Racial Segregation and Its Effects on Intergroup Cognition

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Abstract

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The United States' racial landscape continues to be marred by pervasive patterns of structural segregation. In other words, our societal structure—that is, the patterns of relationships between entities within society and the arrangement of groups within society—continues to reflect the separation of Black and White individuals. Why have these patterns of structural segregation persisted over legal, economic, attitudinal and cultural shifts? What are the forces working to stagnate change? In this dissertation, I aim to shed light on processes that play a role in impeding progress towards a more integrated and accepting racial landscape. My research focuses on one set of perceptions, which prior research has established as important for maintaining the current racial landscape—people's perceptions of other individual's racial attitudes (for brief review see: Shelton & Richeson, 2006), and the factors that shape these

perceptions. More specifically, I posit that the patterns of structural segregation in our society augment, and even instill the perception that other individuals prefer same-race to cross-race peers.

To build towards this assertion, I draw on a sociocultural framework, which conceptualizes the relation between individuals and the surrounding cultural context. I then present data from three manuscripts, on the effects of structural segregation on children and adults perceptions of others' racial attitudes. Paper 1 investigated the impacts of observing patterns of structural segregation in others' friendship networks on 4- to 6-year-old children's perceptions of who should and will be friends. Paper 2 focused on how patterns of structural segregation within schools influence 7- to 10-year-old children's perceptions of others' racial attitudes. Finally, Paper 3 focused on patterns of structural segregation within neighborhoods, and their effect on adults' perceptions of others' racial attitudes. Together, this dissertation provides insight into the ways in which people normalize and understand patterns of structural segregation. By shedding light on this process, we can hopefully gain a more holistic understanding of why progress towards a more racially egalitarian and integrated landscape is slower than what we might expect.

TABLE OF CONTENTS

Acknowledgements

This dissertation was a journey of attempting to find my voice, hearing what each data set was telling me, and being authentic to myself throughout the process. It represents more than just the research that I did while in graduate school, but it represents a piece of me. From the words in this document, you will not see the many sleepless nights, frustrating days, the joy, the loss, the sorrow, and the growth. But I want to assure you that these all these experiences happened, both the highs and the lows. However, if it were not for some key people I know I would not be at a place to submit this document.

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Introduction

Take a moment to think about the current racial landscape of the United States. Black and White people largely live in distinct neighborhoods (Williams & Emamdjomeh, 2018), attend schools that are racially homogenous (KewalRamani et al., 2007; U.S. Department of Education, 2006), and maintain friendships that are same-race (Cox, Narvarro-Rivera, & Jones, 2016). When cross-race interactions actually occur, it is not uncommon for both Black and White people to express fear and anxiety (e.g., Plant & Devine, 2003), and the interaction itself can be fraught with tension and uneasiness. People avoid eye contact, adopt closed body positions, and are more likely to be terse with and physically distant from their cross-race interaction partners (e.g., Fugita, Wexley, & Hillery, 1974; Ickes, 1984; LaFrance, & Mayo, 1976; Hendricks & Bootzin, 1976; Word, Zanna, & Cooper, 1974). When given the chance, people regularly choose to forego cross-race interactions in favor of same-race interactions (e.g., Kinzler, Shutts, DeJesus, & Spelke, 2009) and, as a result, same-race interactions and preferences seem normal, if not expected. Taken together, each same-race interaction works to reinforce the current racial landscape.

Now imagine growing up and living in a completely new racial landscape in which Black and White people live next to one another as neighbors and friends. Schools are racially diverse and people are just as likely to be friends with same-race and cross-race peers. As a result of these pervasive societal patterns, there are many opportunities to engage in cross-race interactions, which lessens fear and anxiety (Pettigrew & Tropp, 2006). The interactions become natural and effortless and both same-race and cross-race interactions are experienced as normal. Furthermore, people in this new racial landscape believe that other individuals like same-race

and cross-race peers equally. Each new cross-race experience further reinforces the new racial landscape.

More than 50 years ago, at the end of the Civil Rights Movement, it seemed as though our nation would transition to this new racial landscape. Specifically, a series of laws, policies, and Supreme Court decisions officially put an end to *de jure* racial segregation. For example, the landmark Supreme Court *Brown v. Board of Education* case struck down the doctrine of "separate, but equal," forcing states to abolish the separate public education of Black and White individuals; the Civil Rights Act of 1968 made it illegal to discriminate against people on the basis of race in the housing sector; and the *Loving v. Virginia* Supreme Court case struck down anti-miscegenation laws, allowing Black and White individuals to legally marry. Thus, the laws of our nation transitioned from codifying the physical and social separation of Black and White people to ensuring that people of different races could live and engage in overlapping physical and social spaces, if they had the means and desire to do so.

In addition to these legal changes, individuals' own racial attitudes also seemed to significantly shift. In 1972, 65% of people supported the sentiment that people should be able to discriminate on the basis of race in home sales, but in 2012, only 28% of people supported this sentiment (Marsden, 2012). Similarly, in 1990, 65% of White people reported being opposed to having a close family member marry a Black person, whereas by 2012 only 21% of people are opposed to this possibility (Marsden, 2012). Today, Black and White people express interest in engaging in even more cross-race interactions than they already do (Shelton & Richeson, 2006). Taken together, people's own attitudes have become more egalitarian and seemingly open to a more integrated racial landscape.

Yet, even with these significant legal and attitudinal shifts, this nation's racial landscape continues to be marred by pervasive patterns of structural segregation. In other words, our societal structure—that is, the patterns of relationships between entities within society and the arrangement of groups within society—continue to reflect the separation of Black and White individuals. Why has there been so little change, and what are the forces holding us back?

In this dissertation, I aim to shed light on processes that play a role in impeding progress towards a more integrated and accepting racial landscape. My research focuses on one set of perceptions, which prior research has established as important for maintaining the current racial landscape—people's perceptions of other individual's racial attitudes (for brief review see: Shelton & Richeson, 2006). In this paper, I consider the factors that shape these perceptions. More specifically, I posit that the patterns of structural segregation in our society (e.g., children today attend public schools that are just as racially segregated as they were in 1968) augment, and even create, perceptions of other individuals' racial attitudes. Taken together this suggests that one way in which patterns of structural segregation maintain themselves is by shaping people's perceptions of other individual's racial attitudes.

To build towards the proposition that patterns of structural segregation shape people's perceptions of other individual's racial attitudes, and ultimately hinder racial progress, this paper is divided into three broad sections. The first section aims to establish how people's perceptions of others' racial attitudes may work throughout the lifespan to shape and maintain the current racial landscape, even early in development. The second section of this paper unpacks the social and cultural processes that contribute to shaping people's perceptions of other individual's racial attitudes, specifically the role of pervasive patterns of structural segregation. To do so, I will introduce a sociocultural framework, which conceptualizes the relation between individuals and

society. I then use this framework to review the existing literature and discuss the empirical research still needed in order to come to a more holistic understanding of how patterns of structural segregation shape perceptions of other individual's racial attitudes. Lastly, the focus of the third section is to establish how my research program helps to address the empirical gap. Specifically, I will provide an overview of three sets of studies I conducted in order to investigate how three specific patterns of structural segregation (e.g., neighborhood segregation, racially homogenous schools environments, and predominantly same-race friendship networks) shape people's thoughts about other individual's racial attitudes.

Perceptions of Other Individual's Racial Attitudes

Research broadly implicates a diverse set of thoughts and feelings in shaping and maintaining the current racial landscape (e.g., political ideology, and individual's own racial attitudes), with perceptions of other individual's racial attitudes being only one of those factors (for more thorough reviews see: Allport, 1979; Dovidio & Gaertner, 1986; Dovidio, Glick, & Rudman, 2005; Dovidio, Hewstone, Glick, & Esses, 2010; Fiske, 2000). The focus here on perceptions of other individual's racial attitudes is not meant to: 1) diminish the importance of other thoughts and feelings, 2) suggest that perceptions of other individual's racial attitudes have the largest impact on maintaining the current racial landscape, or 3) imply that patterns of structural segregation only affect these thoughts but not other thoughts. Instead, the focus on this particular set of thoughts was simply to hone in on and unpack a piece of an undoubtedly complex process. With this in mind, the following sections aim to review the literature establishing the importance of people's perceptions of other individual's racial attitudes for shaping cross-race interactions, and how these perceptions take root early in development. This

developmental consideration suggests that perceptions of other individual's racial attitudes may operate throughout the lifespan to maintain the current racial landscape.

Perceptions of Other Individual's Racial Attitudes Affecting Cross-Race Interactions

On average, both White and non-White people believe that other individuals prefer same-race to cross-race individuals (e.g., Plant, Butz, & Tartokovsky, 2008; Voraeur, Main & O'Connell, 1998). For example, on average, White people report that non-White individuals feel negatively towards White people (Voraeur et. al., 1998); and, on average, non-White people believe that White individuals are racially biased (Plant et al., 2008; Wout, Murphy, Steele, 2010). Moreover, when asked to reflect on specific instances of prior cross-race interactions, people attributed the cause to their perceptions of the other individual's racial attitudes. This occurs even when the individual making the judgment is directly responsible for choosing not to interact with a cross-race individual (as opposed to individual being judged choosing not to engage in the cross-race interaction). Specifically, when asked to reflect on cross-race interactions they chose not to engage in, both Black and White people reported that they feared being rejected by outgroup members (Shelton & Richeson, 2005). Supporting the idea that this fear of rejection is rooted in perceptions of a potential interaction partner's racial attitudes, when asked to make judgments about other individuals' choices not to engage in a cross-race interaction, both Black and White individuals report that outgroup members lack interest in cross-race interactions (Shelton & Richeson, 2005). Together, this research suggests that people believe other individuals, especially cross-race individuals, prefer same-race to cross-race peers.

Importantly, the perception that other individuals prefer same-race to cross-race peers and interactions also predicts cross-race interaction outcomes. The more that people believe that their group is perceived negatively by cross-race individuals, the less they anticipate enjoying cross-

race interactions compared to same-race interactions (Voraeur, et al., 1998; Plant & Butz, 2006; Plant, et. al., 2008). Furthermore, the extent to which White people reported that Black people were uninterested in cross-race contact, the less they reported being willing to interact with Black people, and the fewer actual cross-race interactions they had the following week (Shelton & Richeson, 2005). Subsequent studies with different methods found a similar relation between participants' thoughts about other individual's racial attitudes and their interest in participating in cross-race interactions among diverse samples (Shapiro, Baldwin, Williams, & Trawalter, 2011; Wout, et al., 2010; see also Barlow, Louis, & Hewstone, 2009). Moreover, both Black and White people reported being more hostile towards their cross-race interaction partner when they perceived the partner is uninterested in cross-race interactions and they blamed the partner for the negative interaction outcome (Plant & Butz, 2006). These data suggest that believing that individuals prefer same-race to cross-race peers has negative consequences for people's perception of and engagement in cross-race interactions, as well as the interaction outcomes themselves. Together this work suggests that inferring that other people prefer same-race to cross-race peers can reinforce the current racial landscape. Specifically, avoiding cross-race interactions while engaging in primarily same-race interactions creates and maintains racially homogenous friendship networks.

Developmental Consideration

While research demonstrating the intergroup consequences of perceptions of other individual's racial attitudes has largely focused on adult populations, there is some evidence that these inferences begin to take root much earlier in development. In infancy, a necessary precursor to inferring that people prefer same-race to cross-race peers first emerges, is the ability to distinguish between Black and White individuals. By as early as 3 months of age, infants

discriminate between White and Black individuals (Bar-Haim, Ziv, Lamy, & Hodes, 2006). Furthermore, White infants raised in predominantly White environments prefer to look at other White individuals (as opposed to Black individuals), and Black infants raised in predominantly Black environments prefer to look at other Black individuals (as opposed to White individuals; Bar-Haim et al., 2006). By 9 months of age, race begins to take on more meaning, as infants form perceptual categories on the basis of race (Anzures, Quinn, Pascalis, Slater, & Lee, 2010), and even group individuals by whether they are part of the infant's racial ingroup or outgroup (Kelly, Quinn, Slater, Lee, Ge, & Pascalis, 2007). Although infants appear to group individuals by race, this grouping could be on the basis of phenotypic similarity as opposed to denoting a deeper understanding of the shared unseen/non-obvious characteristics of group members.

By the early preschool years, children begin to impart rich meaning to racial categories (for review see: Hailey & Olson, 2013), and the first evidence emerges suggesting that children infer that other individuals prefer same-race to cross-race peers. For example, White, Black, and multiracial children believe that both Black and White children prefer same-race to cross-race peers (Roberts, Williams, & Gelman, 2017; Shutts, Roben, & Spelke, 2013). In part, this perception is due to the fact children believe that people of the same race are more similar and have more shared interests with each other compared to people of different races (McGlothlin, Killen, & Edmonds, 2005; McGlothlin & Killen, 2006). By adolescence, these thoughts persist and are further expanded upon. For example, adolescents not only believe that people prefer same-race to cross-race peers (Aboud, Mendelson & Purdy, 2003), but they also believe that cross-race friendships are less stable and less intimate than same-race friendships (Aboud et al., 2003; Castelli, De Amicis, & Sherman, 2007).

Developmental research has yet to link perceptions of other individual's racial attitudes to children and adolescents' subsequent engagement in cross-race interactions. Nonetheless, children and adolescents' perceptions of other individual's racial attitudes seem to be remarkably similar to adults' perceptions. This suggests that perceptions of other individuals' racial attitudes may have important consequences throughout the entire lifespan.

Taken together the evidence presented in this section demonstrates that from early in development to adulthood people have systematic patterns of thought about other individual's racial attitudes—specifically, that other individuals prefer same-race to cross-race peers. Furthermore, these perceptions have the power to reify the existing racial landscape. That is, the more that people believe other individuals prefer same-race to cross-race peers the less likely they are to interact across racial lines and the more negative those interactions are when they do occur.

A Sociocultural Framework

In the previous section, I reviewed the literature establishing the importance of people's perceptions of other individual's racial attitudes based on findings demonstrating that these perceptions shape cross-race interactions, and take hold early in development. Given the power of people's perceptions of others' racial attitudes, the aim of the next section is to understand the factors that shape and maintain these perceptions and, in particular, to highlight the role of patterns of structural segregation.

Theorists foundational to the field of social psychology noted that in order to understand the factors that cause social phenomena, it is necessary to recognize that individuals are rooted within, and cannot be separated from, the broader cultural context in which they live and engage. Particularly, Walter Lippmann, the man credited for bringing the study of stereotypes into the

social sciences, noted that people, "create pictures in their mind...and these pictures reflect what culture has defined" (1922). Further, Gordon Allport, an intergroup relations researcher who was chiefly concerned with understanding psychological processes and individuals' interactions, noted that in addition to these personalized influences we must also attend the more macro-level historical and sociocultural determinants (Allport, 1979; 1954).

In line with this theorizing, the following section describes a sociocultural framework, which explicitly conceptualizes the relation between the surrounding cultural context and individual's thoughts, feelings and behavior. After describing the tenants of this framework, I will then apply the framework to theoretically describe how pervasive patterns of structural segregation shape people's perceptions of other individual's racial attitudes. Subsequently, I review the existing empirical evidence on the factors that shape people's perceptions of other individual's racial attitudes through the lens of the sociocultural framework. In doing so, I also discuss how patterns of structural segregation have been implicated in these existing findings. Finally, I close by discussing the types of investigations that still need to occur in order to come to a more holistic understanding of how patterns of structural segregation shape people's perceptions of others' racial attitudes as postulated by the sociocultural framework.

What is a Sociocultural Framework?

In order to understand the sociocultural framework, we must first define what is meant by culture. Culture can be understood as consisting of four interconnected, and nested levels—*societal factors and pervasive ideas*, *institutions and practices*, *interactions*, and *individuals* (see Markus & Connor, 2013). Specifically, the most macro-level feature of culture is the *societal factors and core cultural ideas*, which include the social, political, and economic histories of a society, as well as understandings of what it means to be a "good" and normative member of

society. Within the context of race relations in the United States these societal factors and pervasive ideas include, for example, the idea that African American individuals are inferior to White individuals, the 250 years of enslavement of African Americans, the almost 100 year long Jim Crow era, and the fact that African Americans have and continue to be economically disadvantaged relative to White individuals. The next level of culture represents the societal institutions and practices. *Institutions* include the media, legal, and education systems, and the overall societal structures and practices, such as pervasive patterns of neighborhood segregation, low diversity schools, or racially homogenous friendship networks (these patterns are referred to as structural segregation). Together these two macro-level features of culture—societal factors and core cultural ideas, and institutions and practices—form what will henceforth be referred to as the *sociocultural context*.

At the more micro-levels of culture, are the individualized factors which shape social and psychological outcomes. These include the everyday *interactions* that people have with other individuals, with prominent societal institutions, and with the materialized products of those societal institutions. Finally, at the most micro-level of culture are *individuals'* psychological processes (e.g., categorization and memory processes) and the resultant psychological tendencies (e.g., thoughts, feelings, and subsequent behaviors).

Through a sociocultural lens, each level of culture works together in a mutually constitutive way to produce and reinforce social and psychological outcomes (Adams & Markus, 2004; Fiske, Kitayama, Markus, & Nisbett, 1998; Markus & Conner, 2013; Markus & Kitayama, 1994; 2010). In one direction, more macro-level features of culture work to shape the more micro-level features. The two facets of the sociocultural context, societal factors and core cultural ideas, manifest within societal institutions, such as neighborhoods and schools, and

societal practices. For example, patterns of structural segregation reflect the historical, political, and economic circumstances of society, and provide an understanding of how our society handles diversity--through the separation of individuals from different racial backgrounds; similarly, the media, produces representations of these societal norms, for example by predominantly producing television shows with racially homogenous casts (e.g., Fresh off the Boat, Black-ish, Girls).

Next, the sociocultural context shapes individualized experiences and psychological processes and tendencies. Institutions and practices, which reflect societal factors and cultural ideas, provide people with a set of scripts and norms with which to carry out social interactions. In other words, the sociocultural context affords people the greater opportunity for certain types of experiences and interactions. The pervasive pattern of structural segregation in the sociocultural context mean that environments are predominantly same-race and thus people have more opportunities to engage in same-race interactions. Finally, the sociocultural context (i.e., societal factors and pervasive ideas, institutions and practices) and individuals' personalized experiences (i.e., interactions and immediate environments) and psychological processes (e.g., memory and categorization processes) come together to shape individuals' thoughts, feelings, and behavior. As a consequence of each of these factors, some patterns of thought are more likely to emerge within a given cultural context than other patterns of thought (see Figure 1).

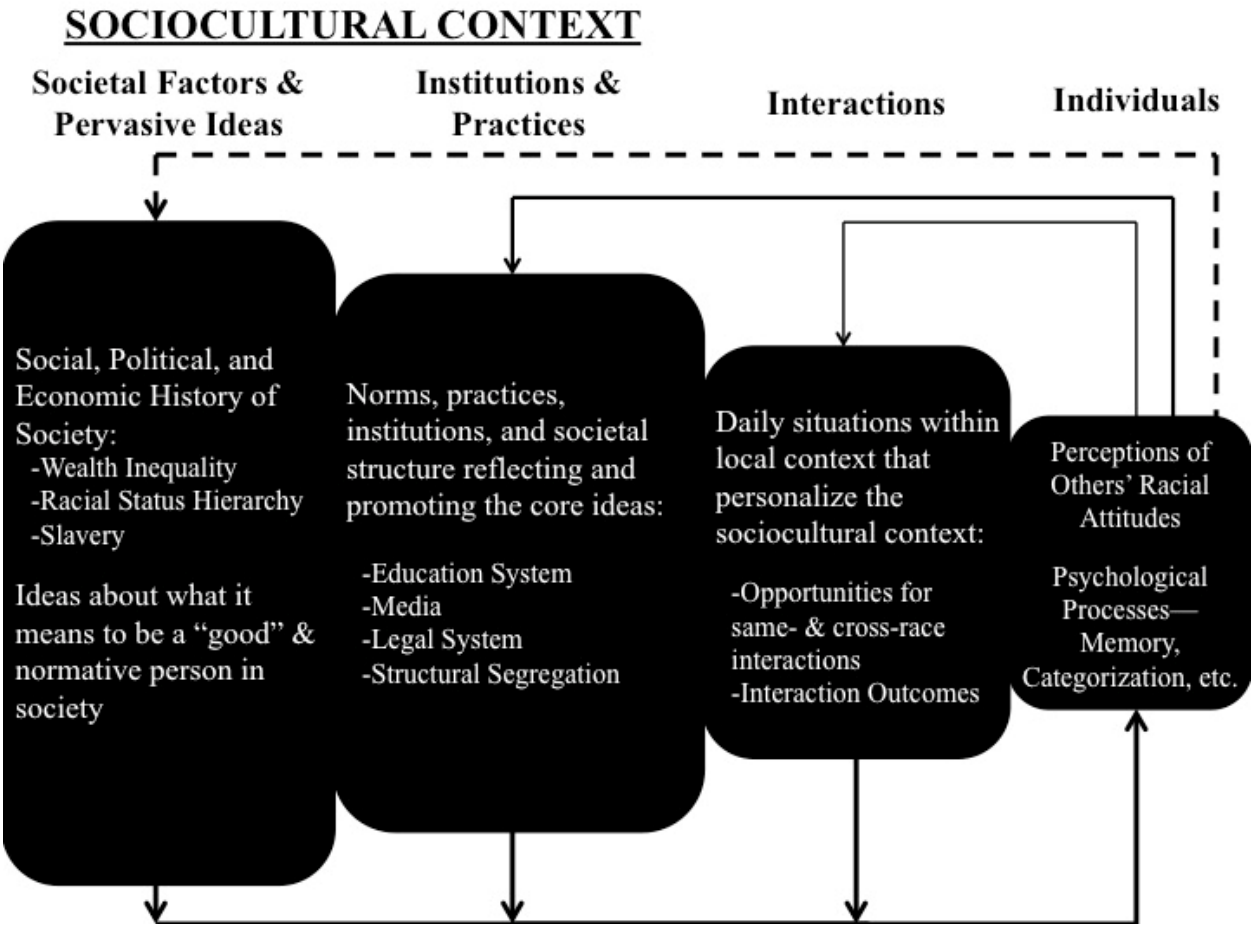

Figure 1. Visual Representation of the how the four levels of culture are influenced by and influence each other within a sociocultural framework. Figure adapted from Markus & Kitayama, 1994; Markus & Kitayama, 2010.

In the other direction, the micro-level features of the cultural context work to shape and reinforce the macro-level features. That is, when people think and engage in ways that are consistent with the sociocultural influences, they reinforce the status quo. For example, when people perceive that other individuals prefer same-race to cross-race peers, as discussed in the previous section of this paper, people are themselves more likely to engage in same-race interactions. As a consequence of individuals' behavior, patterns of structure segregation are reinforced--friendship networks remain largely same-race, and people create more racially homogenous social spaces, such as schools and neighborhoods, which reflect their network

preferences. Through this process, pervasive cultural ideas about what it means to be a "good" and normative person remain in tact, ultimately reify the continued existence of patterns of structural segregation. When people think and engage in ways that are inconsistent with sociocultural influences, they push back against the pervasive cultural ideas, and set the stage for new institutions and practices to take hold. In doing so people can challenge the existing social structure, and ultimately shift and reconstitute the broader sociocultural context. For example, as individuals have more positive cross-race interactions, they may begin to have more racially diverse friendship networks and create more integrated social spaces. As this process continues then societal norms may begin to shift as will the patterns of structural segregation.

It is important to note that while each level of culture is constituted by and constitutes the other levels of the cultural system, the relation between each level of culture is probabilistic (i.e., increasing or decreasing the likelihood of a particular outcome), not deterministic. For example, even though pervasive patterns of racial segregation afford individuals more opportunity for same-race interactions than cross-race interactions, there is still variability in the extent to which people across this nation, or even within the same neighborhood, have cross-race friends. And even though the sociocultural context makes some patterns of thought and behavior more likely than others, individuals within a society and sociocultural context can, and do, develop different thoughts and behavior. For a particularly powerful set of examples of this probabilistic phenomenon, one only needs to think about the individuals who risked life and limb for cross-race romantic relationships in the era of anti-miscegenation laws. During this time, the pervasive cultural idea in the sociocultural context was that being a "good" and normative person in society was to be in a same-race relationship. While this surely curtailed the number of cross-race

relationships in society, it did not completely stop them. Thus, the sociocultural context is potentially powerful shaper of behavior, but it is not deterministic.

