gender attitudes, 95% CI [-.024, .006] for teacher/observer report, and 95% CI [-.004, .018] for parent report. This model showed decent fit, $\chi^2(23) = 21.46$, $p = .553$, CFI = 1.00, SRMR = .04, RMSEA = .00 [.00, .06].

Gender as a moderator. To examine child gender as a moderator, I conducted multiple group analyses with the final path model determined in the previous step (i.e., Figure S1.4; child gender was removed as a covariate). In this model, there were 65 girls and 75 boys. First, I used Satorra-Bentler Chi-square difference tests to compare model fit between the fully constrained model and the freely estimated model: $\chi^2_{dif}(30) = 19.41$, $p = .931$, suggesting that the fully constrained model fit the population matrix equally well as the freely estimated model. Thus, the fully constrained model was kept, and I would conclude that there was no gender moderation. Thus, Hypothesis 3 was not supported.

In summary, contrary to my hypotheses, neither other-gender friendships nor children's cognitive and affective attitudes predicted children's other-gender prosocial behavior over time. Intervention effect was the only significant predictor of children's other-gender prosocial behavior. Further, T1 other-gender prosocial behavior positively predicted T2 affective attitudes toward other-gender peers for both boys and girls. To generalize findings to Latino populations, I conducted analyses using Latinx-only sample. Overall, results of developmental trend and path models were similar to those using the full sample, in terms of statistical significance, with the exception that intervention effect

was not significantly related to T2 other-gender prosocial behavior. Further, I was not able to get reliable estimates for gender moderation analyses due to the small sample size.

Discussion

The primary goal of the current study was to examine the development and predictors of young children's prosocial behavior toward other-gender peers, building on prior literature in intergroup relations and prosocial development. Using multiple methods (i.e., surveys, observations) from multiple informants (i.e., parents, teachers, observers, children), I examined the relation between children's other-gender friendships and other-gender prosocial behavior over one semester. Further, I investigated two aspects of children's gender attitudes (i.e., cognitive and affective) in relation to children's other-gender friendships and their prosocial behavior toward other-gender peers. The data came from an intervention study involving teachers' employment of peer "buddies" for one semester, although the efficacy of the intervention was not the focus of the current investigation. The sample of the study comprised of low-income children and almost eighty percent of the children were Mexican Americans.

Overall, neither other-gender friendships nor children's cognitive and affective gender attitudes predicted changes in their prosocial behavior toward other-gender peers. However, intervention status was significantly related to children's other-gender prosocial behavior, indicating that when children were explicitly invited to participate in other-gender interactions, they were reported (by teachers) as demonstrating more other-gender prosocial behavior. That is, children in the intervention group were provided with more opportunities to interact with other-gender peers (see Martin, Fabes, et al., 2017 for

details of the intervention program), and in turn, over time, their teachers saw these children as showing more positive behaviors with their other-gender peers. Further, results showed that preschoolers' other-gender prosocial behavior increased over one semester. Below I discuss the findings in detail.

Other-gender Friendships and Children's Other-gender Prosocial Behavior

Children's other-gender friendships (reported by teachers and observers) were positively associated with their prosocial behavior toward other-gender peers within, but not across, time. These constructs were positively correlated at both time points which suggests that the relation between these constructs are stable during preschool age, consistent with previous research on intergroup contact theory (e.g., Davies et al., 2011). Looking at the magnitudes of correlations, they were weaker at Time 2 (.49) than at Time 1 (.54) indicating the possibility that other-gender friendships and other-gender prosocial behavior could become less correlated later in childhood, especially because the assessment interval was only four months.

The fact that these results were not found across time is surprising; However, because the assessments were only about four months apart, the rank-order stability for children's other-gender prosocial behavior was relatively high (zero-order correlation was .74). Perhaps if the assessment intervals had been longer, construct stability would be smaller, and thus it would be statistically easier for children's other-gender friendships to predict changes in other-gender prosocial behavior over time. It is also possible that, as Tropp (2008) suggested, we should consider the quality of friendships, rather than the presence of other-gender friendships because shared activities and companionship could foster emotional bonding and trust. Other researchers also have shown that the quality

and processes (e.g., perceived respect) of cross-group friendships are important indicators of improved intergroup attitudes (e.g., Davies & Aron, 2016; Rastogi & Juvonen, 2019).

Regardless, it was interesting that children in intervention classes were more prosocial toward other-gender peers at T2 (posttest) than children in control classes, even after accounting for construct stability. Given that the intervention program (Buddy-up) involved facilitating children's interactions with other-gender peers in their classroom, this finding is consistent with the intergroup contact hypothesis. In fact, these findings would indicate that explicitly creating opportunities for children to interact with other-gender peers promotes children's positive behaviors toward other-gender peers. In this sense, the finding extends previous literature by showing that the intergroup contact hypothesis might also apply to gender as a social category (Martin, Fabes, et al., 2017). Admittedly, it is also possible that teachers in the invention classrooms were primed to notice children's positive behaviors toward other-gender peers. Moreover, it is worth noting that children's gender attitudes (affective or cognitive) did not change as a result of the intervention, perhaps because behaviors can change before attitudes change. Therefore, whether other-gender interactions promote children's gender-based intergroup prosocial behavior needs to be further examined in future work.

Almost all findings remained the same for the Mexican-American subsample with the exception that intervention effect was not significantly related to children's other-gender prosocial behavior. Aside from the clear drop in statistical power, it is possible that opportunities to interact with other-gender peers are less impactful for Mexican-American children than other children because Mexican Americans tend to endorse more traditional gender role values such as Marianismo and Machismo (Castillo, Perez,

Castillo, & Ghosheh, 2010). However, this speculation cannot be tested with the current study; this topic warrants careful examination in future research.

Children's Cognitive and Affective Attitudes as Mediators

Children's gender attitudes did not mediate the relations between their cross-gender friendships and intergroup prosocial behavior as I expected. A key point to note is that significant statistical mediation effect normally requires both the a path (i.e., the path from cross-gender friendships to gender attitudes) and the b path (i.e., the path from gender attitudes to other-gender prosocial behavior) to be statistically significant (MacKinnon, 2008). In this study, neither the a path nor the b path was statistically significant.

Although the proposed mediation relation has not been examined empirically in previous research (even with group categories other than gender), in this study, the a path is one that we would expect based on the well-established literature on testing ICT (see Davies et al., 2011; Pettigrew & Tropp, 2006). Based on previous research, I expected to find that children's other-gender friendships would be positively related to their cognitive and affective gender attitudes. However, in the present study, children's other-gender friendships were not significantly related to their gender attitudes. Given the prior work on this topic, it is surprising that the commonly assessed contact-attitudes link was not found in this study. Perhaps such finding is related to the young age of these children as much of the work has been done with adults. It is possible that that children's gender-based intergroup relations function differently from other social categories (e.g., race/ethnicity) perhaps due to the pervasive and entrenched nature of gendered relations

(e.g., Mehta & Strough, 2009). However, this finding may be due to the study design when looking at concurrent relations.

Concurrently, teacher-and-observer reported other-gender friendships were positively but weakly correlated with children's cognitive gender attitudes (see Table S1.1). This finding extends previous literature on the effect of intergroup contact on intergroup attitudes because the majority of prior research was done with adults, and gender was rarely examined as a group category in these studies. For example, in a recent meta-analysis by Davies and colleagues (2011), among the 135 studies examined, only 17 involved children. Among these 17 studies, 14 focused on race/ethnicity as a group category, 1 focused on age, 1 on religion, and 1 on nationality. However, children's other-gender friendships were not related to their affective gender attitudes at either time point. These findings are somewhat at odds with previous work, as researchers generally have shown that cross-group friendships were more effective in changing individuals' affective intergroup attitudes rather than cognitive intergroup attitudes (Davies et al., 2011). It is puzzling why affective gender attitudes were not related to children's other-gender friendships, and this question should be examined in future research.

As for the b path in mediation, children's gender attitudes were not related to their prosocial behavior longitudinally. Such finding may reflect some unique characteristics of the current study, particularly the measurement issue of children's other-gender prosocial behavior. Teachers did not differentiate the targets of children's prosocial behavior and instead reported children's global prosocial behavior (see more detailed discussion of this point in the limitations section). As such, it is not surprising that children's gender attitudes were not related to their global (recipient non-specific)

prosocial behavior. Thus, whether and how children's gender attitudes are related to their prosocial behavior toward other-gender peers should be further examined in future research. Concurrently, children's cognitive attitudes at T1 were positively related to their other-gender prosocial behavior at both time points. Thus, although children's cognitive or affective attitudes did not predict later prosocial behavior (i.e., longitudinally) as expected, it appears that prosocial children also tend to hold more positive cognitive attitudes toward other-gender peers. Because human prosocial behavior is often motivated by concerns of reciprocity (Warneken & Tomasello, 2013), it is possible that prosocial children tend to hold more positive beliefs (cognitive attitudes) about others.

Prosocial Behavior Promotes Intergroup Attitudes

One interesting but unexpected finding was that children's other-gender prosocial behavior was positively related to their later affective gender attitudes over and above the stability of constructs. This finding suggests that fostering prosocial behavior (even if it is global unidimensional behavior) could be a potentially effective solution to promote intergroup relations. Previous research has shown that prosocial behavior is positively associated with peer acceptance and well-being (Layous et al., 2012). The current research indicates that acting prosocially might also promote children's own liking of others (e.g., those who are dissimilar from oneself).

Why might prosociality promote children's liking of other-gender peers? One possible explanation is that children's prosocial behavior is largely motivated by concerns of reciprocity. Thus, perhaps when children act prosocially towards others, they expect these individuals to reciprocate and accept them more. Indeed, children tend to

behave prosocially towards those who have helped them before (Dunfield, Kuhlmeier, & Murphy, 2013); those who are previously prosocial to others (Malti, Gummerum, Ongley, Chaparro, Nola, & Bae, 2015); and those who are well-intentioned (Dunfield & Kuhlmeier, 2010). As such, prosocial children might be well-liked by others (both same- and other-gender peers) and therefore, other children might consider the prosocial children to hold positive intentions toward others. Such positive affect could in turn foster prosocial children's greater liking of others. It may also be that when children act prosocially toward others, they likely have positive interactions with others, which in turn could enhance prosocial children's liking of other people.

The Development of Children's Other-gender Prosocial Behavior

To date, researchers have not examined the development of children's intergroup prosocial behavior using longitudinal design. In the current study, preschoolers' prosocial behavior toward other-gender peers increased over time, contrary to my hypothesis. This finding is largely inconsistent with existing research: In the few cross-sectional studies focusing on gender, researchers have shown that school age children show more ingroup gender bias in their helping and sharing behaviors than preschoolers (Dunham et al., 2011; Weller & Lagattuta, 2014). Because teachers did not differentiate the targets of children's prosocial behavior (see more detail in limitations section), it is likely that the finding reflects the developmental trend of children's global (versus target-specific) prosocial behavior which generally increases during childhood (see Eisenberg et al., 2015, a review). Therefore, to elucidate the developmental trend of children's other-gender prosocial behavior, longitudinal work, especially with longer assessment intervals (e.g., one year), is needed.

Limitations and Future Directions

To my knowledge, this is one of the first studies designed to examine the development and predictors of preschoolers' intergroup prosocial behavior. In this work, I focused on gender because gender is one of the most fundamental and salient social groups for young children. Further, it is important to investigate gender because researchers have not focused on gender as a social group in the intergroup literature. To address the gaps in the literature, I examined preschoolers' other-gender prosocial behavior by using multiple reporters' ratings and various forms of assessment. Although parents' ratings were not consistent with teachers' or observers' ratings, such discrepancy is not uncommon when it comes to rating children's social behaviors (e.g., Rudasill, Prokasky, Tu, Frohn, Sirota, & Molfese, 2014). Despite these strengths, there are some limitations.

First, there were issues in teachers' reporting of children's other-gender prosocial behavior since they did not clearly distinguish between same- and other-gender prosocial behavior (i.e., very high correlation). The lack of distinction may be due to several factors. First, in teachers' view, prosociality is a global construct such that prosocial children are prosocial to both same- and other-gender peers. That is, what's conceptualized and operationalized as children's other-gender prosocial behavior was in fact children's global prosocial behavior (target undifferentiated). Second, teachers are busy and may not notice children's target-specific prosocial behavior. Third, perhaps teachers do not have the opportunities to observe nuanced aspects of children's social behaviors such as their intergroup prosocial behavior because these behaviors are not salient enough for teachers. Although teachers (and parents) are generally considered

reliable reporters of children's social behaviors (e.g., Ladd & Profilet, 1996), the finding is inconsistent with existent, robust, experimental evidence that young children hold ingroup bias in their prosocial behavior (e.g., Renno & Shutts, 2015). Thus, future researchers should adopt experimental or observational methods rather than relying on teachers as reporters of prosocial behaviors directed toward girls and boys separately.

Second, data of this study came from an intervention project that was designed to provide children the opportunities to interact with peers as buddies and was particularly focused on improving relations with other-gender peers. A traditional repeated measures design (with at least three assessments) would be more suitable for my research questions about development and mediation process. Lastly, although majority of the sample consisted of Latino children, given the small sample size ($n = 118$), statistical power was low to examine moderation by ethnicity. Further, despite the speculations I made about Latino children and their other-gender prosocial behavior, it is necessary to test culture-specific constructs (e.g., gender-role orientation; Davis, Carlo, & Knight, 2015) before I can draw culture-based conclusions.

Conclusions

This multi-method multi-informant study was designed to examine development and predictors of children's prosocial behavior toward other-gender peers. As the field of prosocial behavior moves toward treating prosocial behavior as a multidimensional construct (e.g., specific types of prosocial behavior, prosocial behavior toward different targets), this work could be highly impactful for future research. The focus on children's gender-based behaviors through the intergroup lens is innovative because much research on intergroup relations focuses primarily on social categories such as race/ethnicity,

nationality, and disability (e.g., Davies et al., 2011, a meta-analysis), but very few studies explore gender as a social category. Results highlighted the importance of children's other-gender interactions in relation to their prosocial development, although children's gender-based attitudes did not mediate this relation. Furthermore, prosocial behavior was shown to positively predict children's affective attitudes toward other-gender peers. These findings have important implications for both research and practice. For example, practically, because teachers are important agents to make decisions about children's interactions with same- and other-gender peers, teachers could intentionally create opportunities of mixed-gender group projects to promote children's gendered intergroup relations. In addition, practicing and fostering children's prosocial behavior, such as through mindfulness-based exercises (e.g., Flook, Goldberg, Pinger, & Davidson, 2014), might be critical in promoting children's positive intergroup attitudes.

STUDY 2

School-age Children's Prosocial Behavior Toward Various Outgroup Members: A Test of The Transfer Effects of Intergroup Contact

From infancy, humans recognize and differentiate various similar and dissimilar individuals based on their social group categories such as gender (Poulin-Dubois, Serbin, Kenyon, & Derbyshire, 1994) and race (Bar-Haim, Ziv, Lamy & Hodes, 2006). Subsequently, children show differential attitudes (e.g., prejudice) and behaviors (e.g., exclusion, avoidance) toward outgroup members compared to ingroup members (e.g., gender, race; see Ruble & Martin, 1998; Rutland & Killen, 2015). These attitudes and behaviors can have detrimental effects on individuals (e.g., health; Pascoe & Smart Richman, 2009) and, thus, it is of particular importance to promote prosocial and inclusive actions toward all members of the society.

Much research in intergroup relations is guided by Allport's (1954) Intergroup Contact Theory (ICT; see Aboud & Brown, 2013). ICT posits that positive intergroup contact has positive impact on individuals' intergroup attitudes toward members of that group. Further, given the social nature of intergroup relations, cross-group friendships are considered as a particularly effective and important form of contact in impacting individuals' intergroup attitudes such as prejudice and stereotyping (Pettigrew, 1997).

However, there are some gaps in the literature that warrant further investigation. Specifically, past studies have consistently focused on individual group memberships (e.g., race; Rutland, Cameron, Bennett, & Ferrell, 2005) and rarely examined multiple group memberships. Further, it is unclear how cross-group friendships in one domain (e.g., cross-race friendships) might be related to intergroup relations in another domain

(e.g., gender). Lastly, despite robust evidence on the friendship-attitudes link (i.e., the relation between intergroup friendships and intergroup attitudes), researchers have rarely examined the friendship-behavior link (i.e., the relation between intergroup friendships and intergroup behaviors), particularly intergroup prosocial behavior. To address these gaps, I propose to investigate how children's cross-gender and cross-race friendships are related to their prosocial behavior toward a variety of targets including those who are similar and dissimilar in gender and race, as well as family and friends, strangers and outgroups. Further, I plan to examine children's cognitive attitudes about gender (i.e., stereotyped beliefs) and race-based sympathy as potential indirect factor (although our data do not allow the test of directionality).

Consider Multiple Identities

Individuals have multiple identities, and these identities are often structured hierarchically with some identities being more important and central to the self than are other identities (Kiang, Yip, & Fuligni, 2008). That is, in intergroup contexts, the ingroup and outgroup distinctions are not always binary, and instead, there likely are nuances in the degree of other-ness when considering various combinations of identities. Thus, the salience and importance of certain group categories to oneself is important to consider when it comes to multiple identities.

Take gender and race, the most basic and salient social categories (at least in the U.S.), as examples. Researchers have shown that regardless of age, gender, or race/ethnicity, children in middle childhood consider gender an important group membership (e.g., Rogers & Meltzoff, 2017; Shutts, Roben, & Spelke, 2012; Turner & Brown, 2007). These findings are not surprising given the ubiquitous phenomenon of

gender segregation, specifically for young children (Maccoby, 1998). Thus, individuals' gender might be considered more important and salient than race or other group memberships in social decision-making process.

Transfer Effects of Cross-group Friendships

Given the intricacy of identities, it is possible that cross-group friendships with members of one group might extend to changes in attitudes or behaviors toward members of other groups. Thus, it is important to understand to what extent cross-group friendships would generalize to improved attitudes and relations across various group categories. Traditionally, contact theory involves group-specific contact and reduced prejudice (Allport, 1954). Since then, Pettigrew (2009) has proposed the idea of "secondary transfer effect" of intergroup contact (p.55). Specifically, contact, such as friendships, with members of one group (e.g., gender) might extend to reduced negative attitudes toward members of other groups (e.g., race).

There is some empirical evidence of transfer effect although these studies are mostly conducted with adults with the focus on contact, rather than friendships, and the contact effects were generalized to subgroups of a broad domain such as nationality, ethnicity, or religion (e.g., Hewstone et al., 2008; Tausch et al., 2010). For example, English students' contact with French students was not only related to changed attitudes toward French but also their attitudes toward Algerians (i.e., another nationality; Eller & Abrams, 2004); Whites' contact with Blacks was not only related to their reduced prejudice toward Blacks but also toward Jewish-, Latino-, and Asian-Americans (i.e., another race/ethnicity; Wilson, 1996). Only one study showed transfer effects of cross-group contact to members of different domains (Pettigrew, 2009). Specifically, Germans'

contact with foreign residents was related not only to their reduced prejudice toward foreigners, but also toward Muslims, homeless people, gay men, and lesbians (i.e., nationality to other social categories). Although many children are surrounded by diverse others from a young age (e.g., gender, race, age), there is only one study examining the transfer effect for children (Vezzali et al., 2018). They showed that Italian children's contact with minorities (i.e., immigrant Italians) was related to their reduced prejudice toward the minorities as well as their prejudice toward disabled children. Similar to the literature on intergroup contact, studies on transfer effects mainly focused on the affective aspect of intergroup relations and work examining behavioral outcomes is scarce.

Examining Intergroup Prosocial Behavior

In addition to multiple group memberships and the transfer effect of cross-group friendships, there is also the need to examine the behavioral aspects of intergroup relations (see Fiske, 2000) as past research generally focused on cognitive aspects such as prejudice (see Davies et al., 2011; Pettigrew & Tropp, 2006). When intergroup behaviors were examined, researchers have primarily investigated intergroup conflict and aggression (e.g., Schmid, Hewstone, Kupper, Zick, & Tausch, 2014), and work on positive behaviors such as prosocial behavior is scant. Prosocial behavior is an umbrella term including various types (e.g., helping, sharing) of voluntary acts done to benefit another (Eisenberg, Spinrad, & Knafo-Noam, 2015).

Drawing from literature on intergroup contact and prejudice, it is plausible that cross-group friendships might directly and positively relate to children's prosocial behavior toward individuals who are dissimilar to themselves. Further, this relation might

be explained by other processes: First, children who have cross-group friends might have more positive cognitive (e.g., beliefs) and affective (e.g., liking) attitudes toward members of dissimilar groups (see Davies et al., 2011 a meta-analysis). Take gender stereotyping as an example, children who have other-gender friends might be more likely to believe that girls and boys are similar in their abilities and interests than children who do not have other-gender friends. Such egalitarian beliefs about gender would in turn relate to children's prosocial behavior toward dissimilar others. Second, friendships with dissimilar others might lead to empathy-related responding such as sympathy (i.e., feelings of sorry or concern for the distress other generated from one's comprehension of another's emotional state; Eisenberg, Spinrad, & Sadovsky, 2006). Sympathy is thought to be an important motivator of prosocial behavior toward those dissimilar others because individuals' sense of self would expand to include dissimilar others with the shortened psychological distance between ingroup and outgroup (Aron & Mclaughlin-Volpe, 2001; Eisenberg et al., 2016). Therefore, cross-group friendships might relate to children's intergroup behavior through changes in attitudes and emotions toward members of those groups.

To my knowledge, there is no research examining how cross-group friendships are related to children's intergroup prosocial behavior or how intergroup attitudes are related to intergroup prosocial behavior although prejudicial attitudes are in general closely linked to discriminatory behaviors (e.g., Dovidio, Brigham, Johnson, & Gaertner, 1996, a meta-analysis). Only one study examined children's global behavior: Spivak, White, Juvonen, and Graham (2015) showed that cross-ethnic contact at school was positively related to adolescents' self-reported global prosocial behavior, suggesting that

cross-group contact/friendships might promote prosocial behavior toward both similar and dissimilar others. Regarding empathy/sympathy, Pettigrew and Tropp (2008) provided some evidence in their meta-analysis that empathy is an important mediator explaining the relation between intergroup contact and reduced intergroup prejudice. However, their analysis included predominantly adult sample across a wide range of group memberships such as sexual orientation, physical ability status, race, and ethnicity. Thus, it remains unclear whether and how young children's cross-group friendships are associated with group-specific empathy/sympathy.

As for the relation between empathy/sympathy and prosocial behavior, numerous studies have demonstrated that empathy-related responding is an important predictor of a broad range of prosocial behaviors (e.g., helping, sharing; Ongley & Malti, 2014), particularly behavior directed at strangers (Barraza & Zak, 2009; Padilla-Walker & Christensen, 2011). However, only a few experimental studies examined the relation between empathy (but not sympathy) and intergroup prosocial behavior, or prosocial intentions (e.g., Koschate et al., 2012; Stürmer et al., 2005; 2006; Vezzali, Hewstone, Capozza, Trifiletti, & Di Bernardo, 2017). Most of these studies were conducted with adults using arbitrary group memberships, and yielded mixed findings that indicate the importance to examine empathy/sympathy toward specific targets. Only two studies were conducted with children, and they showed that children's general empathy (Sierksma, Thijs, & Verkuyten, 2014), and empathy toward outgroup members (Vezzali et al., 2017), was positively predictive of their attitudes and behavioral intentions toward outgroup members (nationality; Sierksma et al., 2014; immigrants; Vezzali et al., 2017). Given this body of work, group-specific empathy/sympathy (e.g., race) might indirectly account for

the relation between children's cross-group friendships and intergroup prosocial behavior.

The Current Study

Due to the increasing diversity and prevalence of prejudice in our society, it is important to understand children's prosocial behavior toward people who are similar and different from themselves. Although there is a large literature on intergroup relations, and it is well known that cross-group friendships are positively related to intergroup attitudes, researchers have rarely examined the direct relations between cross-group friendships and intergroup prosocial behavior. Further, past work generally focused on individual group memberships, little is known about children's intergroup relations when multiple group memberships are considered together. Moreover, it is unclear whether cross-group friendships or intergroup attitudes about one group category (e.g., gender) would be related to intergroup behaviors in another group category (e.g., race).

To address these gaps, I examined how various cross-group friendships (i.e., other-gender and other-race friendships) are related to children's prosocial behavior directed at various others with the consideration of multiple group categories. Because gender and race are the most basic and salient social categories (at least in the U.S.), understanding children's prosocial behavior toward individuals whose gender and race are similar or dissimilar to themselves might shed light on children's prosocial behavior toward diverse others (e.g., religion). Therefore, I specifically examined children's prosocial behavior toward various combinations of gender and race categories: same-gender same-race targets, same-gender other-race targets, other-gender same-race targets, and other-gender other-race targets. To further test the transfer effect of intergroup

contact, I also examined children's prosocial behavior toward family, friends, strangers, and outgroup members (more broadly).

My first aim was to examine the direct relation between children's cross-group friendships and intergroup prosocial behavior. I expected that both cross-gender friendships and cross-race friendships would be positively related to children's prosocial behavior toward diverse others (e.g., individuals who are similar or dissimilar in gender, race, and other group categories; Hypothesis 1a). However, cross-gender friendships might be particularly important and show stronger predictive power than cross-race friendships (Hypothesis 1b) for several reasons. First, gender is considered more important than race, particularly for White children (Brown & Hewstone, 2005; Turner & Brown, 2007). Qualitative work shows that school-age children consider gender as a group category that represents inequality and group differences whereas the meaning children assigned to race was physical appearance and equality (see Rogers et al., 2017). Second, gender is arguably the most meaningful social category in children's social lives as children across cultures learn various gender stereotypes and gender norms starting from preschool (Maccoby, 1998).

My second aim was to examine the intermediate processes underlying the relations between cross-group friendships and intergroup prosocial behavior. Specifically, intergroup moral emotions (e.g., sympathy toward gender outgroups) and intergroup attitudes (e.g., cognitive and affective dimensions) are theorized to mediate the relations between cross-group friendships and intergroup prosocial behavior. As Figure S2.1 shows, based on the transfer effect of cross-group contact (Pettigrew, 2009), these mediated paths would extend beyond matching groups to include other groups. For

example, cross-race friendships would not only predict racial attitudes but also gender attitudes.

Given available data, I could not test the proposed model comprehensively in one study, and instead examined the model portrayed in Figure S2.2. Specifically, I expected that children's sympathy toward members of another race would indirectly account for the relation between cross-race friendships and their prosocial behavior toward diverse others (Hypothesis 2a). In addition, children's cognitive attitudes about gender would indirectly account for the relation between cross-gender friendships and their prosocial behavior toward various recipients (Hypothesis 2b). Lastly, although I did not have reasons for sex differences in these relations, I tested whether and how the proposed direct and indirect relations differed for boys and girls.

Method

Participants

Participants in the study were 190 (54% male) school age children between the ages of 5 and 9 years old ($M = 7.09$, $SD = .94$) and their primary parents (i.e., the parent who spends most time with the child) recruited from a Southwest and a Northeast city. Out of the 190 primary parents, 175 were biological mothers, 12 were biological fathers, and 3 were of another relationship (e.g., adoptive mother). Among these children, nineteen were siblings. Because the focus of the current study was not strongly relevant to family-related factors, I included all children in the analyses. Southwest participants were recruited via various methods (e.g., local museums, bookstores, after school programs, Facebook); Northeast participants were recruited from a research database of

the Psychology Department in the university. All participants were non-Hispanic White given they are the social dominant group of racial power and privilege and the larger project's focus on intergroup racial bias. Most parents reported having at least some college experience (85.8% of mothers and 82.5% of fathers); 85.3% of the primary parents were married and living with the child's biological parent, 4.2% were married and living with a partner other than the child's biological parent, 3.7% were single, 3.7% were single and living with the child's biological parent, and 3.2% were single and living with a partner other than the child's biological parent. Average annual income was ranged from \$75,000 to \$100,000.

Procedures

The study was approved by the Institutional Review Board of both universities. Participating children and their primary parents were invited to the universities for a 90 – 120 minutes visit. All parents gave consent to themselves and child interview, all children assented to participate in the study. Parents and children participated in separate rooms except several parent-child tasks. Parents filled out a survey about parenting styles, parental own attitudes and values, as well as children's social emotional well-being. A female undergraduate research assistant administered a series of behavioral tasks with participating children which were designed to assess children's attitudes and behavior toward anonymous peers. In the Southwest, parents were paid \$40 at the end of the visit; in Northeast, parents received Amazon gift cards for their time. Children received a variety of small gifts and a participation certificate. Parents were asked to give permission to contact a secondary parent (mostly fathers but some were mothers, step-parents, adoptive parents, or grandparents) and each child's teacher to complete an online

questionnaire. Secondary parent (n = 163) and teachers (n = 160) completed questionnaires either online or in paper⁵.

Measures

Children's intergroup prosocial behaviors. We assessed children's prosocial behavior toward individuals whose gender and race were the same or different from themselves using two tasks. In the first task, the gender of the recipients was controlled to be the same as the participating child. In the second task, the gender of the recipients was controlled to be different from the participating child. In both tasks, children were asked to share with peers of same or different race.

Distribution to same- and other-race children (gender matched). The task started with the experimenter showing children a pile of chocolate coins, children were told that they would get chocolate coins by playing this game (House, Henrich, Brosnan, & Silk, 2012; House, Silk, Lambeth, & Schapiro, 2014). Children were told that they are going to divide some chocolate coins between themselves and another pictured same-gender child. For each trial, children were forced to choose between two competing distribution strategies (A or B) to divide the chocolates between themselves and the pictured child. There were five unique trials of distribution combinations, and one of the strategies was always more prosocial than the other. For example, the children can choose between A) one for the self, one for the other child (i.e., a fair distribution), or B) one for the self, and none for the other child (i.e., a selfish distribution). In this trial, A)

⁵ Children whose secondary parent did not respond did not differ from the rest of the sample in terms of child sex, research site, and age, primary parent income, education, or marital status. Children whose teachers did not respond did not differ from the rest of the sample in child sex, research site, age, parents' marital status, primary parents' income, or education.

would be considered more prosocial than B). Each combination was presented twice: once with a White, and once with a Black, child in the picture. The order of the trials was randomized. The total number of chocolates given to same-race targets and other-race targets were created.

Costly-sharing toward other- and same- race (gender mismatched). Toward the end of the lab visit, children watched a film depicting two children (both of the other-gender, one White, one Black) disappointed that they could not raise enough money to go to their school trip to Disney. Following the film, children were given prizes (ten quarters) for participation in the lab visit. Then, the experimenter reminded the participants of the children in the film by showing their photos, and noted that they could keep all the money or could give some or all the money to other children. The experimenter then left the room under the pretense of getting a computer game ready; meanwhile, children were then left in the room with the opportunity to give their money to the children in the film. The number of coins given was recorded for coins given to the other-gender same-race target and the other-gender other-race target.

Reported prosocial behavior toward diverse others. Primary caregiving parents reported on children's prosocial behavior toward diverse others using 16 items on a 5-point Likert scale (1 = Not at all; 2 = A little; 3 = A moderate amount; 4 = A lot; 5 = A great deal; adapted from Padilla-Walker & Christensen, 2011). Specifically, parents rated children's prosocial behavior toward family, friends, strangers, and outgroup members. Items assessing prosocial behavior toward family, friends, and strangers have been used extensively among adolescents (e.g., Padilla-Walker et al., 2011). Our team created the prosocial behavior toward outgroup members subscale based on our research

aims (e.g., “My child helps people who are different from him/her (e.g., race or ethnicity, country of origin) even if it is not easy for him/her.”). There were four items for each subscale, and all subscales yielded acceptable reliability: alphas were .842, .874, .883, .940 for family, friends, strangers, and outgroup members. Prosocial behavior toward family and friends were highly correlated $r(188) = .631$, $p < .001$, and prosocial behavior toward strangers and outgroup members were highly correlated $r(188) = .749$, $p < .001$. Thus, I created two composites by averaging the items: Prosocial behavior toward family and friends, and prosocial behavior toward strangers and outgroups.

Egalitarian gender attitudes. Children’s endorsement of gender stereotypes was measured using the occupation subscale from the Preschool Occupation, Activity, and Trait-Attitude Measure (POAT-AM; see Liben & Bigler, 2002). Specifically, there were 14 items for the subscale, and each item is illustrated in a picture. For each picture, children were asked “who should be?” An example item is “This job is farmer, someone who grows lots of food to sell to other people. Who should be a farmer?”. Children were given three response options: 1) only men, 2) only women, and 3) both men and women. Six of the items were considered female-typed (babysitter), six were male-typed (e.g., truck-driver), and two were gender-neutral (e.g., baker) based on previous work (Liben & Bigler, 2002). Children’s egalitarian gender attitudes were calculated by summing the number of times children chose “both men and women” for the twelve stereotyping items; thus, a lower score indicates stereotyping attitudes, and a high score indicates egalitarian attitudes (alpha was .692 in the current study).

Empathy/Sympathy toward racial ingroup and outgroups (gender matched).

Children watched two short films depicting race-based bullying where sex was controlled as consistent with the participants' sex. Each film has four equivalent versions to match the child sex and to counterbalance the race of the target child and the stories. Thus, there were four possible orders. For example, in one film, a White child poured milk all over a Black/White child's painting. We alternated the order of Black and White victim films to control for order effect. After the films, we assessed children's sympathy toward racial ingroup and outgroup members by interviewing them about how sorry they were to the victims in the film on a four-point Likert scale (0 = not at all, 3 = a whole lot).

Cross-gender and cross-race friendships. Following an approach that has been used in previous work (Eisenberg et al., 2009), primary parents were asked to think of four of the child's closest friends and report on each friend's gender and race to assess the diversity in children's friendships. Teachers were asked to report the same information for three of the child's closest friends. Children's cross-gender friendships were calculated by dividing the number of other-gender friends by the total number of friends (as not all children had three or four best friends). Children's cross-race friendships were calculated following the same formula. The (ratio) scores ranged from 0 to 1.

Children's social desirability. We assessed children's social desirability using a shortened version Marlowe-Crowne Social Desirability questionnaire (Crowne & Marlowe, 1964). Children answered 14 questions (e.g., "Are you always glad to share your things with others?"). Cronbach's alpha was .63), and we deleted 4 items and improved Cronbach's alpha to .71.

Analytic Plan

All analyses (except tests for control variables such as independent samples t-tests) were conducted using Mplus version 8.2. To determine potential control variables for analyses, I used independent samples t-tests for dichotomous variables including child sex, site, as well as other categorical demographic variables which were dichotomized due to small cell sizes (i.e., family income, parental education); I used analysis of variance (ANOVA) for film order, and correlations for continuous demographic variables (i.e., age; child social desirability). If differences were found for certain variables, they would be included as a covariate in analyses. Because only some teachers participated in the study, I used Robust Maximum Likelihood (MLR) estimator to adjust for standard errors and account for missing data⁶. To assess model fit, I referred to various fit indices including the Chi-square statistic, the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Model fit was considered acceptable when the CFI is greater than .90, the RMSEA had a value less than .08, and the SRMR had a value less than .10 although I also considered local fit indices such as residuals and modification indices (Hu & Bentler, 1999).

Before testing the structural model, I first examined the measurement model in Structural Equation Modeling framework (SEM) by forming latent variables for other-gender friendships and other-race friendships indicated by parents and teachers by conducting confirmatory factor analysis (CFA) to estimate measurement models. When latent variables could not be formed, I conducted analyses using teacher and parent

⁶ Out of all teachers, 84.2% (160) participated in the study.

reports in two ways: as individual indicators and as combined composites (created when correlations among indicators were greater than .20, given the sample size, $p < .006$). I used the composite scores when results were consistent with those using individual scores, otherwise, I would have parent- and teacher- reported friendships as individual predictors.

To examine the relation between cross-group friendships and children's diverse prosocial behavior, a path model was specified with children's prosocial behavior toward six different recipients (i.e., same-gender same-race, same-gender other-race, other-gender same-race, other-gender other-race, family & friends, and strangers & outgroups) as outcome variables, and children's cross-gender and cross-race friendships reported by teachers and parents as predictors. Residuals of endogenous variables were allowed to covary. Further, to maximize sample size⁷, I estimated the means of exogenous variables.

To examine the proposed indirect effects, I conducted analyses using bias-corrected bootstrapping method to estimate the significant indirect effect by resampling 1000 samples (MacKinnon, Lockwood, & Williams, 2004). Specifically, indirect effects were estimated by using the percentile bootstrapping method with 95% confidence intervals (CI) recommended by MacKinnon (2008). If zero was included in the CI, then I concluded that there were no significant indirect effects; if zero was not included in the CI, then I concluded that there were significant indirect effects.

⁷ By default, Mplus only uses Full Information Maximum Likelihood (FIML) on endogenous variables; thus, in path models with observed variables, Mplus does not deal with missingness for exogenous variables unless additional specifications are included, such as estimating the means of these variables.

To examine the moderating role of child sex for direct and indirect relations, I conducted multiple group analyses following MacKinnon's (2008) recommendation. Specifically, child sex was used as the grouping variable for the model. First, an unconstrained mediation model was estimated in which all path coefficients were freely estimated for boys and girls. Then, I set cross-group equality constraints and estimated a fully constrained model. I used Satorra-Bentler Chi-Square difference tests to examine changes in model fit.

Results

Descriptive Analyses

Correlations among the main variables, means, and standard deviations are presented in Table S2.1. Overall, prosocial variables (outcome variables) were highly correlated within task and mostly significantly and positively correlated across tasks, particularly for the two behavioral tasks. Cross-gender friendships (teacher-reported) were positively correlated with children's prosocial behavior toward family/friends and strangers/outgroups whereas cross-race friendships were not directly correlated with any of the outcome variables. Children's egalitarian gender attitudes were positively correlated with several prosocial outcome variables but not correlated with any of the cross-group friendships, whereas children's race-based sympathy was positively correlated with parent-reported other-race friendships (in addition to several prosocial outcome variables).

Child sex, research site, and child age were included as covariates⁸ due to their relations with main study variables. Specifically, regarding sex differences, girls were more prosocial to family and friends, $t(188) = 2.84, p < .01$, ($M = 4.21, SD = .57$ for girls, $M = 3.96, SD = .63$ for boys) than were boys; Girls also had higher egalitarian gender attitudes, $t(188) = 2.366, p < .05$, than did boys ($M = .54, SD = .24$ for girls, $M = .47, SD = .18$ for boys). Regarding research site, in this sample, children in the Northeast ($M = 2.36, SD = 1.46$) had higher scores on other-gender same-race prosocial behavior than children in the Southwest ($M = 1.80, SD = 1.48$), $t(186) = -2.61, p < .05$. In addition, children in the Southwest ($M = .29, SD = .26$) had higher scores on parent-reported other-race friendships than did children in the Northeast ($M = .17, SD = .21$), $t(186) = 3.72, p < .001$. Children in the Southwest ($M = .35, SD = .30$) also had higher scores on teacher-reported other-race friendships than did children in the Northeast ($M = .20, SD = .30$), $t(147) = 2.96, p < .001$. Child age was positively correlated with children's prosocial behavior toward same-gender same-race peers $r(188) = .32, p < .001$, same-gender other-race peers $r(188) = .38, p < .001$, and other-gender same-race peers $r(186) = .17, p < .05$. Further, age was negatively correlated with parent-reported other-gender friendships $r(188) = -.15, p < .05$, and positively correlated with children's race-based sympathy $r(188) = .24, p < .01$. No differences were found based on film order, parental income, education for any of the study variables. Further, children's social desirability was not correlated with any outcome variables. Therefore, these variables were not included in analyses.

⁸ Child sex, research site, and child age were included in all analyses during the model building process; However, to improve model parsimony, they were trimmed (one by one) from analyses when predictions were statistically not significant.

Inferential Analyses

For the measurement structure of the model, I was unable to form latent other-gender, other-race, friendships due to model divergence (i.e., failed to converge). Although it would be reasonable to combine parent and teacher report statistically because parent-reported proportion of other-gender friendships were correlated with teacher report, $r(147) = .186, p < .05$, and parent-reported proportion of other-race friendships were correlated with teacher report, $r(145) = .432, p < .001$, I was interested in examining whether parent-report and teacher-report were uniquely related to children's prosocial outcomes. Analyses showed that using parent- and teacher-reports as separate indicators had unique predictive powers than combining them (i.e., when combined, the friendship composites did not have unique predictions for outcome variables). Therefore, I included parent- and teacher-report cross-group friendships as individual predictors in one model in subsequent analyses⁹.

Cross-group friendships and children's diverse prosocial behavior.

Hypothesis 1a was that cross-gender friendships and cross-race friendships would be positively related to children's prosocial behavior toward diverse others. Hypothesis 1b further posited that cross-gender friendships would be a stronger predictor than cross-race friendships for children's diverse prosocial behavior. Results showed partial support for both hypotheses. Specifically, to test the hypotheses, I estimated a path model including all hypothesized paths between cross-gender, cross-race friendships, and prosocial outcome variables. Residuals of endogenous variables were allowed to covary; teacher-

⁹ I also ran analyses in two separate models: the parent-report model and the teacher-report model. The results of these models are mostly consistent with the final model in terms of statistical significance and directionality (which contains both parent- and teacher- report).

and parent-reported other-race friendships were allowed to covary; non-significant covariates were removed (see Figure S2.3). This model yielded good global fit, $\chi^2(13) = 8.25, p = .827, CFI = 1.00, SRMR = .03, RMSEA = .00 [.00, .04]$. As can be seen in Figure S2.3, among the four cross-group friendships predictors, teacher-reported cross-gender friendships were positively related to children's prosocial behavior toward family/friends ($\beta = .16, p < .05$) and toward strangers/outgroup ($\beta = .20, p < .01$). Cross-race friendships were unrelated to children's diverse prosocial behavior (i.e., for all outcome variables). Thus, these results provided partial support for Hypothesis 1a in that cross-gender friendships and cross-race friendships were positively related to children's prosocial behavior toward diverse others; in addition, hypothesis 1b was supported in that cross-gender friendships were a stronger predictor of children's intergroup prosocial behavior than cross-race friendships, which were not predictive.

Sympathy toward other-race peers as a mediator. I hypothesized that children's sympathy toward members of another race would indirectly account for the relation between cross-race friendships and their prosocial behavior toward diverse others (Hypothesis 2a). Bias-corrected bootstrapping analyses were conducted and showed partial support for this hypothesis. Specifically, parent-, but not teacher-, reported other-race friendships positively predicted children's race-based sympathy, which in turn positively predicted children's prosocial behavior toward other-gender same-race peers and toward family/friends. Further, the indirect effects were statistically significant such that children's race-based sympathy mediated the relations between (parent-reported) other-race friendships and children's prosocial behavior toward other-gender same-race peers, 95% CI [.018, .465], as well as toward family/friends, 95% CI [.005, .239].

The mediating role of egalitarian gender attitudes. I hypothesized that children's cognitive attitudes about gender, specifically, egalitarian gender attitudes, would indirectly account for the relation between cross-gender friendships and their prosocial behavior toward various recipients (Hypothesis 2b). Results from the abovementioned bootstrapping analyses did not show support for this hypothesis. Specifically, cross-gender/race friendships were not related to children's egalitarian gender attitudes as expected. However, children's egalitarian gender attitudes were positively related to a number of prosocial outcomes. That is, children with more egalitarian gender attitudes were more prosocial towards same-gender other-race targets, same-gender same-race targets, family/friends, as well as strangers/outgroups (see Figure S2.4). Given that cross-group friendships did not predict children's egalitarian attitudes, it is not surprising that children's egalitarian gender attitudes did not mediate the relations.

Child sex as a moderator. I used multiple group analyses to explore the potential moderating role of child sex for proposed relations. There were 87 boys and 103 girls. First, I used Satorra-Bentler Chi-square difference tests to compare model fit between the fully constrained model and the freely estimated model: $\chi^2_{dif}(63) = 69.98, p = .255$, indicating that the constrained model fit the population matrix equally well as the freely estimated model. Thus, I concluded there was no gender moderation.

In summary, I found some evidence in support of the secondary transfer effect of cross-gender, but not cross-race, friendships. Specifically, children's cross-gender friendships appear to be an important and positive predictor of their prosocial behavior toward family/friends and strangers/outgroup members. As for cross-race friendships, although they were not directly related to any prosocial outcomes as expected, they were

positively related to children's prosocial behavior toward family/friends indirectly, through children's race-based sympathy. Although egalitarian gender attitudes were positively related to various prosocial outcomes, they were not related to children's cross-group friendships as expected, nor did they explain the relations between cross-group friendships and prosocial outcomes as hypothesized.

Discussion

In this study, I investigated a group of non-Hispanic White children's prosocial behavior toward various targets based on gender, race, and broader categories of ingroup and outgroup membership (i.e., strangers, other outgroups). Specifically, I tested the secondary transfer effect of intergroup contact theory (Pettigrew, 2009). Intergroup contact theory posits that individuals' contact with outgroup members, such as contact with Asians, would be related to reduced prejudice toward members of that specific group (i.e., Asians; Allport, 1954). However, it might not be necessary for us to have contact or be friends with members of all outgroups in order to reduce our prejudice. Indeed, Pettigrew (2009) argued that individuals' contact with outgroup members of certain groups (e.g., Asians) would be related to reduced prejudice not only toward members of that group (i.e., Asians) but also toward other, uninvolved, outgroups within the same domain, for example, members of other racial/ethnic groups (e.g., Latino) or even beyond the domain and extend toward other dissimilar groups such as those based on sexual orientation (e.g., lesbians).

In this study, I examined whether and how children's cross-group friendships in one domain (e.g., gender) would be related to their intergroup attitudes and prosocial

behavior in another domain (e.g., race, ethnicity, nationality). In addition, I examined the mediating role of gender- and race-based attitudes for the relation between children's intergroup friendships and prosocial behavior toward diverse others. Overall, evidence was mixed in terms of testing secondary transfer effect, and I discuss these findings in detail below.

Furthermore, given that individuals have multiple identities (e.g., white and male; Shields, 2008) and these identities do not exist independently, I considered various targets of children's intergroup prosocial behavior from a continuum of ingroupness. Specifically, instead of treating ingroup and outgroup as the opposite ends of a binary concept, I conceptualized and operationalized various targets comparatively and continuously such that some targets (e.g., same-gender other-race peers) might be considered more of an outgroup than other targets (e.g., other-gender other-race peers). To do this, I examined a range of combinations of the gender and the race of the targets and assessed children's prosocial behavior toward these targets. I also included prosocial behavior directed toward family/friends (considered ingroup), and strangers/outgroups (who are dissimilar in race/ethnicity, nationality).

Mixed Evidence of the Secondary Transfer Effect

Other-gender friendships and intergroup prosocial outcomes. Children's other-gender friendships were positively and directly related to parents' reports of prosocial behavior directed at family/friends and strangers/outgroups (including people of different nationalities, races/ethnicities). In a way, these findings are consistent with the secondary transfer hypothesis of intergroup contact theory, which posits that cross-group friendships in one domain such as nationality (e.g., contact with Blacks) would be related

to reduced prejudice not only in that domain (e.g., prejudice toward Latinos and Asians, in addition to prejudice toward Blacks; Eller & Abrams, 2004) but also in other domains such as sexual orientation (Pettigrew, 2009). In this case, children's cross-group contact in the domain of gender was positively related to their prosocial behavior toward others beyond the domain of gender (i.e., strangers/outgroups who are different in race/ethnicity, nationality). This finding expands the literature because researchers have not tested gender as a group category in this body of work, similar to the larger intergroup literature (e.g., Pettigrew & Tropp, 2006). Further, this finding extends previous research on secondary transfer effect because previous work has primarily focused on adults (e.g., Tausch et al., 2010) and there was only one study with children (Vezzali et al., 2018).

However, why children's other-gender friendships did not relate to their observed prosocial behavior toward various targets is unclear. Because race was the salient factor within task and gender was only salient between task, it is possible that children considered these targets to be same- and other-race peers without considering gender. If this is the case, the null finding might indicate that children's friendships with other-gender peers are not related to their race-based prosocial behavior, as one might expect based on the secondary transfer hypothesis. It might also be because the observed prosocial tasks reflected a more specific form of prosocial behavior (i.e., costly sharing) or motivated by other factors (i.e., fairness and equity) whereas parents' reports of prosocial behavior might have reflected other forms of prosocial behaviors (e.g., low cost).

Other-race friendships and intergroup prosocial outcomes. Although I had expected that children's other-gender friendships would be more powerful than their cross-race friendships in predicting prosocial behavior toward diverse others, I still expected to find transfer occurring with cross-race friendships. Therefore, it was somewhat surprising that children's cross-race friendships were not directly related to their prosocial behaviors. In the literature, the effect of intergroup contact has generally been found to benefit Whites more strongly than ethnic racial minorities (Brown & Hewstone, 2005; Tropp & Pettigrew, 2005). Given that the participants in this study were all non-Hispanic White children, I expected to find a significant secondary transfer effect. It is possible that the lack of a significant finding is due to the young age of participants. Despite the amount of research testing intergroup contact hypothesis, the body of work on secondary transfer effect of intergroup contact is small. Similar to the larger intergroup contact literature, most research employed adult samples. Only one study to date focused on the transfer effect of contact with children in middle childhood (the mean age was 9.55 years; Vezzali et al., 2018). However, in the present study, the children were six to eight years old. Thus, this may account for the lack of findings on the transfer effect of intergroup contact.

It is also possible that individuals' intergroup attitudes are indirectly related to their intergroup prosocial behavior. Indeed, children's cross-race friendships predicted their race-based sympathy likely because friendships with individuals who are dissimilar from oneself would lead to feelings of understanding, concern, and care for others (see Pettigrew & Tropp, 2008, a meta-analysis). This finding enhanced our understanding of the processes of intergroup relations and contributes to the literature because there is very

little research examining the role of empathy/sympathy in intergroup relations, let alone with children. For example, in Pettigrew and Tropp's (2008) meta-analysis, there were only 14 samples that included empathy and perspective taking, and they could not examine the role of empathy independent of perspective taking. The current study is consistent with prior literature demonstrating that children's empathy positively predicts nationality-based attitudes and behavioral intentions toward outgroup members (Sierksma et al., 2014; Vezzali et al., 2017).

However, such indirect relations were only found for children's prosocial behavior toward family/friends and other-gender same-race peers (both which could be considered ingroup members more generally; see more detail in the limitations section). This finding may be due to the high correlation between children's sympathy toward racial outgroup members and their sympathy toward racial ingroup members (zero-order correlation was .75). Therefore, it would make sense that children's sympathy toward racial ingroup members was positively related to their prosocial behavior toward family/friends and other-gender same-race peers. Further, the indirect relations were not found for other prosocial outcomes. This finding may be due to the nature of these measures: Both behavioral tasks were essentially resource allocation tasks (behavioral economic tasks) and do not require sympathy/empathy whereas the parent-report questionnaire (see Appendix D) was consisted of items that are relevant to sympathy (e.g., "My child goes out of his/her way to cheer up people who seem sad, even if he/she does not know them"). As such, parents might have been thinking about the types of prosocial behavior that are motivated by sympathy. However, as some researchers have shown that children's sympathy is associated with their later sharing behavior with

anonymous peers in resource allocation tasks (e.g., Malti, Gummerum, Keller, Chaparro, & Buchmann, 2012), this question should be investigated further.

Other-gender friendships and intergroup attitudes. As for the friendship-attitudes link, results showed no support for the secondary transfer effect: Neither other-gender nor cross-race friendships was related to children's race- or gender-based attitudes. I expected to find both types of friendships to relate to attitudes. The lack of relation between children's other-gender friendships and egalitarian gender attitudes may be due to the limited ways attitudes were assessed: Only children's attitudes about occupations were assessed, rather than their gender attitudes in other areas (e.g., traits or activities; see Liben & Bigler, 2002). Further, egalitarian gender attitudes might not represent children's intergroup attitudes and, rather, reflect children's gender-based cognitive flexibility (Halim, 2016; Halim & Ruble, 2010). It is likely that children's other-gender friendships are related to their affective or cognitive attitudes about gender, which might reflect children's intergroup attitudes rather than cognitive flexibility/rigidity (e.g., Halim et al., 2017; Yee & Brown, 1994). Other-gender friendships might also be related to children's gender-based sympathy/empathy based on previous research (see Pettigrew & Tropp, 2008). As such, it is important to test the model shown in Figure S2.1 in future work.

Egalitarian Gender Attitudes and Children's Intergroup Prosocial Outcomes

Children's egalitarian attitudes were positively associated with their prosocial behavior toward family/friends, toward same-gender same-race peers (i.e., fully ingroup), toward same-gender other-race peers, and toward stranger/outgroups. Although the current finding is correlational in nature, this finding extends previous research by

showing that not only is gender a vital aspect of young children's social lives (Maccoby, 1998), children's gender-based attitudes and relationships are also associated with their behaviors and relations in other domains (beyond gender). It is possible that children's egalitarian gender attitudes were similarly related to their prosocial behavior toward ingroups and outgroups because egalitarian attitudes were characterized by the endorsement of equality for the genders, such as both men and women can be a truck driver (see Appendix D). Another possibility is that similar to the transfer effect of intergroup contact/friendships, people's intergroup attitudes might also be related to their intergroup behavior across different domains. That is, perhaps egalitarian attitudes in one domain (e.g., gender) would be positively associated with children's positive gender-based as well as other group-base behaviors.

Strengths, Limitations and Future Directions

This is one of the first studies to test the secondary transfer effect of intergroup contact with young children. In addition to the examination of this effect toward diverse targets (similar and dissimilar group categories), this work also extended the intergroup literature by including multiple social categories (gender and race) and conceptualizing a continuum of ingroupness. To achieve these goals, various assessment methods (i.e., behavioral task, survey data) were used and various informants (i.e., parents, teachers, and children) were interviewed. Despite the strengths of this research, there are some limitations. First, the assessment of children's prosocial behavior toward diverse others consisted of two behavioral tasks and parent-report. Because of this, the correlations, as well as residual covariances for within-task constructs (e.g., same-gender other-race and same-gender same-race prosocial behaviors) were stronger compared to between-task

constructs. This could be problematic because the residual covariances were included based on the assumption that these variables have at least one common unmeasured cause (Kline, 2011). In this study, the common underlying cause might be specific to the task rather than based on the degree of ingroupness (as I theorized).

Further, although these constructs were theoretically distinctive only in the degree of ingroupness (i.e., same-gender same-race targets would be considered more of an ingroup than other-gender other-race targets), the distinctions among targets might have been confounded because the tasks were not comparable in two aspects. First, cost: The chocolate-sharing task was a less-costly force-choice resource distribution task between the participant and one target child whereas the money-sharing task was a more costly sharing task designed to elicit sympathy in which the participant was expected to freely share with two other children. As researchers have shown, the cost associated with prosocial behavior is an important factor to consider (e.g., Svetlova, Nichols, & Brownell, 2010). Second, gender: Gender was not salient within task (controlled to be the same) and was only salient between tasks. Thus, it is possible that children did not differentiate different recipients by both gender and race. Together, these differences among tasks limited my ability to draw conclusions regarding children's prosocial behavior toward diverse others. Future work could benefit from having more rigorously designed tasks (e.g., testing all six outcomes in one task) to advance our understanding in this area. Nonetheless, as is in the real world, children's prosocial decisions likely occur in varying contexts with individuals' multiple identities intertwined (e.g., gender might not be salient in certain contexts), thus, despite the shortcomings of the assessment

methods, this study offers unique insight into children's prosocial behavior toward various targets.

Second, participants of the study were all non-Hispanic White children because the larger project was designed to assess non-Hispanic White children's racial attitudes. It is unclear whether the findings could be generalized to non-White children, particularly for the role of children's cross-race friendships because there is research indicating that the mechanisms of cross-race friendships and intergroup relations are complex among ethnic racial minority youths (e.g., Chen & Graham, 2015). Furthermore, the relations between egalitarian gender attitudes and prosocial behaviors might also be stronger for White children than for ethnic racial minority children as researchers have shown that gender is considered more important than race for White children (Turner & Brown, 2007).

In addition, the cross-sectional design is limiting in terms of determining the directionality of the proposed relations. For example, with longitudinal assessment, it would be interesting to examine whether these relations are bidirectional, or even transactional. Further, to test the mediating role of intergroup attitudes stringently, a repeated measures design (with at least three assessments) would be more suitable than cross-sectional data.

Conclusions

Overall, this study highlights that children's cross-group friendships, especially other-gender friendships, are associated with their prosocial behavior toward diverse others beyond the category of gender. This research is one of the first to consider multiple group categories together and thinking of them as representing a continuum of

ingroupness when examining children's intergroup prosocial behavior, instead of treating group categories independently. As the field of prosocial and moral development moves toward examining the intersections of multiple group identities (e.g., Burkholder, Elenbaas, & Killen, 2019), this work has important implications for future research and practice. For example, it may be critical to examine the intergroup attitudes and intergroup contact across several domains of social categories (e.g., race/ethnicity, nationality) to understand how multiple categories function together in context, and whether attitudes and interactions in some categories (e.g., gender) are more impactful than others. This effort could contribute to better use of social resources for intervention/prevention research that is aimed at improving children's intergroup behaviors and relations broadly.