Taken together, a sociocultural framework provides an important insight for developing a more holistic understanding of how patterns of thought, feeling, and behavior are shaped and arise. The framework emphasizes that individuals cannot be separated from the broader cultural context(s) in which they live and engage. Specifically, to understand a social or psychological phenomenon, research must consider the entire cultural system, ranging from sociocultural factors to individuals' psychological processes. In other words, we cannot ignore the influence of each level of culture in shaping individuals' thoughts and behaviors. In light of this insight, in the next section I will use this framework to outline how pervasive patterns of structural segregation might work to shape people's perceptions of other individual's racial attitudes.

Structural Segregation and Perceptions of Others' Racial Attitudes

Through the lens of the sociocultural framework, I posit that patterns of structural segregation in the sociocultural context shape people's perceptions of others' racial attitudes through at least two means. First, patterns of structural segregation in the United States reflect a particular societal history and a longstanding set of normative relations between Black and White individuals. As a consequence, patterns of structural segregation carry and communicate this information to individuals who live or engage within the cultural context, shaping the way they think about cross-race relations and others' racial attitudes. Second, the patterns of structural segregation influence the more personalized levels of the cultural context, by affording more opportunity for particular types of interactions compared to other types of interactions. Thus, in addition to communicating information about sociocultural histories and normative behavior, patterns of structural segregation also impact the way people think about cross-race relations and

other individual's racial attitudes by influencing the interactions that individuals are likely to have.

More concretely, the role of the sociocultural context in defining people's perceptions of others' racial attitudes can be understood in the following manner. First, within the sociocultural framework, patterns of structural segregation (e.g., segregated neighborhoods, low diversity schools, and predominantly same-race friendship networks) reflect a particular set of societal factors and ideas (e.g., historical, social, and economic factors, and understandings of what it means to be a "good" and normative person in society). Historically, laws and policies through the 20th century explicitly produced and maintained racial segregation. Similarly, economically, wealth inequality between Black and White individuals on average contributes to maintaining patterns of structural segregation (Cortright, 2017). Today segregation continues to persist, even in the absence of formal policies codifying racial segregation, and even among Black and White people matched in terms of socioeconomic status (Adelman, 2004; Cortright, 2017; Iceland, Sharpe, & Steinmetz, 2005; Iceland & Wilkes, 2006). This suggests that across time, space, and cultural shifts, segregation is a consistent and normal feature of the United States' racial landscape. As a consequence, when interpreting the pervasive patterns of structural segregation, people are especially likely to understand these patterns as a set of guidelines about what it means to be a "good" and normative individual in society. In other words, imbued within the persistent patterns of structural segregation are a set of norms which cannot be entirely attributed to legal restrictions or economic inequality, yet still need explanation. As such, people may make inferences about the normative characteristics of individuals, such as their wants and preferences, as an explanation for the patterns they observe. Therefore, when the patterns of structural segregation persist over time, space, and economic and legal changes, as they have within the

United States, then people may come to view racial segregation and same-race interactions as normal, expected, and an indication of other individuals' attitudes and preferences. Whereas, when structural patterns become more integrated then people may come to see both same-race and cross-race interactions as normal, expected, and an indication that individuals like same-race and cross-race peers equally. This first process suggests a direct relation between patterns of structural segregation and people's perceptions of other individual's racial attitudes. In particular, because patterns of structural segregation reflect societal factors and cultural ideas, these patterns communicate what is expected from individuals within society, ultimately shaping how people think about cross-race relations and others' racial attitudes.

The second means by which patterns of structural segregation may shape people's perceptions of other individual's racial attitudes is by affording individuals greater opportunity for particular types of interactions and personal experiences. Specifically, pervasive patterns of structural segregation allow for individuals to have greater access to same-race as opposed to cross-race peers. For example, due to racial segregation in neighborhoods, children are more likely to grow up with same-race individuals in their immediate environments than cross-race individuals. Moreover, in racially homogenous schools, children are statistically more likely to be exposed to children of one race, compared to children of another race.

The tenants of contact theory suggests that close personal relationships across racial lines can lead people to develop positive attitudes towards cross-race individuals (Pettigrew & Tropp, 2006; Pettigrew & Tropp, 2008). However, when there are few opportunities to develop close personal interactions across racial lines, same-race preferences are likely to persist. People are therefore more likely to represent same-race interactions as more normal than cross-race interactions. Moreover, research suggests that people often generalize their own attitudes and

experiences to other similar individuals (see Fenigstein & Abrams, 1993; Kenny & DePaulo, 1993; Krueger & Clement, 1994; MacInnis & Hodson, 2012; Marks & Miller, 1987). Because personal preferences for same-race as opposed to cross-race peers are likely to be maintained by virtue of few opportunities for personal cross-race interactions, individuals may come to perceive that similar individuals also prefer same-race to cross-race individuals.

Inferences about others' same-race preferences may be further bolstered if people reflect on the cross-race individuals that they interacted with. Specifically, people are particularly apt to infer that negative cross-race interactions are the result of their interaction partner's intentions and attitudes (Plant & Butz, 2006). Therefore, even when people think about cross-race interaction partners they may come to believe that same-race preferences are normative, even among cross-race individuals.

Ultimately, when same-race interactions are viewed as normal (relative to cross-race interactions) and people perceive that other individuals prefer same-race to cross-race individuals then patterns of structural segregation are reinforced and reified. For example, when people come to believe that other individuals prefer same-race to cross-race interactions, they subsequently engage in fewer cross-race interactions themselves (Shelton & Richeson, 2005) and the interactions that do occur are more negative (Butz & Plant, 2006). By engaging in more same-race as opposed to cross-race interactions, the patterns of structural segregation within the sociocultural context continue to persist. Thus, patterns of structural segregation in the current racial landscape, through their reflection of pervasive ideas and societal factors, and by shaping people's personal experiences and psychological processes may augment and bolster people's perception that others' prefer same-race compared to cross-race peers. Ultimately, this process works to hinder progress towards a more racially integrated society.

A Review of the Prior Literature Through the Lens of a Sociocultural Framework

The sociocultural framework suggests that there are two sets of mechanisms by which features of the sociocultural context shape people's perceptions of other individual's racial attitudes: 1) by serving as a signal to normative behavior and thoughts, and 2) by influencing individuals' interactions within and across racial lines. Generally, however, empirical research stemming from the psychological study of intergroup relations has a tendency to overlook or under-investigate the totality of these sociocultural influences. Instead, the empirical research has generally focused on the influences of more micro-level features of culture--individuals and interactions. This trend also holds true for research programs investigating the factors that shape people's perceptions of others' racial attitudes.

As such, in the following sections, I will review the empirical research on the individual-level and interaction-level forces that shape people's perceptions of other individual's racial attitudes. In order to build towards a more holistic understanding of the forces that shape people's perceptions of others' racial attitudes, in line with the sociocultural framework, and the founding of the field, after each review I will unpack how patterns of structural segregation influence these processes. Finally, I close by discussing the empirical research still needed to understand the role of patterns of structural segregation in shaping and augmenting people's perceptions of other individual's racial attitudes.

Individual-Level Cultural Mechanisms: The Role of Psychological Processes

One prominent area of psychology, namely intergroup relations, sought to unpack the cognitive and motivational processes which lead people to make judgments about other individuals. These research endeavors have uncovered many psychological mechanisms, which are beyond the scope of this review. However, the two processes that emerge from this literature

as particularly relevant for shaping people's perceptions of other individual's racial attitudes, and specifically other individual's same-race preferences, are categorization and information search and memory processes.

By virtue of categorizing other individuals into social groups and being a member of a social category, people may come to perceive that other individuals prefer ingroup members relative to outgroups members. Specifically, to simplify the surrounding social world, individuals categorize other individuals into groups, much like they categorize objects (Allport, 1979). People spontaneously identify similarities across individuals, and use those similarities as the basis for their social categories (Crisp & Hewstone, 2007). Once people divide individuals into groups, they exaggerate the differences between groups and minimize the differences within a group (for meta-analysis see: Mullen & Hu, 1989). By exaggerating the differences between groups, people can come to view individuals from the different groups as having distinct attitudes, preferences, and interests.

Moreover, being a part of a social group also produces similar outcomes. For example, in minimal group paradigms, people are assigned to a social group on the basis of an arbitrary dimension, such as whether one overestimates or underestimates the number of dots in an array (Tajfel, Billig, Bundy, & Flament, 1971), or whether their coin toss resulted in a heads or tails (Billig & Tajfel, 1973). In line with the idea that categorization alone could lead to the perception that people prefer ingroup members to outgroup members, being a member of a social category on the basis of an arbitrary dimension also leads people to exaggerate the differences between their ingroup and outgroup. Consequently, even in these minimal group paradigms, people develop the belief that their ingroup and outgroup have distinct interests, and preferences (see Stephan & Stephan, 1985 for general phenomenon).

Once people form beliefs about other individuals or social groups, whether that be through categorization processes or other means, information search and memory processes work to canalize those beliefs. Specifically, people are more likely to search for information that validates their pre-existing beliefs (Johnston & Macrae, 1994), and when people lack the motivation or available cognitive resources, they discount new information that conflicts with their beliefs (Petty & Cacioppo, 1986). People are also better able to remember information in line with their pre-existing beliefs (Rojahn & Pettigrew, 1992) and may even distort information about individuals so that it conforms to their beliefs (Martin & Halverson, 1983). Although these studies are not specific to beliefs about other individual's racial attitudes, they suggest that once people make inferences about an individual's racial attitudes, their beliefs are likely to be upheld through information search and memory biases.

Together these research findings have been leveraged to suggest that intergroup biases, such as perceptions of others' same-race preferences, are an inevitable consequence of cognitive processes that are common to all people, and necessary for human functioning (see Fiske, 2000; Allport, 1979). Yet, even researchers from this tradition openly acknowledge that the sociocultural context in which groups exist influences both categorization and memory (see Fiske, 2000). In the next section, I will discuss why it is important to be cautious in adopting the inevitability of intergroup bias perspective when it comes to attempting to explain people's beliefs about real social groups, such as people's perceptions of others' racial attitudes.

Psychological Processes Influenced by Structural Segregation

First, although researchers demonstrated that merely categorizing people into social groups can lead to the perception that other individuals prefer same-race to cross-race peers, the sociocultural context defines the characteristics that people use to form categories. Specifically,

both theoretical and empirical evidence suggests that people may encode and categorize individuals by race because racial group membership is chronically salient within the sociocultural context (Bigler & Liben, 2007; Kurzban, Tooby, & Cosmides, 2001; see also Gergen, 1967). For example, empirical evidence directly implicated patterns of structural segregation within the sociocultural context in leading people to categorize individuals by race. Kurzban and colleagues (2001) provided participants with information about who numerous different individuals cooperated and competed with. Importantly, they manipulated the extent to which racial group membership was predictive of other individuals' affiliative networks (i.e., who people cooperated with and were friends with), and thus how race impacted the societal structure. That is, in one condition the social structure was racially segregated, whereas in the other condition the social structure was racially integrated. When the observed societal structure was racially segregated, participant significantly reduced the extent to which they spontaneously encoded race and categorized individuals by race, relative to participants who observed a racially integrated societal structure (Kurzban, at al., 2001). These findings suggest that the patterns of structural segregation people observe within the sociocultural context shape the extent to which people categorize by race. Because people's perceptions of other individuals' racial attitudes are a downstream consequence of categorization, these findings leave open the possibility that patterns of structural segregation also shape people's perceptions of others' racial attitudes.

Second, research on memory and information search processes focused on identifying the universal principles of these processes. That is, how do memory and information search processes unfold regardless of the content of memory. Although it is a general principle that people better remember information that aligns with their pre-existing beliefs (Rojahn & Pettigrew, 1992), understanding the content of the pre-existing belief is necessary for

understanding social outcomes. If people hold the belief that same-race interactions are normal and that individuals prefer same-race to cross-race peers, then people will be more likely to attend to information in the sociocultural context which aligns with this understanding. However, if people hold the belief that both same- and cross-race interactions are normal and that individuals like same-race and cross-race peers equally, then people will be more likely to attend to information in the sociocultural context that aligns with this alternative understanding. Thus, through the same memory processes, two significantly different beliefs can be upheld.

Taken together, this evidence suggests that in line with the founding principles of our field, in order to understand the specific social outcome--people's perceptions of other individual's racial attitudes--it is important to root people within a broader sociocultural context. If the patterns of structural segregation that people observe within the sociocultural context change, so might the inferences that people make about others' racial attitudes.

Interaction-Level Cultural Mechanisms: The Role of Personal Experiences

In addition to demonstrating the individual-level forces that shape people's inferences about others' racial attitudes, another prominent area of research has focused on unpacking how people's personal experiences with same-race and cross-race individuals shape their beliefs about others' racial attitudes. One tenant of contact theory suggests that developing close personal relationships across racial lines leads people to feel more positively towards cross-race interactions and peers (Allport, 1979; Pettigrew & Tropp, 2006; 2008). As a consequence, when people have predominantly same-race interactions, they come to understand same-race interactions as normal and positive compared to cross-race interactions.

Quasi-experimental research supports such a claim. Specifically, researchers compared how children from ethnically homogenous schools perceive same-race and cross-race

interactions compared to children from ethnically heterogeneous schools. These studies revealed that White children from ethnically homogenous schools perceived more negative intent in cross-race interactions than did White children from ethnically heterogeneous schools (McGlothlin & Killen, 2010). Furthermore, White children from ethnically homogenous schools perceived potential friendships between cross-race individuals as less likely to occur compared to White children from ethnically heterogeneous schools (McGlothlin & Killen, 2010).

These findings were interpreted as supporting the idea that personal contact with cross-race individuals leads children to have more positive perceptions of cross-race friendships. Consequently, these positive personal experiences with either same-race or cross-race interactions and perceptions of same-race and cross-race friendship may shape perceptions of others' racial attitudes. Specifically, research demonstrated across numerous domains, that either consciously or unconsciously, people's own attitudes influence their perceptions of other individuals' attitudes and beliefs (for review see: Frey & Tropp, 2006). That is, people's own racial attitudes predict their perceptions of other similar individual's racial attitudes. As such, when people have close personal contact with cross-race individuals, and therefore more positive personal attitudes towards cross-race individuals, they may come to believe that other people also have positive attitudes towards cross-race individuals. Similarly, when people are not afforded close personal contact with cross-race individuals, their preferences for same-race individuals are likely to be maintained, and they may come to generalize these attitudes to other individuals. Taken together this research program suggests that the nature of people's experiences with same-race and cross-race individuals have the power to shape their perceptions of other individuals' racial attitudes.

Personal Experiences Influenced by Patterns of Structural Segregation

As outlined more extensively in the section detailing the theoretical means by which patterns of structural segregation shape people's perceptions of other individual's racial attitudes, patterns of structural segregation affords more opportunity for some types of personal experiences compared to other types. Specifically, to the extent that the structure of society is racially integrated (i.e., in neighborhoods, schools, or friendship networks), the more cross-race interactions people will have and thus the more chances to develop the perception that other individuals like same-race and cross-race people equally. However, when the structure of society remains racially segregated, people have fewer opportunities to engage in cross-race interactions, which ultimately works to maintain the perception that other individuals prefer same-race to cross-race peers. Thus, even though the focus of the research program has traditionally been in individual-level experiences, these experiences are nonetheless shaped, and maintained, by the patterns of structural segregation in the sociocultural context.

Remaining Questions on the Role of Patterns of Structural Segregation

Taken together, the research presented here provide insight into a piece of the process by which people come to believe that other people prefer same-race to cross-race peers. Specifically, psychological research largely focused on the way that psychological processes and personal experiences shape people's perceptions of other individual's racial attitudes. As the sociocultural framework suggests, however, these processes cannot be separated from the broader sociocultural context in which people engage. As such, the research demonstrates that patterns of structural segregation both influence the "outputs" of important psychological processes such as categorization and memory, and the nature of people's opportunities for interactions across racial lines. Together, these research findings support one of the proposed mechanisms by which the sociocultural context, and in particular patterns of structural

segregation, shape people's perceptions of other individual's racial attitudes. Specifically, patterns of structural segregation indirectly influence people's perceptions of other individual's racial attitudes by shaping individual's personal experiences and psychological processes.

To date, research uncovering how observations of patterns of structural segregation serve as a signal to others' racial attitudes, the other mechanism proposed by the sociocultural framework, has received little empirical attention. That is, empirical research has yet to thoroughly explore how the structure of the sociocultural context conveys meaning, in and of itself. In fact, such a gap in the literature on intergroup relations has been recently noted, and calls have been made to better conceptualize the role of the sociocultural context (Fiske, 2000; Jones & Dovidio, 2018; Pettigrew, 2018; Plaut, 2010; Salter, Adams, & Perez, 2017). With this in mind, the aim of the following empirical studies is to build upon the sociocultural framework and focus on explicitly understanding whether observing patterns of structural segregation influence individual's understanding of what is normative for people within the sociocultural context, and thus shape people's perceptions of other individual's racial attitudes. In doing so, my research attempts to shed light on one additional process by which our current racial landscape works to stagnate change.

The Research Program

This dissertation aims to begin to fill in the empirical gaps regarding how patterns of structural segregation influence people's perceptions of other individual's racial attitudes. Specifically, the associated manuscripts focus on whether three particular patterns of structural segregation shape people's perceptions of what is normative for members of a given sociocultural context, and therefore shapes observers perceptions of other individual's racial attitudes. In the following sections, I first outline and justify the three patterns of structural

segregation I chose for my empirical investigations. Second, I discuss the empirical approach taken to address whether and how patterns of structural segregation shape people's perceptions of other individual's racial attitudes. The third section more thoroughly discusses and justifies the age ranges used with the subsequent manuscripts, given that research has demonstrated that perceptions of other individual's racial attitudes take root early in development. The final section offers an in depth exploration of the research question(s) addressed by each manuscript. Specifically, the aim is to highlight how each research question contributes to the understanding of how patterns of structural segregation in the sociocultural context influence people's perceptions of other individual's racial attitudes, and perhaps work to hinder change towards a more integrated racial landscape.

The Focal Patterns of Structural Segregation

Each manuscript of this dissertation focuses on unpacking the influence of one pattern of structural segregation that exists within the current racial landscape of the United States. Although patterns of structural segregation manifest in various ways throughout the sociocultural context, such as in media representations, and in the legal system, I chose to focus specifically on patterns of structural segregation within three domains: 1) friendship networks, 2) schools, and 3) neighborhoods.

Understanding the influence of structural segregation manifested in these three domains offers at least three advantages compared to other potential patterns of structural segregations. First, patterns of structural segregation in friendship networks, schools, and neighborhoods are relatively widespread and easily observable. While patterns of structural segregation manifest in other domains, such as the legal system and the media, there may be considerable variability in the extent to which people are exposed to and have experiences within these domains, meaning

that these domains may have more target effects on individuals. In contrast, research contends that friendship networks, schools, and neighborhoods are central to people's everyday lives (see Bronfenbrenner, 1977; Vélez-Agosto, Soto-Crespo, Vizcarrondo-Oppenheimer, Vega-Molina, & Garcia Coll, 2017). Therefore, patterns of structural segregation in friendship networks, schools, and neighborhoods may be particularly powerful, influencing many individuals across society.

Second, as discussed in the first section of this paper, developmental research indicates that even young children believe that other individuals prefer same-race to cross-race peers. Even in early development, children consistently have the opportunity to observe and experience friendship networks, schools, and neighborhoods in the surrounding sociocultural context. For example, by simply walking around in the world, one can observe individual's friendship networks, and can observe demographics of their own neighborhoods relative to surrounding areas. Moreover, recent estimates suggest that only 3.4% of the school-age population of children in the United States are homeschooled (U.S. Department of Education). Thus, even across development, friendship networks, schools, and neighborhoods are widely observable. This leaves open the possibility that that patterns of structural segregation in these three domains may also have a developmental influence.

Finally, investigating the influence of patterns of structural segregation in all three of these domains within the context of a single dissertation offers both breadth and depth of insight into how features of the sociocultural context may affect people's perceptions of other individuals. Specifically, neighborhood segregation, schools demographics and friendship networks have a unique and interwoven connection to one another. That is, racial segregation in neighborhoods is at least partially responsible for schools being racially homogenous. Moreover, whom people befriend is shaped by both where people live (Festinger, Schachter, & Back, 1950),

and the demographics of their schools (Currarini, Jackson, & Pin, 2010). Thus, by investigating the effects of patterns of structural segregation in these three domains, we can envision how the consequences of on people's perceptions of other individual's racial attitudes interlock and potentially reinforce one another in real world contexts. Such a pattern would allow highlight the potential power of the sociocultural context in hindering racial progress.

The Empirical Approach

Answering the question of how patterns of structural segregation impact people's perceptions of what is normative within society and their perceptions of other individual's racial attitudes presents an empirical issue—how to establish causality. To establish causality my research program draws on research methods central to the field of social psychology: laboratory-based and experimental studies. Specifically, I introduce systematic manipulations that attempt to bring to participants' minds the patterns of structural segregation represented in the current racial landscape (Paper 1), or I directly mimic the patterns of structural segregation (Papers 2 & 3) represented in the current racial landscape.

The experimental approach also serves as a more stringent test of whether patterns of structural segregation in the social environment hold meaning for individuals, over and above their more personalized experiences and interactions. In particular, in experimental designs, people are randomly assigned to conditions, therefore reducing the possibility that people's personal experiences reliably and consistently covary across the pattern of structural segregation they observe. This would not be true in a quasi-experimental design in which individuals who naturally are exposed to different patterns of structural segregation would be recruited to report on their perceptions of other individual's racial attitudes. Significant effects within an experimental design would thus provide strong evidence that patterns of structural segregation

hold significant meaning in and of themselves, and can influence people's perceptions of other individual's racial attitudes. Moreover, if patterns of structural segregation in our current racial landscape can lead to the perception that people prefer same-race to cross-race peers, or to the perception that certain types of interactions are more normative than others, then this would suggest that patterns of structural segregation have the power to hinder change towards a more integrated racial landscape.

The focus on development

Finally, as noted previously, perceptions of other individual's racial attitudes take root early in development, and it remains an open question as to what processes may account for this development. One possibility which I explore throughout this dissertation is that patterns of structural segregation shape perceptions of other individual's attitude early in development. Specifically, even young children are exposed to and have the opportunity to observe the widespread and pervasive patterns of structural segregation in society. Therefore, across the three manuscripts associated with this dissertation, I use a broad range of ages--from preschool aged children to adults. This broad consideration has both theoretical consequences as well as real world implications.

From a theoretical perspective, demonstrating that patterns of structural segregation impact individuals across development broaders our current understanding of children's social cognitive abilities. Specifically, research to date has demonstrated that children are able to make sense of their surrounding social world, and intrinsically interested in doing so (see Gopnik, Meltzoff, & Kuhl, 1999). This current dissertation builds on and adds to this theoretical perspective by potentially demonstrating that children are attending to and making sense of the macro-level, sociocultural context. If this is indeed the case, this would suggest that children's

social perceptions are not inevitable, but directly tied to the societal structures. Such investigations help us to envision how psychological outcomes may be different if societal structures change.

In terms of real-world implications, this developmental consideration is important given that adults are not the only people whose actions have the power to maintain or change the racial landscape. In fact, many social movements that have been the catalyst for change have been brought about by the hands of youth, as opposed to adults. Moreover, when considering the interpersonal processes that help to maintain patterns of structural segregation, such as people's choices of friends, it is also clear that even young children have some power in this domain. That is, although there are some constraints, such as how many opportunities for cross-race friendships that a context affords, children can choose which particular individuals to befriend. To the extent that children on average begin to have more diverse friendships then the patterns of structural segregation reflected in friendship networks also begin to change. Therefore, this developmental perspective also allows us to see children as active agents in shaping, maintaining, and even challenging, larger societal trends across successive generations.