STUDY 3

School-age children's intergroup prosocial behavior: Longitudinal prediction from earlier gender identity and cross-gender friendships

With the increasing diversity of the U.S. society, group-based prejudice and discrimination are prevalent, even for young children, and it has negative impact on various developmental outcomes such as mental health for the recipients of discrimination (see Pascoe & Smart Richman, 2009). However, relatively little work focuses on group-based prosocial behavior—that is, voluntary behavior that benefits different recipients depending on their group membership (i.e., ingroups, outgroups; Eisenberg, Spinrad, & Knafo-Noam, 2015). Given the voluntary (rather than obligatory) nature of prosocial behavior, people are more likely to show biases in their prosocial behavior toward others than biases that involve harmful behaviors toward others (Killen, Margie, & Sinno, 2006; Otten & Mummendey, 1999; Weller & Lagattuta, 2013). Thus, promoting prosocial behavior toward outgroup members would not only benefit others directly but also offset group-based aggression, improve intergroup relations, and reduce inequity among all members of the society. It is vital to understand the predictors, processes, and development of children's prosocial behavior toward ingroup and outgroup members. In this study, we focused on one particular group: Gender.

Gender as a Group Category

Do children engage in differential prosocial behavior toward ingroup and outgroup members? Researchers have shown that children show in-group favorable behavior even when the groups were “minimal” groups arbitrarily created by researchers (e.g., Böhm & Buttelmann, 2017; Dunham, Baron, & Carey, 2011; Jordan, McAuliffe, &

Warneken, 2014; Schug, Shusterman, Barth, & Patalano, 2013; Sparks, Schinkel, & Moore, 2017; Vaughan, Tajfel, & Williams, 1981). For example, five-year-olds showed preferential attitudes and shared more with members of the ingroup when their group memberships were randomly assigned to be red or blue. Because children show ingroup bias even when group memberships were experimentally manipulated, it is highly likely that children engage in differential prosocial behavior, particularly when the group category is salient and meaningful to children (e.g., gender; Bigler, 1995).

Gender is one of the earliest group memberships with which children identify; young children begin to learn about the world, and categorize others, based on this basic social category (Bennett, Sani, Hopkins, Agostini, & Mallucchi, 2000; Maccoby, 1986). In addition to the early onset of children's identification with gender groups, children also show strong behavioral preferences for their own gender group (Bigler & Liben, 2007; Martin & Halverson, 1981). This preference has been demonstrated by gender-segregated activities across developmental stages (Mehta & Strough, 2009; Whiting & Edwards, 1988) and by preferential treatment (i.e., high level of liking) of ingroup members (Powlishta, 1995; Zosuls et al., 2011). At the same time, children are socialized, or even enforced, to conform to gender norms (e.g., play with same-gender peers, avoid interacting with other-gender peers; Fagot, 1977; Sroufe et al., 1993; Xiao, Cook, Martin, & Nielson, in press). Therefore, children might show particularly strong ingroup bias in their prosocial behavior toward same- and other-gender peers due to the lack of other-gender interactions and strong behavioral expectations.

Empirical research on children's prosocial behavior toward gender ingroup and outgroup members is scant. Several experimental studies showed that preschoolers

(Renno & Shutts, 2015), kindergarteners (Dunham et al., 2011) as well as school-age children (Weller & Lagattuta, 2014) distributed more resources with same-gender peers than with other-gender peers. However, these studies primarily tested resource distribution and it is unclear whether children's helping behavior toward others would show a consistent pattern of ingroup favoritism.

Patterns of development. Prosocial behavior toward outgroup members, like global prosocial behavior, might increase over time as children's prosocial moral reasoning becomes more other-oriented and less egocentric (Eisenberg, Lennon, & Roth, 1983). However, it is also possible that prosocial behavior continues to increase but only selectively (i.e., toward ingroups versus outgroups) as some researchers have theorized (see Caplan, 1993; Hay, 1994, 2009). Specifically, children's prosocial behavior might become more selective with age because they become more differentiating and regulated as their cognitions and attitudes about behavioral norms and rules governing prosocial behavior mature (Hay & Cook, 2007). This view is also consistent with work on gender development that suggests that children's gender stereotyping attitudes become increasingly rigid, and they engage in more gender-segregated activities after entering school (Halim & Ruble, 2010; Langlois, Gottfried, & Seay, 1973; Maccoby & Jacklin, 1987). Therefore, children's prosocial behavior toward outgroup members might decline over time.

Research on children's prosocial behavior toward same- and other-gender peers is limited, and findings are not all consistent. In one longitudinal study, researchers found that children, particularly girls, develop high ingroup gender bias in their sharing behavior over the second and third year of life (Hay, Castle, Daviews, Demetriou, &

Stimson, 1999). There is some evidence that this trend might extend to children in middle childhood. For example, using cross-sectional designs, researchers showed that school-age children show more ingroup gender bias in their sharing behaviors than preschoolers (Dunham et al., 2011; Weller & Lagattuta, 2014). However, there is also evidence of the opposite pattern: one cross-sectional study indicated that 9-year-olds children shared more with both same-gender and other-gender peers than did 4-year-olds (Benenson, Pascoe, & Radmore, 2007). Thus, longitudinal work examining the development of children's prosocial behavior toward gender ingroup versus outgroup members in middle childhood is needed to elucidate the normative developmental processes of children's gendered intergroup behavior.

Theoretical Framework and Related Empirical Evidence

Social identity theory (SIT). Much work on intergroup relations is guided by Social Identity Theory (SIT; Tajfel & Turner, 1979) and Intergroup Contact Theory (ICT; Allport, 1954). SIT posits that individuals' group identity is directly related to their intergroup attitudes and behaviors because the group identification process is fundamentally a comparison between the ingroup and the outgroup (Tajfel, 1981). Specifically, to achieve positive self-concept and self-esteem, individuals compare themselves to members of other groups in terms of similarity and evaluation (e.g., better or worse; Tajfel & Turner, 1979). This is perhaps why ingroup bias was found even when group memberships were created arbitrarily in the laboratory (e.g., red shirt group versus blue shirt group; Böhm & Buttelmann, 2017; Buttelmann & Böhm, 2014). This comparison between oneself and members of other groups influences individuals' cognitions (e.g., Crocker & Major, 1989; Spears, Doosje, & Ellemers, 1997), emotions

(e.g., Ellemers, Spears, & Doosje, 1997; Tropp & Wright, 1999), and behaviors towards others (e.g., Tajfel & Turner, 1986; Ethier & Deaux, 1994; Smith & Tyler, 1997).

SIT supports a direct link between children's identification with a group membership (e.g., gender) and their behavior toward members of the ingroup and outgroup (e.g., prosocial behavior). However, gender identity is not a unidimensional construct. That is, gender identity is not a binary of either (identifying with) male or female: it is more complex. Specifically, perceived same-gender similarity (i.e., felt same-gender typicality), and perceived other-gender similarity (i.e., felt other-gender typicality) are central aspects of individuals' gender identity (Martin, Andrews, England, Zosuls, & Ruble, 2017). Importantly, gender identity is not only about one's degree of similarity to their same-gender group, instead, both same-gender and other-gender are important reference groups in gender identity formation (Bem, 1974; Martin, Andrews, et al., 2017). The multidimensional nature of gender identity thus creates an empirical question of how children's perceived same- and other-gender similarity might be related to their intergroup prosocial behavior.

To my knowledge, there is no research on the relation between children's perceived gender similarity and their prosocial behavior toward same- and other-gender peers. However, experimental research has shown that children's prosocial behavior toward arbitrary "minimal" outgroup members, such as red or blue group, varied depending on their perceived similarity to outgroup members (Sparks, Schinkel, & Moore, 2017). For example, children shared more with recipients who were described to have shared interests as themselves than with recipients who have different interests. The importance of perceived similarity to particular groups was also shown in another study.

Brown, Spatzier, and Tobin (2010) showed that White children who identified with racial/ethnic minority labels (e.g., hyphenated American) showed more positive attitudes toward racial outgroups than White children who identified as White or American. Although there is limited empirical evidence, it is possible that children's perceived gender similarity toward gender outgroup peers might be positively related to their prosocial behavior toward those peers.

Intergroup Contact Theory (ICT). ICT was originally developed to address race-based intergroup prejudice (Allport, 1954). Specifically, contact with members of outgroups under various conditions is thought to reduce prejudice toward those groups (see Allport, 1954). As such, friendship, which is characterized by prolonged contact over time, are also theorized to improve intergroup relations (Pettigrew, 1997; Pettigrew & Troop, 2000). Decades of research has shown the effect of ICT on various group memberships (e.g., sexual orientation, race/ethnicity, religion), but researchers rarely considered gender as a relevant group category. One exception was an intervention program developed to improve children's gendered peer relationships (Martin, Fabes, et al., 2017). Further, work in this area has largely focused on cognitive and negative aspects of intergroup relations (e.g., prejudice, stereotyping; Pettigrew & Troop, 2006); it is plausible that the reasoning would extend to behavioral aspects (e.g., prosocial behavior).

Although most children are exposed to, and in contact with, other-gender individuals across contexts, such contact does not equate to high-quality positive interactions (Martin, Fabes, et al., 2017). Therefore, friendships with other-gender peers might uniquely and directly contribute to children's gendered intergroup prosocial

behavior. Specifically, because many children mainly engage in activities, and form friendships, with same-gender peers, they are likely more prosocial, and have more opportunities to be prosocial, to same-gender peers than other-gender peers.

To my knowledge, there is no research examining the relation between children's gender-based friendships and their prosocial behavior toward same- and other-gender peers (more generally) in middle childhood. Researchers have demonstrated the proposed relation between cross-group friendships and intergroup prosocial behavior with adults when outgroup members were immigrants (López-Rodríguez, Cuadrado, & Navas, 2015) and experimentally assigned different workgroups (Koschate et al., 2012). With children, there is no research examining children's cross-gender friendships and their intergroup prosocial behavior. Only one study shows that school-age children's cross-race/ethnicity friendships are positively associated with their global prosocial behavior although they did not examine children's intergroup prosocial behavior (Spivak, White, Juvonen, & Graham, 2015). However, there is work on other aspects of intergroup relations: Children's cross-race/ethnicity friendships are positively related to their intergroup ethnic racial attitudes as well as low tolerance of ethnic racial exclusion (Graham, Taylor, & Ho, 2009; Killen, Kelly, Richardson, Crystal & Ruck, 2010). These findings indicate that cross-group friendships might be positively related to children's prosocial behavior toward other-gender peers.

The Current Study

Scientific investigation of the origins, development, and correlates of positive intergroup behavior is relatively scarce, particularly longitudinal work with school-age children. The current study can contribute to the understanding of the developmental

processes of children's positive intergroup behavior toward same- and other-gender peers. Because gender is one of the most basic social categories, understanding gendered intergroup behavior could shed light on other intergroup processes (e.g., race, religion). Moreover, given prosocial behavior has been shown to protect youth from problem behaviors later (e.g., Carlo et al., 2014), this research has the potential to inform strategies to offset negative intergroup behavior.

Overall, the primary goals of the study were to examine two broad aims: first, the development of children's prosocial behavior toward same- and other-gender peers; second, the relation between cross-group friendships and gender identity to children's prosocial behavior toward same- and other-gender peers. Regarding development, I first examined mean-level differences: Are there grade-related differences in children's prosocial behavior toward same- and other-gender peers (Research Question 1a)? I expected that older children would be more biased (i.e., higher same-gender prosocial and lower other-gender prosocial behavior) in their prosocial behavior than younger children (Hypothesis 1). Further, are there gender-related differences in children's prosocial behavior toward same- and other-gender peers (Research Question 1b)? I did not have specific hypotheses because gender differences in prosocial behavior are more complex and not always consistent (Xiao, Hashi, Korous, & Eisenberg, 2019). Broadly, there are two possibilities: Based on gender differences in global prosocial behavior, girls might be more prosocial toward both same-gender and other-gender peers than are boys, because boys experience more pressure to behave stereotypically (e.g., not interacting with girls, not engaging in prosocial behavior) than girls (e.g., Halim & Ruble, 2010). However, based on gender differences in the degree of bias, it is possible that boys are

more prosocial toward other-gender peers and less prosocial toward same-gender peers than are girls as girls show earlier (Maccoby, 1998) and stronger (Dunham et al., 2011; Hay et al., 1999) gender ingroup bias in their preferences for peers and prosocial behavior toward peers than do boys.

In addition to mean-level differences, I examined another aspect of development, namely, rate of change: How does children's gendered intergroup prosocial behavior develop over the course of a school year? I hypothesized that over time children's prosocial behavior toward same-gender peers would increase over time (Hypothesis 2a), whereas prosocial behavior toward other-gender peers would decline over time (Hypothesis 2b).

Research Question 3 and 4 were regarding the predictors of children's gendered intergroup prosocial behavior. How is children's same-gender similarity, and same-gender friendships, related to their prosocial behavior toward same-gender peers concurrently and longitudinally (Research Question 3)? I expected that both perceived same-gender similarity and children's same-gender friendships would positively predict children's prosocial behavior toward same-gender peers controlling for stability (Hypothesis 3a & 3b).

How are children's other-gender similarity, and other-gender friendships, related to their prosocial behavior toward other-gender peers concurrently and longitudinally (Research Question 4)? I expected that both perceived other-gender similarity and children's other-gender friendships would positively predict children's prosocial behavior toward same-gender peers controlling for stability (Hypothesis 4a & 4b).

Lastly, does child gender moderate these proposed relations? (Research Question 5). I expected that the positive relation between other-gender similarity and other-gender prosocial behavior might be stronger for girls than for boys (Hypothesis 5a) because boys likely encounter more barriers, and peer criticism, to approach other-gender peers than girls given the relatively more rigid gender norms in boys' peer groups compared to girls' groups (see Figure S3.1; Banerjee & Lintern, 2000). Further, I expected that the relation between other-gender friendships and prosocial behavior toward other-gender peers would be stronger for girls than boys (Hypothesis 5b) because girls tend to be more cooperative with their friends than boys (see Figure S3.2; Rose & Rudolph, 2006).

Method

Participants

Participants were part of a larger study of school-age children's classroom gender integration and academic outcomes. Students and teachers were recruited from 26 classrooms in three public, co-educational, elementary schools in a metropolitan area in Southwest of U.S. Data were collected using a short-term longitudinal design over the fall (T1) and spring (T2) semester of one year. There is a total of 515 participants in the study, (263, 51.1% boys, Mage = 9.08 years, SD = 1.00), among them, 477 children had data at both T1 and T2, 27 children had data at T1 but attrited from the study at T2 (24 withdrew from school and 3 children refused to participate), 14 children had data only at T2 (8 were new enrollment to school in the Spring semester and 6 received parental consent at T2). Among the total sample of 515 children, there were 174(33.8%) 3rd graders, 177 (34.4%) 4th graders, and 164 (31.8%) 5th graders. Regarding ethnicity, 242

(47%) were non-Latino White, 221 (42.9%) were Hispanic/Latino, 52 (10.1%) were unknown. Regarding race, 243 (47.2%) were White, 72 (14%) were African American, 45 (8.7%) were American Indian or Alaska Native, 9 (1.7%) were Asian, 2 (.4%) were Native Hawaiian or Pacific Islander, and 51 (9.9%) were multiracial, 2 (.4%) were other, and 91 (17.7%) were unknown.

Procedures

Study procedures were approved by the university's Institutional Review Board and participating school districts. Parents were given information about the study and asked if they consented to have the child involved in the study. Only students with parental consent and who provided assent participated in the study. Teachers were also recruited and consented. In October and May, in a large group setting with multiple RAs helping students, students filled out a paper-and-pencil survey about themselves at school for approximately one hour. The surveys include self-report measures as well as peer ratings and nominations. RAs were trained research team members. Specifically, one research staff read questionnaires aloud and students were instructed to follow along and answer the questions. Several research staff answered students' questions and facilitated the assessment process. At each wave, teachers participated in the study by filling out an online survey about their students each semester. Students received a small gift for their time, teachers and schools received modest compensation for their participation.

Measures

Gender identity: Felt same- and other-gender similarity. At each time point, children reported their own gender typicality by using the Perceived Similarity to Own-gender and Other-gender Peers measure (Martin, Andrews, et al., 2017) on a five-point

scale. The scale is consisted of ten items from global similarity (i.e., “How similar do you feel to [girls/boys]”) to local similarities (i.e., “act like [girls/boys],” “look like [girls/boys],” “like to do the same things as [girls/boys],” “like to spend time with [girls/boys]”). Children rated how similar they feel to girls and to boys. At T1, this procedure was carried out by presenting children with visuals (following previous procedure). Specifically, children were shown graphs depicting different relations (in closeness) between two circles (one representing boys/girls, and one themselves). The two circles can range from 0 = furthest separate to 4 = closely overlapped. At T2, the measure was presented in regular written format from 0 = not at all to 4 = a lot due to time constraints. Perceived similarity to own-gender and to other-gender composites were created by recoding and averaging the items. Cronbach’s alphas were .947 and .955 for T1 and T2 for own-gender similarity, and .936 and .939 for T1 and T2 other-gender similarity, respectively.

Peer nominations of prosocial behavior toward same- and other-gender peers. At each time point, Children’s prosocial behavior toward same- and other-gender peers were assessed by peer nomination. Six of the 26 participating classes had at least 60% of students participating in the study, with an average consent rate of 75.7%, the other six classes had lower consent rates ranged from 40% to 58.6%, with an average consent rate of 52.9%. Because students were allowed to nominate any student in the class (including those who did not consent to participate), I included all available data in analyses. Specifically, at each time point, children were given a roster of all students in the classroom and they were asked to write down the names of boys or girls in their class who like to help them (e.g., share a pencil, help figure out a problem) in rank order. There

were ten slots for children to write down names, in addition, they were told that they could write down as many names as they wanted to nominate. To account for class sizes (i.e., the number of nominators within a class) and normalize scores between classes, I computed two continuous proportion scores of prosocial behavior toward same-, and other-, gender peers in three steps. First, I divided the number of same- and other-gender friends nominated over the total number of friends nominated. Second, to account for available numbers of same- and other-gender children in a class (i.e., the proportion of girls and boys in a class), I divided the number of same- and other-gender children by the total number of children in a class. Third, I divided the proportion score created in Step 1 by the proportion score created in Step 2 to create the final proportion score to account for variations in class size. Different from other scales, indices of reliability could not be calculated for peer nomination methods (see Coie & Dodge, 1988). However, the method is widely used in studies published in highly-ranked peer-reviewed journals (e.g., Slaughter, Imuta, Peterson, & Henry, 2015; Van den Berg, Lansu, & Cillessen, 2015).

Peer nominations of friendships with same- and other-gender peers. Similar to the procedure for prosocial behavior nomination, at each time point, children were asked to write down the names of their friends in the classroom in rank order. Thus, each participating child received a friendship nomination score based on the number of reciprocated nominations (i.e., both students agree on friendships) from same- and other-gender classmates. Children's same- and other-gender friendships were calculated in similar procedures as intergroup prosocial behavior.

Analytic Plans

All analyses were conducted using Mplus version 8.2 with the exception of determining which covariates to include (e.g., independent samples t-tests). First, I conducted attrition analyses to investigate the nature of missing data. Then, I conducted various analyses (e.g., independent samples t-tests, analysis of variance) to determine which demographic variables to include as covariates. To address the first research question regarding grade-related and gender-related mean-level differences, I conducted Analysis of Variance to test grade-related differences and independent samples t-tests to test gender-related mean-level differences. From there, demographic variables that were significantly correlated with main variables, and those that show significant group differences (e.g., gender) were included as covariates in path analyses (Research Question 3, 4, and 5).

I used the Robust Maximum Likelihood estimator (MLR) to adjust for standard errors given the amount of missing data for child nominations. Because data were collected from multiple classrooms, I assessed dependency among children from the same classroom using intraclass correlations (ICCs). Following Hox's (1998) recommendation, the ICC was above .05 or .10 would indicate that there was large enough data non-dependency, in that case, I would account for the class-level variance by using TYPE = Complex function to acquire adequate standard errors. This approach is appropriate in Mplus, given the number of classes in the sample ($n = 26$).

To understand how children's prosocial behavior toward same- and other-gender peers change over time (Research Question 2), I estimated a two-wave latent change score model (2W-LCS; Henk & Castro-Schilo, 2015; Valente & MacKinnon, 2017)

which is deemed more appropriate (i.e., less biased) than traditional methods of differences score calculations. Specifically, by avoiding the direct calculation of difference scores, 2W-LCS results in an error-free latent variable of change. I specified the latent change score model by fixing the autoregression path between T1 and T2 variables at 1, and fixing the correlation of T1 and T2 variables at 0. The latent change score was specified to regress on T2 variable and this path coefficient was also fixed at 1. In addition, the residual and intercept of T2 variable were fixed at zero. The mean of the latent variable would indicate the change over time, and the variance of the latent variable would indicate the variability in change. For example, when estimating the latent change score of prosocial behavior toward other-gender peers, if the mean of the latent score was significant and positive, it would indicate that children's prosocial behavior toward other-gender peers increases between T1 and T2. Importantly, the latent change score analysis was only used for this developmental question and was not used for subsequent analyses.

To examine the predictive role of gender identity, and other-gender friendships, to children's prosocial behavior toward same- and other-gender peers, I specified a longitudinal panel model. Specifically, I estimated the unique prediction of T1 perceived similarity to other-gender peers and T1 cross-gender friendships to children's other-gender prosocial behavior at T2 while controlling for construct stability and covariates. In addition to demographic variables, perceived similarity to same-gender peers, same-gender friendships, and prosocial behavior toward same-gender peers will be included as

covariates (when statistically appropriate¹⁰) as they are expected to be correlated with and perceived similarity to other-gender peers cross-gender friendships. Exogenous variables will be allowed to covary (see Figure S3.3).

For prosocial behavior toward same-gender peers, a similar model will be estimated. To assess model fit, we will use the chi-square statistic, the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR) following the recommendation of Hu and Bentler (1999).

Given the reasoning provided, it is also possible that earlier prosocial behavior toward other-gender peers might have some influence on later cross-gender friendships or perceived other-gender similarity. However, these relations are not the focus of the proposed study, therefore, to ensure the direction of effect, I examined a bidirectional model predicting cross-gender friendships at T2 and perceived other-gender similarity at T2 from children's other-gender prosocial behavior at T1 while controlling for construct stability.

To examine the moderating role of child gender for the proposed relations (similarity to prosocial behavior and friendships to prosocial behavior), I conducted a multiple group analysis with child gender as the grouping variable. First, an unconstrained mediation model was estimated in which all parameters (e.g., means of intercept, variance of intercept) are unequal for boys and girls. Then, I set cross-group

¹⁰ For example, the way same- and other-gender prosocial behavior, and same- and other-gender friendships were created made them almost completely opposite of each other, $r(509) = -.94, p < .001$ for same- and other-gender prosocial behavior at both T1 and T2, $r(509) = -.88, p < .001$ and $r(509) = -.89, p < .001$ for same- and other-gender friendships at T1 and T2.

equality constraints, and use Chi-Square difference test to examine the model fit.

Significance of the Chi-Square difference test suggests that the unconstrained model fits the data better, which indicates that gender moderates the mediated relations significantly. After that, decisions of releasing specific paths were made based on modification indices.

Results

Attrition Analyses

Using Pearson chi-square test, I found that the 27 children who attrited at T2 were not significantly different from the non-attrited children in terms of race (i.e., White versus all Other), ethnicity (i.e., Hispanic/Latino versus non-Hispanic/Latino or Other), child gender, or child grade. For all continuous variables in this study, independent sample t-tests showed that attrited children had higher T1 same-gender similarity than non-attrited children, $t(36) = -3.97, p < .001, M = 3.58$ and $3.09, SD = .57$ and 1.05 for attrited and non-attrited children, respectively, suggesting missing was at random (MAR), but not completely at random (MCAR; Enders, 2010). MAR refers to when missingness is systematically related to one or more measured variables. Therefore, I used Full Information Maximum Likelihood (FIML) to handle missing data (because FIML assumes that the mechanism of missing data is MAR).

Descriptive Analyses

Correlations among the main variables, means, and standard deviations are presented in Table S3.1. Overall, same- and other-gender similarities were correlated with same- and other-gender friendships in expected directions, and same- and other-gender friendships were also correlated with same- and other-gender prosocial behavior

in expected directions (although several cross-time correlations were not significant). However, surprisingly, children's same- and other-gender similarities were not correlated with their same- and other-gender prosocial behavior.

It is important to note that children's friendship and prosocial behavior were assessed in the form of peer nomination and a proportion score (with the total number of ratings as the denominator) was used; thus, the same-gender and other-gender variables were not independent of each other. For example, as can be seen in Table S3.1, same-gender prosocial behavior was almost perfectly and negatively correlated with other-gender prosocial behavior. As such, I acknowledge that these variables are not meaningfully different, given the way they were operationalized. This is somewhat less problematic for same-gender and other-gender similarity, but they are moderately and negatively correlated variables (consistent with previous research). Because conceptually, these constructs could have different relations with the variables of interest, and we could not put all variables in the same model, I first specified a same-gender and an other-gender model as proposed, and then specified a model with both same- and other-gender similarities (but only other-gender friendships and prosocial behavior). Finally, I chose the more parsimonious solution as the final model.

Inferential Analysis

I examined grade-related and gender-related differences for all study variables and included these variables when significant differences were found. Aside from same- and other-gender prosocial behavior (Research Question 1, see the section below), there were no differences by age or grade but some gender differences. Girls ($M = 1.07$ and 1.23 , $SD = .62$ and $.88$) rated higher other-gender similarities than did boys ($M = .62$ and

.63, SD = .76 and .71), $t(449) = 5.70, p < .001$ and $t(434) = 7.94, p < .001$, at T1 and T2 respectively; further, boys ($M = 3.40$ and $3.45, SD = .92$ and $.84$) rated higher same-gender similarities than did girls ($M = 2.84$ and $2.96, SD = 1.06$ and $.91$), $t(469) = -6.21, p < .001$ and $t(450) = -5.93, p < .001$, at T1 and T2, respectively. As for race, there were no significant group differences across all study variables when I compared White to racial minorities (i.e., Black, Multiracial, American Indian, Asian, Native Hawaiian or Other Pacific Islander, and Other). Regarding ethnicity, Hispanic children ($M = .81, SD = .78$) reported lower T2 other-gender similarity than non-Hispanic children ($M = 1.01, SD = .89$), $F(2, 455) = 3.05, p < .05$. Thus, ethnicity was included as a covariate when T2 other-gender similarity was included in the model.

Research Question 1. Mean-level Differences in Children's Same- and Other-gender Prosocial Behavior

Research question 1a was about grade-related mean-level differences in children's same- and other-gender prosocial behavior. Hypothesis 1 was that higher grade children (generally older) would be more biased (i.e., higher same-gender prosocial and lower other-gender prosocial behavior) in their prosocial behavior than lower grade children (generally younger). Analysis of Variance (ANOVA) showed partial support for this hypothesis at T2 but not at T1: 3rd graders ($M = 1.30, SD = .69$) had significantly lower scores on T2 same-gender prosocial behavior than did 5th graders ($M = 1.49, SD = .55$), but neither 3rd or 5th graders were not different from 4th graders ($M = 1.40, SD = .54$). Further, 3rd graders ($M = .68, SD = .72$) had significantly higher T2 other-gender prosocial behavior than 5th graders ($M = .50, SD = .56$), but 3rd or 5th graders were not

different from 4th graders ($M = .61$, $SD = .55$). Given these results, child grade was included as a covariate in subsequent path analysis.

Research question 1b was about gender-related mean-level differences in children's same- and other-gender prosocial behavior. I did not have specific hypotheses regarding gender differences in children's prosocial behavior toward same- and other-gender peers because girls might be more prosocial than boys, both toward same- and other-gender peers, but it is also plausible that girls showed stronger ingroup bias than did boys. Results showed that, at both times points, girls showed stronger ingroup bias than did boys (i.e., more favorable toward same-gender peers and less favorable toward other-gender peers). Specifically, girls ($M = 1.53$ and 1.47 , $SD = .59$ and $.58$) had higher scores on same-gender prosocial behavior than did boys ($M = 1.14$ and 1.32 , $SD = .74$ and $.61$), $t(352) = 5.82$, $p < .001$, and $t(418) = 2.60$, $p < .05$, at T1 and T2, respectively. Girls ($M = .49$ and $.54$, $SD = .53$ and $.53$) also had lower scores on other-gender prosocial behavior than did boys ($M = .86$ and $.66$, $SD = .81$ and $.65$), $t(311) = -5.39$, $p < .001$, and $t(402) = -2.11$, $p < .05$ at T1 and T2.

In sum, Hypothesis 1 (i.e., higher grade children would be more biased in their prosocial behavior than lower grade children) was partially supported such that 3rd graders had lower same-gender prosocial behavior and higher other-gender prosocial behavior than 5th graders (only at T2). Further, although exploratory, I found that girls showed greater ingroup bias than did boys. Specifically, girls were more prosocial toward same-gender peers and less prosocial toward other-gender peers than were boys. Given these results, child gender and grade were included as covariates in subsequent analyses.

Research Question 2. The Development of Children's Prosocial Behavior Toward Same- and Other-gender Peers (Rate of Change)

I hypothesized that over time prosocial behavior toward same-gender peers would increase (Hypothesis 2a), whereas prosocial behavior toward other-gender peers would decline (Hypothesis 2b). Using the latent change score approach, I found that, for the overall sample, children's prosocial behavior toward both same-gender peers ($\mu_{\Delta SG\text{prosocial}} = .06, p = .219$) and other-gender peers ($\mu_{\Delta OG\text{prosocial}} = -.07, p = .149$) remained stable over one semester's time. Thus, Hypothesis 2a and 2b were not supported. Further, there was substantial variability of within-person differences for changes in both same-gender ($\sigma^2_{\Delta SG\text{prosocial}} = .64, p < .001$) and other-gender prosocial behavior ($\sigma^2_{\Delta OG\text{prosocial}} = .69, p < .001$) suggesting that (subgroup) children's rate of change differed significantly from each other. To better understand the factors contributing to individual differences in the rate of change, I tested gender and grade differences by examining the 2 (gender) x 3 (grade) interaction on the same-gender prosocial behavior and other-gender prosocial behavior latent change scores.¹¹ Results of these probing analyses showed that boys experienced greater (rate of) change in their intergroup prosocial behavior than did girls. Specifically, boys' prosocial behavior toward same-gender peers increased and their

¹¹ For same-gender prosocial behavior, the interaction term was statistically significant ($\beta = -.55, p < .05$). Further probing (using SUBPOPULATION command) showed that all boys' same-gender prosocial behavior increased ($\mu = .19, p < .01$); in addition, 5th grade boys showed the most pronounced increase, $\mu = .21, p = .057, \mu = .21, p = .060, \mu = .17, p < .05$ for 3rd, 4th, and 5th graders. On the other hand, girls' same-gender prosocial behavior remained stable over time, $\mu = -.05, p = .444$. Among them, 3rd grade girls showed a slight decrease in change, $\mu = -.20, p = .060, \mu = -.03, p = .839, \text{ and } \mu = .12, p = .474$ for 3rd, 4th, and 5th graders. For other-gender prosocial behavior, the gender by grade interaction term was marginally significant ($\beta = .45, p = .084$), and gender was a significant predictor ($\beta = -.53, p < .05$). Further probing of gender differences showed that boys' other-gender prosocial behavior decreased significantly over time ($\mu = -.21, p < .001$) whereas girls' other-gender prosocial behavior remained stable over time ($\mu = .04, p = .493$).

prosocial behavior toward other-gender peers decreased, whereas girls' prosocial behavior remained stable over the school year.

Research Questions 3 & 4. Gender Similarity and Cross-group Friendships as Predictors of Same- and Other-gender Prosocial Behavior.

To test the unique predictions of intergroup friendships and children's perceived gender similarity, I first conducted two separate path analyses (a same-gender model and an other-gender model). First, I examined Research Question 3 (i.e., How is children's same-gender similarity, and same-gender friendships, related to their prosocial behavior toward same-gender peers concurrently and longitudinally), which focuses on the same-gender model. Specifically, Hypothesis 3a was that perceived same-gender similarity would positively predict children's prosocial behavior toward same-gender peers controlling for stability, and Hypothesis 3b was that children's same-gender friendships would positively predict children's prosocial behavior toward same-gender peers controlling for stability.

To examine Research Question 3, I first examined all hypothesized paths in this model (with MLR) while accounting for class-level variance. Endogenous variables were allowed to covary, further, to maximize sample size, I estimated the means of exogenous variables. Child grade and gender were included as covariates. I also allowed child gender to correlate with T1 same-gender similarity to improve model fit (this is consistent with previous t-test). The (unidimensional) model showed decent global fit and local fit, $\chi^2(11) = 6.384$, $p = .847$, CFI = 1.00, SRMR = .02, RMSEA = .00 [.00, .03]. In addition, I estimated an expanded model in which bidirectional paths were included. Satorra-Bentler Chi-square difference test showed that this model-implied

variance/covariance matrix did not fit the data better than the first model, $\chi^2_{\text{dif}}(4) = 2.35$, $p = .672$. Thus, the unidimensional model was kept as the final model (see Figure S3.4).

Results showed that T1 same-gender similarity was not significantly associated with T2 prosocial behavior toward same-gender peers as expected ($\beta = .05$, $p = .254$). Further, T1 same-gender friendships positively predicted T2 same-gender prosocial behavior over and above stability ($\beta = .23$, $p < .01$). Thus, Hypothesis 3a was not supported but 3b was supported.

I then examined Research Question 4 (i.e., How are children's other-gender similarity and other-gender friendships related to their prosocial behavior toward other-gender peers concurrently and longitudinally?), which focuses on the other-gender model. Specifically, Hypothesis 4a was that perceived other-gender similarity would positively predict children's prosocial behavior toward other-gender peers controlling for stability, and Hypothesis 4b was that children's other-gender friendships would positively predict children's prosocial behavior toward other-gender peers controlling for stability.

I conducted a similar analysis for other-gender prosocial behavior (except ethnicity was included as an additional covariate): The first (unidimensional) model had good model fit after allowing child gender to correlate with T1 other-gender similarity, $\chi^2(17) = 21.61$, $p = .200$, CFI = .99, SRMR = .04, RMSEA = .02 [.00, .05]. In addition, I estimated an expanded model in which bidirectional paths were included. Satorra-Bentler Chi-square difference test showed that this model-implied variance/covariance matrix fit the data better than the first model, $\chi^2_{\text{dif}}(4) = 9.45$, $p = .05$, therefore I kept this bidirectional model as the final model for other-gender prosocial behavior (see Figure S3.5). This model showed good fit, $\chi^2(13) = 12.31$, $p = .502$, CFI = 1.00, SRMR = .03,

RMSEA = .00 [.00, .04]. Results showed that T1 other-gender similarity was not significantly associated with T2 prosocial behavior toward other-gender peers as expected ($\beta = .01$, $p = .834$). Further, T1 other-gender friendships positively predicted T2 other-gender prosocial behavior over and above stability ($\beta = .16$, $p < .05$). Hypotheses 4a was not supported but 4b was supported. In addition, findings suggest that T1 other-gender friendships were positively associated with T2 other-gender similarity over and above construct stability ($\beta = .10$, $p < .05$).

Next, I specified a more parsimonious model in which both same-gender and other-gender similarity were included (as they were moderately correlated). In this model, other-gender prosocial behavior and other-gender friendships were included, given the research interests on other-gender relations and given their relations with same-gender variables (almost perfectly correlated).

The unidimensional model in which T2 other-gender prosocial behavior was regressed on all predictors (same- and other-gender similarity, other-gender friendships) and covariates (i.e., gender, grade, ethnicity) over and above stability had good model fit, $\chi^2(27) = 46.62$, $p < .05$, CFI = .95, SRMR = .04, RMSEA = .04 [.02, .06]. In addition, a bidirectional model was also estimated. Satorra-Bentler Chi-square difference test showed that this model-implied variance/covariance matrix fit the data better than the first model, $\chi^2 \text{dif}(7) = 13.55$, $p = .06$; Therefore I kept this bidirectional model as the final model (see Figure S3.6). This model showed good fit, $\chi^2(20) = 32.79$, $p < .05$, CFI = .97, SRMR = .04, RMSEA = .04 [.01, .06].

Results about the role of other-gender friendships and children's same- and other-gender similarity in relation to T2 other-gender prosocial behavior were consistent with

previous analyses (separate models). Specifically, T1 other-gender friendships positively predicted T2 other-gender prosocial behavior but T1 same- and other-gender similarities did not significantly predict T2 other-gender prosocial behavior. In addition, T1 other-gender friendships positively predicted children's T2 other-gender similarity and negatively predicted children's T2 same-gender similarity while controlling for stability. Furthermore, T1 other-gender prosocial behavior was positively associated with T2 same-gender similarity.

Research Question 5. Child Gender as a Moderator

I used multiple group analyses with child gender as a grouping variable to examine gender moderation for the proposal relations for the final model¹² (Figure S3.6). There were 260 boys and 251 girls. I compared the fully constrained model (Model 1; $\chi^2(53) = 114.62$, $p < .001$, CFI = .79, SRMR = .10, RMSEA = .07 [.05, .08]) with the freely estimated model (Model 2; $\chi^2(32) = 36.15$, $p = .281$, CFI = .99, SRMR = .04, RMSEA = .02 [.00, .05]), Satorra-Bentler Chi-square difference test showed that $\chi^2_{\text{dif}}(21) = 76.65$, $p < .001$ suggesting that there were differences in the two models. Modification indices and theoretical rationale supported the release of means for T1 other-gender prosocial behavior, T1 same gender-similarity and T1 other-gender similarity. Once these means were allowed to differ for boys and girls, the model fit for the partially constrained model (i.e., all paths constrained but three means allowed to differ, $\chi^2(50) = 47.06$, $p = .592$, CFI = 1.00, SRMR = .05, RMSEA = .00 [.00, .04]) was compared with the freely estimated (fully unconstrained) model, $\chi^2_{\text{dif}}(18) = 11.35$, $p = .879$, indicating no

¹² Multiple group analysis (with child gender as the grouping variable) with the same-gender model and other-gender model yielded the same results: Gender did not moderate relations in any of the models.

significant difference in model fit. Thus, gender did not moderate the proposal relations (i.e., path coefficients) among variables.

Summary

The first research question was about grade-related and gender-related differences in children's prosocial behavior toward same- and other-gender peers. Results showed that higher grade children showed stronger ingroup bias (i.e., more favorable toward same-gender peers and less favorable toward other-gender peers) in their intergroup prosocial behavior than lower grade younger children (at T2 only). Further, girls showed stronger ingroup bias in their intergroup prosocial behavior than did boys. The second research question was about the rate of change in children's prosocial behavior toward same- and other-gender peers. Results showed that, overall, children's prosocial behavior toward same- and other-gender peers remained stable over one semester. However, there were some gender differences: Boys' prosocial behavior toward same-gender peers increased and their prosocial behavior toward other-gender peers decreased, whereas girls' prosocial behavior remained stable over the school year. The third research question concerned the relations from children's same-gender similarity and same-gender friendships to their prosocial behavior toward same-gender peers. Results showed that same-gender friendships, but not same-gender similarity, were positively related to children's prosocial behavior toward same-gender peers over and above the stability of the constructs. The fourth research question concerned the relations from children's other-gender similarity and other-gender friendships to their prosocial behavior toward other-gender peers. Results showed that other-gender friendships, but not other-gender similarity, were positively related to children's prosocial behavior toward other-gender

peers over and above the stability of the constructs. Additionally, earlier other-gender friendships were positively associated with later other-gender similarity over and above construct stability.

Discussion

To date, there is very little work focusing on children's prosocial behavior toward ingroup and outgroup members based on social categories. In this study, I focused on gender because it is a basic social category and it is salient in children's lives (Maccoby, 1998). My goals were to examine the development and predictors of children's prosocial behavior toward same- and other-gender peers. With regard to development, I examined both mean-level differences based on gender and grade among 3rd to 5th graders, and I also examined the rate of change over one academic year. As for the predictors, I simultaneously tested Social Identity Theory (SIT; Tajfel, 1978) and Intergroup Contact Theory (ICT; Allport, 1954) by examining how children's perceived gender similarity to same- and other-gender peers, and their same- and other-gender friendships, are associated with their prosocial behavior toward same- and other-gender peers.

Overall, there are three noteworthy findings of the current study. First, developmentally, girls' intergroup prosocial behavior remained stable (no significant rate of change) over time, whereas boys' prosocial behavior toward same-gender peers increased and their prosocial behavior toward other-gender peers decreased. Second, children's cross-group friendships were longitudinally and concurrently positively associated with their other-gender prosocial behavior; however, children's perceived gender similarities were not related to their intergroup prosocial behavior. Third,

children's other-group friendships were positively related to their other-gender gender similarity and negatively related to their same-gender similarity both within and across time. Below I discuss these points in detail.

Mean-level Differences and Developmental Patterns

Based on peer nominations, both girls and boys showed ingroup bias in their prosocial behavior toward same- and other-gender peers: Both boys and girls were more prosocial toward same-gender peers than other-gender peers. This finding is consistent with prior research on children's gender-based ingroup bias. Researchers have shown that children like and favor same-gender peers more than other-gender peers likable (Gasparini, Sette, Baumgartner, Martin, & Fabes, 2015; Martin & Fabes, 2001; Zosuls et al., 2011), they also believe same-gender peers to be more communicatively responsive than other-gender peers and more responsive (Xiao, Cook, Martin, Nielson, & Field, 2019). Further, children prefer to include same-gender peers more so than other-gender peers (Peplak, Song, Colasante, & Malti, 2017). The current finding extends the literature by showing that children also engage in more prosocial behavior toward same-gender peers than toward other-gender peers. This finding also provides unique insight on prosocial research in which girls are generally reported, by peers and adults, as more prosocial than boys (see Eisenberg & Fabes, 1998, a meta-analysis). Thus, the finding further underscores the importance of considering various dimensions, such as the recipients, of children's prosocial behavior. In addition to the general pattern of ingroup bias, results also showed that girls had greater ingroup bias than did boys in terms of mean-level differences. That is, girls were significantly more prosocial toward same-gender peers and less prosocial toward other-gender peers than were boys. Other

researchers have shown similar patterns among younger children: For example, Hay and colleagues (1999) observed that toddler girls showed ingroup bias (favoring other girls) in their sharing behavior, whereas toddler boys shared with peers of both genders equally.

Aside from mean-level differences, when I examined the rate of change for children's intergroup prosocial behavior, I found that boys' prosocial behavior toward same-gender peers increased and their prosocial behavior toward other-gender peers decreased over time. This pattern of change is likely because children's prosocial behavior might become more selective with age by considering the recipients of prosocial behavior, as well as their self-interest (Caplan, 1993; Hay, 1994). Specifically, given limited resources, children might act prosocially only toward certain recipients from whom they would expect prosocial behavior in return (i.e., ingroup members). However, such a hypothesis remains to be examined by assessing the motives of children's differentiated prosocial behavior. This finding is important because it extends previous, cross-sectional research in which researchers reported that school-age children show more ingroup gender bias in their sharing behavior (Dunham et al., 2011) and helping intentions (Weller & Lagattuta, 2014) than do preschoolers.

Girls' intergroup prosocial behavior remained stable with relatively high same-gender and low other-gender prosocial behavior over time. That is, girls' intergroup prosocial behavior did not change significantly over time. Why might this be? It is possible that girls' intergroup prosocial behavior shows similar patterns to those of boys during middle childhood except that changes happen slower for girls (e.g., longer than one academic year). There is some support for this possibility because both boys and girls showed similar patterns of intergroup prosocial behavior in terms of the means.

Specifically, all children had lower levels of other-gender prosocial behavior and higher levels of same-gender prosocial behavior. Further, cross-sectional findings showed that 5th graders had higher same-gender prosocial behavior, and lower other-gender prosocial behavior, than did 3rd graders, regardless of child gender (only at T2). Thus, girls may show a similar pattern of intergroup prosocial behavior over three years during late childhood.

It is plausible that boys and girls experience similar patterns of development but at different times: Perhaps the change (increase in same-gender, and decrease in other-gender, prosocial behavior) happened earlier in development for girls than for boys. Although I could not examine this speculation with the current data, this might be the case because it is thought that children's behaviors toward others become more selective (e.g., target specific) with age (Caplan, 1993; Hay, 1994). Perhaps, by age 9 to 11, the rate of change in girls' intergroup prosocial behavior has slowed down with the onset of puberty and potential romantic interests in boys because girls generally experience earlier pubertal maturation than boys (Connolly, Craig, Goldberg & Pepler, 2004).

Another possibility is that the patterns of developmental trajectories for intergroup prosocial behavior differ for boys and girls during middle to late childhood. Previous research also demonstrated that boys and girls do not always show similar developmental patterns. For example, in a classic study, LaFrenier, Strayer, and Gauthier (1984) showed that boys' same-gender interactions linearly increased from 1 to 6 years of age whereas girls experienced a greater increase (than boys) early on by 27 months but then leveled-off during preschool to early elementary years. In this work, girls' other-gender prosocial behavior at 4th grade was higher than that of 3rd and 5th grade girls, suggesting that it is

possible that girls' other-gender prosocial behavior shows a quadratic pattern during middle childhood. Thus, the data from this study may provide preliminary evidence that, in middle to late childhood, boys and girls both show increasing and linear growth in same-gender prosocial behavior—but for other gender prosocial behavior, boys might show linear decrease whereas girls might show an upward quadratic pattern (inverse U shape). Nonetheless, these patterns might be unique to preadolescents because children's gender-based relationships likely change during adolescents (Field & Martin, 2016). These interesting possibilities can be tested in future work with multiple assessments over time.

Testing Intergroup Contact Theory and Social Identity Theory

The finding that other-gender friendships were positively related to children's prosocial behavior toward other-gender peers both longitudinally and concurrently extends previous research in three ways. First, despite the amount of research testing intergroup contact hypothesis (e.g., Pettigrew & Tropp, 2006), the majority of this literature focuses on the intergroup friendship-attitudes link; whether cross-group friendships would influence intergroup behaviors, particularly positive behaviors, has rarely been examined (cf. López-Rodríguez et al., 2015; Koschate et al., 2012). Second, gender is generally not the focal intergroup category of interest in the intergroup literature; instead, the majority of research revolved around social categories such as race/ethnicity, nationality, and age (e.g., Davies et al., 2011). Third, prior studies primarily focused on adults rather than children (see Pettigrew & Tropp, 2006). The current finding extends the literature by showing that intergroup contact would not only reduce negative attitudes toward outgroup members (as prior research shows) but also

foster positive behaviors toward outgroup members. This finding is exciting because biases related to positive behaviors are likely more pervasive and harder to combat than negative biases (see Mummendey & Otten, 1998).

Children's perceived gender similarity was not related to their prosocial behavior toward same- and other-gender peers either within or across time. This finding is surprising for two reasons. Because based on SIT, children's subjective identification with gender groups should be related to their intergroup prosocial behavior, among other intergroup behaviors. Empirically, researchers have shown that school-age children's perceived gender similarity was related to their social emotional well-being (e.g., same- and other-gender friendships) in meaningful ways (Martin, Andrews et al., 2017). Others have shown the effect of promoting perceived similarity on prosocial behavior toward arbitrary outgroup members with younger children (4- to 6-year-olds; Sparks et al., 2017). However, perhaps it is also important to have information of gender similarity for both the perceiver and the target. For example, although it is thought that boys who feel more similar to girls might be more likely to act prosocially toward girls, perhaps their prosocial intentions would only extend to girls who feel similar to boys. I could not test this speculation given that there were no clear markers of gender similarity of the targets of children's prosocial behavior. However, both girls and boys showed gender ingroup bias in their intergroup prosocial behavior. That is, rather than children's subjective identification with a gender group (or the degree of identification), their categorical gender (i.e., whether one is a boy/girl) was meaningfully related to their prosocial behavior toward same- and other-gender peers. This finding might be due to the salience of gender and the segregated nature of children's gendered peer relationships (e.g., Xiao,

Cook, Martin, & Nielson, 2019). However, it is also possible that children's perceived gender similarity is indirectly (rather than directly) related to their intergroup prosocial behavior through empathy-related responding because perceived self-other similarity is a basic factor that motivates empathy (Stürmer & Snyder, 2009). If this is the case, the direct relation between gender similarity and intergroup prosocial behavior might not be statistically significant (O'Rourke & MacKinnon, 2015; Preacher & Selig, 2012).

Additionally, it is also likely that the relation between gender similarity and children's intergroup prosocial behavior is moderated by children's empathy. For example, when empathy is high, perhaps children's intergroup prosocial behavior would be high regardless of their gender similarity, but when empathy is low, perhaps children's gender similarity is positively related to their intergroup prosocial behavior. It would be informative to assess children's empathy-related responding in future work to examine this relation.

Other-gender Friendships Predicted Perceived Gender Similarity

One interesting but unexpected finding concerns the relation between children's other-gender friendships and their perceived gender similarity: Children's other-gender friendships positively predicted changes in other-gender similarity and negatively predicted changes in their same-gender similarity, over and above stability. Although the relation between other-gender friendships and gender similarity was not the focus of this study, this finding is informative for future research and practice in several ways.

First, given this finding, it is possible that cross-group friendships, such as cross-race/ethnicity friendships, might also promote children's increased felt similarity to those groups, which in turn might promote improved intergroup relations, according to ideas of

ICT and SIT. Although gender similarity did not predict children's gender-based prosocial behavior, it remains a question of interest whether these constructs are related to other group categories such as race/ethnicity or nationality (e.g., Sparks et al., 2017). Second, this finding suggests that the other-gender friendships and gender-based similarities might have transactional relations such that earlier similarity predicts later friendships which in turn predicts greater similarity. Even though in this study, children's gender similarity did not predict their other-gender friendships, such null finding may be due to children's age: It is possible that children's gender similarity predicted their other-gender friendships early in development which in turn promotes more similarity. This possibility is supported by research on young children's peer relations because researchers have consistently shown the peer homophily effect that "birds of a feather flock together" (McPherson, Smith-Lovin, & Cook, 2001). Specifically, researchers have shown that toddlers and preschoolers develop friendships with peers based on similarity across domains including demography (e.g., gender), social skills, and academic ability (Graham, Cohen, Zbikowski, & Secrist, 1998; Howes & Phillipsen, 1992; Martin & Fabes, 2001). Third, regardless of whether gender similarity predicts children's intergroup friendships, the finding that other-gender friendships can promote gender similarity is important because children's perceived gender similarity is related to various aspects of social adjustment and well-being (Martin, Andrews, et al., 2017). As such, socializers could engage in various practices (e.g., foster other-gender interactions) to potentially influence children's perceived similarity to same- and other-gender peers.

Strengths, Limitations, and Future directions

In this study, I used advanced statistical methods to examine two developmental issues in children's gendered intergroup prosocial behavior: between-person differences by grade and within-person variabilities of the rate of change. Further, I examined two central theories in intergroup research (SIT and ICT) by testing the unique predictions from children's other-gender friendships and gender similarity to their intergroup prosocial behavior. Despite these strengths, the study has some limitations. First, children's prosocial behavior toward same- and other-gender peers were assessed by relying on peers' perceptions of whether a child is likely to be helpful rather than direct assessment (e.g., observational or behavioral) of the behavior. This method might be troublesome because it is possible that children nominated more well-liked or generally socially competent peers rather than focusing on their prosocial behaviors, per se.

Second, because prosocial behavior was assessed with peer nominations, children's prosocial behavior toward same- and other-gender peers were computed as proportion scores such that they were highly and inversely correlated with each other. It is likely that, when considering the levels versus proportions, children's prosocial behavior toward ingroup and outgroup members might be positively correlated if trait prosociality/compassion fosters children to be prosocial toward many people; these constructs might also be not very highly correlated if children's prosocial behavior toward ingroup and outgroup members are motivated by different concerns. These are interesting questions to be examined in future research. Relatedly, the relations between same-gender friendships and same-gender prosocial behavior, and between other-gender friendships and other-gender prosocial behavior, were identical (due to the high correlations). There is a need to further test these relations.

Third, as researchers have shown that peer report, as well as ratings reported by teachers, and/or parents, generally reflect the gender stereotype that girls are more helpful than boys (see Eisenberg & Fabes, 1998), it is possible that the assessment was somewhat inflated, favoring girls. As such, it could be helpful for future researchers to incorporate observational or experimental assessments of children's intergroup prosocial behavior. It is important for future work to assess these constructs beyond classrooms in the future.

Lastly, although the two-wave longitudinal design allowed for stronger testing of causal relation controlling for stability, two-wave data are limited in investigating developmental trends. Ideally, to assess change over time, at least three time points are needed to test linear growth and at least four-time points are required to test quadratic growth (Bollen & Curran, 2006). Thus, in future studies, researchers could examine within-person developmental trajectories more rigorously with multiple assessments.

Conclusions

The field of prosocial development is moving toward treating prosocial behavior as a multidimensional construct (e.g., different types of prosocial behavior; Padilla-Walker & Carlo, 2014). Recently, there has been increasing interest in examining children's prosocial behavior toward ingroup and outgroup members (e.g., Fraser et al., 2020; Weller & Lagattuta, 2014). With a few cross-sectional studies in this area, the current study expanded this body of work substantially as I integrated both the prosocial literature and the intergroup literature. Developmentally, this research provided some initial evidence of the within-person developmental trajectories of children's intergroup prosocial behavior. I examined both mean-level differences and the rate of change in children's prosocial behavior toward same- and other-gender peers. Together, findings

suggest that the target of prosociality matters: For both girls and boys, prosocial behavior toward same-gender peers was higher than that directed toward other-gender peers. Further, boys same-gender prosocial behavior increased with age whereas their other-gender prosocial behavior decreased with age but no such developmental changes were identified for girls. Surprisingly, results showed support for ICT but not for SIT such that children's other-gender friendships, but not their gender similarity, were related to their prosocial behavior toward other-gender peers over time. Together, these findings contribute to the understanding of the development and predictors of children's gender-based intergroup prosocial behavior, and they could shed light on children's intergroup prosocial behavior across other categories (e.g., race/ethnicity).

General Discussion

Prosocial behavior refers to voluntary acts benefit another (Eisenberg et al., 2015). Prior research on prosocial behavior has generally focused on global prosocial behavior. However, it is important to treat prosocial behavior as a multidimensional construct because various types of prosocial behaviors (e.g., sharing) and prosocial behaviors enacted toward various targets (e.g., strangers) are motivated by different concerns (Padilla-Walker & Carlo, 2014). To date, there is little work on prosocial behavior toward ingroup versus outgroup members, and it remains understudied how children's differential prosocial behavior develops in childhood.

Given the voluntary (versus obligatory) nature of prosocial behavior, individuals might be more likely to show biases in this behavior as compared to harmful behaviors toward others (Otten & Mummendey, 1999). However, much research attention has been devoted to reducing negative intergroup attitudes whereas the mechanism for fostering positive intergroup behaviors remains underexamined, particularly for children. As our society becomes increasingly diverse, promoting children's prosocial behavior toward diverse others who are similar and dissimilar from themselves is becoming an important developmental task.

The goal of this dissertation was to examine the development and the predictors of children's intergroup prosocial behavior from early to late childhood. Intergroup prosocial behavior refers to voluntary behavior that benefits recipients who are similar or dissimilar in their group memberships such as gender and race. In particular, my interest is in the factors that relate to prosociality toward dissimilar/diverse others. To address the research goal, I drew upon the well-established prosocial literature and the intergroup

relations literature and proposed an integrative model of the predictors and processes of children's intergroup prosocial behavior (see Figure 1). Specifically, I tested Intergroup Contact Theory (ICT; Allport, 1954) and Social Identity Theory (SIT; Tajfel & Turner, 1986) in three studies with a particular focus on gender and race using advanced statistical analyses (e.g., Latent Change Score Model; Multilevel Modeling; Mediation & Moderation Analyses). Broadly, findings of these studies contributed to our understanding of how to promote children's prosocial behavior toward diverse others.