In terms of formally considering age across the manuscripts of this dissertation, as the pattern of structural segregation becomes more diffuse or the manipulation becomes more complex, I use older test populations. For example, a friendship network may be more localized than a school, which is more localized than a neighborhood. Thus, it may take more observational experience in order to build a representation about neighborhoods, than it does to build a representation about who interacts with whom. As a consequence, the sample to investigate the effects of patterns of structural segregation in friendship networks is the youngest presented within this dissertation, and the sample used to investigate the effects of patterns of

structural segregation in residential neighborhoods is the oldest presented in this dissertation. Within each manuscript using a developmental population, I directly justify my choice of ages.

In sum, the developmental consideration can shed light on the breadth of the relation between observation of patterns of structural segregation in the sociocultural context and inferences about others' racial attitudes, and can help us to better model the potential real world experiences and implications of patterns of structural segregation.

Overview of the associated manuscripts

Paper 1: Friendship Networks

Paper 1 takes a distal approach to understanding the impacts of observing patterns of structural segregation in the sociocultural context. Specifically, as children are moving through the world, and observing the individuals around them they are largely exposed to same-race interactions. In fact, estimates suggest that the average White person's friendship network is 91% White, and the average Black person's friendship network is 83% Black. In line with these estimates, research has established that by as early as 4 years of age, children are expect other individuals to have same-race friendships (e.g., White people will choose to interact with White people; Roberts, Williams, & Gelman, 2016; Shutts, Roben, & Spelke, 2013).

Importantly, however, the people that children are observing in the sociocultural context belong to multiple social categories, race being only one. Therefore, the patterns of racial segregation that children observe in friendship networks may also interact with another social category, such as gender. Indeed, estimates suggest that approximately 60% of people's close friends are same-race *and* same-gender (e.g., White girls are friends with other White girls; MacDonald, et al., 2009). Therefore friendship networks are not just same-race, but they are same-race *and* same-gender. However, it remains an open question as to whether children's

perceptions of other individual's racial attitudes are affected by observing these patterns of friendship networks in the sociocultural context. In other words, do children normalize same-race, same-gender friendships and expect people to prefer same-race, same-gender peers, more than same-race, different gender peers?

In three studies ($N = 145$), I test this question with sample of 4- to 6-year-old White children. Specifically, in Studies 1 and 2, I investigate whether children believe that same-race, same-gender friendships are more normative than a. same-race, cross-gender friendships, b. different race, same-gender friendship, and c. different race, different gender friendships. In Study 3, I test whether children believe that individuals prefer to have same-race, same-gender friends, relative to a. same-race, cross-gender friends, b. different race, same-gender friends, and c. different race, different gender friends.

Together, these studies provide an initial test of whether patterns of structural segregation in the sociocultural context influence children's perceptions of other individual's racial attitudes, and influence their perceptions of normative relationships. If patterns of structural segregation have the power to shape children's perceptions of other individuals, then I expect that children will believe that same-race, same-gender friendships are normative, and that other individuals have a preference for same-race, same-gender friends.

Paper 2: Racially Homogenous Schools

Paper 2 focuses on how patterns of structural segregation within schools influence perceptions of other individual's racial attitudes. In particular, 40% of White students attend schools that are more than 90% White and 50-60% of Black and Latino students attend schools that are more than 75% non-White (KewalRamani et al., 2007; U.S. Department of Education, 2006). This suggests that when observing other individual's behaviors, and making inferences

about their preferences based on this behavior, children are likely to be doing so in a low diversity context. This set of studies asked whether patterns of structural segregation within the school environment (i.e., the fact that schools are low diversity environments) hold important meaning for observers, particularly as it pertains to interpreting the behavior of other individuals.

Research demonstrates that when drawing inferences about other's behavior, both children and adults consider the surrounding context (Castelli, De Amicis, & Sherman, 2007; Gilbert & Malone, 1995; Heider, 1958; Kelley, 1967; Kushnir, Xu, & Wellman, 2010). For example, if an agent's toy choice is perceived to be statistically non-random based on the properties of the surrounding context (i.e., toy ducks chosen from a toy chest that is mostly filled with toy balls) toddlers infer that the agent prefers the chosen toy, compared to the non-chosen toy. However, they infer no such preference when the choice could have occurred by chance based on the properties of the surrounding context (i.e., toy ducks chosen from a toy chest that is mostly toy ducks; Kushnir et al., 2010). This suggests that the pattern of structural segregation within schools may systematically impact children's perceptions of other individual's racial attitudes.

In two experiments ($N = 406$) I investigated how 7- to 10-year-old children's inferences about other individual's same-race and cross-race friendships are impact by patterns of structural segregation within schools, specifically that many schools are low diversity environments. Participants were exposed to a Black (Experiment 1) or White (Experiment 2) Protagonist who befriended peers (i.e., White or Black children) within a low diversity classroom (either predominantly White or predominantly Black). Participants were then asked to make inferences about the Protagonist's racial attitudes and future behavior. If indeed children are attuned to the context in which friends are chosen when making inferences about other's racial attitudes and

behavior, then we expect children will infer racial preferences only in the cases when friendships were with members of the numeric minority group, whereas children would no preference, or a weaker preference, when the race of friends is likely given the context (i.e., when there is no violation of random sampling).

These results would provide evidence that patterns of segregation in the sociocultural context, specifically low diversity environments within schools, influence children's perceptions of same-race and cross-race interactions, and individual's preferences. In particular, this pattern of results would suggests that patterns of structural segregation in schools, disadvantage members of the numeric minority (vs. majority) group. That is, when people observe numeric minority group members engage in same-race interactions, they interpret that behavior as an indication of an individual's preference, and discount these same individuals cross-race friendships. The extent to which this inference occurs is particularly important, given that it predicts people's willingness to and likelihood of engaging in cross-race interactions in the future (Shelton & Richeson, 2005). Ultimately, this works to reify the patterns of structural segregation in our current racial landscape and hinder change towards a more integrated landscape.

Paper 3: Residential Racial Segregation

Paper 3 focuses on patterns of structural segregation within neighborhoods, and their effect on people's perceptions of other individual's racial attitudes. In particular, although many urban areas of the United States are racially diverse (i.e., feature many members of different racial backgrounds), people of different races often live in distinct areas. Consider for example, St. Louis, Missouri, which is approximately 47% Black and 47% White. Despite the relatively

high presence of both Black and White people within the city, the majority of Black residents live in the north whereas the majority of White residents live in the south of the city.

Moreover, these patterns of structural segregation within neighborhoods are imbued with a rich set of sociocultural history, informal norms, and practices which served to maintain the presence of racial segregation, even in the absence of *de jure* segregation or economic inequalities. With this in mind, I test the possibility that the presence of racial segregation serves as a signal to other individual's racial attitudes and suggests that same-race interactions are normative. To test this possibility, White adults viewed either a racially segregated neighborhood or a racially integrated neighborhood. Participants then made inferences about the residents' racial attitudes (Experiment 1 & 2) and friendship networks (Experiment 2). If the presence of racial segregation serves as a signal to others' racial attitudes then people should infer that residents of racially segregated neighborhoods prefer same-race to cross-race peers and interactions to a greater extent than residents of racially integrated neighborhoods. This pattern of results would provide evidence that patterns of structural segregation within the sociocultural context shapes people's perceptions of other individual's racial attitudes.

In Experiment 3, I go one step further to explicitly investigate whether these inferences serve to normalize the presence of racial segregation and therefore reify the existing racial landscape. Specifically, participants were asked to create the ideal neighborhood from the perspective of Black and White individuals. If participants normalize same-race preferences and interactions, then we expect participants to create racially homogenous and segregated neighborhoods. Together these studies would suggest that a. the pattern of structural segregation within neighborhoods influences people's perceptions of other individual's racial attitudes, and b. that these perceptions can work to hinder progress towards a more integrated racial landscape.

Taken together, the data from the three manuscripts associated with this dissertation provide insight into the ways in which people normalize and understand patterns of structural segregation within the sociocultural context. By shedding light on this process, we can hopefully gain a more holistic understanding of why progress towards a more racially egalitarian and integrated landscape is slower than what we might expect.

Who should be friends? Children's use of race and gender to infer social relations

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Abstract

From early in development, race and gender shape children's thinking about relationships. When race and gender are assessed in isolation, children expect others to have same-race friendships and same-gender friendships. However, the question remains, do children consider race and gender in conjunction, or prioritize one aspect of identity when reasoning about relationships? Three studies (*N*=145) indicated that 4-6-year-olds think friendships should be (Studies 1-2) and are (Study 3) not simply same-race or same-gender but same-race *and* same-gender. Given that children operate in a world in which everyone has multiple social identities, it is crucial to understand how membership across social categories intersects and is perceived early in development.

Keywords: Friendship, Social Categories, Race, Gender, Social Cognitive Development

Who should be friends? Children's use of race and gender to infer social relations

Race and gender have profound implications for the construction of our social worlds, particularly in terms of who interacts with each other. For example, evidence suggests that approximately 90% of White Americans' friends are also White (Cox, Narvarro-Rivera, & Jones, 2016); similarly, up to 70% of Americans' close friends are same-gender (McPherson, Smith-Lovin, & Cook, 2001; Shrum, Cheek, & Hunter, 1988). Moreover, these friendship patterns remain stable across development (Shrum et al., 1988). Although having largely same-race or same-gender social networks may seem innocuous, perceptions of who people know and are likely to interact with predict diverse outcomes ranging from whether one is likely to be hired for a job (Bayer, Ross, & Topa, 2008), to bias (Pettigrew & Tropp, 2006), and choosing to engage in cross-group interactions in the future (Shelton & Richeson, 2005).

Yet when trying to understand how individuals make sense of patterns of affiliation in the social world, race and gender are often considered in isolation. This approach stands in stark contrast to the realities that every person has multiple social identities and that adults often spontaneously use categories that represent race and gender simultaneously (Stangor, Lynch, Duan, & Glass, 1992). A simple thought experiment demonstrates that considering race and gender in isolation may be insufficient, particularly when making sense of social affiliation. Consider your own group of friends and think about each individual's race *and* gender. You may realize that your friendships are not simply same-race (irrespective of gender) or same-gender (irrespective of race), but instead friendships are same-race *and* same-gender. Furthermore, if you were to think about your kindergarten friends, you would likely arrive at a similar conclusion. Empirical evidence goes as far to suggest that up to 60% of people's social networks consist of same-race, same-gender others (MacDonald, Lin, & Ao, 2009). This pattern suggests

not only that race and gender *combine* to play an important role in shaping social interactions and affiliation, but also that evidence of such is readily available in the world, even early in development. In the present work, we examine when in development children recognize that the interaction of race and gender predicts patterns of social affiliation, and whether children use the intersection of race and gender to make inferences about others' social affiliation.

Early in development, gender is one of the central ways in which children organize their social worlds. By 3 months of age, infants can form distinct categories of male and female faces (Quinn, Yahr, Kuhn, Slater, & Pascalis, 2002). Furthermore, at 2 years of age children begin to explicitly categorize themselves and others by gender (Stennes, Burch, Sen, & Bauer, 2005). The central importance of gender early in development also extends to children's social relations (i.e., friendships; La Freniere, Strayer, & Gauthier, 1984; Maccoby, 1998; Martin, Fabes, Hanish, Leonard, & Dinella, 2011; Martin & Ruble, 2004; Yee & Brown, 1994) and their expectations of others' friendships. For example, Shutts and colleagues (2013) demonstrated that by 3 years of age, children prefer to engage in same-gender (vs. cross-gender) friendships. Moreover, 3-year-olds also expect others to have same-gender friendship preferences (e.g., that a girl would want to play with another girl, more than with a boy).

In addition to gender, children also use race to organize their social worlds. By 9 months old, infants can form distinct perceptual categories of people of different races (Anzures, Quinn, Pascalis, Slater, & Lee, 2010), and by 4 years of age children can explicitly categorize others into racial categories (Aboud, 1988; Nesdale, 2001). Beyond merely categorizing individuals, by preschool children prefer to engage with same-race (vs. cross-race) peers (Kinzler, Shutts, DeJesus, & Spelke, 2009), and expect others to prefer same-race to cross-race peers (Roberts,

Williams, & Gelman, 2016; Shutts et al., 2013). That is, preschool-aged children believe a White child would want to play with another White child, rather than with a Black child.

Together, prior work has demonstrated that young children can, and do, use race and gender to reason about others' social relations when each social category is assessed in isolation. We build on these prior findings and ask how children reason about others' friendships when considering multiple social categories at once. We assessed evidence for a variety of possible outcomes.

First, it is possible that, when given the opportunity, children use both race and gender in conjunction when making inferences about others' friendships. In particular, children's own friendships are largely same-race, same-gender (Graham & Cohen, 1997). Furthermore, when observing others' interactions, same-race, same-gender interactions are overrepresented (see Hall, 2015). Thus, once children have learned to use race and gender in isolation, their inferences may quickly become more specific given the ubiquity of same-race, same-gender interactions in their environments.

Despite the prevalence of same-race, same-gender interactions, classic developmental research has suggested that children younger than age 7 are unable to represent membership in multiple social categories (e.g., Inhelder, & Piaget, 1964). Specifically, work supporting this claim demonstrates that even after a training, children younger than 7 years of age have trouble creating four non-overlapping categories after being provided photographs of Black girls, Black boys, White girls, and White boys (e.g., Bigler & Liben, 1992). Although categorization ability is undoubtedly related to whether children use race and gender in conjunction to make inferences about others' behavior, a large body of evidence has suggested that judgments of others are affected by factors that people are not able to accurately or explicitly recount (for reviews, see

Greenwald & Banaji, 2017; Roediger, 1990; Schacter, 1987). For example, a study investigating 4- and 5-year-old's preferences for resource-rich (vs. poor) individuals revealed that even when children were unable to explicitly identify children who were previously depicted as rich, they had a reliable preference for the rich child (Li, Spitzer, & Olson, 2013). Thus, even though young children have difficulty explicitly categorizing others, their inferences may regardless reflect the underlying pattern they observe in the world—that people affiliate with predominantly same-race, same-gender others.

Alternatively, children's inferences may instead reflect a prioritization of gender over race. Considerable work has suggested that gender is a more basic and fundamental social category than race. Specifically, people are more likely to remember others' gender than race (Gardner, MacIntyre, & Lalonde, 1995; Kurzban, Tooby, & Cosmides, 2001; Stangor et al., 1992; Weisman, Johnson, & Shutts, 2015; Zarate & Smith, 1990). Furthermore, gender is utilized at earlier ages than race in guiding friendship selection (Shutts et al., 2013; see also Kinzler & Spelke, 2011) and is more likely than race to predict whom children trust (Shutts, Banaji, & Spelke, 2010). Together, these findings raise the possibility that children may rely more strongly on gender than race when reasoning about others' friendships (e.g., believing a White girl will befriend a White or Black girl over a White or Black boy).

Finally, race may instead trump gender in guiding children's perceptions of friendships. Some studies have found that 4- to 6-year-old White children use race more often than gender to categorize people (Ramsey, 1991; but see also Ramsey & Myers, 1990), and that race is more likely than gender to serve as the basis for rejecting peers (Ramsey, 1991). Furthermore, in everyday life, children likely see many more cross-gender than cross-race interactions. For example, only 0.4% of two-parent households with children have parents of the same gender,

whereas 90% have same-race parents (Vespa, Lewis, & Kreider, 2013). Additionally, 75% of White adults report that they do not have single a friend of another race (Cox et al., 2016). Thus, (White) children are much more likely to witness cross-gender interactions than cross-race interactions in their everyday lives, potentially leading them to perceive race as a particularly strong predictor of friendships (e.g., believing that a White girl will befriend a White girl or boy over a Black girl or boy).

In the present work, we contrasted these possible patterns. In three studies, we investigated whether and how 4- to 6-year-old children use both race and gender when making inferences about friendship. In each study, participants saw photographs of children (the targets), each paired with four potential friends. The potential friends always included one individual of the same race *and* gender (race & gender match), one of the same race but different gender (race match), one of a different race but same gender (gender match), and one of a different race and gender (no match) as the target child. Participants indicated who they thought the target child should (Studies 1-2) and will (Study 3) befriend. Our sample included 4-6 year old children because age 4 is the youngest in development that children have been found to expect others to have same-race or same-gender friendships (Shutts et al., 2013).

Study 1

Method

Participants. Forty-eight monoracial 4-6-year-old White children participated (29 girls; M_{age}=5 years and 5 months, *SD*=10.75 months, range=4 years and 0 months to 6 years and 10 months[1]). The study took place in parks (*N*=16) or a child research laboratory (*N*=32) in the Pacific Northwest. White female experimenters ran all sessions. An additional seven participants

[1] In all three studies, equal numbers of 4-, 5-, and 6-year-old children participated.

were excluded due to being identified as non-White (*n*=5), experimenter error (*n*=1), or being too distracted to complete the task (*n*=1).

Procedure. Children were given 8 trials in which they were asked to indicate with whom they thought a target child should be friends. For each trial, participants were introduced to a target, centered at the top of the screen. Participants then saw four children at the bottom of the screen, which the target could have as friends (henceforth referred to as potential friends). Participants were asked to point to indicate which of the four potential friends they thought the target *should* befriend. The experimenter recorded each selection.

Across the eight trials, participants saw 2 White girls, 2 White boys, 2 Black girls, and 2 Black boys as targets in one of eight possible orders. The location of the potential friends on the screen (from left to right) was counterbalanced across trials and across participants. Across the eight trials, no photos of children were repeated. All photos were selected such that on each trial, the potential friends did not significantly differ on perceived expression, age, or attractiveness as rated by a group of 7-15 adults.

Results and Discussion

To account for the dependent nature of our repeated measures design (i.e., choosing one potential friend necessitates not choosing another potential friend), we conducted a Generalized Estimating Equation (GEE) analysis. GEE is similar to logistic or multinomial logistic regression; however, GEE can account for the fact that each child provided multiple responses. We tested whether there were significant differences in the rate at which each type of potential friend was selected, with participant age (mean centered) as a continuous predictor. Selection of the potential friend who matched the target in terms of both race and gender (i.e., the race & gender match) served as the reference category. Significant intercepts in this model mean that, on

average, there was a significant difference in the rate at which children selected the other potential friends (race matches, gender matches, or no matches), relative to the race & gender matched potential friends (i.e., that the odds ratio was significantly different from 1). For each intercept, there is also an age estimate, which quantifies how a one-month change in participant age affects the odds of choosing each type of potential friend (relative to the reference category).

In comparison to selecting the race & gender matches, we found that participants were less likely to choose the race match ($p<.001$), gender match ($p<.001$), and no match ($p<.001$) potential friends. These findings suggest that children are using the unique combination of race and gender to make inferences about who others should be friends with. There were no significant effects of age (all ps>.289). Table 1 presents parameter estimates and standard errors; Table 2 presents the proportion of times that children selected each type of potential friend, estimated from the gee model.

Effect	Estimate	*SE*	*p*-value
No match effect	-2.03	.23	<.001
Gender match effect	-1.22	.18	<.001
Race match effect	-1.31	.21	<.001
No match x age interaction	-.02	.02	.290
Gender match x age interaction	-.01	.01	.402
Race match x age interaction	.01	.02	.583

Table 1. Study 1 gee modeling results. *Note.* The baseline category was the race & gender match potential friend.

Potential friend	Predicted proportion
Race & gender matches	.59
Race matches	.17
Gender matches	.16

No matches	.08

Table 2. Study 1 estimates of the average proportion of times each type of potential friend was selected.

These results provide the first evidence that children use both race and gender concurrently when making judgments about others' friendship. However, the zero-sum nature of the task (i.e., children could choose only one potential friend) may have inflated the extent to which children use both categories in conjunction. Therefore, the goal of Study 2 was to investigate whether a similar pattern is obtained with a non-zero sum task.

Study 2

Method

Participants. A new group of forty-eight 4-6-year-old monoracial White children participated (22 girls; M_{age}=5 years and 5 months, *SD*=9.47 months, range=4 years and 0 months to 6 years and 9 months)[2]. The study took place in parks (*N*=8), a child research laboratory (*N*=19), and preschools (*N*=21) in the Pacific Northwest. White female experimenters ran all sessions, except for one participant who was run by the first author. An additional three participants were excluded due to being identified as non-White.

Procedure. The procedure was identical to Study 1, except that participants were informed they could select one, two, three, or four children that the target should be friends with.

Results and Discussion

On average, participants indicated that each target should be friends with 1.52 individuals (*SD*=0.67; range=1-4). To investigate whether and how children use race and gender to make

[2] Two parents did not report their child's exact date of birth.

predictions about others' social relations, we computed the proportion of times that participants selected the race & gender match, race match, gender match, and no match potential friends. We then conducted a repeated-measures analysis of variance (ANOVA) to understand whether the rate at which children selected each type of potential friend differed, with participant age as a continuous predictor.

We observed a significant difference in the proportion of times that children selected each type of potential friend, $F(3, 132)=18.44$, $p<.001$, $\eta^2_p=.30$. In line with Study 1, follow-up pairwise comparisons indicated that participants selected the race & gender matches at higher rates compared to all other potential friends (all ps$<.001$). Furthermore, children's selection of the race matches did not differ significantly from their selection of the gender matches ($p=.206$). Finally, the rate at which participants selected the no-match potential friends was significantly lower than selection of all other potential friends (race & gender matches, $p<.001$; gender matches, $p<.001$; and race matches, $p<.042$). There were no other significant effects (main effect of age: $F(1, 44)=0.04$, $p=.852$, $\eta^2_p=.00$; potential friend type × age interaction: $F(3, 132)=2.37$, $p=.074$, $\eta^2_p=.05$). Means are presented in Table 3.

Potential friends	Predicted proportion (*se*)
Race & gender matches	$.57\ (.04)_a$
Race matches	$.33\ (.04)_b$
Gender matches	$.39\ (.04)_b$
No matches	$.25\ (.04)_c$

Table 3. Study 2 estimates of the average proportion of times each type of potential friend was selected. *Note*. Because children could select multiple friends, the column does not add to 1. Different subscripts denote significant differences at $p<.05$.

These results replicate and extend the results of Study 1 by demonstrating that children use race and gender in conjunction when reasoning about others' friendships. Importantly, this phenomenon occurs even when children are given explicit information that people can have multiple friends. In Study 3, we sought to extend these findings by investigating children's

expectations about what actually happens in the world (i.e., their descriptive norm judgments). That is, instead of asking children who *should* be friends as in Studies 1-2, in Study 3 we asked children who they thought *will* be friends.

Study 3

Method

Participants. Forty-nine 4-6-year-old White children participated (28 girls; M_{age}=5 years and 4 months, *SD*=10.30 months, range=4 years and 0 months to 6 years and 11 months). The study took place in parks (*N*=22), a child research laboratory (*N*=14), and preschools (*N*=13) in the Pacific Northwest. White female experimenters ran all sessions. An additional seven participants were excluded due to experimenter error (*n*=3) or being identified as non-White (*n*=4).

Procedure. The procedure was identical to Study 2, except that participants were informed they could select one, two, three, or four children that the target *will* be friends with.

Results and Discussion

On average, participants indicated that each target will be friends with 1.44 individuals (*SD*=0.69; range=1-4). To investigate whether and how children use race and gender to make predictions about who will be friends, we used the same analytic approach as in Study 2. Specifically, we conducted a repeated-measures ANOVA to test whether the proportion of times children selected each type of potential friend significantly differed; additionally, participant age was entered as a continuous predictor.

We observed a significant difference in the proportion of times that children selected each type of potential friend, $F(3, 141)=23.29$, $p<.001$, $\eta^2_p=.33$. The main effect of participant age was not statistically significant, $F(1, 47)=0.20$, $p=.654$, $\eta^2_p=.00$. However, there was a

significant potential friend type × age interaction, $F(3, 141)=10.45$, $p<.001$, $\eta^2_p=.18$. Because we recruited equal numbers of 4-, 5-, and 6-year-old children, for ease of interpretation, we probed the interaction at three levels to represent the ages we had represented in our sample: 4.5 years old, 5.5 years old, and 6.5 years old (see Table 4).