According to ICT, children's cross-group friendships would be positively related to their intergroup prosocial behavior. Across preschool to preadolescent children in three studies, I consistently found that children's other-gender friendships were positively related to their prosocial behavior toward other-gender peers (in Studies 1 and 3) and prosocial behavior toward outgroup members more broadly (strangers/outgroups in Study 2). Furthermore, this relation was found both concurrently and longitudinally (Studies 1 and 3). Given the pervasiveness of gender segregation during childhood (e.g., Maccoby, 1998; Mehta & Strough, 2009), this finding highlighted that fostering children's other-gender friendships might yield fruitful results in promoting children's intergroup relations and behavior across group categories. Although there are numerous studies focusing on intergroup relations, gender is rarely considered a target category in the literature (e.g., Davies et al., 2011; Pettigrew & Tropp, 2006). Thus, the current finding makes a strong case that intergroup contact theory also applies to gender as a social category, and gender should be considered as a social group category in intergroup research.

A direct relation between cross-race friendships and children's intergroup prosocial behavior was examined in Study 2 but was not supported. This finding suggests

that the proposed conceptual model for children's intergroup prosocial behavior might differ for various social categories. Gender and race/ethnicity, for example, might function differently because most children live in a gender diverse world (in which they have exposure and some contact with other-gender peers), whereas children might not necessarily have such exposure to diverse races/ethnicities. Indeed, in Study 2, teachers reported an average of 49% of boys in their classrooms, but 69% of White children. Despite the mixed gender environment that most children find themselves in, they also express same-gender preferences beginning at a young age (Martin & Fabes, 2001) and are more attuned to gender than race (Rogers & Meltzoff, 2017). For these reasons, for young children, having other-gender friends might be more surprising in their peer relations, whereas having other-race (same-gender) friends might be more acceptable. This might be why the direct relation between other-gender friendships and intergroup prosocial behavior was robust, whereas other-race friendships and intergroup prosocial behavior were not directly related.

SIT posits that individuals' social identity, particularly their subjective identification with group memberships, would be related to their intergroup behavior (Tajfel, 1981). Although categorical group membership (e.g., being a girl) is thought to be related to one's intergroup behaviors, researchers argued that the degree to which individuals identify with a group (e.g., how similar one is to other girls) would be more relevant than categorical memberships for their intergroup behaviors (Ashmore, Deaux, & McLaughlin-Volpe, 2004). In Study 3, I examined children's gender identity (i.e., perceived gender similarity) and their prosocial behavior toward other-gender peers. Contrary to my expectations, findings showed that children's perceived gender similarity

was not related to their intergroup prosocial behavior either within time or across time. However, children's categorical gender, that is, whether one is a boy or a girl, rather than one's degree of perceived similarity to boys or girls, was related to their intergroup prosocial behavior (only testable in Study 3). Therefore, perhaps children's group membership (categorical), versus group identification (continuous), drives their intergroup prosocial behavior, at least for gender. This idea is partially consistent with SIT. It may also be the case that there is a developmental change in whether gender as a category or identification drives prosocial behavior. Why children's gender identity was not related to their intergroup prosocial behavior requires further investigation given that there is limited research examining SIT among children.

Children's cross-group friendships and intergroup attitudes were not positively related as I expected (and as ICT literature shows). This relation was examined in Studies 1 and 2. Specifically, in Study 1, children's other-gender friendships did not predict their affective or cognitive gender attitudes longitudinally; However, there was a weak (concurrent) positive correlation between other-gender friendships and cognitive attitudes, suggesting that the relation between these constructs might be stable and this reduced the amount of variance to be explained. In Study 2, children's other-gender friendships were not related to their egalitarian gender attitudes (about occupations). The differences between these two studies were likely found because attitudinal measures varied across studies. Cognitive and affective attitudes are generally examined in the intergroup literature as indicators of group-based prejudice (e.g., Pettigrew & Tropp, 2006). Children's egalitarian attitudes about occupations differ from cognitive and affective attitudes because egalitarian attitudes represent cognitive flexibility/stereotyping

(Halim et al., 2017), whereas affective and cognitive attitudes assess children's attitudes about a specific group. For example, children who believe that both men and women can be truck drivers or doctors might still report that they do not like other-gender peers (i.e., affective attitudes) or that they think other-gender peers are not nice (i.e., cognitive attitudes).

I tested the mediating role of intergroup attitudes and moral emotions in Studies 1 and 2. Specifically, I tested gender-based intergroup attitudes in both studies and tested race-based sympathy in Study 2. The mediating/indirect effects of gender-based intergroup attitudes were not statistically significant in either Studies 1 or 2. Children's race-based sympathy mediated the relation between children's cross-race friendships and their ingroup prosocial behavior, but not outgroup prosocial behavior as expected, in Study 2. Given that race/ethnicity is the most well-studied group category in the intergroup literature, the results of race-based sympathy are not surprising (e.g., Pettigrew & Tropp, 2008). The potential mediating role of gender-based attitudes should be further investigated because neither Study 1 (two-wave data) nor Study 2 (cross-sectional data) was equipped to rigorously test mediation; it would be ideal to test mediation with three repeated assessments to elucidate the temporal precedence and the processes among focal variables (MacKinnon, 2008).

Other than these predicted paths, across all three studies, I found that the relations among gender similarity, intergroup friendships, and children's prosocial behavior toward same- and other-gender peers did not differ between boys and girls; that is, gender did not moderate these relations. This finding advances our understanding that, although

there are gender differences in children's behaviors (e.g., Rose & Rudolph, 2006), the processes of children's intergroup relations are similar for girls and boys.

Together, these studies provide directions for future research. Researchers should assess children's intergroup prosocial behavior more rigorously to better understand the development and predictors of children's intergroup prosocial behavior. For example, findings suggest that indirect assessment (e.g., teacher-report) might not be sensitive enough to capture children's prosocial behavior toward ingroup and outgroup members. Direct behavioral or observational assessments are needed. Further, it is important to investigate children's (and even adults') intergroup relations by considering multiple social group categories, and treating intergroup relations continuously, both in the target of prosocial behavior and children themselves. For example, it may be important to assess multiple social identities (e.g., gender, race/ethnicity) in relation to children's prosocial behavior toward diverse others.

In sum, this basic research has the potential to shed light on ways to promote equity and inclusion, and potentially offset negative behaviors, across various social groups early in development. In particular, across all three studies, findings indicate that friendships with other-gender peers are positively associated with children's prosocial behavior toward diverse others (not only toward other-gender peers, but also others who are dissimilar in race/ethnicity and nationality) from preschool age to late childhood. Perhaps due to the pervasiveness of gender segregation during childhood, gender has not been considered as an intergroup social category. One might even say that gender-based intergroup attitudes, relations, and behaviors are relatively invisible compared to other salient social categories such as race and ethnicity because it is often thought that males

and females are in contact with each other. As psychological science moves toward greater emphasis on diversity and inclusion, this research highlights the importance of gender, particularly gender-based relationships. Promoting children's gender-based friendships could foster not only children's gender-based relations (prosocial behavior) but also children's intergroup peer relations more broadly (i.e., prosocial behavior toward diverse others across different social categories such as race/ethnicity).

REFERENCES

- About, F. E., & Spears Brown, C. (2013). Positive and negative intergroup contact among children and its effect on attitudes. In G. Hodson & M. Hewstone (Eds.), *Advances in intergroup contact* (pp. 176–199). New York, NY: Psychology Press.
- Abrams, D., Rutland, A., & Cameron, L. (2003). The development of subjective group dynamics: Children's judgments of normative and deviant in-group and out-group individuals. *Child Development, 74*, 1840–1856. <https://doi.org/10.1046/j.1467-8624.2003.00641.x>
- Allport, G. W. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.
- Amodio, D. M., & Devine, P. G. (2006). Stereotyping and evaluation in implicit race bias: Evidence for independent constructs and unique effects on behavior. *Journal of Personality and Social Psychology, 91*, 652–661. doi:10.1037/0022-3514.91.4.652
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*, 411–423. <http://dx.doi.org/10.1037/0033-2909.103.3.411>
- Aron, A., & McLaughlin-Volpe, T. (2001). Including others in the self. In C. Sedikides, & M. Brewer (Eds.), *Individual self, relational self, collective self* (pp. 89–108). New York, NY: Psychology Press.
- Banerjee, R., & Lintern, V. (2000). Boys will be boys: The effect of social evaluation concerns on gender-typing. *Social Development, 9*, 397–408. <https://doi.org/10.1111/1467-9507.00133>
- Bar-Haim, Y., Ziv, T., Lamy, D., & Hodes, R.M. (2006). Nature and nurture in own-race face processing. *Psychological Science, 17* (2), 159–163. doi: 10.1111/j.1467-9280.2006.01679.x
- Barraza, J. A., & Zak, P. J. (2009). Empathy toward strangers triggers oxytocin release and subsequent generosity. *Annals of the New York Academy of Sciences, 1167*(1), 182–189.
- Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology, 42*, 155. doi:10.1037/h0036215
- Benenson, J. F., Pascoe, J., & Radmore, N. (2007). Children's altruistic behavior in the dictator game. *Evolution and Human Behavior, 28*, 168–175. doi:10.1016/j.evolhumbehav.2006.10.003

- Bennett, M., & Sani, F. (2003). The role of target gender and race in children's encoding of category-neutral person information. *British Journal of Developmental Psychology*, 21, 99–112. <https://doi.org/10.1348/026151003321164645>
- Bennett, M., Sani, F., Hopkins, N., Agostini, L., & Mallucchi, L. (2000). Children's gender categorization: An investigation of automatic processing. *British Journal of Developmental Psychology*, 18, 97–102. <https://doi.org/10.1348/026151000165599>
- Bigler, R. S. (1995). The role of classification skill in moderating environmental influences on children's gender stereotyping: A study of the functional use of gender in the classroom. *Child Development*, 66, 1072–1087. <https://doi.org/10.2307/1131799>
- Bigler, R. S., & Liben, L. S. (2007). Developmental intergroup theory: Explaining and reducing children's social stereotyping and prejudice. *Current Directions in Psychological Science*, 16, 162–166. doi:10.1111/j.1467-8721.2007.00496.x
- Böhm, R., & Buttelmann, D. (2017). The impact of resource valence on children's other-regarding preferences. *Developmental Psychology*, 53, 1656–1665. doi:10.1037/dev0000365
- Buttelmann, D., & Böhm, R. (2014). The ontogeny of the motivation that underlies in-group bias. *Psychological Science*, 25, 921–927. doi:10.1177/0956797613516802
- Brown, C. S., & Bigler, R. S. (2005). Children's perceptions of discrimination: A developmental model. *Child Development*, 76, 533–553. <http://dx.doi.org/10.1111/j.1467-8624.2005.00862.x>
- Brown, R., & Hewstone, M. (2005). An integrative theory of intergroup contact. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, (Vol. 37, pp. 255–342). San Diego, CA: Elsevier. doi:10.1016/S0065-2601(05)37005-5
- Brown, C. S., Spatzier, A., & Tobin, M. (2010). Variability in the inter-group attitudes of White children: What we can learn from their ethnic identity labels. *Social Development*, 19, 758–777. <https://doi.org/10.1111/j.1467-9507.2009.00571.x>
- Buhrmester, D., Goldfarb, J., & Cantrell, D. (1992). Self-presentation when sharing with friends and non-friends. *Journal of Early Adolescence*, 12, 61–79. doi:10.1177/0272431692012001004
- Caplan, M. (1993). Inhibitory influences in development: The case of prosocial behavior. In D.F. Hay, & A. Angold (Eds.), *Precursors and causes in development psychopathology* (pp. 169–198). New York, NY: Wiley.

- Caplan, M. Z., & Hay, D. F. (1989). Preschoolers' responses to peers' distress and beliefs about bystander intervention. *Journal of Child Psychology and Psychiatry*, 30, 231–242. doi:10.1111/j.1469-7610.1989.tb00237.x
- Caprara, G. V., Barbaranelli, C., Pastorelli, C., Bandura, A., & Zimbardo, P. G. (2000). Prosocial foundations of children's academic achievement. *Psychological science*, 11, 302–306. <https://doi.org/10.1111/1467-9280.00260>
- Caprara, G. V., & Steca, P. (2005). Self-efficacy beliefs as determinants of prosocial behavior conducive to life satisfaction across ages. *Journal of Social and Clinical Psychology*, 24, 191–217. <http://dx.doi.org/10.1521/jscp.24.2.191.62271>.
- Carlo, G., Mestre, M. V., Samper, P., Tur, A., & Armenta, B. E. (2010). Feelings or cognitions? Moral cognitions and emotions as longitudinal predictors of prosocial and aggressive behaviors. *Personality and Individual Differences*, 48, 872–877. doi:10.1016/j.paid.2010.02.010
- Castillo, L. G., Perez, F. V., Castillo, R., & Ghosheh, M. R. (2010). Construction and initial validation of the Marianismo beliefs scale. *Counseling Psychology Quarterly*, 23, 163–175. doi:10.1080/09515071003776036
- Chen, X., & Graham, S. (2015). Cross-ethnic friendships and intergroup attitudes among Asian American adolescents. *Child Development*, 86, 749–764. <https://doi.org/10.1111/cdev.12339>.
- Connolly, J., Craig, W., Goldberg, A., & Pepler, D. (2004). Mixed-gender groups, dating, and romantic relationships in early adolescence. *Journal of Research on Adolescence*, 14, 185–207. doi:10.1111/j.1532-7795.2004.01402003.x
- Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. *Psychological Review*, 96, 608–630. <https://doi.org/10.1006/jesp.1998.1369>
- Davies, K., & Aron, A. (2016) Friendship development and intergroup attitudes: The role of interpersonal and intergroup friendship processes. *Journal of Social Issues*. 72, 489–510. doi: 10.1111/josi.12178
- Davies, K., Tropp, L. R., Aron, A., Pettigrew, T. F., & Wright, S. C. (2011). Cross-group friendships and intergroup attitudes: A meta-analytic review. *Personality and Social Psychology Review*, 15, 332–351.
- Davis, A. N., Carlo, G., & Knight, G. P. (2015). Perceived maternal parenting styles, cultural values, and prosocial tendencies among Mexican American youth. *Journal of Genetic Psychology*, 176, 235–252. <https://doi.org/10.1080/00221325.2015.1044494>

- Dovidio, J. F., Brigham, J. C., Johnson, B. T., & Gaertner, S. L. (1996). Stereotyping, prejudice, and discrimination: Another look. In N. Macrae, C. Stangor, & M. Hewstone (Eds.), *Stereotypes and stereotyping* (pp. 276–319). New York, NY: Guilford.
- Dunfield, K. A., & Kuhlmeier, V. A. (2010). Intention-mediated selective helping in infancy. *Psychological Science*, 21, 523–527. doi:10.1177/0956797610364119
- Dunfield, K. A., Kuhlmeier, V. A., & Murphy, L. (2013). Children’s use of communicative intent in the selection of cooperative partners. *PLoS one*, 8, e61804.
- Dunham, Y., Baron, A. S., & Carey, S. (2011). Consequences of “minimal” group affiliations in children. *Child Development*, 82, 793–811. doi:10.1111/j.1467-8624.2011.01577.x
- Eagly, A. H., & Chaiken, S. (1998). Attitude structure and function. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 269–322). McGraw-Hill.
- Eisenberg, N., & Fabes, R. A. (1998). Prosocial development. In W. Damon & N. Eisenberg (Ed.), *Handbook of Child Psychology: Social, Emotional, and Personality Development*. (pp. 701–778). Hoboken, NJ: John Wiley & Sons Inc.
- Eisenberg, N., Lennon, R., & Roth, K. (1983). Prosocial development: A longitudinal study. *Developmental Psychology*, 19, 846–855. <https://doi.org/10.1037/0012-1649.19.6.846>
- Eisenberg, N., Sallquist, J., French, D. C., Purwono, U., Suryanti, T. A., & Pidada, S. (2009). The relations of majority-minority group status and having an other-religion friend to Indonesian youths’ socioemotional functioning. *Developmental Psychology*, 45, 248–259. doi:10.1037/a0014028
- Eisenberg N., Spinrad T. L., & Knafo-Noam A. (2015). Prosocial development. In M.E. Lamb & C. Garcia Coll (Eds.), *Handbook of child psychology and developmental science: Vol. 3. Social, emotional, and personality development* (7th ed.) (pp. 610–658). New York, NY: Wiley.
- Eisenberg, N., Spinrad, T. L., & Sadovsky, A. (2006). Empathy-related responding in children. In M. Killen, & J. G. Smetana (Eds.), *Handbook of moral development* (pp. 517–549). Mahwah, NJ: Lawrence Erlbaum Associates.
- Eisenberg, N., VanSchyndel, S. K., & Spinrad, T. L. (2016). Prosocial motivation: Inferences from an opaque body of work. *Child Development*, 87, 1668–1678. doi:10.1111/cdev.12638.

- Ellemers, N., Spears, R. & Doosje, B. (1997). Sticking together or falling apart: Ingroup identification as a psychological determinant of group commitment versus individual mobility. *Journal of Personality and Social Psychology*, 72, 617–626. <http://dx.doi.org/10.1037/0022-3514.72.3.617>
- Eller, A., & Abrams, D. (2004). Come together: Longitudinal comparisons of Pettigrew's reformulated intergroup contact model and the common ingroup identity model in Anglo-French and Mexican-American contexts. *European Journal of Social Psychology*, 34, 229–256. doi:10.1002/ejsp.194
- Enders, C. K. (2010). *Applied missing data analysis*. New York, NY: Guilford Press.
- Fabes, R. A., Hanish, L. D., & Martin, C. L. (2003). Children at play: The role of peers in understanding the effects of child care. *Child Development*, 74, 1039–1043 <https://doi.org/10.1111/1467-8624.00586>
- Fagot, B. I. (1977). Consequences of moderate cross-gender behavior in preschool children. *Child Development*, 48, 902–907. doi:10.2307/1128339
- Field, R. D., & Martin, C. L. (2016). The development of other-gender interactions: Behavioral, biological, cognitive, and contextual influences. In T. Roberts, N. Curtin, L. E. Duncan, & L. M. Cortina (Eds.), *Feminist Perspectives on Building a Better Psychological Science of Gender* (pp. 121–139). Cham: Springer. https://doi.org/10.1007/978-3-319-32141-7_8.
- Fiske, S. T. (2000). Stereotyping, prejudice, and discrimination at the seam between the centuries: Evolution, culture, mind, and brain. *European Journal of Social Psychology*, 30, 299–322. doi:10.1002/(SICI)1099-0992(200005/06)30:3<299::AID-EJSP2>3.0.CO;2-F
- Flook, L., Goldberg, S. B., Pinger, L., & Davidson, R. J. (2015). Promoting prosocial behavior and self-regulatory skills in preschool children through a mindfulness-based kindness curriculum. *Developmental Psychology*, 51, 44–51. doi:10.1037/a0038256
- Fraser, A. M., Hampton, R., Spinrad, T. L., Varnum, M., Eisenberg, N., Gal-Szabo, D., Berger, R. H., Xu, J., & Xiao, S. X. (in press). Children's Mu suppression is sensitive to witnessing others' social victimization. *Social Neuroscience*. doi:10.1080/17470919.2020.1722220
- Fujisawa, K. K., Kutsukake, N., & Hasegawa, T. (2008). Reciprocity of prosocial behavior in Japanese preschool children. *International Journal of Behavioral Development*, 32, 89–97. doi:10.1177/0165025407084055

- Gasparini, C., Sette, S., Baumgartner, E., Martin, C. L., & Fabes, R. A. (2015). Gender-biased attitudes and attributions among young Italian children: Relation to peer dyadic interaction. *Sex Roles, 73*, 427–441. doi: 10.1007/s11199-015-0526-5
- Gelman, S. A., Taylor, M. G., & Nguyen, S. P. (2004). The developmental course of gender differentiation. *Monographs of the Society for Research in Children Development, 69*(1), vii–127
- Graham, J. A., Cohen, R., Zbikowski, S. M., & Secrist, M. E. (1998). A longitudinal investigation of race and sex as factors in children's classroom friendship choices. *Child Study Journal, 28*, 245–266.
- Graham, S., Taylor, A. Z., & Ho, A. Y. (2009). Race and ethnicity in peer relations research. *Handbook of peer interactions, relationships, and groups*. In K. H. Rubin., W. M. Bukowski. & B. P. Laursen (Eds). *Handbook of peer interactions, relationships, and groups* (pp. 394–413). New York, NY: Guilford Press.
- Halim, M. D. (2016). Pink princesses and strong superheroes: Gender rigidity in early childhood. *Child Development Perspectives, 10*, 155–160. doi: 10.1111/cdep.12176.
- Halim, M. L., & Ruble, D. N. (2010). Gender identity and stereotyping in early and middle childhood. In J. Chrisler & D. McCreary (Eds.). *Handbook of Gender Research in Psychology* (pp. 495–525). New York: Springer. doi:10.1007/978-1-4419-1465-1_24
- Halim, M. D., Ruble, D. N., Tamis-LeMonda, C. S., Shrout, P. E., & Amodio, D. A. (2017). Gender attitudes among ethnic minority children: Consequences for intergroup behavior and social cognitive antecedents. *Child Development, 88*, 882–899. doi:10.1111/cdev.12642
- Hay, D. F. (1994). Prosocial development. *Journal of Child Psychology and Psychiatry, 35*, 29–71. <https://doi.org/10.1111/j.1469-7610.1994.tb01132.x>
- Hay, D. F., & Cook, K. V. (2007). The transformation of prosocial behavior from infancy to childhood. In *Socioemotional development in the toddler years: Transitions and transformations* (pp. 100–131). New York, NY: Guilford Press.
- Hay, D. F., Castle, J., Davies, L., Demetriou, H., & Stimson, C. (1999). Prosocial action in very early childhood. *Journal of Child Psychology and Psychiatry, 40*, 905–916. doi:10.1111/1469-7610.00508
- Henk, C. M., & Castro-Schilo, L. (2015). Preliminary detection of relations among dynamic processes with two-occasion data. *Structural Equation Modeling: A*

- Multidisciplinary Journal, 23, 180–193.
<https://doi.org/10.1080/10705511.2015.1030022>
- Hewstone, M., Cairns, E., Kenworthy, J., Hughes, J., Tausch, N., Voci, A., von Hecker, U., Tam, T., & Pinder, C. (2008). Stepping stones to reconciliation in Northern Ireland: Intergroup contact, forgiveness and trust. In A. Nadler, T. E. Malloy, & J. D. Fisher (Eds.), *The social psychology of intergroup reconciliation* (pp. 199-226). Oxford, U.K. & New York, NY: Oxford University Press
- Hilliard, L. J., & Liben, L. S. (2010). Differing levels of gender salience in preschool classrooms: Effects on children's gender attitudes and intergroup bias. *Child Development, 81*, 1787–1798. <https://doi.org/10.1111/j.1467-8624.2010.01510.x>
- Hine, B., & Leman, P. J. (2013). The developing relationship between gender and pro-social behaviour. In P. J. Leman & H. R. Tenenbaum (Eds.), *Gender and development* (pp. 78–108). New York, NY: Psychology Press.
- Hines, F. A. D. (1996). Children's perceptions of cross-race and same-race peer relationships. *Dissertation Abstracts International, 57*, 2176B.
- Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the Implicit Association Test and explicit self-report measures. *Personality and Social Psychology Bulletin, 31*, 1369–1385. <https://doi.org/10.1177/0146167205275613>
- House, B. R., Henrich, J., Brosnan, S. F., & Silk, J. B. (2012). The ontogeny of human prosociality: behavioral experiments with children aged 3 to 8. *Evolution and Human Behavior, 33*, 291–308. <https://doi.org/10.1016/j.evolhumbehav.2011.10.007>
- House, B. R., Silk, J. B., Lambeth, S. P., & Schapiro, S. J. (2014). Task design influences prosociality in captive chimpanzees (*Pan troglodytes*). *PLoS One, 9*(9), e103422. <https://doi.org/10.1371/journal.pone.0103422>
- Howes, C., & Phillipsen, L. (1992). Gender and friendship: Relationships within peer groups of young children. *Social Development, 1*, 230–242.
- Hox, J. (1998). Multilevel modeling: When and why. In *Classification, data analysis, and data highways* (pp. 147-154). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-72087-1_17
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*, 1-55. doi:10.1080/10705519909540118

- Jordan, J. J., McAuliffe, K., & Warneken, F. (2014). Development of in-group favoritism in children's third-party punishment of selfishness. *Proceedings of the National Academy of Sciences*, 111(35), 12710–12715.
- Katz, P. A., & Kofkin, J. A. (1997). Race, gender, and young children. In S. S. Luther, J. A. Burack, D. Cicchetti, & J. R. Weisz (Eds.), *Developmental psychopathology: Perspectives on adjustment, risk, and disorder* (pp. 51–74). New York, NY: Cambridge University Press.
- Kiang, L., Yip, T., & Fuligni, A. J. (2008). Multiple social identities and adjustment in young adults from ethnically diverse backgrounds. *Journal of Research on Adolescence*, 18, 643–670. <http://dx.doi.org/10.1111/j.1532-7795.2008.00575.x>
- Killen, M., Kelly, M., Richardson, C., Crystal, D., & Ruck, M. (2010). European American children's and adolescents' evaluations of interracial exclusion. *Group Processes & Intergroup Relations*, 13, 283–300. doi:10.1177/1368430209346700
- Killen, M., Lee-Kim, J., McGlothlin, H., Stangor, C., & Helwig, C. C. (2002). How children and adolescents evaluate gender and racial exclusion. *Monographs of the society for research in child development*, i-129.
- Killen, M., Margie, N. G., & Sinno, S. (2006). Morality in the context of intergroup relationships. In M. Killen & J. Smetana (Eds.), *Handbook of moral development* (pp. 155–183). Mahwah, NJ: Erlbaum. <https://doi.org/10.4324/9781410615336>
- Kline, R. B. (2015). *Principles and Practice of Structural Equation Modeling* (4th ed.). New York, NY: The Guilford Press.
- Knifsend, C. A., & Juvonen, J. (2017). Extracurricular activities in multiethnic middle schools: Ideal context for positive intergroup attitudes? *Journal of Research on Adolescence*, 27, 407–422. <https://doi.org/10.1111/jora.12278>
- Knight, G. P., Carlo, G., Mahrer, N. E., & Davis, A. N. (2016). The socialization of culturally related values and prosocial tendencies among Mexican American adolescents. *Child Development*, 87, 1758–1771. doi:10.1111/cdev.12634
- Koschate, M. J., Oethinger, S., Kuchenbrandt, D., & van Dick, R. (2012). Is an outgroup member in need a friend indeed? Personal and task-oriented contact as predictors of intergroup prosocial behavior. *European Journal of Social Psychology*, 42, 717–728. doi:10.1002/Ejsp.1879
- Kupersmidt, J. B., DeRosier, M. E., & Patterson, C. P. (1995). Similarity as the basis for children's friendships: The roles of sociometric status, aggressive and withdrawn behavior, academic achievement and demographic characteristics. *Journal of Social and Personal Relationships*, 12, 439–452.

<http://dx.doi.org/10.1177/0265407595123007>

- Ladd, G. W., & Profilet, S. M. (1996). The Child Behavior Scale: A teacher-report measure of young children's aggressive, withdrawn, and prosocial behaviors. *Developmental Psychology*, 32(6), 1008–1024.
<https://doi.org/10.1037/0012-1649.32.6.1008>
- La Freniere, P., Strayer, F. F., & Gauthier, R. (1984). The emergence of same-sex affiliative preferences among preschool peers: A developmental/ethological perspective. *Child Development*, 55, 1958–1965.
<https://doi.org/10.2307/1129942>
- Langlois, J. H., Gottfried, N. W., & Seay, B. (1973). The influence of sex of peer on the social behavior of preschool children. *Developmental Psychology*, 8, 93–98.
<http://dx.doi.org/10.1037/h0033844>
- Layous, K., Nelson, S. K., Oberle, E., Schonert-Reichl, K. A., & Lyubomirsky, S. (2012). Kindness counts: Prompting prosocial behavior in preadolescents boosts peer acceptance and well-being. *PLoS ONE*, 7(12), e51380.
<https://doi.org/10.1371/journal.pone.0051380>
- Lemmer, G., & Wagner, U. (2015). Can we really reduce ethnic prejudice outside the lab? A meta-analysis of direct and indirect contact interventions. *European Journal of Social Psychology*, 45, 152–168. doi:10.1002/ejsp.2079
- Levitt, M. J., Weber, R. A., Clark, M. C., & McDonnell, P. (1985). Reciprocity of exchange in toddler sharing behaviour. *Developmental Psychology*, 21, 122–123.
<http://dx.doi.org/10.1037/0012-1649.21.1.122>
- López-Rodríguez, L., Cuadrado, I., & Navas, M. (2017). I will help you because we are similar: Quality of contact mediates the effect of perceived similarity on facilitative behaviour towards immigrants. *International Journal of Psychology*, 52, 273–282. <https://doi.org/10.1002/ijop.12212>
- Maccoby, E. E. (1998). *The two sexes: Growing up apart, coming together*. Cambridge, MA: Belknap Press.
- Maccoby, E. E., & Jacklin, C. N. (1987). Gender segregation in children. In H. W. Reece (Ed.), *Advances in child development and behavior* (pp. 239–287). New York: Academic Press. [https://doi.org/10.1016/S0065-2407\(08\)60404-8](https://doi.org/10.1016/S0065-2407(08)60404-8)
- MacKinnon, D. P. (2008). *Introduction to Statistical Mediation Analysis*. Mahwah, NJ: Erlbaum.

- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39, 99–128. doi:10.1207/s15327906mbr3901_4
- Malti, T., Gummerum, M., Keller, M., Chaparro, M. P., & Buchmann, M. (2012). Early sympathy and social acceptance predict the development of sharing in children. *PLoS ONE*, 7, e52017. doi:10.1371/journal.pone.0052017
- Malti, T., Gummerum, M., Ongley, S., Chaparro, M., Nola, M., & Bae, N. Y. (2015). “Who is worthy of my generosity?” Recipient characteristics and children’s sharing behavior. *International Journal of Behavioral Development*, 40, 31–40. <http://dx.doi.org/10.1177/0165025414567007>.
- Martin, C. L. (1989). Children's use of gender-related information in making social judgments. *Developmental Psychology*, 25(1), 80–88. <http://dx.doi.org/10.1037/0012-1649.25.1.80>
- Martin, C. L., Andrews, N. C., England, D. E., Zosuls, K., & Ruble, D. N. (2017). A dual identity approach for conceptualizing and measuring children's gender identity. *Child Development*, 88, 167–182. doi:10.1111/cdev.12568
- Martin, C. L., & Fabes, R. A. (2001). The stability and consequences of young children’s same-sex peer interactions. *Developmental Psychology*, 37, 431–446. doi:10.1037//0012-1649.37.3.431
- Martin, C. L., Fabes, R. A., Hanish, L. D., Gaertner, B., Miller, C. F., Foster, S., & Updegraff, K. A. (2017). Using an intergroup contact approach to improve gender relationships: A case study of a classroom-based intervention. *The Wiley handbook of group processes in children and adolescents*, 437–454. <https://doi.org/10.1002/9781118773123.ch21>
- Martin, C. L., & Halverson Jr, C. F. (1981). A schematic processing model of sex typing and stereotyping in children. *Child Development*, 52, 1119–1134. doi:10.2307/1129498
- Martin, C. L., & Ruble, D. N. (2009). Patterns of gender development. *Annual Review of Psychology*, 61, 353–381. <http://dx.doi.org/10.1146/annurev.psych.093008.100511>
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27, 415–444. <https://doi.org/10.1146/annurev.soc.27.1.415>.
- Mehta, C. M., & Strough, J. (2009). Sex segregation in friendships and normative contexts across the life span. *Developmental Review*, 29, 201–220. doi:10.1016/j.dr.2009.06.001

- Moore, C. (2009). Fairness in children's resource allocation depends on the recipient. *Psychological Science*, 20, 944–948. doi:10.1111/j.1467-9280.2009.02378.x
- Mummendey, A., & Otten, S. (1998). Positive-negative asymmetry in social discrimination. *European Review of Social Psychology*, 9, 107e143. <https://doi.org/10.1080/14792779843000063>.
- Ongley, S.F., & Malti, T. (2014). The role of moral emotions in the development of children's sharing behavior. *Developmental Psychology*, 50, 1148-1159. doi:10.1037/a0035191
- Otten, S., and Mummendey, A. (1999). To our benefit or at our expense? Justice considerations in intergroup allocations of positive and negative resources. *Social Justice Research*, 12, 19–38. <https://doi.org/10.1023/A:1023274223181>
- Padilla-Walker, L. M., & Carlo, G. (2014). The study of prosocial behavior. In L. M. Padilla-Walker & G. Carlo (Eds.), *Prosocial development: A multidimensional approach* (pp. 3–16). New York: Oxford University Press. doi:10.1093/acprof:oso/9780199964772.003.0001
- Padilla-Walker, L. M., & Christensen, K. J. (2011). Empathy and self-regulation as mediators between parenting and adolescents' prosocial behavior toward strangers, friends, and family. *Journal of Research on Adolescence*, 21, 545–551. doi:10.1111/j.1532-7795.2010.00695.x
- Padilla-Walker, L. M., Coyne, S. M., Collier, K. M., & Nielson, M. G. (2015). Longitudinal relations between prosocial television content and adolescents' prosocial and aggressive behavior: The mediating role of empathic concern and self-regulation. *Developmental Psychology*, 51(9), 1317. <https://doi.org/10.1037/a0039488>
- Pascoe, E. A., & Smart Richman, L. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin*, 135, 531–554. doi:10.1037/a0016059
- Paulus, M., & Moore, C. (2014). The development of recipient-dependent sharing behavior and sharing expectations in preschool children. *Developmental Psychology*, 50, 914–921. doi:10.1037/a0034169
- Peplak, J., Song, J.-H., Colasante, T., & Malti, T. (2017). “Only you can play with me!” Children's inclusive decision-making, reasoning, and emotions based on peers' gender and behavior problems. *Journal of Experimental Child Psychology*, 162, 134–138. <http://dx.doi.org/10.1016/j.jecp.2017.04.019>.

- Pettigrew, T. F. (1997). Generalized intergroup contact effects on prejudice. *Personality and Social Psychology Bulletin*, 23, 173–185.
<https://doi.org/10.1177/0146167297232006>
- Pettigrew, T. F. (2009). Contact's secondary transfer effect: Do intergroup contact effects spread to non-participating outgroups? *Social Psychology*, 40, 55–65.
<https://doi.org/10.1027/1864-9335.40.2.55>
- Pettigrew, T.F., & Tropp, L. (2000). Does intergroup contact reduce racial and ethnic prejudice throughout the world? In S. Oskamp (Ed.), *Reducing prejudice and discrimination*. Mahwah, NJ: Lawrence Erlbaum.
- Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, 90, 751–783.
 doi:10.1037/0022-3514.90.5.751
- Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *European Journal of Social Psychology*, 38, 922–934. <https://doi.org/10.1002/ejsp.504>
- Poulin-Dubois, D., Serbin, L. A., Kenyon, B., & Derbyshire, A. (1994). Infants' intermodal knowledge about gender. *Developmental Psychology*, 30, 436–442.
 doi:10.1037/0012-1649.30.3.436
- Powlishta, K. K. (1995). Intergroup processes in childhood: Social categorization and sex role development. *Developmental Psychology*, 31, 781. doi:10.1037/0012-1649.31.5.781
- Raffaelli, M., & Ontai, L. L. (2004). Gender socialization in Latino/a families: Results from two retrospective studies. *Sex Roles*, 50, 287–299.
<https://doi.org/10.1023/B:SERS.0000018886.58945.06>
- Rastogi, R., & Juvonen, J. (2019). Interminority friendships and intergroup attitudes across middle school: Quantity and stability of Black–Latino ties. *Journal of Youth and Adolescence*, 48, 1619–1630. doi:10.1007/s10964-019-01044-9
- Renno, M. P., & Shutts, K. (2015). Children's social category-based giving and its correlates: Expectations and preferences. *Developmental Psychology*, 51, 533–543. doi:10.1037/a0038819
- Rogers, L. O., & Meltzoff, A. N. (2017). Is gender more important and meaningful than race? An analysis of racial and gender identity among Black, White, and mixed-race children. *Cultural Diversity and Ethnic Minority Psychology*. Advance online publication. doi:10.1037/cdp0000125

- Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, 132, 98–131. doi:10.1037/0033-2909.132.1.98
- Rudasill, K. M., Prokasky, A., Tu, X., Frohn, S., Sirota, K., & Molfese, V. J. (2014). Parent vs. teacher ratings of children's shyness as predictors of language and attention skills. *Learning and Individual Differences*, 34, 57–62. doi:10.1016/j.lindif.2014.05.008
- Ruble, D. N., & Martin, C. L. (1998). Gender development. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (pp. 933–1016). New York, NY: Wiley.
- Rutland, A., Cameron, L., Bennett, L., & Ferrell, J. (2005a). Interracial contact and racial constancy: A multi-site study of racial intergroup bias in 3–5 year old Anglo-British children. *Journal of Applied Developmental Psychology*, 26, 699–713. <http://dx.doi.org/10.1016/j.appdev.2005.08.005>.
- Rutland, A., & Killen, M. (2015). A developmental science approach to reducing prejudice and social exclusion: Intergroup processes, social-cognitive development, and moral reasoning. *Social Issues and Policy Review*, 9, 121–154. <http://dx.doi.org/10.1111/sipr.12012>
- Rutland, A., Killen, M., & Abrams, D. (2010). A new social-cognitive developmental perspective on prejudice: The interplay between morality and group identity. *Perspectives on Psychological Science*, 5, 279–291. doi:10.1177/1745691610369468.
- Slaughter-Defoe, D. T. (Ed.), (2012). *Racial stereotyping and child development*. New York, NY: Karger. <http://dx.doi.org/10.1159/isbn.978-3-8055-9983-2>
- Schmid, K., Hewstone, M., Küpper, B., Zick, A., & Tausch, N. (2014). Reducing aggressive intergroup action tendencies: Effects of intergroup contact via perceived intergroup threat. *Aggressive Behavior*, 40, 250–262. <https://doi.org/10.1002/ab.21516>
- Schug, M. G., Shusterman, A., Barth, H., & Patalano, A. L. (2013). Minimal-group membership influences children's responses to novel experience with group members. *Developmental Science*, 16, 47–55. <https://doi.org/10.1111/j.1467-7687.2012.01193.x>
- Shutts, K., Roben, C.K.P., & Spelke, E.S. (2013). Children's use of social categories in thinking about people and social relationships. *Journal of Cognition and Development*, 14, 35–62.

- Sierksma, J., Thijs, J., & Verkuyten, M. (2014). Children's intergroup helping: The role of empathy and peer group norms. *Journal of Experimental Child Psychology*, 126, 369–383. <http://dx.doi.org/10.1016/j.jecp.2014.06.002>
- Smith, H. J., & Tyler, T. R. (1997). Choosing the right pond: The impact of group membership on self-esteem and group-oriented behavior. *Journal of experimental social psychology*, 33, 146–170. <http://dx.doi.org/10.1006/jesp.1996.1318>
- Sparks, E., Schinkel, M. G., & Moore, C. (2017). Affiliation affects generosity in young children: The roles of minimal group membership and shared interests. *Journal of Experimental Child Psychology*, 159, 242–262. doi:10.1016/j.jecp.2017.02.007
- Spears, R., Doosje, B., & Ellemers, N. (1997). Self-stereotyping in the face of threats to group status and distinctiveness: The role of group identification. *Personality and Social Psychology Bulletin*, 23, 538–553. <https://doi.org/10.1177/0146167297235009>
- Spivak, A. L., White, S. S., Juvonen, J., & Graham, S. (2015). Correlates of prosocial behaviors of students in ethnically and racially diverse middle schools. *Merrill-Palmer Quarterly*, 61, 236–263. <https://doi.org/10.13110/merrpalmquar1982.61.2.0236>
- Sroufe, L. A., Bennett, C., Englund, M., Urban, J., & Shulman, S. (1993). The significance of gender boundaries in preadolescence: Contemporary correlates and antecedents of boundary violation and maintenance. *Child Development*, 64, 455–466. doi:10.2307/1131262
- Stangor, C., Sullivan, L. A., & Ford, T. E. (1991). Affective and cognitive determinants of prejudice. *Social Cognition*, 9(4), 359–380. <https://doi.org/10.1521/soco.1991.9.4.359>
- Staub, E. (2003). *The psychology of good and evil: Why children, adults and groups help and harm others*. New York, NY: Cambridge University Press. <https://doi.org/10.1017/CBO9780511615795>
- Stephan, W. G., & Finlay, K. (1999). The role of empathy in improving intergroup relations. *Journal of Social Issues*, 55, 729–743. doi:10.1111/0022-4537.00144
- Stürmer, S., Snyder, M., Kropp, A., & Siem, B. (2006). Empathy motivated helping: The moderating role of group membership. *Personality and Social Psychology Bulletin*, 32, 943–956. doi:10.1177/0146167206287363
- Stürmer, S., Snyder, M., & Omoto, A. M. (2005). Prosocial emotions and helping: The moderating role of group membership. *Journal of Personality and Social Psychology*, 88, 532–546. <https://doi.org/10.1037/0022-3514.88.3.532>

- Svetlova, M., Nichols, S., & Brownell, C. (2010). Toddlers' prosocial behavior: From instrumental to empathic to altruistic helping. *Child Development*, 81, 1814–1827. doi:10.1111/j.1467-8624.2010.01512.x
- Tajfel, H. (1981). *Human groups and social categories: Studies in social psychology*. Cambridge: Cambridge University Press.
- Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33-53). Belmont CA: Wadsworth
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. Austin (Eds.), *Psychology of intergroup relations* (pp. 7–24). Chicago, IL: Nelson Hall.
- Tausch, N., Hewstone, M., Kenworthy, J. B., Psaltis, C., Schmid, K., Popan, J. R., . . . Hughes, J. (2010). Secondary transfer effects of intergroup contact: Alternative accounts and underlying processes. *Journal of Personality and Social Psychology*, 99, 282–302. doi:10.1037/a0018553
- Tisak, M., Holub, S., & Tisak, J. (2007). What nice things do boys and girls do? Preschoolers' perspectives of peers' behaviors at school and at home. *Early Education and Development*, 18, 183–199. doi:10.1080/10409280701282686
- Tropp, L. R., & Pettigrew, T. F. (2005b). Relationships between intergroup contact and prejudice among minority and majority status groups. *Psychological Science*, 16, 651–653.
- Turner, K. L., & Brown, C. S. (2007). The centrality of gender and ethnic identities across individuals and contexts. *Social Development*, 16, 700–719. <https://doi.org/10.1111/j.1467-9507.2007.00403.x>
- Turner, R. N., Hewstone, M., & Voci, A. (2007). Reducing explicit and implicit outgroup prejudice via direct and extended contact: The mediating role of self-disclosure and intergroup anxiety. *Journal of Personality and Social Psychology*, 93, 369–388.
- Updegraff, K. A., McHale, S. M., Zeiders, K. H., Umana-Taylor, A. J., Perez-Brena, N. J., Wheeler, L. A., & Rodriguez De Jesus, S. A. (2014). Mexican-American adolescents' gender role attitude development: The role of adolescents' gender and nativity and parents' gender role attitudes. *Journal of Youth and Adolescence*, 43, 2041–2053. <https://doi.org/10.1007/s10964-014-0128-5>
- Valente, M. J., MacKinnon, D.P. (2017). Comparing Models of Change to Estimate the Mediated Effect in the Pretest–Posttest Control Group Design. *Structural*

- Equation Modeling, 24, 428–450.
<https://doi.org/10.1080/10705511.2016.1274657>
- Vaughan, G. M., Tajfel, H., & Williams, J. (1981). Bias in reward allocation in an intergroup and an interpersonal context. *Social Psychology Quarterly*, 44, 37–42.
<https://doi.org/10.2307/3033861>
- Vezzali, L., Di Bernardo, G. A., Stathi, S., Cadamuro, A., Láštíková, B., & Andraščíková, S. (2018). Secondary transfer effect among children: The role of social dominance orientation and outgroup attitudes. *British Journal of Social Psychology*, 57, 547–566. <https://doi.org/10.1111/bjso.12248>
- Vezzali, L., Hewstone, M., Capozza, D., Trifiletti, E., & Di Bernardo, G.A. (2017). Improving intergroup relations with extended contact among young children: Mediation by intergroup empathy and moderation by direct intergroup contact. *Journal of Community and Applied Social Psychology*, 27, 35–49.
doi:10.1002/casp.2292
- Warneken, F., & Tomasello, M. (2013). The emergence of contingent reciprocity in young children. *Journal of Experimental Child Psychology*, 116, 338–350.
doi:10.1016/j.jecp.2013.06.002
- Weller, D., & Lagattuta, K. H. (2014). Children’s judgments about prosocial decisions and emotions: Gender of the helper and recipient matters. *Child Development*, 85, 2011–2028. doi:10.1111/cdev.12238
- White, R. M. B., Nair, R. L., & Bradley, R. H. (2018). Theorizing the benefits and costs of adaptive cultures for development. *American Psychologist*, 73, 727–739.
10.1037/amp0000237
- Whiting, B., & Edwards, C.P. (1988). A cross-cultural analysis of sex differences in the behavior of children aged 3 through 11. In G. Handel (Ed.), *Childhood socialization* (pp. 281–297). New York, NY: Aldine de Gruyter.
- Wilson, T.C. (1996). Prejudice reduction or self-selection? A test of the contact hypothesis. *Sociological Spectrum*, 16, 43–60.
- Xiao, S. X., Cook, R. E., Martin, C. L., & Nielson, G. M. (2019). Preschool gender enforcers: Their characteristics and the effects on peers of affiliation with gender enforcers. *Sex Roles*. doi:10.1007/s11199-019-01026-y
- Xiao, S. X., Cook, R. E., Martin, C. L., Nielson, G. M., & Field, R. D. (2019). Girl talk vs. boy talk? More like in-group vs. out-group: Boys’ and girls’ expectations about communicative responsiveness with same- and other-gender peers. *Sex Roles*. doi: 10.1007/s11199-018-0924-6

- Yee, M., & Brown, R. (1994). The development of gender differentiation in young children. *British Journal of Social Psychology*, 33, 183–196. doi:10.1111/j.2044-8309.1994.tb01017.x
- Zosuls, K. M., Field, R. D., Martin, C. L., Andrews, N. C., & England, D. E. (2014). Gender-based relationship efficacy: Children's self-perceptions in intergroup contexts. *Child Development*, 85, 166–1676. doi:10.1111/cdev.12209
- Zosuls, K. M., Martin, C. L., Ruble, D. N., Miller, C. F., Gaertner, B. M., England, D. E., & Hill, A. P. (2011). 'It's not that we hate you': Understanding children's gender attitudes and expectancies about peer relationships. *British Journal of Developmental Psychology*, 29, 288–304. doi:10.1111/j.2044-835X.2010.02023.x
- Zucker, K. J., Wilson-Smith, D. N., Kurita, J. A., & Stern, A. (1995). Children's appraisals of sex-typed behavior in their peers. *Sex Roles*, 33, 703–725. <https://doi.org/10.1007/BF01544775>

APPENDIX A
TABLES

Table S1.1. Descriptive Statistics and Correlations among Main Study Variables for Study 1

	1	2	3	4	5	6	7	8	9	10
1 Age	--									
2 T1Prosocial Behavior	.25***	--								
3 T2Prosocial Behavior	.23**	.74***	--							
4 T1OG friend-TO	.14 ⁺	.54***	.42***	--						
5 T2OG friend-TO	.16 ⁺	.40***	.49***	.59***	--					
6 T1OG friend-parent	.23**	.11	.14	-.07	-.01	--				
7 T1affective attitudes	-.15*	.13	.09	.12	.11	-.01	--			
8 T2affective attitudes	-.01	.20*	.12	.02	.03	.10	.32***	--		
9 T1cognitive attitudes	-.08	.33***	.16*	.22*	.19*	-.05	.24**	.21*	--	
10 T2cognitive attitudes	-.02	.09	.07	.15	.15 ⁺	-.05	.04	.23**	.14 ⁺	--
Mean	56.49	1.32	1.49	-.01	.00	.01	1.75	1.84	1.3	1.20
SD	4.60	.52	.48	.77	.77	.81	1.26	1.25	.64	.70
N	138	139	135	139	135	122	134	133	134	132

Notes. N = 140. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Correlations were estimated using MLR. Age = child age in months; T1OG friend-TO = teacher/observer-reported other-gender friendships at T1; T2OG friend-TO = teacher/observer-reported other-gender friendships at T2.

Table S2.1. *Descriptive Statistics and Correlations among Main Study Variables for Study 2*

	1	2	3	4	5	6	7	8	9	10	11	12
Cross-group friendships (parent-report)												
1. Other gender	--											
2. Other race	.06											
Cross-group friendships (teacher-report)												
3. Other gender	.18 ⁺	.09	--									
4. Other race	.05	.01 [*]	.42 ^{**}	--								
Same Gender Prosocial Behavior (Chocolate-sharing task)												
5. Same race	-.12	-.02	.09	.03	--							
6. Other race	-.15 [*]	-.04	.07	.07	.82 ^{***}							
Other Gender Prosocial Behavior (Money-sharing task)												
7. Same race	-.05	.04	-.05	-.11	.32 ^{***}	.36 ^{***}	--					
8. Other race	-.07	.03	-.01	-.04	.34 ^{***}	.39 ^{***}	.89 ^{***}	--				
Prosocial Behavior (parent-report)												
9. FamilyFriends	.01	.16 [*]	.11	-.01	.15 [*]	.13 ⁺	.05	.11	--			
10. StrangOutgroup	.02 [*]	.20 [*]	.06	-.09	.09	.07	-.06	.01	.70 ^{**}	--		
11. GenderAttitude	.09	.02	-.01	-.04	.16 [*]	.18 ^{**}	.06	.09	.24 ^{**}	.26 ^{***}	--	
Sympathy												
Mean	.82	.48	.98	.92	1.59	1.38	1.45	1.42	6.65	4.52	2.35	3.04
SD	.21	.21	.24	.30	2.44	1.94	2.63	1.46	.61	.80	.21	.81

Notes. $N = 190$. ⁺ $p < .10$. ^{*} $p < .05$. ^{**} $p < .01$. ^{***} $p < .001$.
Correlations were estimated using MLR estimator.

Table S3.1. *Descriptive Statistics and Correlations among Main Study Variables for Study 3*

	1	2	3	4	5	6	7	8	9	10	11	12
1 T1 SG Similar	--											
2 T1OG Similar	-.46***	--										
3 T2 SG Similar	.42***	-.28***	--									
4 T2 OG Similar	-.29***	.48***	-.50***	--								
5 T1 SG Friend	.14*	-.22***	.09	-.13*	--							
6 T1 OG Friend	-.19**	.26***	-.14*	.21***	-.88***	--						
7 T2 SG Friend	.07	-.22***	.12*	-.22***	.54***	-.43***	--					
8 T2 OG Friend	-.09 [†]	.20***	-.16**	.28***	-.38***	.44***	-.89***	--				
9 T1 SG Prosocial	-.06	.07	-.08	.10*	.25***	-.17**	.16**	-.07	--			
10 T1 OG Prosocial	.07	-.07	.07	-.07	-.15**	.16**	-.09 [†]	.07	-.94***	--		
11 T2 SG Prosocial	.05	-.04	.07	-.03	.29***	-.22***	.34***	-.27***	.21**	-.18**	--	
12 T2 OG Prosocial	.05	.02	-.10	.05	-.17**	.18**	-.25***	.27***	-.16*	.17*	-.94***	--
Mean	3.03	.94	3.55	1.09	3.05	.71	3.17	.90	1.93	.96	2.35	.98
SD	1.03	.89	.91	.85	.55	.48	.50	.46	.69	.70	.59	.61

Notes. $N = 515$. [†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Correlations were estimated using MLR estimator. T1 SG Similar = T1 same-gender similarity; T1 OG Similar = T1 other-gender similarity; T2

SG Similar = T2 same-gender similarity; T2 OG Similar = T2 other-gender similarity; T1 SG Friend = T1 same-gender friendships; T1 OG Friend

= T1 other-gender friendships; T2 SG Friend = T2 same-gender friendships; T2 OG Friend = T2 other-gender friendships; T1 SG Prosocial = T1

same-gender prosocial behavior; T1 OG Prosocial = T1 other-gender prosocial behavior; T2 SG Prosocial = T2 same-gender prosocial behavior;

T2 OG Prosocial = T2 other-gender prosocial behavior.