Potential friends	Overall predicted proportion (se)	4-year-old Predicted proportion (se)	5-year-old Predicted proportion (se)	6-year-old Predicted proportion (se)
Race & gender matches	.58 (.04)$_a$	.42 (.05)	.61 (.04)$_a$	.80 (.06)$_a$
Race matches	.29 (.04)$_{bc}$	.33 (.05)	.28 (.04)$_{bc}$	.23 (.06)$_{bc}$
Gender matches	.35 (.04)$_b$	.37 (.06)	.35 (.04)$_b$	.33 (.06)$_b$
No matches	.23 (.03)$_c$	.29 (.05)	.22 (.04)$_c$	.15 (.06)$_c$

Table 4. Study 3 estimates of the average proportion of times each type of potential friend was selected. *Note.* Because children could select multiple friends, columns do not add to 1. Different subscripts in the same column denote significant differences at $p<.05$.

Among 4-year-olds, there were no significant differences in the proportion of times that children selected each type of potential friend, $F(3, 141)=1.51$, $p=.215$, $\eta^2_p=.18$.

In contrast, among 5-year-olds there was a significant difference in the proportion of times that children selected each type of potential friend, $F(3, 141)=28.36$, $p<.001$, $\eta^2_p=.38$. Specifically, 5-year-old participants selected the race & gender matched potential friends more often than any of the other potential friends (all ps$<.001$). Furthermore, 5-year-olds' selection of the race matches did not differ significantly from their selection of the gender matches ($p=.153$) or their selection of the no-match potential friends ($p=.114$). However, 5-year-olds' selection of gender matches was significantly higher than their selection of the no matches ($p=.002$).

Finally, among 6-year-olds there was a significant difference in the proportion of times that children selected each type of potential friend, $F(3, 141)=29.66$, $p<.001$, $\eta^2_p=.39$. Specifically, 6-year-old participants selected the race & gender matched potential friends more often than any of the other potential friends (all ps$<.001$). Their selection of the race matches did

not differ significantly from their selection of the gender matches (p=.217) or their selection of the no-match potential friends (p=.197). However, 6-year-olds' selection of gender matches was significantly higher than their selection of the no matches (p=.008).

Together, these results suggest that by 5 years of age children use information about race and gender in conjunction to make inferences about who others will be friends with. Analogous to Study 2, the expectation that people will be friends with same-race, same-gender peers occurs even when children are reminded that people can have multiple friends. Finally, we observed that the extent to which children expect others will have same-race (but different-gender) friends does not differ significantly from the extent to which they expect others will have same-gender (but different-race) friends.

General Discussion

Our results shed new light on children's use of race and gender as meaningful social categories. Whereas previous research has documented that children use information about race and gender in isolation to make inferences about others' friendships (Roberts et al., 2016; Shutts et al., 2013), the present research goes a step further to demonstrate that children use race and gender *in conjunction* to make such inferences by at least 5 years of age. Specifically, Study 1 revealed that when asked to choose a single individual that someone should befriend, 4-6-year-olds overwhelmingly selected race and gender matched peers. Extending this finding, Studies 2-3 demonstrated that the preferential selection of same-race, same-gender friends occurs even when children are explicitly given the opportunity to be egalitarian (i.e., select all potential friends). Furthermore, Study 3 showed that the use of race and gender in conjunction occurs not only when children make injunctive norm judgments (judgments about what *should* happen) but also when children make descriptive norm judgments (judgments about what *will* and *does* actually

happen). Finally, Study 3 suggested that the tendency to favor race and gender matches might be stronger among 5-6-year-olds, relative to 4-year-olds. Together, these findings suggest that young children are indeed attuned to the real-world statistical regularity that people affiliate with same-race, same-gender others.

Our findings contribute to a longstanding debate about whether gender is a more fundamental social category than race. In all three studies, we found no significant differences in the extent to which children indicated same-race (but different-gender) friendship pairs and the extent to which children indicated same-gender (but different-race) friendship pairs. This pattern suggests that although children may attend to and use gender earlier than race, after children are aware of and can use both race and gender categories, they use both in conjunction, and in isolation are no more or less likely to use race versus gender. Our finding that by age 4 or 5 children are using both race and gender in conjunction when making judgments about friendships rather than relying on only one social category suggests a need to conduct more research, across multiple domains, in which the option of using both categories is possible. Indeed, in social psychological research on adult populations, this approach is increasingly used, demonstrating for example that adults have distinct stereotypes about intersectional categories such as White men and Black women (Purdie-Vaughns & Eibach, 2008). A focus on broad social categories means that nuance is lost, and subgroups may be left behind in the push for progress (Purdie-Vaughns et al., 2008). An intersectional approach can be taken in early development with other categories in mind, such as race and social status (Shutts, 2015) or gender and age. Questions such as these will help to shed light on how children make meaning and acquire representations given the complex inputs from their social environment.

Moreover, our findings suggest that prominent theories in developmental psychology according to which children do not simultaneously consider multiple categories until at least 7 years of age (Inhelder & Piaget, 1964; Aboud, 1988; Bigler & Liben, 1992) may be incorrect or incomplete. It may be that children cannot explicitly do so (or cannot verbally justify these categorizations), but the present results suggest that at least implicitly, even preschoolers can and do use at least two features at the same time. Thus, future work would benefit from examining circumstances under which children consider multiple features simultaneously, as well as when and why children are likely to rely on a single (vs. multiple) feature. Our work begins to lay this foundation, revealing that as early as by age 4 or 5, friendships are not thought to simply be same-race or same-gender; instead, friendship is thought to consist of same-race, same-gender peers.

Underrepresentation and the perception of others' racial attitudes

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Abstract

Across two experiments, we investigate racial attitude perceptions in low diversity environments to explore whether friendships with members of numerically underrepresented groups serve as a stronger indication of individuals' racial attitudes, than friendships with members of the numeric majority. Seven- to ten-year-old children heard about a Black (Experiment 1) or White (Experiment 2) Protagonist befriending two classmates who belonged to either the numeric minority or majority group. When protagonists befriended classmates from the numeric minority rather than the numeric majority, participants inferred racial preferences among Black protagonists who befriended ingroup (but not outgroup) children and White protagonists who befriended ingroup and outgroup children. Racial preferences were not assumed when children made inferences about others' choice of future social partners. This work has implications for understanding how the racial composition of environments may affect perceptions of same-race and cross-race friendships.

Keywords: statistical learning, race, intergroup relations, social cognition, children

Underrepresentation and the perception of others' racial attitudes

Although the United States is increasingly diverse overall, segregation remains persistent in many contexts, including neighborhoods (Adelman & Gocker, 2007), workplaces (Hellerstein & Neumark, 2008; U.S. Department of Labor, 2011), and schools (KewalRamani et al., 2007; U.S. Department of Education, 2006). Whites are more likely than racial minorities to spend their time in racially homogenous environments (Cox, Navarro-Rivera, & Jones, 2016; KewalRamani, Gilbertson, Fox, & Provasnik, 2007). Yet, society more often questions why racial minorities, as opposed to Whites, "self-segregate" (e.g., Beaman, 2016). Indeed, this perplexing paradox was the topic of an influential text on racial discourse, *Why are all the Black kid sitting together in the cafeteria?: And other conversations about race* (Tatum, 1997). In the current experiments we explore whether low diversity contexts can promote the exaggerated perception that Black individuals like same-race peers to a greater extent than White individuals like same-race peers.

Imagine being in a predominantly White environment where Black children befriend White children. Do these friendships suggest the Black children like their White peers better than Black peers? While it is possible that they possess this racial preference, the fact that the environment contains many White children may preclude drawing this inference. That is, friendships with members of the numeric majority group may be a byproduct of the environment (i.e., these friendship pairings align with random sampling assumptions) and therefore serve as a poor indication of individuals' racial attitudes. But now imagine in the same predominantly White classroom viewing Black children befriend each other. Do their friendships suggest they like Black peers better than White peers? Unlike the prior situation, friendships between Black children should be rare if people chose friends randomly. As such, friendships with members of

an underrepresented group (i.e., the numeric minority group) may seem to "violate" random sampling assumptions and therefore serve as a better indicator of an individual's racial attitudes, compared to the choice to befriend members of the numeric majority group. In other words, these asymmetric inferences may unfold within low diversity environments precisely because the racial composition of some friendships seem to be more likely based on the population characteristics than other friendships.

Indeed, when drawing inferences about the causes of others' behavior, both children and adults weigh evidence about whether others' behavior can be explained by salient environmental features (Castelli, De Amicis, & Sherman, 2007; Gilbert & Malone, 1995; Heider, 1958; Kelley, 1967; Kushnir, Xu, & Wellman, 2010). For example, if an agent's toy choice is statistically non-random (i.e., toy ducks chosen from a toy chest that is mostly filled with toy balls) toddlers infer that the agent prefers the chosen toy, compared to the non-chosen toy. However, they infer no such preference when the choice could have occurred by chance (i.e., toy ducks chosen from a toy chest that is mostly toy ducks; Kushnir et al., 2010). The present investigation draws upon this literature to explore whether biased perceptions of others' racial attitudes (e.g., the exaggerated perception that Black individuals prefer same-race peers relative to White individuals) can arise within environments that predominantly consist of people from a single racial background (henceforth referred to as, low diversity environments).

The Current Experiments

Two experiments examine whether friendships with members of the underrepresented group serves as a stronger indication of individuals' racial attitudes, than friendships with members of the numeric majority group. Experiment 1 investigates our main question by investigating perceptions of Black individuals' friendship preferences, whereas Experiment 2

tests generalizability by investigating perceptions of White individuals' friendship preferences. Given adults' longstanding experience with predominantly same-race environments, and the fact that adults' expectations and attitudes about race are well practiced (e.g., Baron, 2015), our investigation focused on 7- to 10-year-old children. Although children of this age encode information about others' racial background, the inferences they make about their peers based on race may be more malleable compared to their adult counterparts (Baron, 2015). Furthermore, by 7 years of age children can reliably use information about a person's past behavior towards an object to predict that person's attitudes and future behavior towards similar objects (Kalish, 2002). Therefore, children of this age should be able to use information about the race of others' previous friends to make inferences about others' racial attitudes and future behavior.

Participants were exposed to a Black (Experiment 1) or White (Experiment 2) Protagonist who befriended peers (i.e., White or Black children) within a low diversity classroom (either predominantly White or predominantly Black). Within the context of the classroom, the race of the Protagonist's playmates was either statistically unlikely, and thus represented a "violation" of random sampling assumptions (i.e., Black playmates chosen from a predominantly White classroom; and White playmates selected from a predominantly Black classroom), or the race of the playmates was statistically likely, and thus represented no "violation" of random sampling assumptions (i.e., White playmates selected from a predominantly White classroom; and Black playmates chosen from a predominantly Black classroom). Participants then made inferences about the child's racial attitudes and related behavior.

If children are attuned to the context in which friends are chosen when making inferences about other's racial attitudes and behavior, then we expect children will infer that the Protagonist has a racial preference only in the cases when the race of friends seems unlikely given the

context (i.e., there is a violation of random sampling assumptions), whereas they would infer no preference, or a weaker preference, when the race of friends is likely given the context (i.e., when there is no violation of random sampling).

Experiment 1

Methods

Participants.

For both experiments, our target sample size given the counterbalancing of the experimental design was 192 participants. Data collection stopped at the end of the day in which the 192nd participant was run. This stopping goal allowed us to detect a small effect ($\eta^2 \leq .038$) in our 2 x 2 between subjects design for the primary question of interest (i.e., children's inferences about others' racial attitudes) with 80% power (Faul, Erdfelder, Lang, & Buchner, 2007). Experiment 1 had 197 participants (See Table 1 for demographics).

Experiment	Average Age (*SD*)	Age Range	% Female	% of children identified as…							Location run			Additional participants who were excluded from analyses because they...	
				White	Mixed Race	Hispanic	Asian or Pacific-Islander	African American	Native American	"Other"	% in Parks	% at a Camp	% in lab	Did not Finish	Failed to Pass Memory Control Question
1	8 years, 11 months (1 year, 1 month)	7 years, 0 months to 10 years 11 months	48%	61%	22%	6%	5%	1%	.5%	1%	99%	0%	1%	2	3
2	8 years, 11 months (1 year, 2 months)	7 years, 0 months to 11 years 0 months	58%	67%	13%	5%	8%	2%	1%	.5%	83%	15%	1%	0	4

Table 1. Participant demographics for each experiment. Note: Three parents in Experiment 1 and seven parents in Experiment 2 failed to report the exact birthdate of their child. Percentages may not sum to 100% due to rounding error, or in the case of children's identified race, some parents declined to respond.

Procedure.

Participants sat in front of the testing computer next to the experimenter, who recorded participant's responses. In storybook format, children were introduced to a gender-matched Black Protagonist child and the Protagonist's gender-matched classmates. Participants were then introduced to the Protagonist's specific playmates from the class. We manipulated both the racial composition of the Protagonist's class (Majority White—10 White and 2 Black children; or Majority Black—10 Black and 2 White children) and whether the Protagonist had Black playmates or had White playmates (i.e., same-race friendships or cross-race friendships, respectively). These manipulations resulted in a 2 (Racial Composition of Friendship: Same-Race (Black) or Cross-Race (White)) x 2 (Statistical Sampling Information: No Sampling Violation or Sampling Violation) between-subjects design (see Figure 1 for a schematic). White playmate choices within a majority White classroom, and Black playmate choices within a majority a Black classroom represented the two cases of "no sampling violation" because the race of playmates was likely given the classroom population. In contrast, Black playmate choices within a majority White classroom, and White playmate choices within a majority Black classroom represented the two cases of "a sampling violation" because the race of playmates was unlikely given the classroom demographics. Participants then answered counter-balanced questions assessing their inferences about the Protagonist's attitudes and related behavior (see below and Online Supplement).

Dependent variables.

Manipulation check. To assess whether participants viewed the playmate choices as equally stable across all conditions, participants answered two forced-choice questions concerning who the Protagonist would a. bring to a birthday party, and b. take to the movies. The

choices for each question were between the same child previously depicted as the Protagonist's playmate from class, and a gender-matched child who was a different race than the previous playmate.

Responses for each question were scored such that 1 represented inferring the Protagonist would choose to interact with the same playmate again, and 0 represented inferring the Protagonist would choose to interact with the child who was a different race than the previous playmate.

Perceived Liking. To assess participants' inferences about the Protagonist's racial attitudes participants rated how much they thought the Protagonist liked four novel, Target children (two White and two Black), on a five-point scale ranging from *1-Doesn't Like a Lot* to *5-Likes a Lot*.

This variable was scored to reflect average perceived liking of novel children who were the same race as the previous playmates, and average perceived liking of novel children of a different race than the previous playmates. Therefore, if the previous playmates were Black (i.e., the same-race friendship conditions), the perceived liking of novel Black children was coded as perceived liking of children of the same race as the previous playmates, whereas perceived liking of the novel White children was coded as perceived liking of children of a different race than the previous playmates. If the previous playmates were White (i.e., the cross-race friendship conditions), the perceived liking of novel White children was coded as perceived liking of children of the same race as the previous playmates, whereas perceived liking of the novel Black children was coded as perceived liking of children of a different race than the previous playmates.

Social partner choice. To investigate whether the inferences children make about a person's racial attitudes guides assumptions about choice of future interaction partners, participants answered two forced-choice questions about whom they thought the Protagonist would choose as a friend in the future. Each question required them to select between two novel children (one White, one Black).

Responses for each question were scored such that 1 represented inferring the Protagonist would choose to interact with the child of the same race as their previous playmates, and 0 represented inferring the Protagonist would choose to interact with the child who was a different race than the previous playmates (analogous to the scoring of the manipulation check). Therefore, if the previous playmates were Black (i.e., the same-race friendship conditions), selecting the Black child would be scored as 1, and selecting the White child would be scored as 0. Similarly, if the previous playmates were White (i.e., the cross-race friendship conditions), selecting the White child would be scored as 1, and selecting the Black child would be scored as 0.

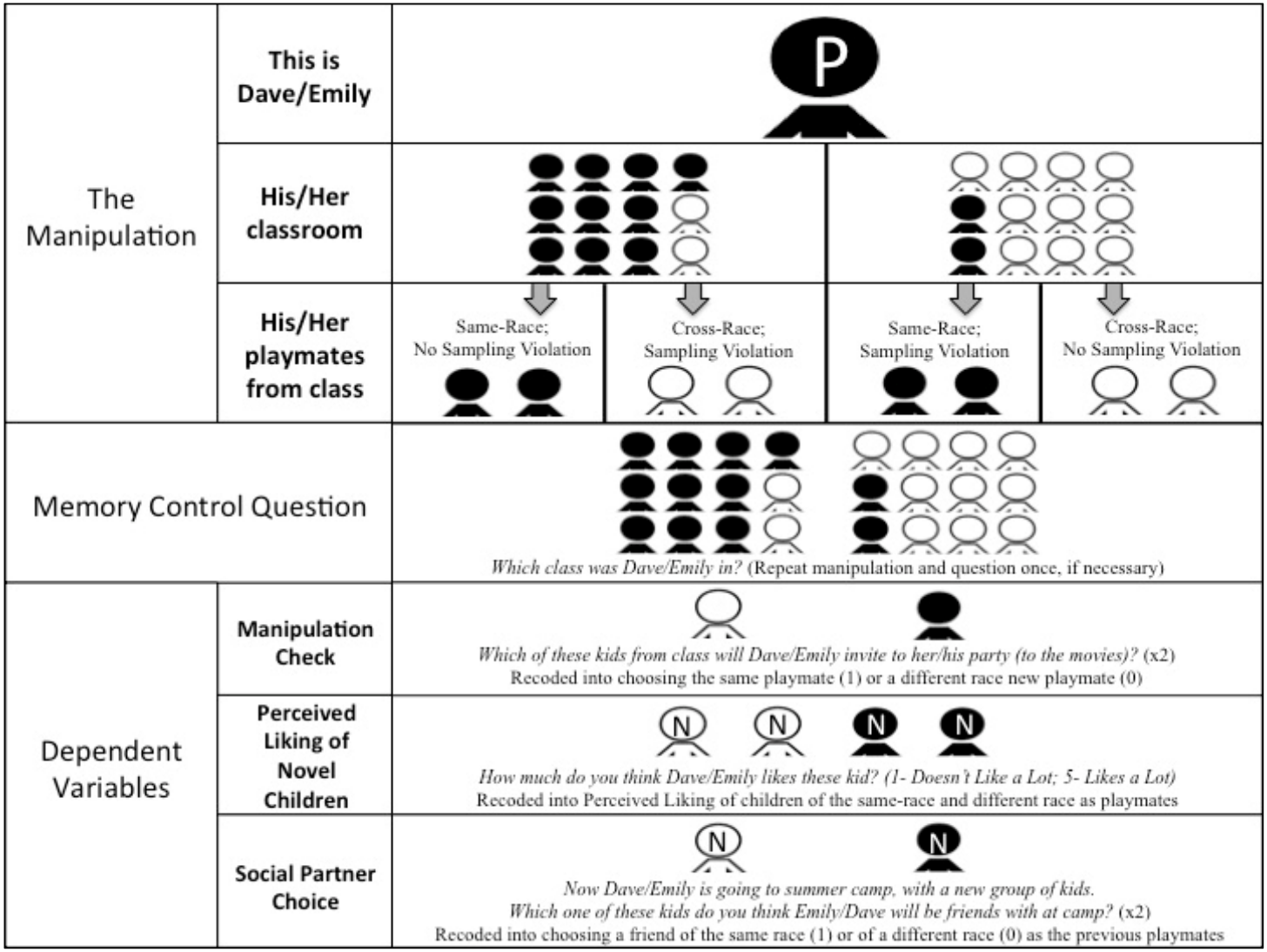

Figure 1. Schematic of the Experiment 1 methods. All of the photos used for participants were of actual (gender-matched) children, as opposed to the black and white figures in the schematic. White figures represent White children, and the Black figures represent Black children. The *P* within the figure denotes the Protagonist, and the *N*s within the figures denote novel children that were not depicted as part of the classroom. Finally, the order of the Dependent Variables was completely counterbalanced.

Results

Manipulation check. Overall, 87.1% of the time, children predicted the Protagonist would choose interact with their previous friend. To investigate whether this pattern differed by condition, we conducted a 2 (Racial Composition of Friendship: Same-race vs. Cross-race) x 2 (Sampling Information: No Sampling Violation vs. Sampling Violation) mixed model binary logistic regression (to account for the repeated measures nature of the design).

There was a significant main effect of Racial Composition of Friendship, $F(1, 391) = 11.202$, $p < .001$. Specifically, participants predicted that the Protagonist would interact with the same playmates (as opposed to different-race, new individuals) more often when the previous playmates were the same race as the Protagonist (i.e., Black; Probability = 94.9%), as opposed to when the previous playmates were cross-race (i.e., White; Probability = 80.5%), nonetheless both of these effects were significantly above chance. The results are summarized in Table 2.

There was no significant main effect of Sampling Information ($F(1, 391) = 2.667$, $p = .103$) or Racial Composition of Friendship x Sampling Information interaction, $F(1, 391) = .204$, $p = .651$.

Predictor	*b* (*SE*)	Exp(*b*)	95% CI Exp(*b*)
Racial Composition of Friendship	.76** (.23)	2.13	[1.37, 3.32]
Sampling Information	-0.37 (.23)	.69	[.44, 1.08]
Racial Composition of Friendship x Sampling Information	-.10 (.23)	.90	[.58, 1.41]
Intercept	2.18*** (.23)	8.83	[5.66, 13.76]

Table 2. Results from the mixed-model binomial logistic regression, with an unstructured covariance matrix, predicting the percentage of times the same playmate was selected from the racial composition of friendship and the sampling information in Experiment 1 (Manipulation Check). Note: Values shown in the *b* column are unstandardized coefficients, values in the Exp(*b*) column represent the odds of selecting that the Protagonist would choose the same playmate as opposed to the different-race child. Racial Composition of Friendship was coded as -1 for cross-race friendships and 1 for same-race friendships. Sampling information was coded as -1 for no sampling violation and 1 for sampling violation. ** $p < .01$, ***$p < .001$

Perceived Liking. To investigate whether inferred liking differed by racial composition of friendship or sampling information, we conducted a 2 (Racial Composition of Friendship: Same-race vs. Cross-race) x 2 (Sampling Information: No Sampling Violation vs. Sampling Violation) x 2 (Target: Same Race as previous playmates vs. Different Race than previous playmates) mixed-model Analysis of Variance (ANOVA), with the last factor within subjects.

As expected there was a main effect of Target ($F(1, 193) = 6.38$, $p = .012$, $\eta^2_{partial} = .03$) such that participants inferred greater liking of children of the same race as the Protagonist's previous playmates, relative to children of a different race than the Protagonist's previous playmates.

This was qualified by a significant Target x Racial Composition of Friendship interaction ($F(1, 193) = 12.34$, $p = .001$, $\eta^2_{partial} = .060$), which was further qualified by a significant Target x Racial Composition of Friendship x Sampling Information interaction, $F(1, 193) = 11.00$, $p = .001$, $\eta^2_{partial} = .054$. We conducted follow-up analyses to break down the significant three-way interaction and investigate the role of statistical sampling information when observing same-race and cross-race friendships.

For *same-race friendships*, there was a significant Target x Sampling Information interaction, $F(1, 193) = 11.03$, $p < .001$, $\eta^2_{partial} = .054$. Simple effects analyses revealed that when Black playmates were chosen from a predominantly White classroom (i.e., there was a sampling violation), participants inferred that the Protagonist liked novel Black playmates more than novel White playmates, $F(1, 193) = 29.65$, $p < .001$, $\eta^2_{partial} = .13$. However, Black classmates were chosen from a predominantly Black classroom (i.e., there was no sampling violation), the Protagonist's perceived liking of novel Black and White children did not differ, $F(1, 193) = .36$, $p = . 549$, $\eta^2_{partial} = .002$. That is, only when the Protagonist chose Black

playmates from a majority White classroom did children infer that the Protagonist liked Black children more than White children (see Figure 3 and Table 3).