APPENDIX B
FIGURES

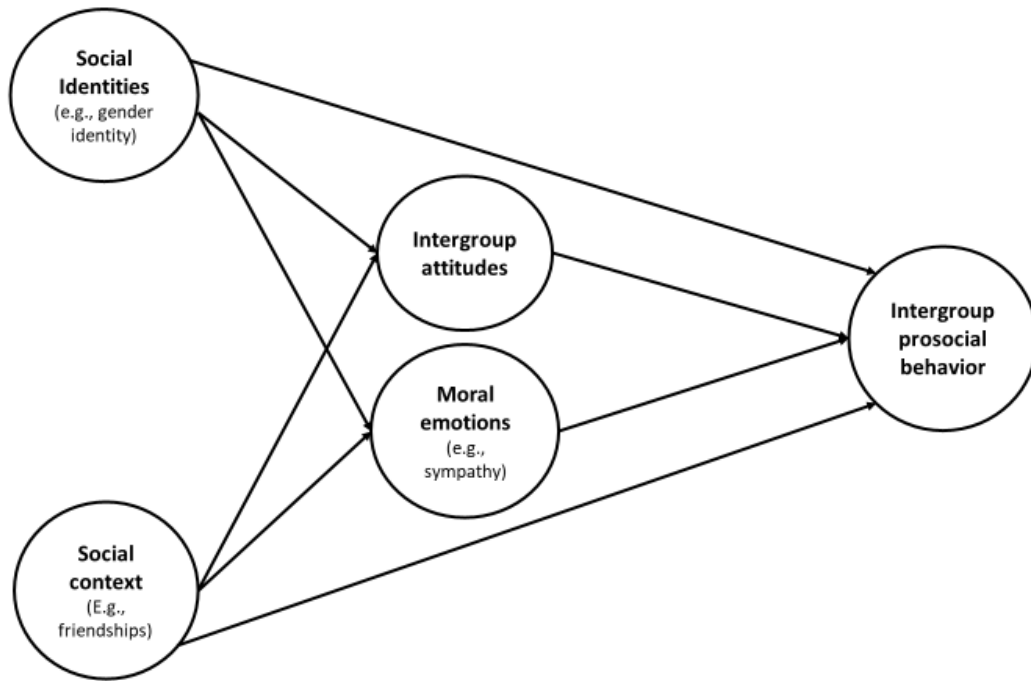


Figure 1. The Overall Conceptual Model

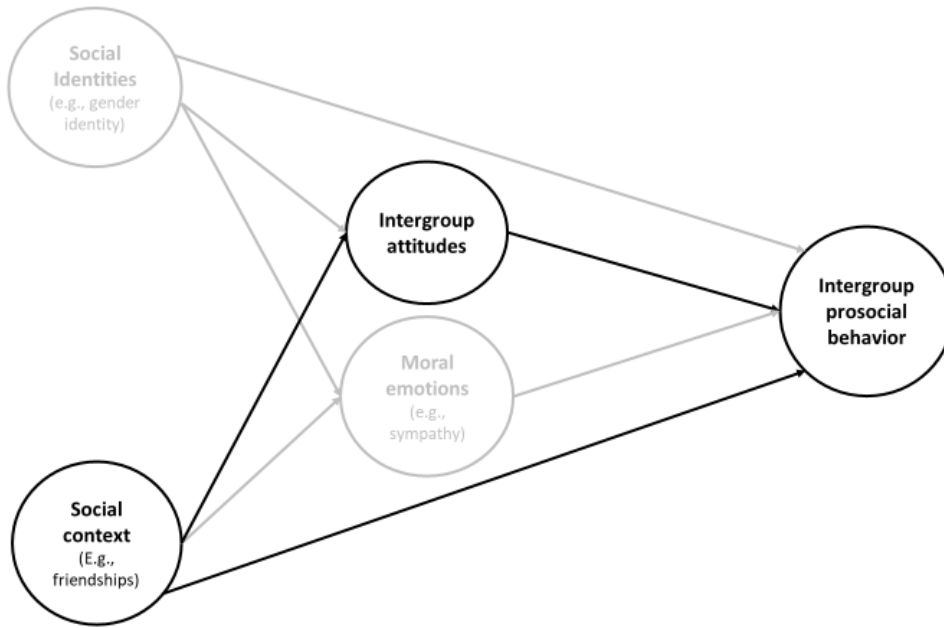


Figure 2. Proposed Model for Study1

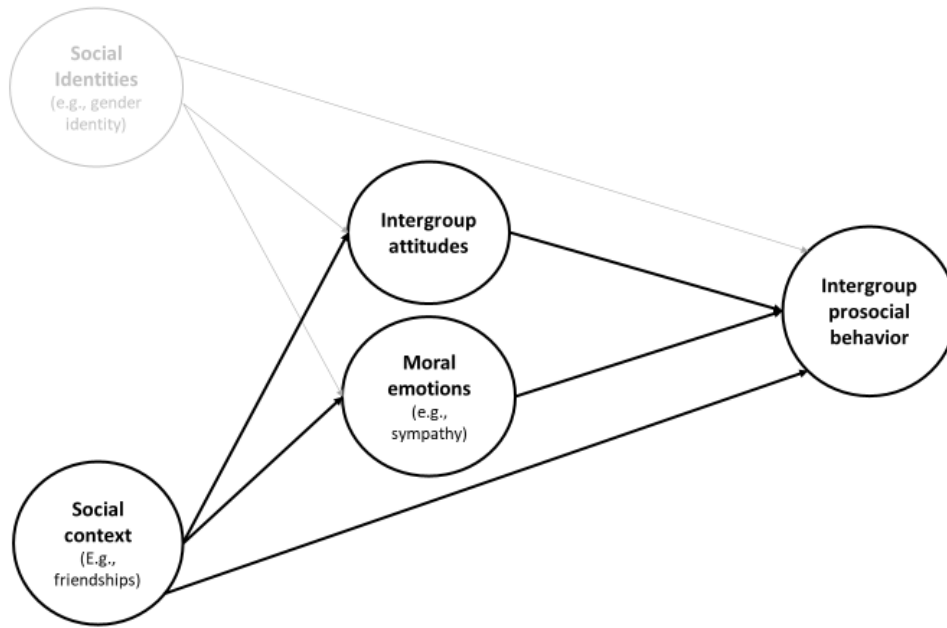


Figure 3. Proposed Model for Study 2

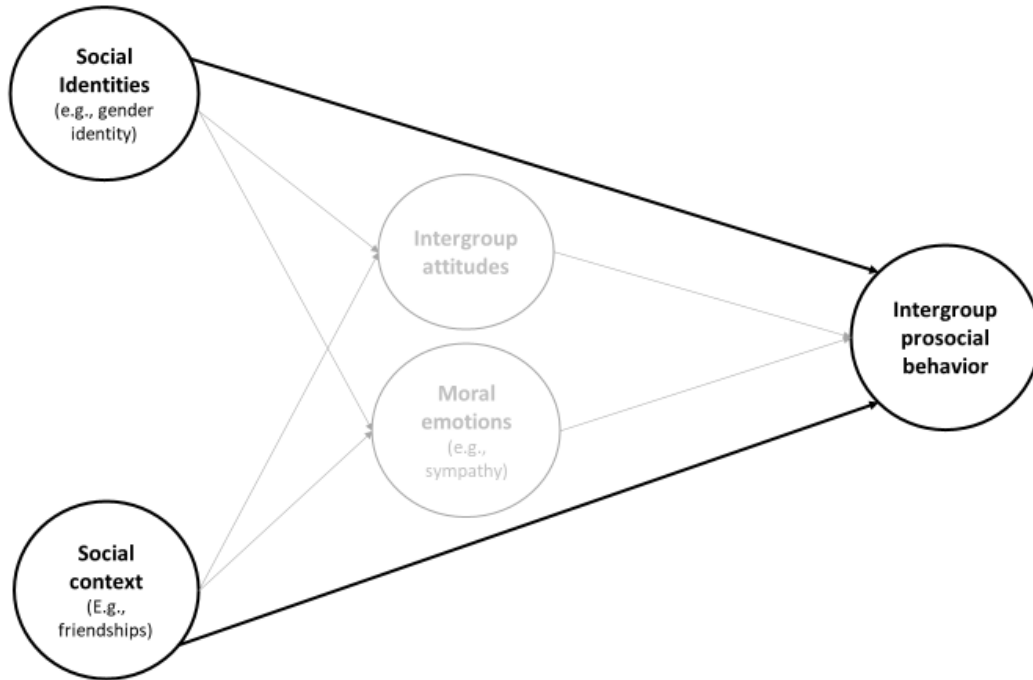


Figure 4. Proposed Model for Study 3

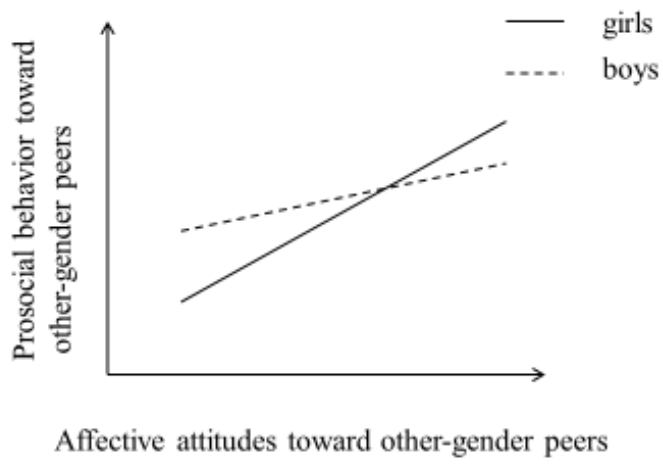


Figure S1.1. An Illustration of Gender Moderating the Relation between Other-gender Affective Attitudes and Other-gender Prosocial Behavior

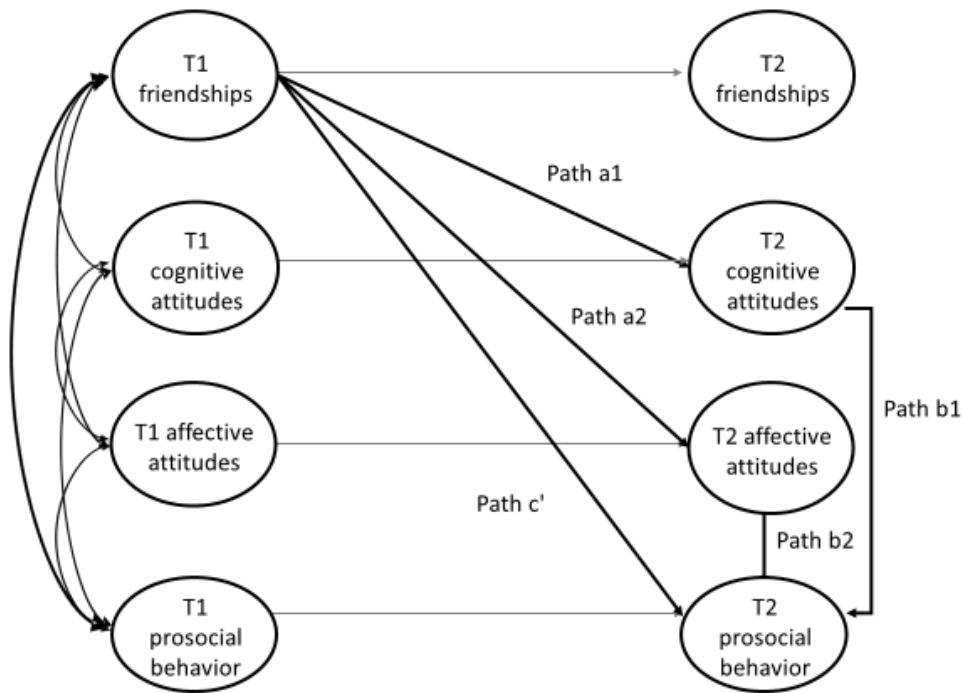


Figure S1.2. The Proposed Mediation Model

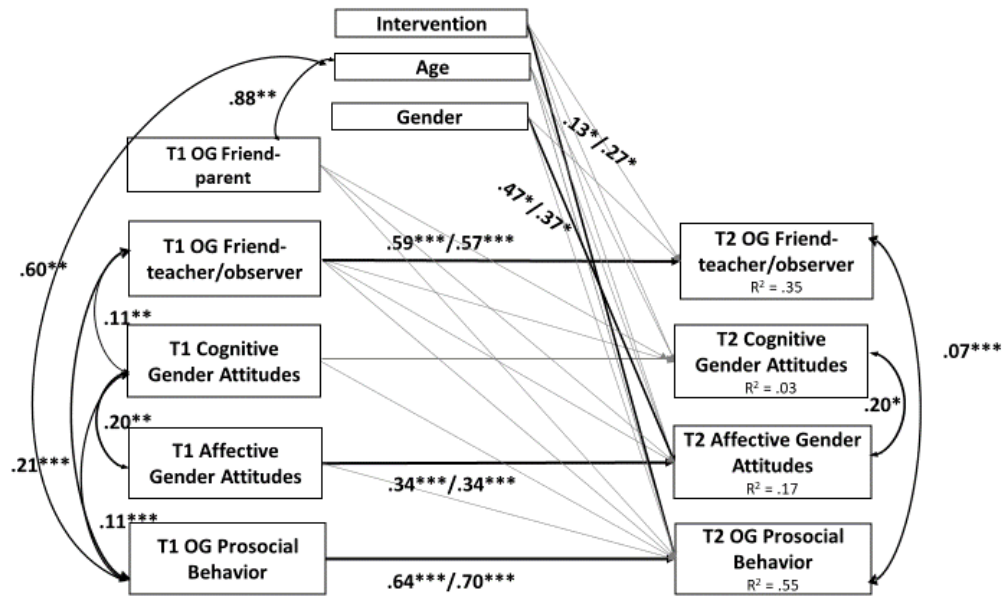
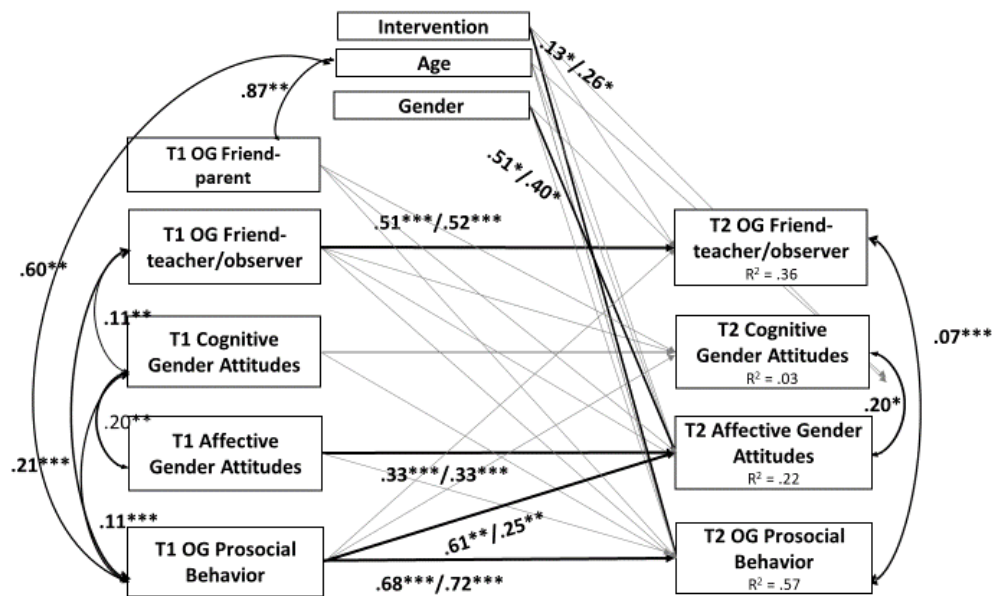


Figure S1.3. Parameter Estimates of the Original Path Model Depicting All Hypothesized Paths.

Notes. N = 140 * $p \leq .05$. ** $p < .01$. *** $p < .001$

Parameter estimates (unstandardized/completely standardized coefficients) of statistically significant paths (bold) are presented. For categorical variables (i.e., intervention group; gender), standardized coefficients were from the STDY output. All exogenous variables were allowed to correlate, and endogenous residuals were allowed to covary although only significant covariance among exogenous, and endogenous, variables are presented in the figure. T1 = pretest; T2 = posttest; T1 OG friend-parent = parent reported children's other-gender friendships (combining home and school) at T1; T1/T2 OG friend-teacher/observer = teacher-reported and observer-reported children's other-gender friendships combined at pretest/posttest; T1/T2 OG Prosocial Behavior = teacher-reported children's prosocial behavior at pretest/posttest.



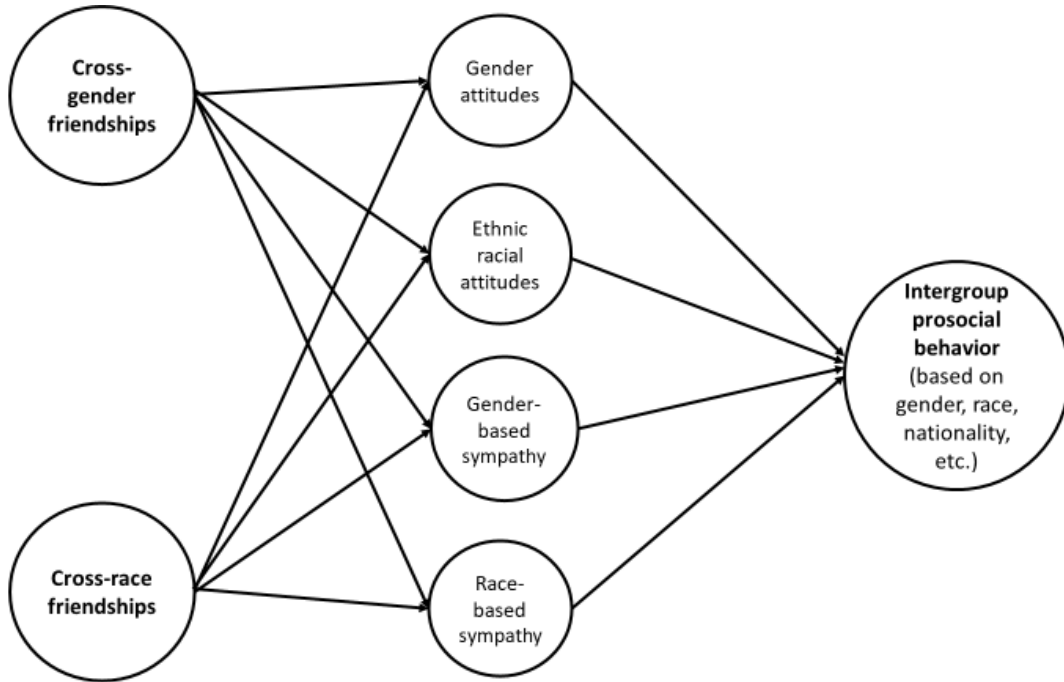


Figure S2.1. The Conceptual Model of Study 2

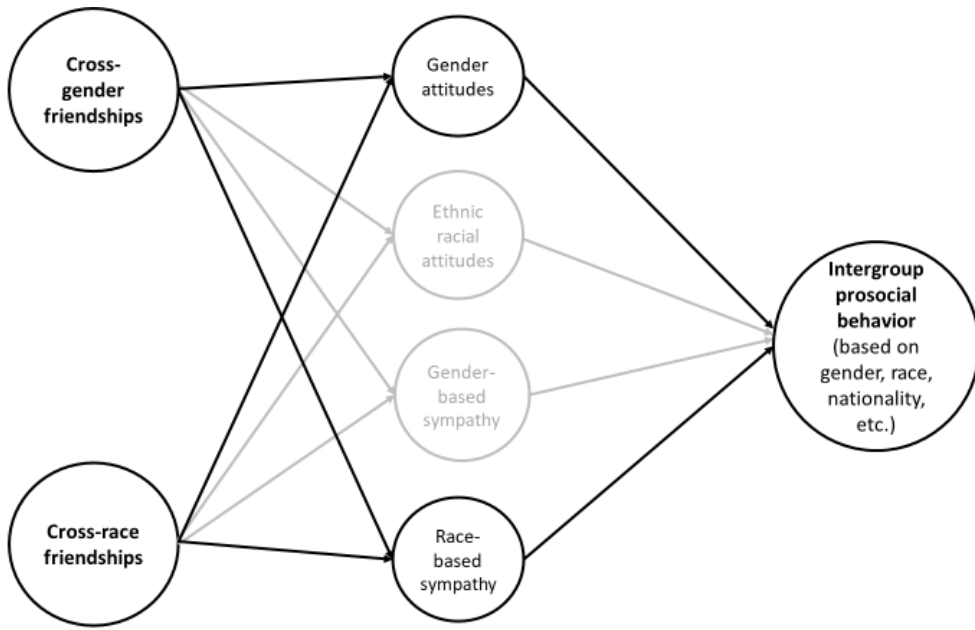


Figure S2.2. The Conceptual Model of Study 2

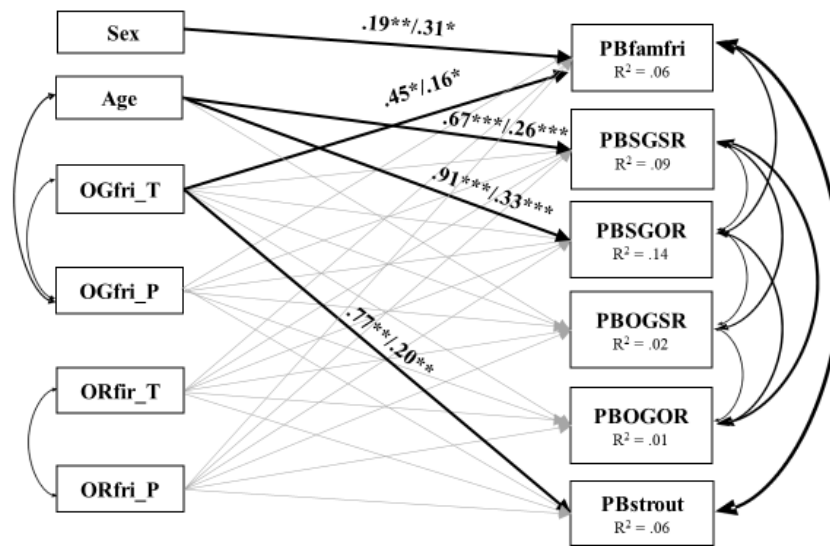


Figure S2.3. Parameter Estimates of the Direct Relations between Cross-group Friendships and Children's Prosocial Behavior toward Diverse Others

Notes. N = 190 * $p \leq .05$. ** $p < .01$. *** $p < .001$

Parameter estimates (unstandardized/completely standardized coefficients) of statistically significant paths are presented. All endogenous residuals were allowed to covary and some exogenous variables were allowed to covary based on theoretical and empirical rationale. Only significant covariance among exogenous, and endogenous, variables are presented in the figure. OGfri_P = parent-reported other-gender friendships; OGfri_T = teacher-reported other-gender friendships; ORfri_P = parent-reported other-race friendships; ORfri_T = teacher-reported other-race friendships; PBSGSR = prosocial behavior toward same-gender same-race peers; PBSGOR = prosocial behavior toward same-gender other-race peers; PBOGSR = prosocial behavior toward other-gender same-race peers; PBOGOR = prosocial behavior toward other-gender other-race peers; PBfamfri = prosocial behavior toward family and friends; PBstrout = prosocial behavior toward strangers and outgroup members.

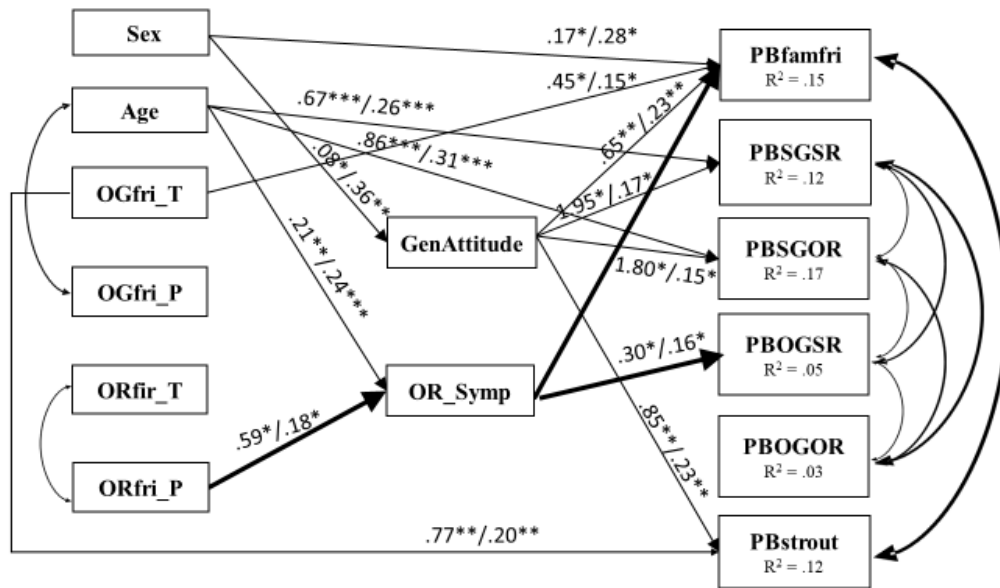


Figure S2.4. Significant Paths in the Mediation Model Testing Hypothesis 2a and 2b

Notes. N = 190 * p <= .05. ** p < .01. *** p < .001

Parameter estimates (unstandardized/completely standardized coefficients) of statistically significant paths are presented. Significant indirect paths are presented with bolded solid lines. The mediation model had good global fit, $\chi^2(17) = 11.09$, $p = .852$, CFI = 1.00, SRMR = .02, RMSEA = .00 [.00, .04]. OGfri_P = parent-reported other-gender friendships; OGfri_T = teacher-reported other-gender friendships; ORfri_P = parent-reported other-race friendships; ORfri_T = teacher-reported other-race friendships; PBSGSR = prosocial behavior toward same-gender same-race peers; PBSGOR = prosocial behavior toward same-gender other-race peers; PBOGSR = prosocial behavior toward other-gender same-race peers; PBOGOR = prosocial behavior toward other-gender other-race peers; PBfamfri = prosocial behavior toward family and friends; PBstrout = prosocial behavior toward strangers and outgroup members; GenAttitude = egalitarian gender attitudes; OR_symp = sympathy toward other-race peers.

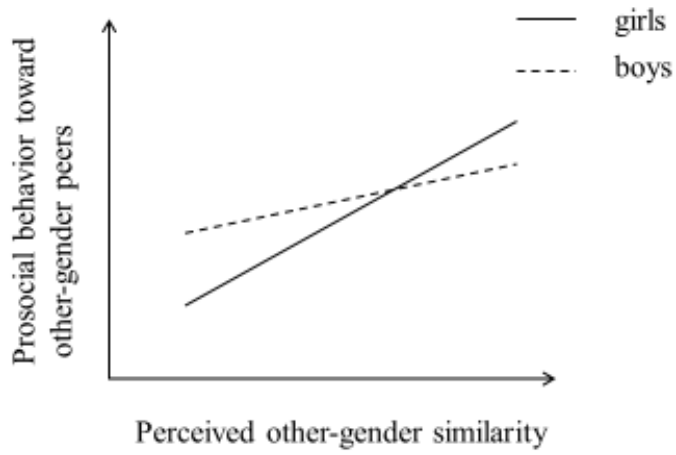


Figure S3.1. An Illustration of Gender Moderating the Relation between Perceived Other-gender Similarity and Other-gender Prosocial Behavior

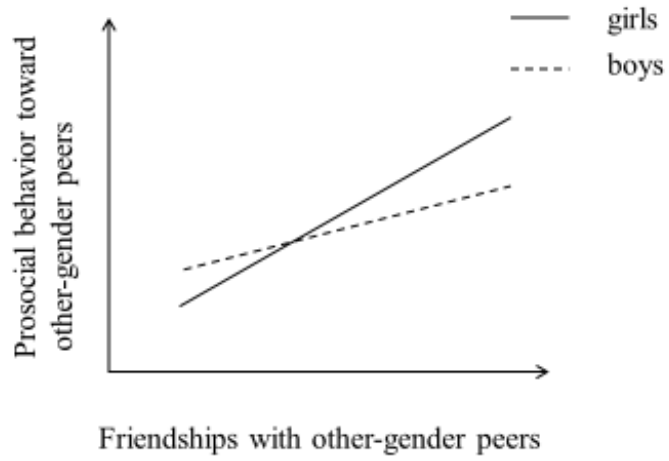


Figure S3.2. An Illustration of Gender Moderating the Relation between Other-gender Friendships and Other-gender Prosocial Behavior

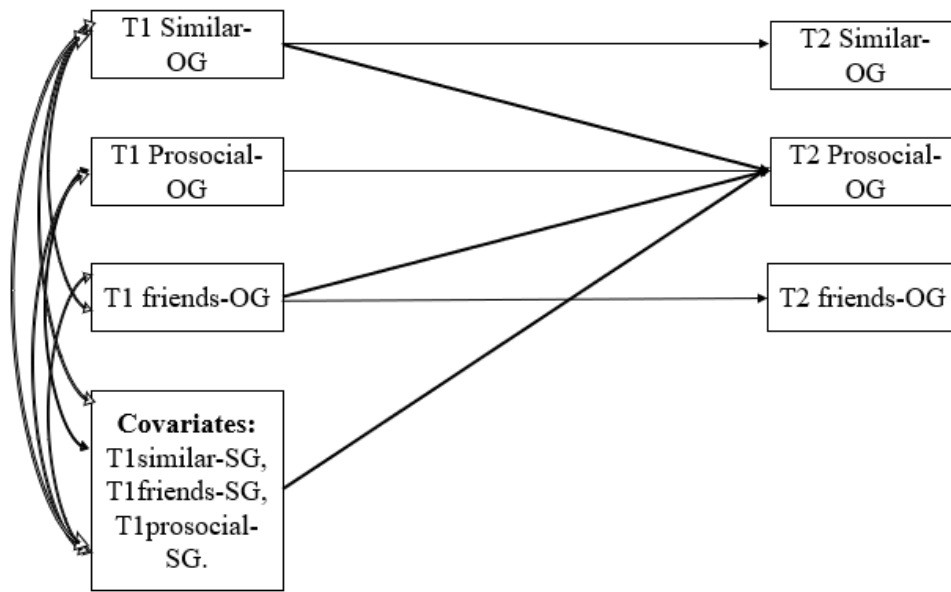


Figure S3.3. Proposed Model Predicting Prosocial Behavior toward Other-Gender (OG) Peers

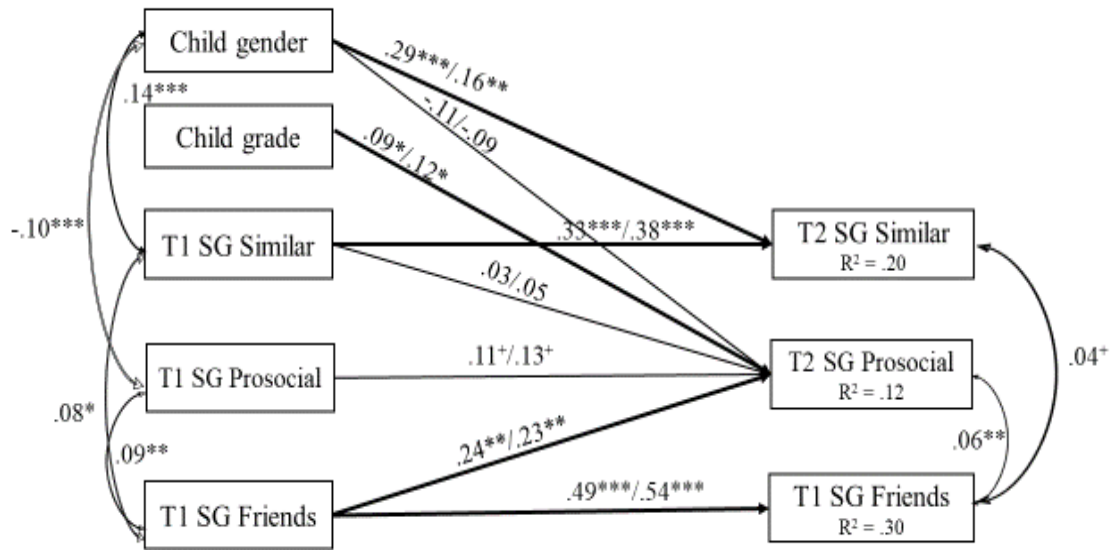


Figure S3.4. Parameter Estimates for the Unidimensional Same-Gender Prosocial Behavior Model

Notes. N = 515. + p < .10* p <= .05. ** p < .01. *** p < .001

Parameter estimates (unstandardized/completely standardized coefficients) of all paths are presented, statistically significant paths are bolded. For categorical variables (e.g., gender), standardized coefficients were from the STDY output. All endogenous residuals were allowed to covary and some exogenous variables were allowed to covary based on theoretical and empirical rationale. Only significant covariance among exogenous, and endogenous, variables are presented in the figure. T1 SG Similar = T1 same-gender similarity; T1 SG Prosocial = T1 same-gender prosocial behavior; T1 SG Friend = T1 same-gender friendships; T2 SG Similar = T2 same-gender similarity; T2 SG Prosocial = T2 same-gender prosocial behavior; T2 SG Friend = T2 same-gender friendships.