However, for *cross-race friendships*, the Target x Sampling Information interaction was not significant, $F(1, 193) = 1.78$, $p = .184$, $\eta^2_{partial} = .009$. Specifically, when the Protagonist chose White playmates, children inferred the Protagonist liked novel White and Black children equally, regardless of the whether the playmates were from a majority White or a majority Black classroom (see Figure 3 and Table 3). Thus, participants did not utilize relevant sampling information when making inferences about the Black Protagonist's racial attitudes after learning that Black Protagonist had cross-race playmates (i.e., White friends).

There were no other significant main effects (Racial Composition of Friendship: $F(1, 193) = 2.71$, $p = .102$, $\eta^2_{partial} = .014$; Sampling Information: $F(1, 193) = .56$, $p = .456$, $\eta^2_{partial} = .003$) or interactions (Target x Sampling Information: $F(1, 193) = 2.15$, $p = .144$, $\eta^2_{partial} = .011$; Racial Composition of Friendship x Sampling Information: $F(1, 193) = .73$, $p = .396$, $\eta^2_{partial} = .004$).

Condition	*Mean Perceived Liking*	
	Children of the same race as previous friends [95% CI]	Children of a different race than previous friends [95% CI]
Same-Race Friendships		
No Sampling Violation	3.60 [3.35, 3.85]	3.50 [3.25, 3.75]
Sampling Violation	4.13 [3.89, 4.37]	3.27 [3.03, 3.51]
Cross-Race Friendships		
No Sampling Violation	3.51 [3.35, 3.85]	3.44 [3.20, 3.68]
Sampling Violation	3.35 [3.12, 3.29]	3.58 [3.34, 3.82]

Table 3. Estimated marginal means and 95% confidence intervals for the perceived liking DV, for each condition of Experiment 1.

Social partner choice. Overall, 61.9% of the time, children predicted the Protagonist would choose the child who was the same race as their previous playmate. To investigate whether this pattern differed by participants' condition, we conducted a 2 (Racial Composition of Friendship: Same-race vs. Cross-race) x 2 (Sampling Information: No Sampling Violation vs. Sampling Violation) mixed-model binary logistic regression.

There was a significant main effect of Racial Composition of Friendship, $F(1, 392) = 21.63$, $p < .001$. Specifically, participants predicted that the Protagonist would interact with a child of the same race (vs. a child of a different race) as the previous playmates more often when the previous playmates were the same race as the Protagonist (i.e., Black; Probability = 75.0%), than when the previous playmates were cross-race (i.e., White; Probability = 50.0%). The results are summarized in Table 4. See Figure 4 for predicted probabilities in each condition.

There was no significant main effect of Sampling Information ($F(1, 392) = 3.36$, $p = .067$) or Racial Composition of Friendship x Sampling Information interaction, $F(1, 392) = .240$, $p = .625$.

Thus, regardless of the sampling information, participants inferred the Protagonist would choose a novel friend of the same race as their previous playmates, only when friendships were same-race, but not when they cross-race.

Predictor	*b* (*SE*)	Exp(*b*)	95% CI Exp(*b*)
Racial Composition of Friendship	.55*** (.12)	1.74	[1.38, 2.20]
Sampling Information	-0.22 (.12)	.80	[.64, 1.02]
Racial Composition of Friendship x Sampling Information	.06 (.12)	1.06	[.84, 1.34]
Intercept	.55*** (.12)	1.73	[1.37, 2.18]

Table 4. Results from the mixed-model binomial logistic regression, with an unstructured covariance matrix, predicting the percentage of times the friend of the same-race as the previous playmates was selected from the racial composition of friendship and the sampling information in Experiment 1 (Social Partner Choice DV). Note: Values shown in the *b* column are unstandardized coefficients, values in the Exp(*b*) column represent the odds of selecting that the Protagonist would choose a friend of the same-race as the previous playmates (vs. a friend of a different race than the previous playmates). Racial Composition of Friendship was coded as -1 for cross-race friendships and 1 for same-race friendships. Sampling information was coded as -1 for no sampling violation and 1 for sampling violation. ***$p < .001$.

Discussion

The results of Experiment 1 provide some evidence that when making inferences about others' racial attitudes children are attuned to both the race of others' friends and the racial demographics of the context in which those friendships occurred. Specifically, viewing Black children affiliate with each other in a predominantly White environment led children to infer that the Protagonist preferred Black to White children. As expected, viewing the analogous same-race friendships occur in a predominantly Black environment, did not lead to a similar inference about the Protagonist's racial attitudes. However, participants' perceptions of the Protagonist's racial attitudes when cross-race (i.e., White) friends were chosen did not seem to be sensitive to the racial demographics of the context (and thus the statistical sampling information). In particular, in neither of the cases when children saw cross-race friendships (i.e., the Black Protagonist choosing White friends) did children infer that the Black Protagonist preferred White children to Black children.

While this experiment alone cannot speak to why statistical sampling information did not affect children's inferences about the racial attitudes of Black children who chose White friends,

prior literature provides a possible explanation. Among children 7-10 year-olds, cross-race friendships are less likely to be stable over time, less intimate, and more likely to be dropped compared to same-race friendships (Aboud, Mendelson, & Purdy, 2003). Consequently, children may perceive that cross-race friendships are less strong than same-race friendships, and thus may require additional evidence to make the inference that an individual prefers racial outgroup members. The results of the manipulation check and social partner choice provide initial evidence in line with this alternative. Specifically, Black Protagonists' friendships with Black children were perceived to be more likely to persist into the future and more likely to generalize to new friendships than Black Protagonists' friendships with White children.

Experiment 2

Experiment 1 provided preliminary evidence that within low diversity environments, asymmetric inferences about racial attitudes may occur. Specifically, Experiment 1 demonstrated that statistical sampling information affected perceptions of Blacks' same-race friendships, but not cross-race friendships. To test the generalizability of these findings, and further test why inferences about same-race friendships seemed to be more affected by statistical sampling information than inferences about cross-race friendships, Experiment 2 replicates Experiment 1, but with a White Protagonist.

Methods

Participants

Two hundred and eight children participated (See Table 1 for demographics).

Procedure

The procedure and measures for Experiment 2 were identical to Experiment 1, except the Protagonist was White, as opposed to Black (see Figure 2).

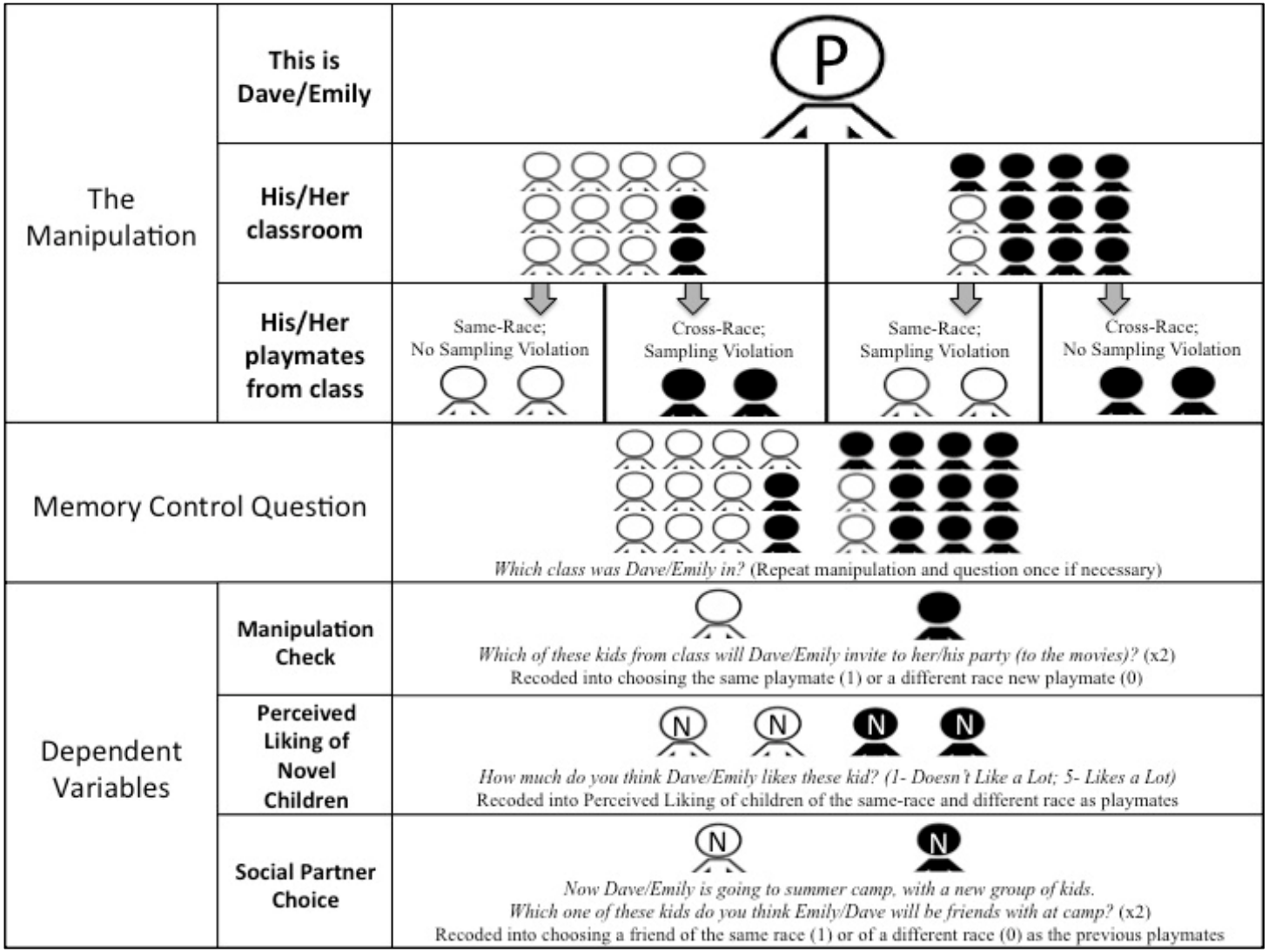

Figure 2. Schematic of the Experiment 2 methods. All of the photos used for participants were of actual (gender-matched) children, as opposed to the black and white figures in the schematic. White figures represent White children, and the Black figures represent Black children. The *P* within the figure denotes the Protagonist, and the *N*s within the figures denote novel children that were not depicted as part of the classroom. Finally, the order of the Dependent Variables was completely counterbalanced.

Results

Manipulation check. Overall, 90.4% of the time, children predicted the Protagonist would choose interact with their previous friend. A 2 (Racial Composition of Friendship: Same-race vs. Cross-race) x 2 (Sampling Information: No Sampling Violation vs. Sampling Violation) mixed-model binary logistic regression revealed no significant main effects (Racial Composition of Friendship: $F(1, 412) = .264$, $p = .608$; Sampling Violation: $F(1, 412) = .010$, $p = .920$) or Racial Composition of Friendship x Sampling Information interaction, $F(1, 412) = 2.705$, $p = .101$. In other words, participants' likelihood of predicting that the Protagonist would choose to interact with the same playmates (as opposed to children of a different race than the previous playmates) did not significantly differ across conditions. The results are summarized in Table 5.

Predictor	*b* (*SE*)	Exp(*b*)	95% CI Exp(*b*)
Racial Composition of Friendship	-.11 (.21)	.90	[.60, 1.35]
Sampling Information	.02 (.21)	1.02	[.68, 1.53]
Racial Composition of Friendship x Sampling Information	.34 (.21)	1.41	[.94, 2.11]
Intercept	2.32*** (.21)	10.21	[6.80, 15.33]

Table 5. Results from the mixed-model binomial logistic regression, with an unstructured covariance matrix, predicting the percentage of times the same playmate was selected from the racial composition of friendship and the sampling information in Experiment 2 (Manipulation Check). Note: Values shown in the *b* column are unstandardized coefficients, values in the Exp(*b*) column represent the odds of selecting that the Protagonist would choose the same playmate as opposed to the different-race child. Racial Composition of Friendship was coded as -1 for cross-race friendships and 1 for same-race friendships. Sampling information was coded as -1 for no sampling violation and 1 for sampling violation. ***$p < .001$

Perceived Liking. To investigate whether inferred liking differed by racial composition of friendship or sampling information, we conducted a 2 (Racial Composition of Friendship: Same-race vs. Cross-race) x 2 (Sampling Information: No Sampling Violation vs. Sampling Violation) x 2 (Target: Same race as previous playmates vs. Different Race than previous playmates) mixed-model ANOVA, with the last factor within subjects.

As expected there was a main effect of Target ($F(1, 204) = 22.47$, $p < .001$, $\eta^2_{partial} = .10$) such that participants inferred greater liking of children of the same race as the Protagonist's

previous playmates, relative to children of a different race than the Protagonist's previous playmates.

However, this was qualified by a significant Target x Sampling Information interaction, $F(1, 204) = 6.83$, $p = .010$, $\eta^2_{partial} = .032$. Simple effects analyses revealed that when there was a sampling violation, participants inferred the Protagonist liked children of the same race as their previous playmates ($M = 3.85$, $SD = .75$, 95% CI[3.71, 4.00]) more than children of a different race as their previous playmates ($M = 3.34$, $SD = .78$, 95% CI[3.19, 3.49]), $F(1, 204) = 27.58$, $p < .001$, $\eta^2_{partial} = .119$. When there was no sampling violation, the Protagonist's perceived liking of children of the same race as previous playmates ($M = 3.64$, $SD = .77$, 95% CI[3.49, 3.79]) and children of a different race than previous playmates ($M = 3.50$, $SD = .81$, 95% CI[3.34, 3.65]) did not differ, $F(1, 204) = 2.22$, $p = .138$, $\eta^2_{partial} = .011$. In other words, only when the Protagonist chose White playmates from a majority Black classroom, and Black playmates from a majority White classroom did children infer the Protagonist liked White children (more than Black children), and Black children (more than White children), respectively (See Figure 3 and Table 6 for information about all conditions).

There were no other significant main effects (Racial Composition of Friendship: $F(1, 204) = .007$, $p = .933$, $\eta^2_{partial} < .001$; Sampling Information: $F(1, 204) = .16$, $p = .688$, $\eta^2_{partial} < .001$) or interactions (Target x Racial Composition of Friendship: $F(1, 204) = .06$, $p = .804$, $\eta^2_{partial} < .001$; Racial Composition of Friendship x Sampling Information: $F(1, 204) = .31$, $p = .578$, $\eta^2_{partial} = .002$; Target x Sampling Information x Racial Composition of Friendship: $F(1, 204) = 3.53$, $p = .062$, $\eta^2_{partial} = .017$).

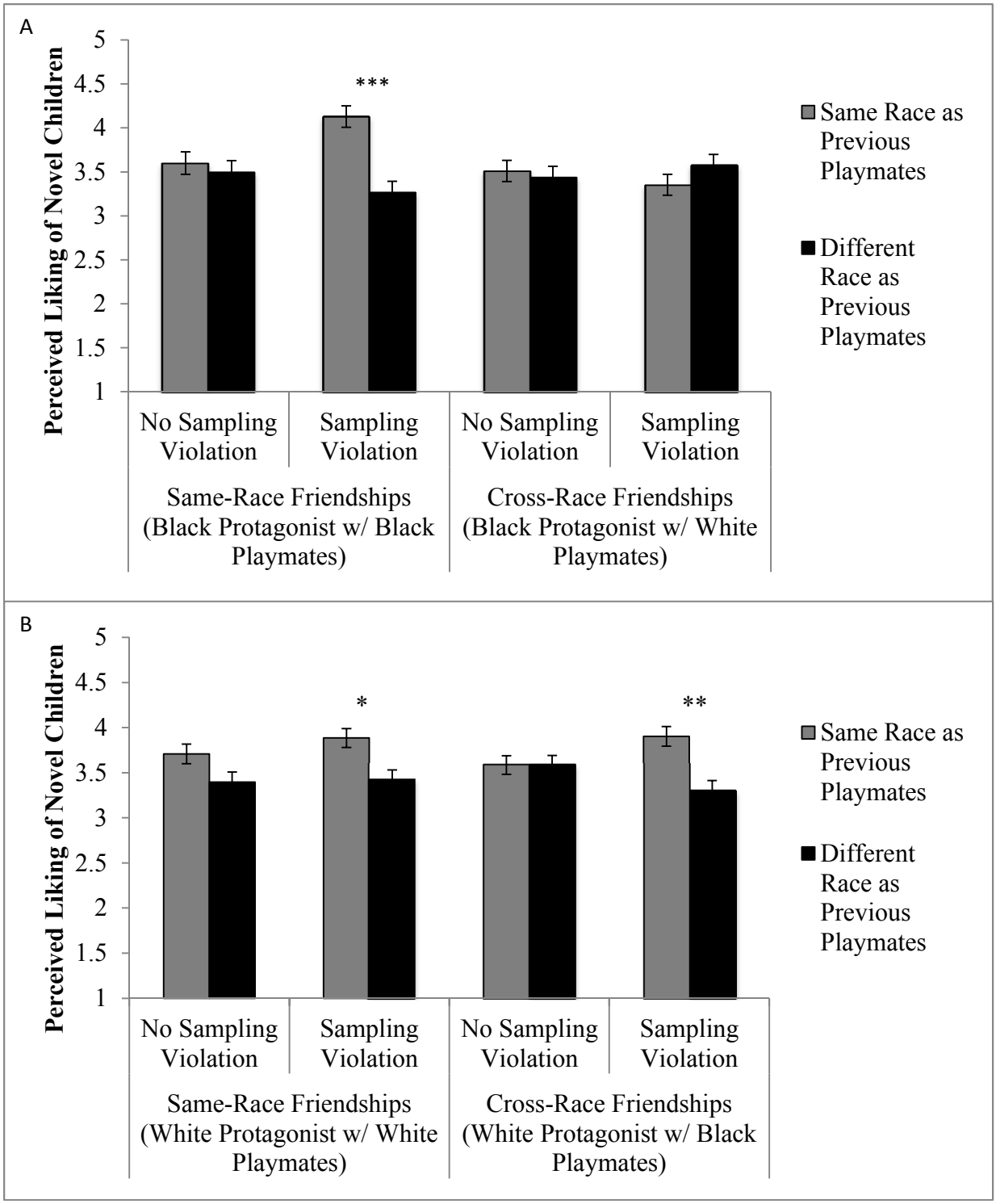

Figure 3. Panel A. Perceived Liking—Perceived Liking as a function of sampling and racial composition of friendship in Experiment 1. Panel B. Perceived Liking—Perceived Liking as a function of sampling and racial composition of friendship in Experiment 2.
** $p < .01$, *** $p < .001$. Error bars represent ± 1 *SE*.

Condition	*Mean Perceived Liking*	
	Children of the same race as previous friends [95% CI]	Children of a different race than previous friends [95% CI]
Same-Race Friendships		
No Sampling Violation	3.69 [3.48, 3.91]	3.40 [3.18, 3.62]
Sampling Violation	3.82 [3.62, 4.03]	3.43 [3.21, 3.64]
Cross-Race Friendships		
No Sampling Violation	3.59 [3.38, 3.79]	3.59 [3.37, 3.80]
Sampling Violation	3.89 [3.67, 4.09]	3.26 [3.04, 3.48]

Table 6. Estimated marginal means and 95% confidence intervals for the perceived liking DV, for each condition of Experiment 2.

Social partner choice. Overall, 65.8% of the time, children predicted the Protagonist would choose the child who was the same race as their previous playmate. A 2 (Racial Composition of Friendship: Same-race vs. Cross-race) x 2 (Sampling Information: No Sampling Violation vs. Sampling Violation) mixed-model binary logistic regression revealed a significant main effect of Racial Composition of Friendship, $F(1, 411) = 8.376$, $p = .004$. Specifically, participants predicted that the Protagonist would interact with a child of the same race (vs. a child of a different race) as the previous playmates more often when the previous playmates were the same race as the Protagonist (i.e., White; Probability = 72.9%), compared to when the previous playmates were cross-race (i.e., Black; Probability = 59.1%). The results are summarized in Table 7. See Figure 4 for predicted probabilities in each condition.

There was no significant main effect of Sampling Information ($F(1, 411) = .086$, $p = .769$), or Racial Composition of Friendship x Sampling Information interaction, $F(1, 411) = .858$, $p = .355$.

Predictor	*b* (*SE*)	Exp*(b)*	95% CI Exp(*b*)
Racial Composition of Friendship	.31** (.11)	1.36	[1.10, 1.67]
Sampling Information	-0.03 (.11)	.97	[.79, 1.19]
Racial Composition of Friendship x Sampling Information	.10 (.11)	1.10	[.90, 1.36]
Intercept	.68*** (.11)	1.96	[1.60, 2.42]

Table 7. Results from the mixed-model binomial logistic regression, with an unstructured covariance matrix, predicting the percentage of times the friend of the same-race as the previous playmates was selected from the racial composition of friendship and the sampling information in Experiment 2 (Social Partner Choice DV). Note: Values shown in the *b* column are unstandardized coefficients, values in the Exp(*b*) column represent the odds of selecting that the Protagonist would choose a friend of the same-race as the previous playmates (vs. a friend of a different race than the previous playmates). Racial Composition of Friendship was coded as -1 for cross-race friendships and 1 for same-race friendships. Sampling information was coded as -1 for no sampling violation and 1 for sampling violation. $^{**}p < .01$, $^{***}p < .001$

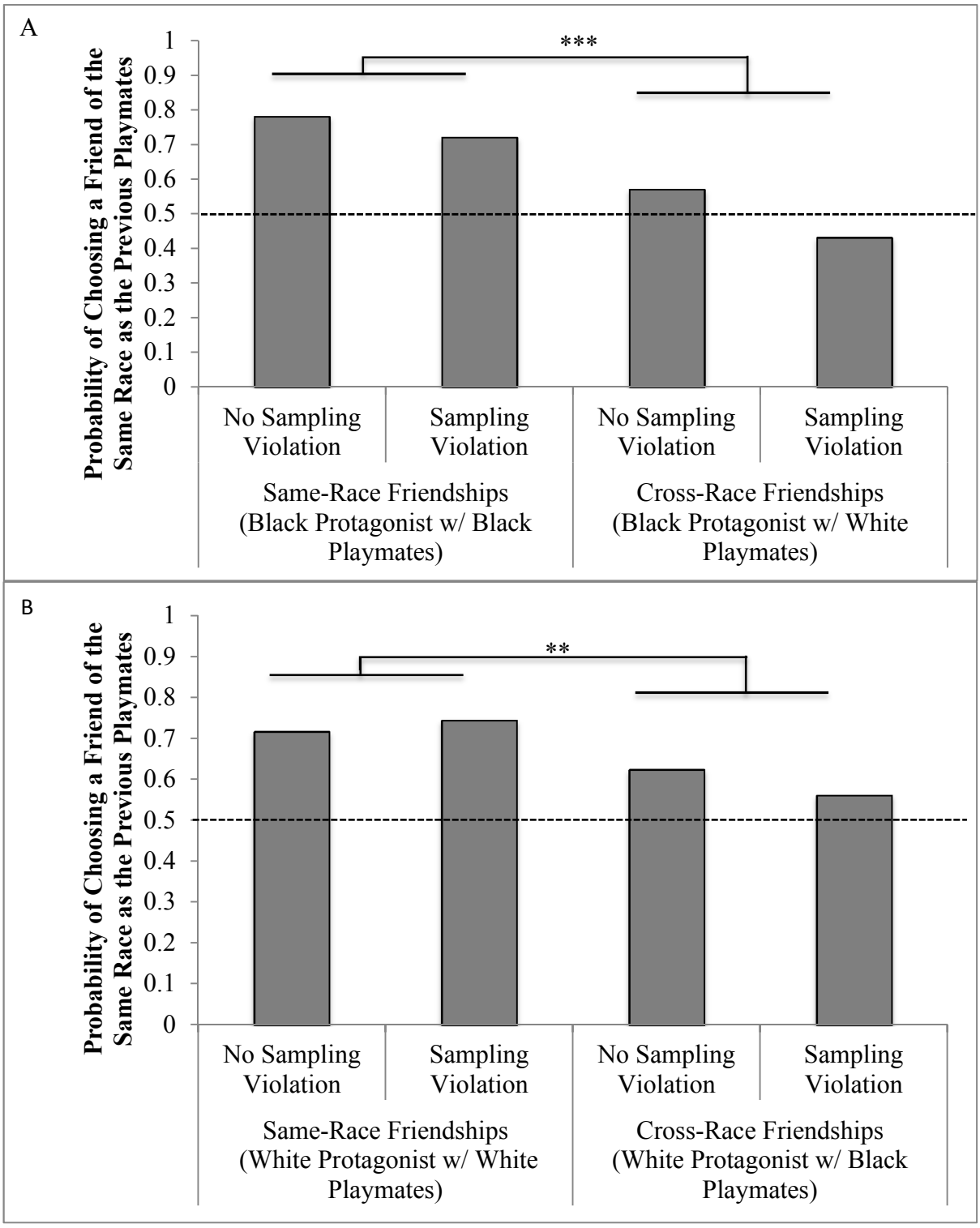

Figure 4. Panel A. Predicted probability of predicting the Protagonist would choose a friend of the same race as the previous playmates as a function of racial composition of friendship and sampling information in Experiment 1. Panel B. Predicted probability of predicting the Protagonist would choose a friend of the same race as the previous playmates as a function of racial composition of friendship and sampling information in Experiment 2. Predictions are based on the estimates shown in Tables 4 and 7. $^{**}p < .01$, $^{***}p < .001$

Discussion

Experiment 2 suggests that when making inferences about others' racial attitudes children are attuned to both the choice of friends and the context in which the choice occurred. Regardless of whether the friendships were same-race or cross-race, children inferred that the Protagonist preferred individuals of the same race as their previous friends when the choice of friends was unlikely given the context (i.e., there was a sampling violation), but not when the choice of friends was likely given the context (i.e., there was no sampling violation). This is a broader demonstration of the use of sampling information relative to Experiment 1. Thus, this study provides further evidence that within low diversity contexts, asymmetric perceptions of others' racial attitudes may arise.