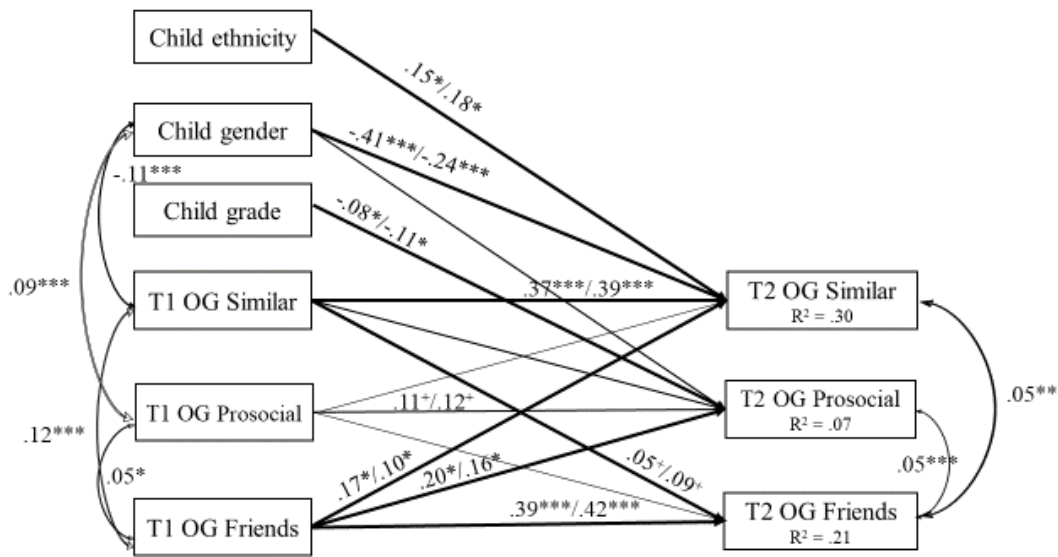


Figure S3.5. Parameter Estimates for the Bidirectional Other-gender Prosocial Behavior Model

Notes. N = 515. + p < .10* p <= .05. ** p < .01. *** p < .001

Parameter estimates (unstandardized/completely standardized coefficients) of all paths are presented, statistically significant paths are bolded. For categorical variables (e.g., gender), standardized coefficients were from the STDY output. All endogenous residuals were allowed to covary and some exogenous variables were allowed to covary based on theoretical and empirical rationale. Only significant covariance among exogenous, and endogenous, variables are presented in the figure. T1 OG Similar = T1 other-gender similarity; T1 OG Prosocial = T1 other-gender prosocial behavior; T1 OG Friend = T1 other-gender friendships; T2 OG Similar = T2 other-gender similarity; T2 OG Prosocial = T2 other-gender prosocial behavior; T2 OG Friend = T2 other-gender friendships.

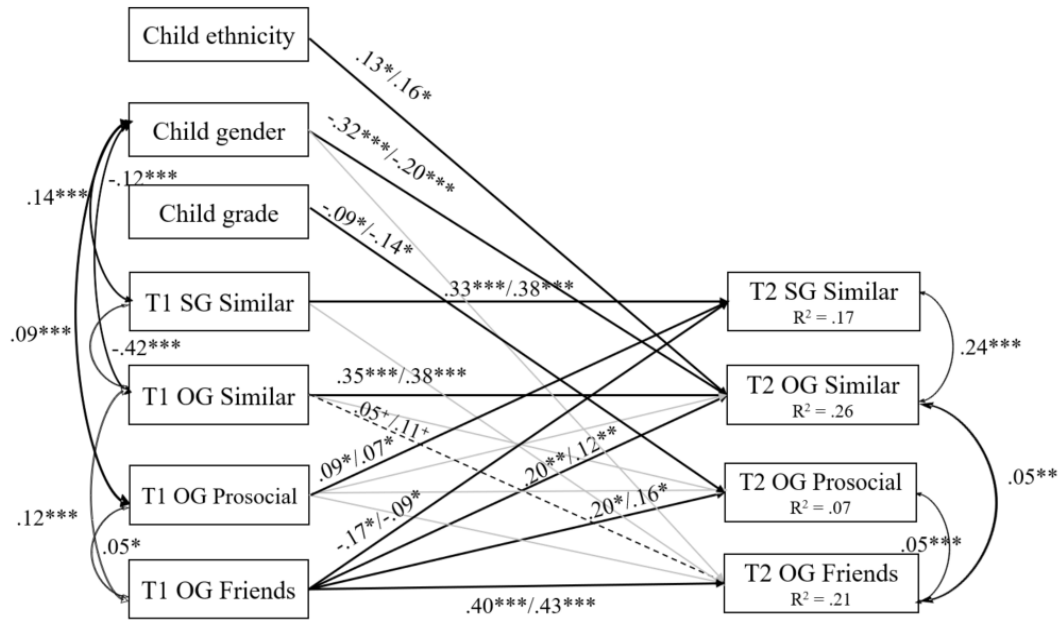


Figure S3.6. Parameter Estimates for the Bidirectional Intergroup Prosocial Behavior Final Model

Notes. N = 515. + p < .10* p <= .05. ** p < .01. *** p < .001

Parameter estimates (unstandardized/completely standardized coefficients) of all paths are presented, statistically significant paths are bolded. For categorical variables (e.g., gender), standardized coefficients were from the STDY output. All endogenous residuals were allowed to covary and some exogenous variables were allowed to covary based on theoretical and empirical rationale. Only significant covariance among exogenous, and endogenous, variables are presented in the figure. T1 OG Similar = T1 other-gender similarity; T1 OG Prosocial = T1 other-gender prosocial behavior; T1 OG Friend = T1 other-gender friendships; T2 OG Similar = T2 other-gender similarity; T2 OG Prosocial = T2 other-gender prosocial behavior; T2 OG Friend = T2 other-gender friendships.

APPENDIX C
HUMAN SUBJECT IRB APPROVAL DOCUMENTS



APPROVAL: MODIFICATION

Laura Hanish
Social and Family Dynamics, T. Denny Sanford School of (SSFD)
480/965-8133
Laura.Hanish@asu.edu

Dear Laura Hanish:

On 2/11/2019 the ASU IRB reviewed the following protocol:

Type of Review:	Modification
Title:	Sanford Harmony Program Evaluation— Preschool Buddy Study Data Analysis
Investigator:	Laura Hanish
IRB ID:	STUDY00008837
Funding:	Name: Social and Family Dynamics, T. Denny Sanford School of (SSFD)
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Social Behavioral Protocol Form , Category: IRB Protocol;

The IRB approved the modification.

When consent is appropriate, you must use final, watermarked versions available under the “Documents” tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Cory Gassner
Richard Fabes
Dawn DeLay
Cory Gassner
Rachel Cook

Carol Martin
Laura Hanish
Xinyue Xiao

APPROVAL: EXPEDITED REVIEW

Tracy Spinrad
 Social and Family Dynamics, T. Denny Sanford School of (SSFD)
 480/727-7925
 tspinrad@asu.edu

Dear Tracy Spinrad:

On 2/21/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Modification
Title:	The Emergence of Children's Attitudes and Prosocial Tendencies Toward Outgroup Members: Pilot Study
Investigator:	Tracy Spinrad
IRB ID:	STUDY00004912
Category of review:	(mm) Minor modification
Funding:	Name: ISSR - Research Support Team
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none"> • Parent Consent, Category: Consent Form; • Seed Funding Application_ISSR_March8.pdf, Category: Sponsor Attachment; • Script for Laboratory visit, Category: Participant materials (specific directions for them); • Recruitment Flyer, Category: Recruitment Materials; • Extensivity_IRB_application revision2.docx, Category: IRB Protocol; • Scripts for Recruitment/screening, Category: Recruitment Materials; • Questionnaires, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Teacher Letter, Category: Consent Form; • Child Observational Question Items, Category: Measures (Survey

	questions/Interview questions /interview guides/focus group questions); • Screening Form--AKA "Parent Interest Form", Category: Screening forms;
--	---

The IRB approved the protocol from 9/29/2016 to 9/28/2017 inclusive. Three weeks before 9/28/2017 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 9/28/2017 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc:

Nancy Eisenberg
Hui ZHANG
Diana Gal
Xinyue Xiao

APPROVAL: MODIFICATION

Carol Martin
 CLAS-SS: Social and Family Dynamics, T. Denny Sanford School of (SSFD)
 480/965-5861
 cmartin@asu.edu

Dear Carol Martin:
 On 6/19/2019 the ASU IRB reviewed the following protocol:

Type of Review:	Modification
Title:	The Relation of Gender-Integrated Classroom Climate to Students' Academic Outcomes
Investigator:	Carol Martin
IRB ID:	STUDY00008441
Funding:	Name: DOEd: Institute of Education Sciences (IES), Grant Office ID: R305A180028; Name: DOEd: Institute of Education Sciences (IES), Grant Office ID: FP12295, Funding Source ID: R305A180028
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none"> • Teacher/class Recruitment, Category: Recruitment Materials; • Teacher Survey, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Teacher Mediator (Mid-Point) Brief Survey, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Letter of Support_Kyrene de Las Lomas.pdf, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Kyrene District Letter of Support_Signed.pdf, Category: Off-site

	<p>authorizations (school permission, other IRB approvals, Tribal permission etc);</p> <ul style="list-style-type: none"> • Translation Certification Form.pdf, Category: Translations; • Translation of Parent Permission Form - Spanish, Category: Consent Form; • Queen Creek District Letter of Support, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Student Assent Form.pdf, Category: Consent Form; • Superintendent Recruitment, Category: Recruitment Materials; • Letter of Interest_Porter.pdf, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Principal/School Recruitment, Category: Recruitment Materials; • Saddle Mountain District Letter of Support, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • SUBMITTED FP12295 Martin SB.pdf, Category: Sponsor Attachment; • Description of Notification of Changes to Participants.pdf, Category: Other (to reflect anything not captured above); • Student Survey, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Mesa Public Schools Letter of Support, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Parent Permission, Category: Consent Form; • Measures.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Modification - 5.07.docx, Category: IRB Protocol; • Teacher Compensation Chart.pdf, Category: Other (to reflect anything not captured above);
--	---

	<ul style="list-style-type: none"> • Kyrene de la Colina Letter of Support.pdf, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Teacher Consent Form, Category: Consent Form;
--	--

The IRB approved the modification.

When consent is appropriate, you must use final, watermarked versions available under the “Documents” tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Stacy Morris
Karishma Singh
Aubrey Hoffer
Ashcon Bastani
Dawn DeLay
Tyler Prather
Richard Fabes
Matthew Nielson
Carol Martin
Krista Oswald
Kenton Woods
Diego Angel Espinoza Masias
Cory Gassner
Laura Hanish
Stephan Scrofani
Hsiao-Ya Chen
Stacy Morris
Jenna Lehman
Rachel Cook
Xinyue Xiao
Kealie Walker
Amber Yu

APPENDIX D
MEASURES

Study 1

Children's Friendships with Other-gender Peers

1. Parent report (at T1) created by CARE team (Carol Martin and colleagues)

Response scale:

0 = None/ Almost None; 1 = Just a Few; 2 = Some; 3 = A Lot; 4 = All/ Almost All

- 1) How many of your child's friends at school are boys?
- 2) How many of your child's friends at school are girls?
- 3) How many of the friends your child spends time with at home and in the neighborhood are boys?
- 4) How many of the friends your child spends time with at home and in the neighborhood are girls?

2. Teacher report (at T1 & T2) created by CARE team (Carol Martin and colleagues)

Response scale:

0 = None/ Almost None; 1 = Just a Few; 2 = Some; 3 = A Lot; 4 = All/ Almost All

- 1) How many of your child's friends at school are boys?
- 2) How many of your child's friends at school are girls?

3. Observer rating (at T1 & T2)

Response scale:

0 = Not at all true; 1 = Somewhat untrue; 2 = Untrue; 3 = Somewhat true; 4 = Very true

- 1) This child plays with girls.
- 2) This child plays with boys.

Children's Affective Gender Attitudes toward Other-gender Peers

Child report at T1 & T2, adapted from the intergroup liking scale (Yee & Brown, 1994)

Response scale: (Smiley Face Response Scale)

0 = Not at all; 1 = Not much; 2 = A little; 3 = A lot



Not at All



Not Much



A little



A lot

- 1) How do you feel about boys?
- 2) How do you feel about girls?

Children's Cognitive Gender Attitudes toward Other-gender Peers

Child report at T1 & T2, developed by CARE team and adapted from Doyle and Aboud (1995) and Halim, Ruble, Tamis-LeMonda, Shrout, and Amodio (2017)

Response scale: (Arms Response Scale)

0 = No; 1 = A little; 2 = A lot



No



A little



A lot



No



A little



A lot

- 1) Do you think boys are nice?
- 2) Do you think boys are mean?
- 3) Do you think girls are nice?
- 4) Do you think girls are mean?

Children's Prosocial Behavior toward Other-gender Peers

Teacher report (at T1 & T2) adapted from the Child Behavior Scale (Ladd & Profilet, 1996)

Response scale:

0 = Doesn't Apply; 1 = Applies Sometimes; 2 = Certainly Applies

Instruction: "This child..."

- 1) Shows concern for moral issues regarding boys
- 2) Shows concern for moral issues regarding boys
- 3) Shows concern for moral issues regarding girls
- 4) Shows concern for moral issues regarding girls
- 5) Is cooperative with boys
- 6) Is cooperative with boys
- 7) Is cooperative with girls
- 8) Is cooperative with girls
- 9) Helps boys
- 10) Helps boys
- 11) Helps girls
- 12) Helps girls
- 13) Shows recognition for the feelings of boys
- 14) Shows recognition for the feelings of boys
- 15) Shows recognition for the feelings of girls
- 16) Shows recognition for the feelings of girls
- 17) Seems concerned when boys are distressed
- 18) Seems concerned when boys are distressed
- 19) Seems concerned when girls are distressed
- 20) Seems concerned when girls are distressed
- 21) Offers help or comfort when boys are upset
- 22) Offers help or comfort when boys are upset
- 23) Offers help or comfort when girls are upset
- 24) Offers help or comfort when girls are upset
- 25) Is kind towards boys
- 26) Is kind towards boys
- 27) Is kind towards girls
- 28) Is kind towards girls

Study 2

Children's Prosocial Behavior toward Other-gender Peers

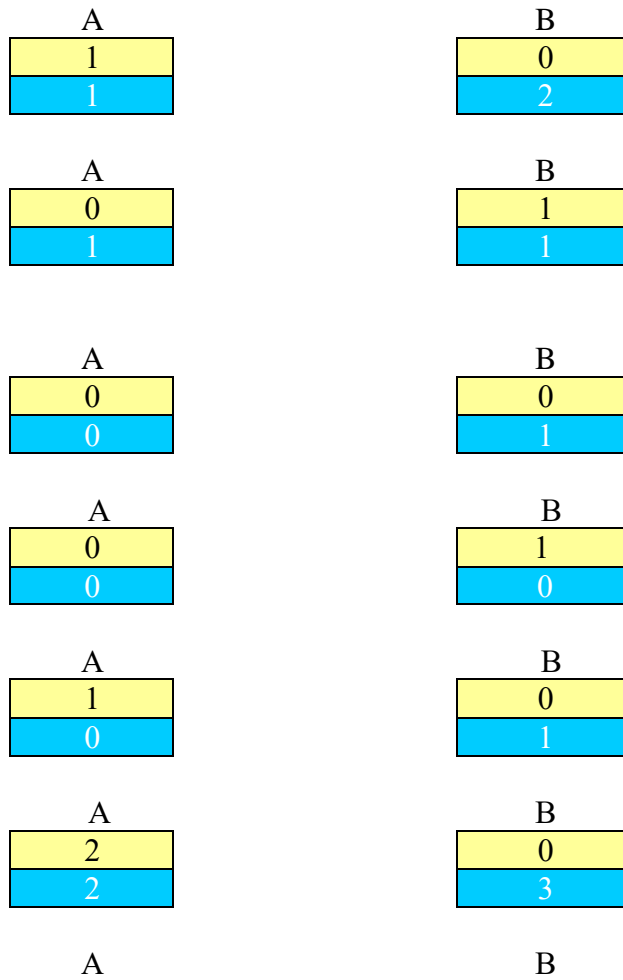
1. Chocolate sharing task (Gender matched)

Experimenter script:

“We will now do an activity with chocolate. Look at these two sheets. Each sheet has one half colored in blue, and one half colored in yellow. I will put chocolate coins on the two sheets, and you will pick one of the two sheets. The chocolate coins in the blue half of the sheet is chocolate you can keep. I will give the chocolate coins in the yellow half to another child who comes here to do these games with us, just like you. I will show you a picture of the other child each time.”

Proceed with the test item, saying each time, “The chocolate in the yellow half is for this child.” Point to picture of the child. “Which of the two sheets do you choose?”

Continue with all items changing picture of child each time and circling which option the child chose.



0
1

2
0

2. Money sharing task (Gender Mismatched)

Children watch a film that depicts a conversation between two children who are talking about their school trip to Disney Land.

Play video and once it's over, ask, "What happened in the video you just saw?" If C seems to understand, move on. If C does not understand, help clarify details.

Take prize money out and say, "You've done such a great job! We have one last game to play, but before we finish up, here is your prize money! What are you going to do with it?" Wait for C's response, then say, "That sounds like a great plan! Before you go...remember those two children we saw on the video? If you would like you could give NONE, SOME, or ALL of this money for that trip to Disney Land. If enough kids give, they should be able to go! Here is a pouch for each child. It looks like there may already be some money in here! All the money in this pouch will go to this child (point to picture). All of the money in this pouch will go to this child (point to picture). I'm going to go set up our last game. While I'm doing that, if you want, you can put none, some, or all of your money in these pouches and put any money you want to keep in your envelope."

3. Parent report of children's prosocial behavior toward diverse others

Adapted based on Padilla-Walker and Christensen (2011)

Response scale:

1 = Not at all; 2 = A little; 3 = A moderate amount; 4 = A lot; 5 = A great deal

Directions: Please rate how much each of the following statements apply to your child:

1. My child helps people he/she doesn't know, even if it is not easy for him/her.
2. My child really enjoys doing small favors for people who he/she doesn't really know.
3. My child enjoys being kind to others, even if he/she does not know them.
4. My child goes out of his/her way to cheer up people who seem sad, even if he/she does not know them.
5. My child helps friends, even if it is not easy for him/her.
6. My child really enjoys doing small favors for his/her friends
7. My child enjoys being kind to his/her friends
8. My child goes out of his/her way to cheer up friends when they seem sad.
9. My child helps his/her family, even if it is not easy for him/her.
10. My child really enjoys doing small favors for family members.
11. My child enjoys being kind to members of our family.
12. My child goes out of his/her way to cheer up members of our family when they seem sad
13. My child helps people who are a different from him/her (e.g., race or ethnicity, country of origin) even if it is not easy for him/her.
14. My child really enjoys doing small favors for people who are a different from him/her (e.g., for people who of different ethnicity/race, country of origin).
15. My child enjoys being kind to people who are a different from him/her (e.g., ethnicity/race, country of origin).
16. My child goes out of his/her way to cheer up people who seem sad, even if they are a different from him/her (e.g., ethnicity/race, country of origin).

Children's Egalitarian Gender Attitudes

The occupation subscale from the Preschool Occupation, Activity, and Trait-Attitude Measure (POAT-AM; Liben & Bigler, 2002)

Response scale:

(a) only boys and men, (b) only girls and women, (c) both boys and girls and men and women.

“This job is ____, someone who ____. Who should be a(n) ____?”

1. Florist. someone who puts flowers in fancy vases and delivers them to people.
2. Fashion model. someone who puts on fancy clothes so other people can see what the clothes look like.
3. Truck driver. someone who drives a truck and delivers things to stores and people's homes.
4. Babysitter. someone who takes care of other people's children and babies when moms and dads are away.
5. Farmer. someone who grows lots of food to sell to other people.
6. Garbage collector. someone who picks up trash from people's homes and businesses.
7. Ship captain. someone who steers large boats across the ocean.
8. Restaurant cook. someone who cooks food for other people to eat in a restaurant.
9. Clothes maker. someone who sews clothes to sell in a store.
10. Nurse. someone who helps doctors take care of sick people.
11. Computer builder. someone who makes computers and fixes them so that they work.
12. Car mechanic. someone who fixes people's cars
13. Baker. someone who makes cakes and pies to sell to other people.
14. House cleaner. someone who cleans other people's homes.

Children's Sympathy toward Racial Ingroup and Outgroups (Gender Matched)

First, children watched the sympathy films depicting race-based teasing. Then, the experimenter asked children "Now I'm going to ask you some questions about the video. For each of these questions you can answer, 'Not at all', 'A little bit', 'Some' or 'A whole lot.'"

Response scale: 0 = Not at all; 1 = A little bit; 2 = Some; 3 = A whole lot

- 1) How sorry for the child did you feel while watching the video?

Children's Cross-gender and Cross-race Friendships

1. Parent-report

We are interested in understanding your child's friendships. Please begin by thinking of your child's closest friend, second closest friend, third closest friend, and fourth closest friend. Thinking of this friend:

What is their gender?

Response scale: 1 = Male; 2 = Female

What is his/her race/ethnicity? (Please select all that apply*)

Response scale: White/Caucasian – Non-Hispanic; Hispanic/Latino/Spanish; Black/African American; American Indian or Alaska Native; Native Hawaiian or Other Pacific Islander; Asian

2. Teacher-report

We are interested in understanding this child's friendships. Please begin by thinking of this child's closest friend, second closest friend, and third closest friend. Thinking of this friend:

What is their gender?

Response scale: 1 = Male; 2 = Female

What is his/her race/ethnicity? (Please select all that apply*)

Response scale: White/Caucasian – Non-Hispanic; Hispanic/Latino/Spanish; Black/African American; American Indian or Alaska Native; Native Hawaiian or Other Pacific Islander; Asian

Children's Social Desirability

- Crowne, D. P., & Marlowe, D. (1964). *The approval motive*. New York: Wiley.
- Eisenberg, N., Fabes, R. A., Miller, P. A., Fultz, J., Shell, R., Mathy, R. M., & Reno, R. R. (1989). Relation of sympathy and personal distress to prosocial behavior: A multimethod study. *Journal of Personality and Social Psychology*, 57, 55-66.
- Eisenberg, N., Schaller, M., Fabes, R. A., Bustamante, D., Mathy, R., M., Shell, R., & Rhodes, K. (1988). Differentiation of personal distress and sympathy in children and adults. *Developmental Psychology*, 24, 766-775.

Response scale:

0 = No; 1 = Yes

- 1) Are you always polite to older people?
- 2) Have you ever felt like saying unkind things to a person?
- 3) When you are in class, do you always pay attention?
- 4) Have you ever argued with your parents to let you do something they did not want you to do?
- 5) Are you always glad to share your things with others?
- 6) Do you sometimes get mad when people don't do what you want them to do?
- 7) When you make a mistake, do you always admit that you are wrong?
- 8) Do you always listen to your parents?
- 9) Have you ever bragged to your friends about what you can do or what you have?
- 10) Are there times when you don't like it if somebody asks you to do something for him/her?
- 11) Do you always enjoy yourself at parties?
- 12) Have you ever felt like staying home and not going to school, even though you were not sick?
- 13) Do you sometimes feel like making fun of other people?
- 14) Have there been times when you've been quite jealous of others?

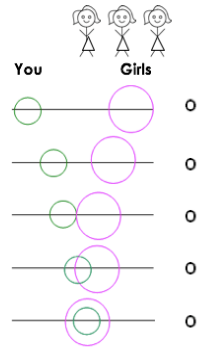
Study 3

Children's Perceived Same- and Other-gender Similarity (at T1)

Some kids feel similar to girls, some feel similar to boys, some feel similar to both boys and girls, and some don't feel similar to either boys or girls. In this section, we want to ask you to tell us about that. Remember, there are no right or wrong answers; whatever you say is exactly right for you. For the next questions, imagine that you are the small circle, girls are the big circle on the left side, and boys are the big circle on the right side. If you feel like you are really very similar to girls, you would fill in the tiny bubble that shows the small circle inside the big circle. If you don't feel similar to girls, you would fill in the tiny bubble that shows the small circle far away from the large circle.

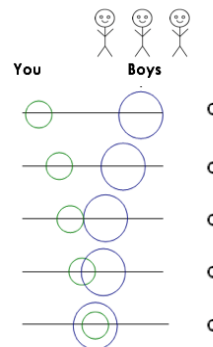
1.

Fill in the bubble that shows how similar you feel to girls.



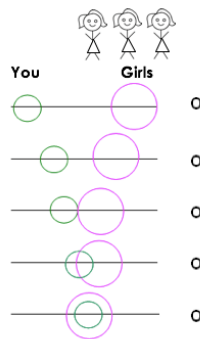
2.

Fill in the bubble that shows how similar you feel to boys.



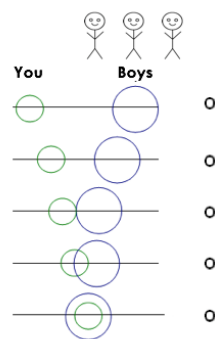
3.

Fill in the bubble that shows how much you act like girls.



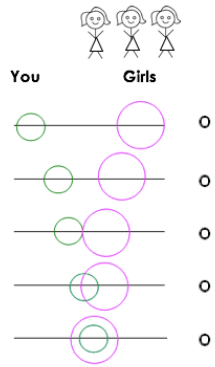
4.

Fill in the bubble that shows how much you act like boys.



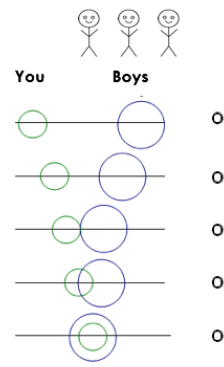
5.

Fill in the bubble that shows how much you look like girls.



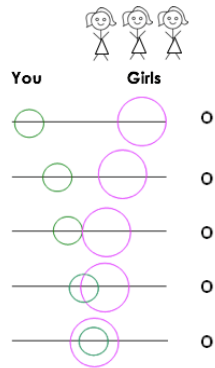
6.

Fill in the bubble that shows how much you look like boys.



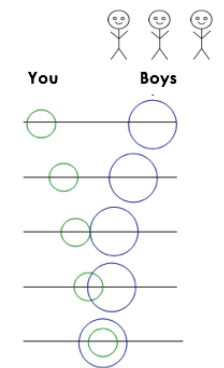
7.

Fill in the bubble that shows how much you like to do the same things as girls.



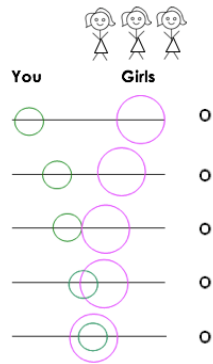
8.

Fill in the bubble that shows how much you like to do the same things as boys.



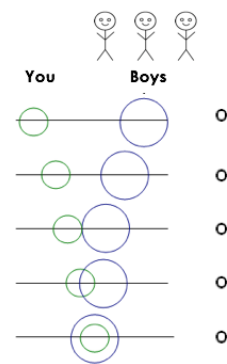
9.

Fill in the bubble that shows how much you like to spend time with girls.



10.

Fill in the bubble that shows how much you like to spend time with boys.



Children's Perceived Same- and Other-gender Similarity (at T2)

Response scale:

0 = Not at all; 1 = A little bit; 2 = A medium amount; 3 = Pretty much; 4 = A lot

- 1) How similar do you feel to girls?
- 2) How similar do you feel to boys?
- 3) How much do you act like girls?
- 4) How much do you act like boys?
- 5) How much do you look like girls?
- 6) How much do you look like boys?
- 7) How much do you like to do the same things as girls?
- 8) How much do you like to do the same things as boys?
- 9) How much do you like to spend time with girls?
- 10) How much do you like to spend time with boys?

Prosocial Behavior toward Same- and Other-gender Peers

Peer Nominations at T1 & T2

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.

	FIRST NAME	LAST NAME
Example: help	Mickey	Mouse
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10		

Friendships with Same- and Other-gender Peers

Peer Nominations at T1 & T2

Who in your class is your best friend? Write that name on the first row. On the second row, write the name of the person who is your second best friend, and continue like this up to ten friends.

	FIRST NAME	LAST NAME
	Kungfu	Panda
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10		