However, once again, children's inferences about others' race-related behavior were unaffected by the racial demographics of the context. Instead children simply expected the Protagonist to choose novel children of the same race as their previous playmates. Consistently across experiments, we found divergence between inferences about racial attitudes and inferences about race related behavior—while the former seems to be sensitive to the racial makeup of the broader context, the latter does not. We return to this point in the general discussion.

General Discussion

These experiments demonstrate that within low diversity environments biased perceptions of others' racial attitudes can arise. Specifically, across multiple environments (i.e., predominantly White and predominantly Black environments), friendships with members of the numeric majority group led children to infer that the individual likes both groups equally. In contrast, friendship with the underrepresented group were often perceived to indicate that the

individual liked members of the underrepresented group more than members of the group that were the numeric majority. Interestingly, one set of conditions did not show this pattern—Black children choosing cross-race friendships. This unexpected finding is fascinating, and we offer two potential explanations that warrant attention in subsequent research.

First, children may have attributed Black children's engagement in cross-race friends to a factor other than preference. For example, selfish motivations (e.g., the desire for resource acquisition) may underlie children's preferences for high status individuals (Ahl & Dunham, 2017). As even young children associate Black people with lower status than White people (Shutts, Brey, Dornbusch, Slywotzky & Olson, 2016), children may have inferred that Black children's friendships with Whites are motivated by status concerns or selfish motivations (rather than motivated by preferences). Expanding future investigations beyond inferences about racial attitudes and behavior, and even beyond Black-White interactions, can shed light on whether this inference accounts for why children did not infer that Black children who chose Whites friends in predominately Black environments had a preference for Whites.

A second possibility for why Black children with White friends, in a majority Black context were not perceived to have a racial preference for Whites is that this condition was the most cognitively taxing for children. Specifically, considerations of random sampling are cognitively taxing (Xu & Denison, 2009), and may be especially taxing in novel tasks. As both predominantly Black environments, and taking the perspective of outgroup members (i.e., Black children) are novel activities for participants, this may have created an especially cognitively taxing situation for 7-10 year-old children. Consequently, children may have had been cognitively overloaded, thus leading to a more random pattern of responses in this particular condition.

Although we found largely consistent evidence that within low diversity environments asymmetric inferences about others' racial attitudes may result, unexpectedly a different pattern of results emerged when making inferences about the Protagonist's race-related behavior (i.e., choice of social partners). Across both experiments, participants were more likely to infer that the Protagonist would choose a partner of the same race as their previous playmates when the friendships were same-race as opposed to when friendships were cross-race, regardless of whether the friendships were likely or unlikely in the context (i.e., the statistical sampling information). As attitudes, especially those about racial preferences, do not always align with attitude-consistent behavior (e.g., Azjen & Cote, 2008; Crosby, Bromley, & Saxe, 1980; Wicker, 1969), inferences about others' attitudes and attitude consistent-behavior may not align. While we did not predict this divergence, other researchers have also found similar divergence (Berndt & Heller, 1985; Cain, Heyman, & Walker, 1997; Liu, Gelman, & Wellman, 2007).

Particularly, both theoretical perspectives and empirical evidence suggest that the more abstract the inference is the more likely it is to be informed by contextual information (e.g., Trope & Liberman, 2010). Because making a general inference about preferences is more abstract than an inference about a constrained and concrete future behavior (Semin & Filder, 1988), people may be more likely to use statistical sampling information in the former case than in the latter. This may be particularly true of children, as they are still developing the ability to recognize the causes of others' behavior and use that information to make predictions (Abrams, Rutland, Pelletier, & Ferrell, 2009; Fitzroy & Rutland, 2010; Selman & Byrne, 1974). Future research may consider investigating the circumstances that lead to high (vs. low) concordance between inferences about others' preferences and behaviors, especially within the context of social preferences and friendship choices.

To return to the question of why do all the Black kids sit together, our work provides novel insight into why this question may be more frequent than why do all the White kids sit together. The overwhelming prevalence of predominantly White environments (KewalRamani et al., 2007; U.S. Department of Education, 2006) can serve as foundation for such inferences. Specifically, viewing same-race Black friendships in these environment suggests that Black people strongly prefer other Black people; however, seeing same-race White friendships in the same environment suggests that White individuals are relatively egalitarian (i.e., like White and Black people equally). These inferences have important implications for promoting positive intergroup interactions. Specifically, the more that White people believe that Black people prefer to interact with same-race as opposed to cross-race individuals the less likely Whites are to engage in and initiate future cross-race interactions (Shelton & Richeson, 2005), an important way to promote positive racial attitudes (e.g., Tropp & Pettigrew, 2008). Together, our studies begin to highlight the potentially under-appreciated role of demographic contexts in shaping perceptions of intergroup relationships.

The Effect of Neighborhood Segregation on Perceptions of Others' Racial Attitudes

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The Effect of Neighborhood Segregation on Perceptions of Others' Racial Attitudes

Imagine being a real estate agent. Your aim is to help clients find their ideal homes. There are a number of objective characteristics that are important for you to consider when showing homes—such as the price, size of home, home layout, and distance to your clients' workplaces. But beyond these objective criteria, there are also more abstract, subjective considerations. Specifically, your clients are hoping to find homes in neighborhoods in which they feel like they "fit." That is, when your clients walk around prospective neighborhoods they likely want to feel comfortable, and that they will be well-received by the surrounding community. Consequently, do you think you would be more likely to show your Black clientele homes in certain neighborhoods, while showing your White clientele homes in different neighborhoods?

After the passage of the Fair Housing Act in 1968, which outlawed formal discriminatory practices such as restrictive covenants (i.e., pacts between residents not to sell their house to non-White individuals), the U.S. Department of Housing and Urban Development (HUD) was interested in this very question—were Black and White people treated systematically differently in the housing market? To explore this question, HUD conducted four large-scale audit studies in 1977, 1989, 2000, and 2012. In these studies, Black and White couples (henceforth referred to as auditors) were matched on various characteristics (e.g., income, age, the objective characteristics associated with the home they were searching for), and trained to inquire about available rental properties and home listings. The findings of these studies are clear. Since 1977, and continuing today, Black prospective renters and buyers are "steered" towards homes in neighborhoods with higher populations of Black residents compared to White prospective buyers (Choi, Ondrich, &

Yinger, 2005; Oh & Yinger, 2015; Ondrich, Stricker, & Yinger, 1998; Turner, Santos, Levy, Wissoker, Aranda, & Pitingolo, 2013; Yinger, 1991).

The pattern of steering in the audit studies revealed two important insights. First, real estate agents' perceptions of prospective buyers/renters drove the steering phenomenon, as opposed to the objective characteristics of prospective buyers/renters. More specifically, researchers proposed that real estate agents may have made inferences about their clientele's racial attitudes and about neighborhood residents' racial attitudes (Ondrich, Ross, & Yinger, 2001; 2003; Yinger, 1986). There is grounding for this inference in the psychological literature on race. For example, when directly asked to make inferences about another individual's racial attitudes, people report believing that White people like other White individuals more than non-White individuals (MacInnis & Hodson, 2012; Plant, Butz, & Tartokovsky, 2008). Similarly, people report believing that Black people like other Black individuals more than White individuals (MacInnis & Hodson, 2012). Even children as young as four years old believe that other children harbor more positive attitudes towards same-race compared to cross-race peers (see Eason, Newheiser, & Olson, unpublished data; Roberts, Williams, & Gelman, 2017; Shutts, Roben, & Spelke, 2010).

Second, in addition to potentially making inferences about auditors' racial attitudes, HUD data suggests that these inferences may serve to legitimize and maintain the presence of racial segregation. That is, by inferring that both Black and White people prefer same-race to cross-race individuals, predominantly same-race neighborhoods may be perceived as reflecting the wants of the people, instead of reflecting a long history of discriminatory practices and systemic inequality. As a consequence, racial segregation becomes normalized and its persistence into the future legitimized. In fact, U.S. Housing Authority manuals from 1937 explicitly state that the

agency would not undo racial segregation because the presence of segregation reflected the wants of residents and surroundings communities, particularly the wants of Black residents (Rothstein, 2017). Therefore, in places where segregation already existed, it would continue to persist.

Taken together, these data suggest that: 1) people's inferences about other's racial attitudes have played an important role in shaping and maintaining the presence of racial segregation, and 2) that at least historically, the presence of racial segregation can become normalized, legitimized, and thereby allowed to persist into the future. Drawing on these real-world observations, the current work aims to provide an in-depth exploration of this process. Specifically, we first aim to shed light on how a potential factor, the continued existence of racial segregation, may influence people's perceptions of others' racial attitudes. Second, we aim to test whether today, when the norms and expectations surrounding residential segregation have significantly shifted compared to the 1940s, people still normalize, legitimize, and therefore tacitly allow, residential racial segregation to persist.

Towards the first aim, psychologists have long been interested in understanding what types of information people rely on in order to "read" the minds of other individuals (for review see: Frey & Tropp, 2006). With respect to reading others' racial attitudes, there are three non-mutually exclusive factors: people's own racial attitudes, the nature of people's past experiences, and observing other individual's behavior. First, research dedicated to understanding people's meta-perceptions, which are people's perceptions of what other individuals think about them and their groups, demonstrates that people's meta-perceptions are heavily influenced by their own attitudes. Specifically, people tend to believe that their own attitudes and preferences are widely held as opposed to being idiosyncratic (see Fenigstein & Abrams, 1993; Krueger & Clement,

1994; Marks & Miller, 1987; Kenny & DePaulo, 1993). Furthermore, even when people attempt to take the perspective of other individuals, their own beliefs still influence their perceptions. That is, people often start with their own perspective, attempt to adjust, but rarely make enough adjustments to accurately adopt the perspective of the other individual (Epley & Gilovich, 2004; Epley, Keysar, Van Boven, & Gilovich, 2004; Pronin, Puccio, & Ross, 2002). As a result of these two processes, people who feel more positively towards their own racial ingroup (vs. outgroups) are more likely to believe that other individuals similarly feel more positively towards their own racial ingroup. However, when people feel positively towards both Black and White individuals, they are more likely to believe that other individuals also feel positively towards both Black and White individuals (see MacInnis & Hodson, 2012). It is important to note that despite the potential concordance between people's own racial attitudes and their perceptions of other individual's racial attitudes, these attitudes and beliefs are conceptually distinct. Specifically, people's own attitudes and inferences about others' attitudes often diverge when people are asked to make inferences about how outgroup members feel towards their ingroup (for examples see: Plant et al., 2008; Vorauer, Hunter, Main, & Roy, 1998; Vorauer & Kumhyr, 2001; Vorauer, Main & O'Connell, 1998).

Second, people's past experiences also shape their inferences about others' racial attitudes. For example, the degree of contact people have across racial lines, and the positivity and negativity of those contact experiences, shape whether people believe that others have racial preferences. Contact theory states that positive and meaningful experiences with cross-race individuals (e.g., friendships or romantic relationships) lead to more positive racial attitudes (for meta-analysis see: Pettigrew & Tropp, 2008). Moreover, these positive contact experiences shape perceptions of cross-race individuals' racial attitudes (West, 2011). Specifically, people who

have more positive cross-race interactions perceive that that cross-race individuals harbor more positive attitudes towards White people as a group, compared to White people who have fewer positive cross-race contact experiences (Plant & Butz, 2006; Plant et al., 2008). Conversely, when people have negative contact experiences across racial lines, they attribute the negative outcomes to the negative attitudes and intentions of the interaction partner (Plant & Butz, 2006). That is, people infer that because they entered a cross-race interaction with positive intentions, it was their partner's attitudes that caused the tense and negative outcome. Consequently, White people may be particularly apt to blame Black individuals for negative cross-race experiences, or even foregone potential cross-race interactions (Shelton & Richeson, 2005). As these experiences amass, people begin to generalize their inferences beyond the specific people they are interacting with and toward the larger racial group. Therefore, when White people have multiple negative experiences with Black individuals, they are more likely to believe that Black individuals like Black people more than White people.

While these first two factors center on how characteristics of the perceiver (i.e., their own attitudes and experiences) influence perceptions of others' racial attitudes, the third factor focuses on the role of direct observation of interpersonal relationships in inferences about others' racial attitudes. For example, when engaged in a cross-race interaction, people pay attention to the verbal and non-verbal behavior of their interaction partners and use that information to make inferences about whether their partner feels positively towards them and their racial group (for review see: Fazio, Jackson, Dunton, & Williams, 1995; Frey & Tropp, 2006; Dovidio, Kawakami, & Gaertner, 2002; McConnell & Leibold, 2001; Shelton, 2003). Beyond observing the behavior of other individuals while directly interacting with them, people also observe others' same-race and cross-race interactions and make inferences about those individual's racial

attitudes. For example, people make inferences about others' racial attitudes based on their observed friendship networks (Shapiro, Baldwin, Williams, Trawalter, 2011). When White people view a Black person with Black friends, they infer that a subsequent interaction with that person is more likely to be negative compared to when they view a Black person alone or in the presence of a racially mixed social group (Shapiro et al., 2011). Together, these data suggests that in addition to drawing on one's own experiences and attitudes, people also rely on their observations of other individuals' behavior and interpersonal relationships to make inferences about others' racial attitudes.

It is important to note, however, that when making inferences based on direct observations of individual's behavior, people have a tendency to over-attribute the causes of behavior to individual's relatively stable dispositions and preferences, as opposed to more external and situational factors (Jones, 1979; Jones & Davis, 1965; Jones & Harris, 1967; Nisbett & Ross, 1980; Ross, 1977). For example, when making inferences about individuals' racial attitudes based on their friendship networks, it is also the case that the same-race friendships are often a product of the fact that many environments afford more opportunities for same-race (vs. cross-race) friendships to develop (Currarini, Jackson, & Pin, 2010). Nonetheless, people still make dispositional inferences about the racial attitudes as opposed to explaining the behavior through a more situational cause. Taken together, this work suggests while people are attuned to patterns of same-race and cross-race interpersonal relationships, they may be particularly apt to make inferences about others' racial attitudes. In particular, when the patterns of relationships people observe favor same-race interactions, people infer that other individuals prefer same-race to cross-race peers.

The current work builds on the observation that people are attuned to patterns of interpersonal affiliation when making inferences about other individual's racial attitudes. We propose that there may be a more widespread and pervasive factor that influences people's inferences about others' racial attitudes. Specifically, people may use the structural arrangement of groups within society—that is, the presence of racial segregation—as the basis for their inferences. We posit that the present day persistence of racial segregation may communicate to observers what is, and what was, normative for residents. As a consequence, people may perceive that individuals in racially segregated neighborhoods prefer same-race to cross-race individuals, and have distinct socialization experiences, compared to individuals from racially integrated neighborhoods.

To build towards these propositions, we first provide an overview of the history of residential segregation and how the persistence of racial segregation has been maintained by informal norms and practices. We then discuss evidence that people use information about the structure of the social environment to make inferences about the characteristics of other individuals. Finally, we close by discussing the processes by which the presence of residential racial segregation has become normalized and therefore may be allowed to persist.

Norms and Practices Maintaining Residential Racial Segregation

Racial segregation in United States has historically been a complex and multifaceted process, which has been maintained through multiple means, such as prejudice, discrimination, and wealth inequality. While a discussion of all the means by which segregation has been maintained historically and contemporarily is beyond the scope of this paper (for review see: Clark, 1986; Krysan & Crowder, 2017), most germane to the current discussion is that

segregated neighborhoods have been maintained through both formal and informal means, which may reflect the racial attitudes of individuals.

Historically, there are overt examples of the link between individual's racial attitudes and the norms and practices that created and maintained racially segregated neighborhoods. For example, until the 1940s, one of the most widespread ways in which segregation was informally maintained was through the adoption of racial covenants, in which neighborhood residents agreed not to sell their homes to non-White individuals. Although formal analyses of the prevalence of such covenants are lacking, these covenants existed in a broad range of cities, such as: Seattle, WA, San Francisco, CA, Atlanta, GA, Kansas City, MO, Westchester, NY, Levittown, PA, and Chicago, IL. In Chicago alone, scholars estimate that up to 80% of the city of Chicago had some form of racial covenant associated with the properties of the city (Dean, 1947). Even in places in which racial covenants were not common, Black people attempting to move into traditionally White environments were often met with explicit protests, threats of violence, and even riots (for examples see: Hogan, Levin, Clarke, Jackson, Watkins, & Fox, 2015).

Integrated neighborhoods were also created and reinforced by a distinct set of norms and practices that reflected the relatively egalitarian attitudes of residents. For example, many financing agencies refused to invest in building integrated communities. As a consequence, when proposals attempted to build integrated communities, financiers often gave people an ultimatum: drop the prospective Black residents to get funding, or maintain the Black residents and receive nothing. Thus, the integrated communities developed prior to the 1960s were often the result of concerted efforts taken on the part of White residents, who refused to drop the Black prospective residents (Rothstein, 2017). In other words, integrated communities were often the direct result

of White people displaying and enacting their egalitarian values, choosing to live with and affiliate with Black people, even if it would have been easier to live in and create an all White community. Taken together, historically, both segregated and integrated neighborhoods were at least in part the result of people explicitly displaying and acting upon their racial attitudes.

Presently, the persistence of racial segregation is not attributable to current laws forbidding people from interacting and engaging across racial lines. Instead, our current laws and policies reflect the notion that if people want to, and have the means to, affiliate across racial lines there should be no barriers. Nonetheless, residential segregation remains rampant, especially in large metropolitan areas with a long history of racial segregation. Consider, for example, New York City, one of the metropolitan areas with the largest population of Black residents (U.S. Census Bureau, 2010). In 1970, approximately 81% of Black New Yorkers would have had to move to a different neighborhood in order for Blacks and Whites to be equally distributed across New York neighborhoods (Massey & Denton, 1987). In 2010, that number has barely changed to 78% of Black New Yorkers needing to move in order to achieve an integrated city (Frey, 2010). Moreover, these patterns of racial segregation, although reduced, even occur in locations where there are no economic differences between Black and White (i.e., in areas in which Black and White individuals are matched socioeconomically; Adelman, 2004; Iceland & Wilkes, 2006).

As these examples suggest, the legacy of norms and practices maintaining racial segregation continue, just through different, subtler means (see also Massey, 2005). While White people are hesitant to explicitly report that they are uncomfortable living in neighborhoods with non-White individuals, their moving behavior tells a different story. Specifically, when neighborhoods become between 5% and 20% Black, White individuals begin to systematically

exit, until the neighborhood becomes predominantly non-White (Hanson & Hawley, 2011). Moreover, even though racial discrimination in housing sales is illegal, in 2012 28% of individuals supported the idea that people should be able to discriminate on the basis of race (Marsden, 2012). Finally, supporting the idea that the present day persistence of racial segregation may be associated with an informal set of norms and practices, cities with longstanding histories of racial segregation, such as Chicago, Detroit, and St. Louis, have maintained their relatively high levels of racial segregation. However, more newly developed cities, in which longstanding community norms have not been created and reinforced over time such as Colorado Springs, CO, Tucson, AZ, Las Vegas, NV, and Greenville, SC have significantly lower rates of racial segregation (see also: Odrich et al. 2003).

Taken together, historically, and today, racial segregation has been (and continues to be) associated with a specific set of norms and practices that maintain the social structure. We propose that as a consequence, when these patterns of segregation persist across time, locations, and cultural shifts, as they have within the United States, people may come to view these patterns as normal and expected, and also make inferences about the behavior and attitudes of residents of racially segregated (vs. integrated) neighborhoods. In other words, the fact that segregation persists even in the absence of laws codifying segregation, and even in places where wealth inequality cannot explain the divide, may communicate important information to observers—that segregation is normative and reflects resident's racial attitudes.

Inferences about Individuals and Norms Based on Social Structures

The prior section established that residential segregation is widespread and maintained, at least in part, by a set of informal norms and practices. With this background, we can now turn our attention to our contention that the presence of racial segregation shapes people's perceptions

of other individual's racial attitudes and socialization experiences, and also may lead people to tacitly accept, and allow segregation to persist into the future. To do so we draw on the literature, which broadly suggests that people recognize the way that social groups are arranged throughout society and use this information to make inferences about other individuals. We close with a brief discussion of how people's inferences may serve to normalize and legitimize the presence of racial segregation.

Across numerous domains, people are attuned to how individuals of people belonging to different social groups, such as race and gender, are organized throughout society. For example, people recognize that White people are likely to have high status jobs whereas Black people are likely to have low status jobs (Bigler, Averhart, & Liben, 2003; Unzueta & Binning, 2012). Beyond recognizing how individuals from different racial groups are organized in society, more recent research has demonstrated that people use this information to make inferences about other individuals. Specifically, when trying to explain current societal arrangements, people often make inferences about individuals' inherent characteristics (e.g., Cimpian & Salomon, 2014; Hoffman & Hurst, 1990; Jost & Burgess, 2000; Napier, Mandisodza, Andersen, & Jost, 2006). That is, people assign characteristics to social groups in ways that align with the group's social roles. For example, when a novel group was described as "children raiser," participants stereotyped members of this group as patient and kind; whereas when the novel group was described as "city workers" participants stereotyped members of this group as more confident and forceful (Hoffman & Hurst, 1990). Further supporting the idea that people's inferences about other individuals are a reflection of the social structure, analyses of gender stereotypes across time demonstrate that as women's social roles have shifted, stereotypes associated with women have shifted along with them. Specifically, as gender roles in society have become more similar

over time so too have people's inferences about the characteristics of men and women (Diekman & Eagly, 2000). These data broadly suggest that people may draw on the existing societal structure to make inferences about other individual's characteristics.

More directly suggesting that racial segregation may influence people's perceptions of other individuals, one of the only experimental investigations of the effects of segregation demonstrated that engaging within segregated social environments leads people to make more polarized inferences about ingroup and outgroup members compared to people engaging within integrated social environments (Enos & Ceyala, 2018). Participants were randomly assigned to be in one of two novel groups. Before completing the study, they sat in a waiting room where people were segregated by group membership or were integrated with ingroup and outgroup members. Notably, the only thing that differed across the conditions was the arrangement of seats within the space—people assigned to different groups either occupied distinct or overlapping physical locations. The number of ingroup and outgroup individuals in the waiting rooms were equivalent across conditions. Participants then were asked to attribute various characteristics to ingroup and outgroup individuals. Compared to individuals in the integrated condition, people in the segregated condition perceived themselves to be more distinct from outgroup members, and also assigned more negative attributes to outgroup (vs. ingroup) members. Thus, independent of the amount of exposure to people from different social groups, being in a segregated social environment shaped how positively people perceived ingroup and outgroup members. These research findings suggest that racial segregation may be an important feature of the social world that affects people's judgments of other individuals.

While the Enos & Celaya (2018) investigation provide a compelling demonstration that segregated and integrated environments shape people's social perceptions, at least two important

conceptual questions remains. First, it remains an open question as to whether the observed effects of segregation (vs. integration) were the result of the social structure, *per se*, or whether they were the result of personal experience engaging within a segregated or integrated environment. Specifically, in the prior research individuals were immersed within the segregated (vs. integrated) environment. Thus, our research program both builds upon and extends beyond this work, by contending and directly assessing whether the presence of racial segregation has a more widespread influence by impacting mere *observers* of segregated and integrated environments. Second, while the presence of racial segregation affects individual's own attitudes and social perceptions, it remains unclear as to whether people made inferences about the normative thoughts and behavior based on the social structure, as these two outcomes are conceptually distinct, and can even diverge. With this in mind, our current research builds upon and extends beyond this past work by investigating the social structure communicates important information to *observers*. Specifically, we ask do observers perceive that the normative patterns of thought and behavior within racially segregated environments significantly diverge from the normative patterns of thought and behavior within racially integrated environments. In other words, does the presence of racial segregation (vs. integration) shape people's perceptions of others' racial attitudes?

In addition to making inferences about others' characteristics based on the social structure, people also legitimize and normalize the arrangement of individuals and social groups within society. Specifically, people view the mere existence of a phenomenon as evidence that the phenomenon is natural (e.g., Cimpian & Salomon, 2014), good (Eidelman, Crandall, & Pattershall, 2009), and should continue to persist into the future (Eidelman et al., 2009). Moreover, work on the inherence heuristic posits that when people are faced with a set of

patterns in the current reality they are more likely to explain that reality by drawing on the inherent characteristics of an object, as opposed to extrinsic factors. Consequently, people perceive that the present reality is a reflection of the natural ordering of the world, or how things are supposed to be (Cimpian & Salomon, 2014).

Similarly reflecting people's psychological tendency to normalize existing social structures, people perceive the very same procedures and practices significantly differently depending on whether they are described as existing for a long time and how things have always been done (i.e., representing the status quo), as opposed to being described as relatively new. When the practice is described as representing the status quo (vs. being relatively new), people are more likely to report that the practice reflects the "right" way to do things, and expect the practice to continue into the future (Eidelman et al., 2009). Therefore, the longstanding persistence of racial segregation, may lead people to normalize the societal structure, and perceive that it should and will continue into the future. Together, these research programs suggest that people derive meaning from longstanding social structures, and understand these social structures as normative and legitimate (for review see: Eidelman & Crandall, 2012).

The novel questions addressed by the present research are: 1) whether the presence of racial segregation can serve as a signal to others' racial attitudes and socialization experiences, and 2) whether people's perceptions of others work to normalize, and thereby, legitimize the persistence of racial segregation into the future. Advancing prior work, we focus on whether observing patterns of neighborhood segregation (as opposed to patterns of interpersonal affiliation) shape people's perceptions of others' individuals. This advance is particularly important given that societal structures are ever-present and observable by a wide range of individuals, whereas observations of interpersonal relationship and behavior are much more

constrained to one's immediate environment. With this in mind, we asked whether neighborhood racial segregation (vs. integration) signals to observers that residents prefer same-race to cross-race individuals (Experiments 1 & 2) and have significantly different socialization experiences than individuals from racially integrated neighborhoods (Experiment 2). Moreover, we test whether people's perceptions of Black and White individuals can lead people to expect racial segregation to persist into the future (Experiment 3), potentially legitimizing the continuation of racial segregation into the future.

The Current Studies

The current studies investigate whether the structural arrangement of groups—that is, the presence of racial segregation—affects people's perceptions of Black and White individuals' racial attitudes (Experiment 1 & 2) and socialization experiences (Experiment 2), and whether these inferences in turn normalize the continuation of racial segregation into the future. To test this question, White adults were exposed to either a racially segregated or racially integrated neighborhood. As a stringent test of whether people were attending to the structural arrangement of social groups, we operationalized racial segregation as the distribution of Black and White individuals throughout a neighborhood, and controlled for the number of Black and White individuals within each type of neighborhood (see also Enos & Ceyala, 2018). That is, segregated neighborhoods were those in which Black and White individuals occupied largely distinct physical spaces, whereas integrated neighborhoods were those in which Black and White individuals occupied overlapping physical spaces.

Participants were then asked to make inferences about residents' (Experiment 1: heterosexual couples; Experiment 2: young children) racial attitudes (Experiment 1 & 2) and friendship networks (Experiment 2). We expected that participants who viewed segregated (vs.

integrated) neighborhoods would infer that residents prefer same-race to cross-race individuals and have more same-race friends.

Experiment 3 builds on Experiment 1 and 2 to test whether people's perceptions of others could work to legitimize and maintain the presence of racial segregation. Specifically, participants were asked to create what they believed was the *ideal* neighborhood for both Black and White individuals. As with the logic of Experiments 1 and 2, given the longstanding presence of racial segregation in the United States, and the fact that segregation is no longer codified by law but still persists, people may believe that racial segregation reflects the wants and preferences of Black and White individuals. As a consequence, when thinking about other individual's ideal neighborhoods, people may be especially likely to create racially homogenous and segregated neighborhoods. Such a pattern would provide evidence that people perceive that segregation exists, at least in part, because other individuals actually *want* to live in segregated spaces. One potential, but untested consequence of such a pattern of data may be that this perception leads people to tacitly accept the persistence of racial segregation into the future.

Experiment 1

Methods

Participants

One hundred thirty-one mono-racial White college students from a large research institution in the Pacific Northwest participated in the study in exchange for course credit (64 women; M_{age} = 19.55 years old; 79% had at least one parent with a 4-year college degree). Participants either took the experiment in lab (n = 73) or online (n = 58). Given the timing of data collection, the goal was to collect as many subjects as possible before the end of the quarter in which data was collected, with the caveat that there had to be at least 50 participants per

condition. The final sample size was sufficient to detect a medium sized effect (d = .49) with 80% power.

Procedure

Participants were randomly assigned to view one of two 3-minute videos depicting either a racially segregated or a racially integrated neighborhood within the United States. Each video started by displaying a schematic of a neighborhood, divided into eight city blocks. Within each city block there were boxes, which represented a "home." In a predetermined randomized order, a photo of a Black or White same-race heterosexual couple appeared on the screen for 2 seconds. Then the photo shrank and moved into one of the boxes (depicting that the couple lived in that location) and remained in the box. This sequence of events continued until all 43 "homes" had occupants (Black couples n = 22; White couples n = 21). For an additional six seconds, the video then displayed a still frame of all the residents in their respective locations and then ended. In the segregated neighborhood condition, 95% of the Black residents lived in four continuous city blocks on the northwest of the neighborhood, and 95% of the White residents lived in four continuous city blocks on the southeast of the neighborhood (see Figure 1). In the integrated neighborhood condition, Black and White residents were equally distributed across all eight blocks of the neighborhood (see Figure 1). Participants were then asked to report on their perceptions of the demographic characteristics of the neighborhood, the residents, and the positivity of future interactions with residents. Finally, participants completed a brief demographic survey.

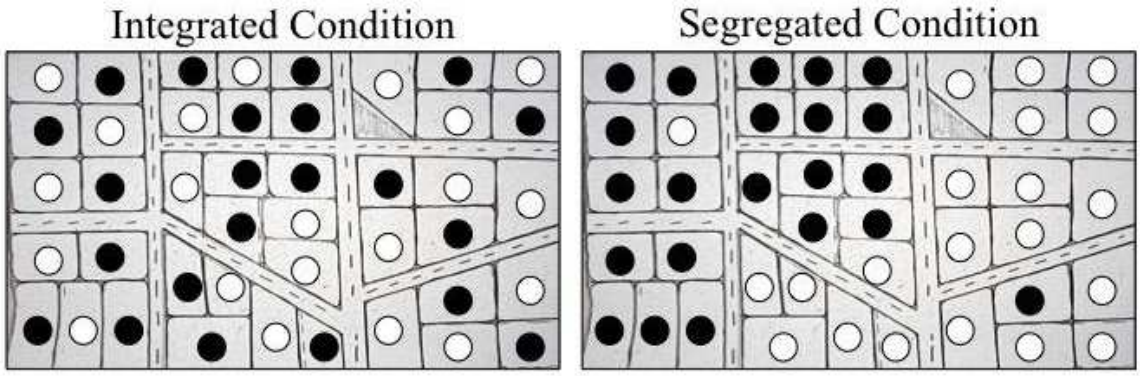

Figure 1. Schematic of the final distribution of Black and White neighbors in the two conditions.

Perceptions of the Neighborhood

To investigate whether there were systematic differences in participants' perceptions of the objective neighborhood demographics, participants responded to three questions: 1) median income of neighborhood residents (12-point scale), 2) percentage of couples over 50 years of age, 3) percentage of African American couples. Given that the individuals depicted in the racially segregated and racially integrated neighborhood were the same, we did not expect significant differences.

Perceptions of Residents' Racial Attitudes

Of central interest were participants' perceptions of the residents' racial attitudes. We measured these perceptions using two different methods.

First, to assess global perceptions of residents' racial attitudes, participants reported on two items assessing their overall perception of the Black and White residents' racial attitudes (i.e., "On average, the White people in this neighborhood feel more positively towards other White people than Black people," and "On average, the Black people in this neighborhood feel more positively towards other Black people than White people"; 1-Strongly Disagree to 7-Strongly Agree; $r(129) = .879$, $p < .001$).

Additionally, we aimed to understand whether segregation (vs. integration) affects perceptions of attitudes towards same-race individuals, cross-race individuals, or both same-race and cross-race individuals. To do so, participants rated their perceptions of four couples' (two White couples and two Black couples) feelings of warmth towards 11 different racial social groups. Specifically, in randomized order, participants viewed a photo of one couple, and were asked to use a sliding scale (0-very cold, 100-very warm) to indicate how they believed that couple felt towards each social group. The focal groups of interest were participants' perceptions of attitudes towards Black/African Americans and White Americans. Ratings were averaged together reflect perceptions of White couples' warmth towards same-race ($r = .629$, $p < .001$) and cross-race individuals ($r = .617$, $p < .001$) and perceptions of Black couples' warmth towards same-race ($r = .813$, $p < .001$) and cross-race individuals ($r = .853$, $p < .001$).

The four couples that participants judged for this measure were selected because the set of Black couples and set of White couples did not significantly differ on perceived age, perceived attractiveness, or whether they were perceived to be a real couple, as rated by groups of independent adult coders (*N*s = 13-20). Furthermore, one Black couple and one White couple were rated to be above the age of 50, and the other couples were rated to be below the age of 50. Therefore participants made judgments about couples of various ages.

Perceptions of Potential Interactions with Residents

Finally, in Experiment 1 we added an exploratory measure to assess whether the presence of racial segregation also shapes people's perceptions of same- and cross-race interactions. Participants rated their expectations about interactions with the each of the four couples. Specifically, participants rated three items assessing their concerns about being rejected by the

couple ($\alpha_{WhiteCouples}$ = .895; $\alpha_{BlackCouples}$ = .884) and three items assessing their inclination to reject the couple ($\alpha_{WhiteCouples}$ = .899; $\alpha_{BlackCouples}$ = .908; see Appendix for items; Shapiro et al., 2011)[3].

Results

Perceptions of the Neighborhood

Participants' perceptions of the objective demographic characteristics of segregated and integrated neighborhood did not significantly differ (see Table 2). Specifically, participants perceived the median income of the neighborhoods, the proportion of residents over 50 years of age, and the proportion of Black individuals to be equivalent.

Variable	Response Scale Range	Mean (*SD*) Integrated Condition	Mean (*SD*) Segregated Condition	*df*	*t*	*p*	95% CI LL	95% CI UL	Cohen's *d*
Median Income	1-12	7.87 (1.65)	7.56 (1.51)	129	1.29	.257	-.232	.861	.20
Proportion of Couples over 50	0-100	31.60 (11.81)	29.90 (16.35)	128	.674	.502	-3.29	6.69	.12
Proportion of Black couples	0-100	47.60 (9.58)	48.07 (10.39)	129	.369	.789	-3.93	2.99	.04

Table 1. Perceptions of the objective demographic characteristics of the segregated and integrated neighborhood in Experiment 1.

Perceptions of Residents' Racial Attitudes

As expected, racial segregation signaled to observers the racial attitudes of neighborhood residents. Specifically, participants inferred that both Black and White residents of segregated neighborhoods preferred same-race to cross-race individuals more than residents from integrated neighborhoods (see Table 2).

Variable	Response Scale Range	Mean (*SD*) Integrated Condition	Mean (*SD*) Segregated Condition	*df*	*t*	*p*	95% CI LL	95% CI UL	Cohen's *d*

[3] Only a subset of participants received this measure (*n* = 105).

Black residents prefer Black People	1-7	3.25 (1.24)	4.54 (1.18)	129	6.10	<.001	.872	1.71	1.07
White residents prefer White people	1-7	3.24 (1.20)	4.57 (1.30)	129	6.10	<.001	.902	1.77	1.06

Table 2. Perceptions of the racial attitudes of residents of segregated and integrated neighborhoods in Experiment 1.

Next, we asked whether the perception that residents of segregated neighborhoods had greater preference for same-race (vs. cross-race) individuals compared to residents of integrated neighborhoods: 1) also occurred when observers made inferences about specific individuals, and 2) was driven by differences in the extent to which residents were perceived to like same-race individuals, cross-race individuals, or both. To test these questions, we conducted a 2 (Condition: Segregated vs. Integrated) x 2 (Couple Race: Black vs. White) x 2 (Warmth: Same-Race vs. Cross-Race) mixed model Analysis of Variance (ANOVA), with the last two factors within subjects, on participants' perceptions of individual couples' feelings of warmth toward different racial groups. If the results of this DV converge with the Likert scale then we expect for a significant Condition x Warmth interaction to emerge, indicating that people's perceived individuals from segregated communities and individuals from integrated communities to have different patterns of relative preference for same-race and cross-race individuals.

As expected, the results of the ANOVA revealed that there was a significant warmth by condition interaction, suggesting that the difference between perceived warmth towards same race individuals and cross-race individuals was greater in the segregated condition than the integrated condition, $F(1, 128) = 5.009$, $p = .027$, $\eta^2_p = .038$ (See Table 3 for all cell means). Follow up analyses revealed that this difference was drive by perceptions of others' attitudes

towards cross-race individuals. Specifically, participants perceived residents of the segregated neighborhood to feel less warmly towards cross-race individuals compared to residents of the integrated neighborhood, $F(1, 128) = 6.28$, $p = .014$, $\eta^2_p = .047$). However, participants did not perceive residents of the segregated neighborhood and residents of the integrated neighborhood to feel differentially warm towards same-race individuals, $F(1, 128) = .248$, $p = .619$, $\eta^2_p = .002$; see Figure 2). For the complete results of the ANOVA see Table 4.

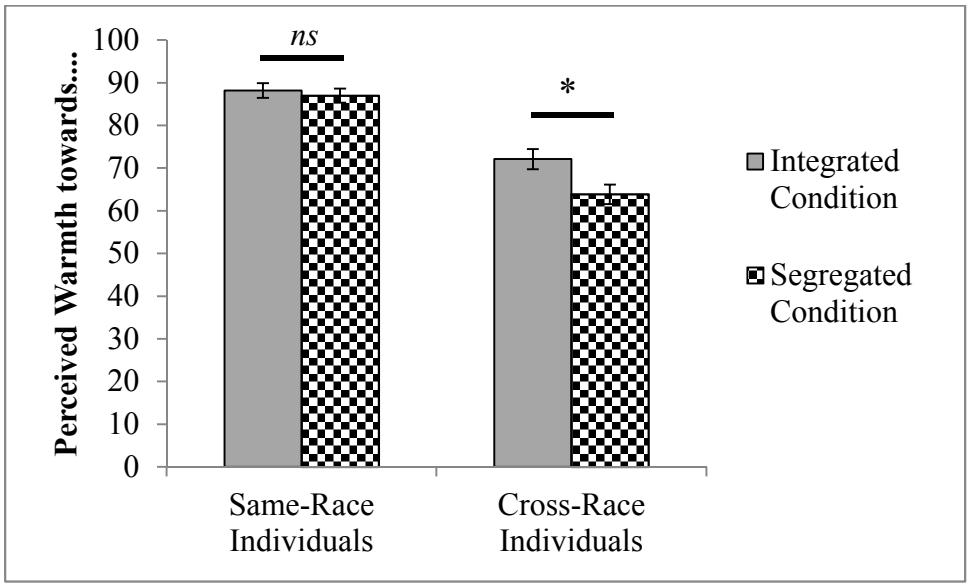

Figure 2. Perceived warmth towards same-race and cross-race individuals by condition in Experiment 1. * $p < .01$

Perceived Warmth	Mean (*SE*) Integrated Condition	Segregated Condition
White Couples		
Same-Race Individuals	86.81 (1.86)	86.66 (1.77)
Cross-Race Individuals	70.92 (2.52)	61.69 (2.40)
Black Couples		
Same-Race Individuals	89.55 (1.79)	87.29 (1.71)
Cross-Race Individuals	73.27 (2.49)	66.01 (2.38)

Table 3. Perceived warmth towards same-race and cross-race individuals, by condition and race of individual being judged for Experiment 1.

Variable	$F(1,128)$	p	η^2_p
Main Effects			
Condition	3.82	.053	.029
Couple Race	12.45	.001	.089
Warmth	154.82	<.001	.547
Two-Way Interactions			
Condition x Couple Race	.002	.961	<.001
Condition x Warmth	5.01	.027	.038
Couple Race x Warmth	2.04	.156	.016
Three-Way Interaction			
Condition x Couple Race x Warmth	3.14	.079	.024

Table 4. Mixed Model ANOVA analysis results predicting patterns of perceived warmth towards same-race and cross-race individuals from Condition and Couple Race in Experiment 1.
Note: CI = Confidence Interval, LL = Lower Limit, UL = Upper Limit

Perceptions of Potential Interactions with Residents

Finally, we also aimed to explore whether the presence of racial segregation affected people's perceptions of the positivity of same-race and cross-race interactions with residents. Although participants perceived individuals in segregated neighborhoods to have a greater relative preference for same-race (vs. cross-race) individuals, compared to individuals integrated neighborhoods, there were no significant differences in participants' perceptions that a future

interaction with residents of either neighborhoods would be positive. Specifically, there were no significant differences in the extent to which participants indicated they were inclined to reject Black residents or concerned with being rejected by Black residents. Similarly, there were no significant differences in the extent to which participants indicated they were inclined to reject either White residents or concerned with being rejected by White residents (See Table 3).

	Mean (*SD*)					95% CI		
Variable	Integrated Condition	Segregated Condition	*df*	*t*	*p*	LL	UL	Cohen's *d*
Rejection Concern								
Black Couples	2.17 (.93)	2.33 (1.10)	103	.819	.415	-.232	.559	.16
White Couples	2.07 (1.03)	2.34 (1.20)	103	1.27	.208	-.157	.711	.24
Inclination to Reject								
Black Couples	1.93 (.85)	2.23 (1.25)	103	1.48	.143	-.107	.727	.28
White Couples	2.47 (.95)	2.89 (1.29)	103	1.88	.063	-.023	.859	.37

Table 4. Perceptions of potential interactions with Black and White residents by condition in Experiment 1.

Discussion

Experiment 1 demonstrated that residential segregation within neighborhoods affects people's perceptions of other individual's racial attitudes. Specifically, residents from racially segregated neighborhoods are perceived to hold a stronger relative preference for same-race (vs. cross-race) individuals, compared to residents from racially integrated neighborhoods. Moreover, this perceived preference for racial ingroup members is driven by the fact that people in segregated neighborhoods are perceived to like cross-race individuals less than residents of integrated neighborhoods.

Importantly, even though participants perceived that residents of segregated and integrated neighborhoods had different racial attitudes, participants did not perceive the objective demographic characteristics of the two neighborhoods to differ. This suggests that the differences in perception of racial attitudes were the result of the presence of racial segregation, per se, as opposed to being the result of perceived status differences, or exposure to diversity (see also Enos & Celaya, 2018).

Despite the difference in perceived racial attitudes of residents from racially segregated neighborhoods and integrated neighborhoods, we did not find significant evidence that the presence of racial segregation significantly affected participants' expectations about the positivity of a future interaction. The pattern of results for this exploratory variable are difficult to interpret, and somewhat inconsistent. Specifically, although not significant, there was a small to medium sized effect whereby White participants reported that they were more likely to reject and be rejected by a Black interaction partner from a segregated neighborhood compared to a Black interaction partner from an integrated neighborhood. This pattern of results is in line with the data by Shapiro and colleagues (2011) in which White people reported that they were more likely to reject and be rejected by a Black person with Black friends compared to a Black friend with racially diverse friends. Thus, it is possible that the presence of racial segregation does impact people's perceptions of future interactions across racial lines, but that our study was underpowered to find such an effect.

Complicating this interpretation, however, is the fact that we found the same pattern of results (although also non-significant) for people's perceptions of future interactions with White residents. Specifically, there were small to medium-sized non-significant effects such that participants also reported that they were more likely to reject, and be rejected by White residents

of segregated neighborhoods, compared to White residents of integrated neighborhoods. This is particularly surprising given that our White participants inferred no difference in how much White residents of segregated and integrated neighborhoods liked White people. Therefore, perceptions of residents' racial attitudes could not account for this finding.

This seemingly inconsistent pattern of results may be because of the well-documented phenomenon that people have difficulty accurately predicting their future feelings (Wilson & Gilbert, 2003). Alternatively, participants may have been relatively reluctant to report that they would enjoy engaging with people who they perceived to be racially biased, as this might reflect that they themselves are also racially biased. Nonetheless, future research will need to unpack whether this pattern of results significantly replicates in a similar larger sample, and if so why interactions with both Black and White people from segregated neighborhoods may be perceived more negatively than interactions with interactions with both Black and White people from integrated neighborhoods.

Experiment 2

Experiment 1 provided the first set of evidence that the presence of racial segregation serves as a signal to others' racial attitudes. Specifically, exposure to racial segregation leads to the perception of greater relative preference for same-race (vs. cross-race) individuals compared to exposure to racial integration. The aim of Experiment 2 was to replicate and extend the findings of Experiment 1. Specifically, we proposed that given that the persistence of racial segregation is related to a set of informal norms and practices, it might also be perceived as an indication of socialization experiences—that is, how people are raised. In other words, people may infer that racially segregated (vs. integrated) neighborhoods actually work to instill residents' racial biases. To test this possibility, we asked participants to make inferences about

the racial attitudes and friendship networks of children in segregated or integrated neighborhoods. This serves as a particularly strong assessment of perceptions of socialization experiences given that children do not choose where to live, therefore it is unlikely that people would infer that the reason children live in a segregated space is because it reflected a pre-existing racial attitude.

If racial segregation signals to observers a rich set of information, related to informal norms and practices, then we expect the results of Experiment 2 to align with Experiment 1. Specifically, we expect that people will infer that children who live in a racially segregated neighborhood prefer and feel more warmly towards same-race (vs. cross-race) individuals, compared to children who live in a racially integrated neighborhood. Moreover, we also expect that observers will make inferences about children's friendship networks based on the presence of racial segregation (vs. integration). Specifically, we predict that people will infer that children in segregated neighborhoods have more same-race friendships than children in integrated neighborhoods, even though each neighborhood has the same number of same-race and cross-race children.

Methods

Participants

Two hundred twenty-one mono-racial White college students from a large research institution in the Pacific Northwest participated in the study in exchange for course credit (124 women; M_{age} = 19.21 years old). As with Experiment 1 the target sample size was 200 participants. Data collection ended during the week in which we collected the 200th participant. The final sample size provides power to detect a medium sized effect (d = .38) with 80% power.

Methods

Experiment 2 was largely identical to Experiment 1. Participants were randomly assigned to view a three-minute video depicting either a racially segregated or a racially integrated neighborhood within the United States. For improved stimulus sampling, in Experiment 2 each condition was now represented by four potential videos (in Experiment 1, each condition was represented by a single video). Similar to Experiment 1, each video started by displaying a schematic of a neighborhood, divided into eight city blocks. Within each city block there were boxes, which represented a "home." In one of four predetermined randomized orders[4], a photo of a Black or White child appeared on the screen for 2 seconds. Then the photo shrank and moved into one of the boxes (depicting that the children lived in that location) and remained. This sequence of events continued until all 43 "homes" had occupants (Black children $n = 22$; White children $n = 21$). For an additional six seconds, the video then displayed a still frame of all the residents in their respective locations and then ended. Similar to Experiment 1, across all the videos representing the segregated condition, 95% of the Black residents lived in four continuous city blocks of the neighborhood, and 95% of the White residents lived in the other four continuous city blocks of the neighborhood. In the integrated neighborhood condition, Black and White residents were equally distributed across all eight blocks of the neighborhood.

Aside from the modifications to the manipulation, we also modified the dependent variables to reflect the fact that the depicted residents were children as opposed to couples. Finally, in Experiment 2 we did not assess participants' perceptions of future interactions with

[4] We increased the number of videos used in Experiment 2 to help ensure that the previous results were not idiosyncratic to the spatial distributions and order of residents displayed in Experiment 1.

residents; instead, participants were asked to make inferences about the racial demographics of the residents' 10 closest friends.

Perceptions of the Neighborhood

As with Experiment 1, there were no significant differences in participants' perceptions of the objective neighborhood demographic characteristics (see Table 5).

Variable	Response Scale Range	Mean (*SD*) Integrated Condition	Mean (*SD*) Segregated Condition	*df*	*t*	*p*	95% CI LL	95% CI UL	Cohen's *d*
Median Income	1-12	6.52 (1.69)	6.11 (1.53)	219	1.82	.070	-.033	.839	.25
Proportion of Children over 10	0-100	33.40 (21.38)	32.03 (21.62)	219	.469	.639	-4.35	7.06	.06
Proportion of Black children	0-100	48.34 (8.24)	48.81 (12.07)	219	.337	.737	-3.23	2.31	.05

Table 5. Perceptions of the objective demographic characteristics of the segregated and integrated neighborhood in Experiment 2.

Perceptions of Residents' Racial Attitudes

As with Experiment 1, racial segregation signaled children's racial attitudes. Specifically, both Black and White residents of segregated neighborhoods were perceived to prefer same-race to cross-race individuals more than residents from integrated neighborhoods (see Table 6).

Variable	Mean (*SD*) Integrated Condition	Mean (*SD*) Segregated Condition	*df*	*t*	*p*	95% CI LL	95% CI UL	Cohen's *d*
Black residents prefer Black People	3.24 (1.51)	4.35 (1.32)	219	5.81	<.001	.734	1.49	.78
White residents prefer White people	3.29 (1.48)	4.26 (1.37)	219	5.00	<.001	.584	1.34	.68

Table 6. Perceptions of the racial attitudes of residents of segregated and integrated neighborhoods in Experiment 2.

A similar pattern of results emerged when investigating perceptions of individual children's feelings of warmth to different racial groups. To test this we conducted a 2 (Condition: Segregated vs. Integrated) 2 (Child Race: Black vs. White) x 2 (Warmth: Same-Race vs. Cross-Race) mixed model Analysis of Variance (ANOVA), with the last two factors within subjects. Analogous to Experiment 1, there was a significant warmth by condition interaction, $F(1, 219) = 14.648$, $p < .001$, $\eta^2_p = .063$. Follow up analyses revealed that the spatial distribution of racial groups in the neighborhood (segregated vs. integrated) affected perceptions of others' attitudes towards cross-race individual ($F(1, 219) = 12.31$, $p = .001$, $\eta^2_p = .053$), but did not significantly affect perceptions of attitudes towards same-race individuals of ($F(1, 219) = .015$, $p = .902$, $\eta^2_p < .001$; see Figure 3). Specifically, people from segregated neighborhoods were perceived to feel less warmly towards cross-race peers than individuals from integrated neighborhoods. For all cell means see Table7, for the complete results of the ANOVA see Table 8.

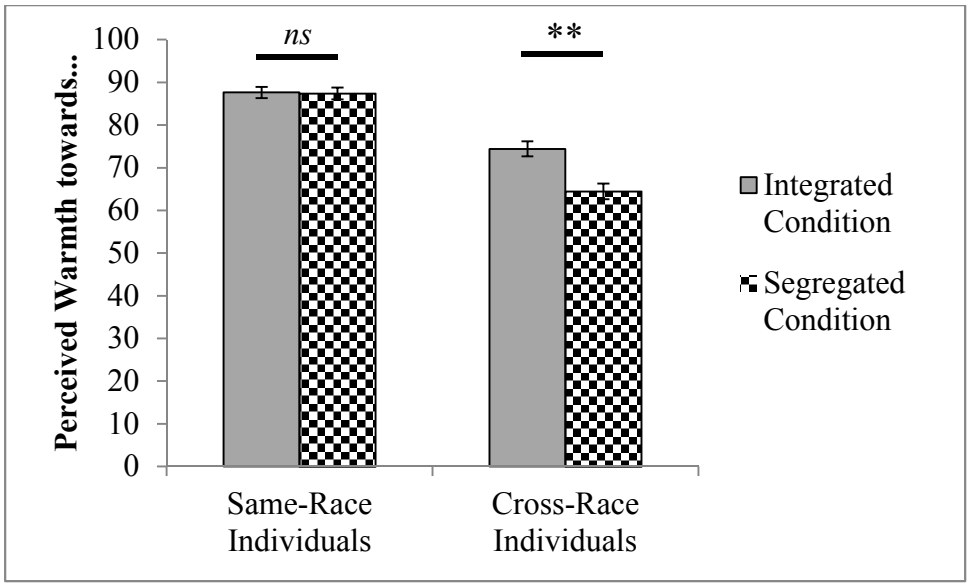

Figure 3. Perceived warmth towards same-race and cross-race individuals by condition in Experiment 2. ** $p < .01$

Perceived Warmth	Mean (*SE*) Integrated Condition	Segregated Condition
White Couples		
Same-Race Individuals	86.85 (1.34)	86.96 (1.41)
Cross-Race Individuals	74.86 (1.83)	65.71 (1.93)
Black Couples		
Same-Race Individuals	88.39 (1.34)	87.82 (1.41)
Cross-Race Individuals	73.96 (1.84)	65.21 (1.93)

Table 7. Perceived warmth towards same-race and cross-race individuals, by condition and race of individual being judged for Experiment 2.

Variable	$F(1, 219)$	p	η^2_p
Main Effects			
Condition	5.62	.019	.025
Child Race	.36	.549	.002
Warmth	237.78	<.001	.521
Two-Way Interactions			
Condition x Child Race	.029	.864	<.001
Condition x Warmth	14.65	<.001	.063
Child Race x Warmth	4.23	.041	.019
Three-Way Interaction			
Condition x Child Race x Warmth	.338	.562	.002

Table 8. Mixed Model ANOVA analysis results predicting patterns of perceived warmth towards same-race and cross-race individuals from Condition and Child Race in Experiment 2.
Note: CI = Confidence Interval, LL = Lower Limit, UL = Upper Limit

Perceptions of Friendship Networks

Finally, to investigate whether participants perceived differences in the friendship networks of children from segregated and integrated neighborhoods we conducted a 2 (Condition: Segregated vs. Integrated) x 2 (Child Race: Black vs. White) mixed ANOVA with the last factor within subjects. There was a significant main effect of child race, suggesting that overall, White children (M = 60%) were perceived to have more same-race friends than Black children (M = 55%), $F(1, 219) = 30.82$, p <.001, $\eta^2_p = .123$.

As expected, there was also a significant main effect of condition, suggesting that children in the segregated condition (M = 62%) were perceived to have more same-race friends than children in the integrated condition (M = 53%), $F(1, 219) = 13.43$, p <.001, $\eta^2_p = .058$. The Condition x Child Race interaction was not statistically significant, $F(1, 219) = .097$, p =.756, η^2_p <.001. See Table 9 for all cell means.

Perceived Percent of Same Race Friends	Mean (*SE*)	
	Integrated Condition	Segregated Condition
White Children	56% (1.7)	64% (1.8)
Black Children	51% (1.6)	59% (1.6)

Table 9. Perceived percent of same-race friends, by condition and race of child being judged for Experiment 2.

Discussion

The results of Experiment 2 demonstrate that the presence of racial segregation within a neighborhood affect people's perceptions of children's racial attitudes and interactions across racial lines. Specifically, residents of racially segregated neighborhoods were perceived to have stronger same-race biases (i.e., more positive racial attitudes and a greater proportion of same-race friends) compared to residents of racially integrated neighborhoods. These results both replicate and extend the findings of Experiment 1. First, they provide additional evidence that the people make inferences about others' racial attitudes based on the presence of racial segregation. Moreover, these results of provide evidence that people may also use the presence of neighborhood racial segregation as a signal to others' racial socialization experiences. That is, even when it is unlikely that there are pre-existing differences in individual's racial attitudes (such as with children), people still inferred that the structure of the social environment served as a signal to their racial attitudes. Specifically, people inferred that young children in a racially segregated environment have stronger same-race preferences, compared to young children socialized in a racially integrated environment. People also inferred that children in segregated and integrated environments had significantly different experiences with same-race and cross-race peers. Taken together, Experiments 1 and 2 demonstrate that the structure of the social environment serves as a signal to others' racial attitudes and socialization experiences.

Experiment 3

Experiments 1 and 2 established that people make inferences about the racial attitudes of both Black and White individuals based on the presence of racially segregated or integrated neighborhoods. That is, the pervasive arrangement of Black and White people in neighborhoods across the nation (i.e., that Black and White people live in largely non-overlapping spaces) leads observers to more strongly believe that Black and White adults and children prefer same-race to cross-race individuals, compared to an alternative in which Black and White people live in overlapping spaces. The goal of Experiment 3 was to build on this set of findings. Specifically, given that research has demonstrated that people perceive others to prefer same-race to cross-race individuals, we asked whether people's inferences about Black and White individuals leads people to expect racially segregated neighborhoods. Such a finding would suggest that people's perceptions of Black and White individuals, and in particular their perceptions of others' racial attitudes, may work to justify the existence of racially segregated neighborhoods and may perpetuate racially segregated spaces into the future. In conjunction with the findings of Experiment 1 and 2, this would suggest that 1) people make inferences about others, particularly others' racial attitudes, based on the presence of racial segregation, and 2) in turn, people's inferences about others work to normalize, maintain, and possibly legitimize the continued existence of racial segregation.

In Experiment 3, participants were asked to take the perspective of Black or White individuals and to create what they believed to be these individuals' *ideal* neighborhoods. If perceptions of others work to legitimize the continued existence of segregation, then we expect participants' reports of Black and White individuals' ideal neighborhoods to reflect the underlying assumption that people prefer same-race to cross-race individuals. We measured this

in two ways—by assessing the number of Black and White individuals in each neighborhood, and by assessing whether those individuals lived in overlapping or non-overlapping space (i.e., the neighborhood was racially segregated). If participants' neighborhoods reflected the underlying idea that people prefer same-race to cross-race individuals, we expect people to report that Black individuals' ideal neighborhoods are predominantly Black; whereas White individuals' ideal neighborhoods are predominantly White. We also expect that regardless of the perspective participants were asked to take, that the neighborhoods they created would be relatively segregated, that is Black and White people would live in distinct areas of the neighborhood.

Methods

Participants

186 mono-racial White college students were recruited from a large research institution in the Pacific Northwest participated in the study in exchange for course credit (75% women; M_{age} = 19.01 years old).

Procedure

Individuals came into lab and were provided with an array of 88 potential neighborhood residents (44 White-White heterosexual couples and 44 Black-Black heterosexual couples) in one of 10 randomized orders. Importantly, all participants learned that the population of potential residents was 50% White and 50% Black. Participants were also provided a schematic of a neighborhood, which included 43 "homes", separated into seven blocks within the neighborhood. Participants placed these couples onto the schematic to indicate who lived in the neighborhood and where they lived. In a between subjects design half the participants were asked to make the ideal neighborhood from the perspective of the "average African American," and the other half

of participants were asked to make the ideal neighborhood from the perspective of the "average White American."

We coded each neighborhood for both numerical representation of racial groups and the spatial distribution of groups. Numerical representation was calculated from the proportion of Black individuals in the neighborhood. Spatial distribution of group was calculated from the dissimilarity index, which is a commonly used metric that is independent of numerical representation (Massey & Denton, 1988). The dissimilarity index ranges from 0 to 1 and represents the percent of Black individuals who have to move to a different neighborhood block in order for the proportion of Black people in each block to be equivalent to the overall proportion of Black people in the entire neighborhood. A value of 0 signifies total integration (i.e., Black and White people are evenly spread across the neighborhood, therefore no one needs to move to another block within the neighborhood), whereas a value of 1 signifies complete segregation (i.e., all the Black and White people need to move to another block within the neighborhood in order to achieve even spread). Traditionally, .4-.7 is considered high segregation and above .7 is considered extreme segregation (see also Massey & Denton, 1989).

Results

Numerical Representation

An independent sample t-test revealed a significant difference in the proportion of Black individuals in the neighborhood across conditions, $t(184) = 7.16$, $p < .001$, $d = 1.05$. On average, participants reported that the ideal neighborhood for Black Americans was 62% Black (SD = 1.60), whereas participants reported that the ideal neighborhood for White Americans was 46% Black (SD = .150).

Furthermore, the demographics of the neighborhoods that participants created when taking the perspective of both Black and White individuals significantly deviated from the overall population demographics. Specifically, participants reported that White Americans' ideal neighborhood was significantly more White (less Black) than the overall population, one-sample $t(91) = 2.68$, $p = .009$, $d = .28$. Similarly, participants reported that Black Americans' ideal neighborhood was significantly more Black (less White) than the overall population, one-sample $t(93) = 7.33$, $p < .001$, $d = .76$. Together these data suggests that people perceived that both Black and White individuals' ideal neighborhoods were predominantly same-race.

Racial Segregation

Next, we investigated how participants distributed Black and White individuals within the neighborhood. On average, participants created neighborhoods that approached a high degree of segregation ($M = .38$, $SD = .18$), regardless of whether they took the perspective of White ($M = .39$, $SD = .18$) or Black individuals ($M = .38$, $SD = .18$), $t = .303$, $p = .762$. (See Table 10 for the proportion of neighborhoods that are considered low, high, and extremely segregated by condition).

Level of Segregation	White perspective	Black perspective
Low (Dissimilarity Index below .4)	63%	61%
High (Dissimilarity Index between .4 and .7)	33%	33%
Extreme (Dissimilarity Index above .7)	4%	7%

Table 10. Percent of neighborhoods failing within each category of segregation by condition. Due to rounding columns may not sum to 1.

Discussion

Experiment 3 demonstrates that when thinking about Black and White individuals' ideal neighborhoods, people create largely same-race neighborhoods, and segregated neighborhoods. In other words, people think that both Black and White individuals actually want to live in relatively segregated, same-race locations. Specifically, participants believed that White people's

ideal neighborhood was significantly more White than the general population provided for the study (50% White; 50% Black), and in comparison to perceptions of Black people's ideal neighborhood. Similarly, participants believed that Black people's ideal neighborhood was significantly more Black than the general population provided for the study, and in comparison to perceptions of White people's ideal neighborhood. Furthermore, regardless of whether people were asked to take the perspective of Black or White Americans, on average, people believed the Black and White people's ideal neighborhoods were racially segregated. That is, even when both Black and White people lived within the ideal neighborhoods, people believed that they would occupy distinct spaces within the neighborhoods.

Taken together, these results provide preliminary evidence of the fact that people's perceptions of other individuals may work to legitimize the persistence of racial segregation. That is, people's responses indicate that they believe that Black and White people *want to* live in predominantly same-race spaces, largely separated from cross-race individuals. For stronger evidence supporting this claim, future research will need to more directly link this pattern of data with perceptions of White and Black individuals' racial attitudes.

General Discussion

The present studies examined the process by which racial segregation is fostered and maintained. Specifically, we investigated whether the presence of racial segregation (vs. integration) affects perceptions of Black and White individuals' racial attitudes and behavior, and whether these inferences in turn normalize and legitimize the persistence of racial segregation. In Experiment 1 and 2, consistent with our hypotheses, we demonstrated that both adult and child residents of racially segregated neighborhoods were perceived to more strongly prefer same-race to cross-race individuals compared to residents of racially integrated

neighborhoods. This pattern of results was driven by the perception that residents of segregated neighborhoods like cross-race individuals less than residents of integrated neighborhoods. In Experiment 3, we demonstrated that people believed that the presence of racial segregation, at least in part, reflects the ideals of both Black and White individuals. Specifically, participants believed that the ideal neighborhood for the "average" Black individuals included significantly more Black residents than the ideal neighborhood for the "average" White individuals. Furthermore, regardless of whether people were prompted to think about the average Black or White American, the neighborhoods participants created were highly racially segregated; that is, Black and White individuals were not evenly distributed throughout the neighborhood. Taken together these results provide support for the original supposition that people use information about the structure of the social environment, specifically the presence of racial segregation, to make inferences about others' racial attitudes and socialization. Moreover, given that segregation no longer is codified by law, yet still persists, the results of Experiment 3 provide preliminary evidence that people's perceptions of Black and White individuals may work to normalize the persistence of racially segregated neighborhoods, by suggesting that segregation reflect the residents' *wants*.

The precise psychological mechanism underlying why people make inferences about others' racial attitudes based on the presence of racial segregation remains an open question. Prior research, however, offers three potential explanations. First, because racial segregation is in part a consequence of people's racial attitudes, people may assume that they are making the correct inference that racial segregation does accurately reflect people's racial attitudes. In other words, there is a "kernel of truth" to the idea that racial segregation at least in part reflects individuals' racial attitudes because White people with higher racial biases choose to live in

locations separate from Black people (Krysan, Couper, Farley, & Forman, 2009). Therefore, participants may have been overgeneralizing this "kernel of truth" when asked to make inferences about the racial attitudes of individuals from racially segregated and racially integrated neighborhoods. It is important to note that even if this is the mechanism by which people make inferences about others' racial attitudes, this process does not necessarily make people's inferences about particular individuals unbiased or correct (for discussion see Judd & Park, 1993). Specifically, while some people in racially segregated neighborhoods may have stronger same-race preferences than people in racially integrated neighborhoods, choosing a neighborhood is a complex and multi-determined process, being the result of more than just people's racial attitudes. To test this whether this mechanism could account for the present findings, researchers could manipulate the extent to which residents' neighborhoods could be the result of free choice, or the result of an external factor such as wealth, and investigate whether people still made differential inferences about others' racial attitudes.

A second possibility is that people make inferences about other individuals' racial attitudes based on the perception that people in segregated spaces have limited opportunity for contact with cross-race individuals compared to people from integrated spaces. That is, people may recognize that contact with cross-race individuals reduces racial bias. Therefore, when confronted with evidence that individuals have few opportunities for cross-race contact, people may infer that these individuals hold more racially biased attitudes compared to individuals who have more opportunities for cross-race contact. Although we tried to minimize the effects of this mechanism by controlling the number of Black and White individuals in the neighborhoods, in both Experiments 1 and 2, it is possible that participants inferred that racially segregated neighborhoods afforded fewer opportunities for cross-race contact than same-race

neighborhoods. In fact, it is the case the closer people live to one another the more likely they are to interact (Festinger, Schachter & Back, 1950). Therefore, racial segregation may signal that people have few opportunities for cross-race contact, which in turn predicts people's inferences about others' racial attitudes. To test this mechanism, researchers could ask participants to make inferences about individuals from racially segregated and integrated neighborhoods who have the same number of same-race and cross-race neighbors. If people still make the differential inferences about others' racial attitudes based on the presence of racial segregation, this would suggest that people might be attending to the larger neighborhood structure, as opposed to simply the number of same-race and cross-race neighbors.

Finally, the third potential mechanistic explanation offered by the prior literature is that the presence of racial segregation makes racial categories salient (Enos & Celaya, 2018). Research from the social identity perspective demonstrates that categorization helps individuals efficiently make inferences about their social world (Turner, 1982). Therefore, when people categorize they maximize the differences between groups and minimize within group differences. As a consequence, people come to perceive that the individuals from two different groups hold distinct attitudes, preferences, and interests. Therefore, as a result of the increased salience of racial group boundaries individuals may come to perceive that people prefer same-race to cross-race peers. To test this mechanism, researchers could directly manipulate the salience of racial group boundaries in the presence of racial segregation and investigate whether people infer that other individuals have same-race preferences even when racial group salience is low. Overall, future research is necessary to build a more holistic understanding of the psychological mechanisms behind why people are making inferences about others' racial attitudes based on the presence of racial segregation.

Future research is also needed to understand the extent to which the inferences made in the presence of racial segregation extend beyond inferences about racial attitudes. For example, people may infer that Black and White people in segregated neighborhoods have disparate household incomes. Or, people may infer that Black individuals who live in segregated neighborhoods faced housing discrimination during the home search, whereas people would not make this inference about Black people in integrated neighborhoods. Thus, we could imagine running a similar set of studies investigating whether people make a broader set of inferences about Black and White individuals based on the presence of racial segregation. We anticipate that people likely make a broad range of inferences about individuals in the presence of racial segregation, and that some of these inferences may be stronger than people's inferences about others' racial attitudes, such as people's inferences about wealth differences. However, we believe that the inference that people prefer same-race to cross-race individuals has particularly pernicious consequences for maintaining racial segregation.

Traditionally, the legal system has been reluctant to intervene in cases where segregation is thought to result from individual choice and idiosyncratic preferences. In particular, Supreme Court opinions from 1992 and 2007 explicitly state that legal action to remedy racial segregation cannot be taken, unless there is clear evidence that the segregation in question originally stemmed from state action and not private choices (Rothstein, 2017). Consequently, policies, such as the Fair Housing Act, have been explicitly implemented to reduce the influence of the structural barriers, as opposed to individual choice or preference, which cause and maintain racial segregation. As a result, the role of the legal and judicial system with respect to racial segregation is largely characterized by a lack of action. This is particularly concerning for two reasons.

First, there is no evidence that when people make inferences about individuals' racial attitudes based on the presence of racial segregation that these inferences are accurate. Indeed, research across numerous domains suggests that people have a tendency to make inferences about stable internal characteristics of individuals, even when there are clear external explanations for others' behavior. Thus, people may incorrectly infer that racial segregation resulted from residents' racial attitudes, even though there might be an alternative account for why segregation exists.

Second, the reluctance to intervene when segregation is perceived to result from individuals' choice and racial attitudes suggests an incomplete understanding of the relation between individuals and the structure of society. The underlying assumption behind this logic is that individuals only shape their social environment. However, psychological theory suggests that the social environment also shapes individuals (Adams & Markus, 2004; Fiske, Kitayama, Markus, & Nisbett, 1998; Markus & Connor, 2013; Markus & Kitayama, 2003; 2010). Despite the fact that legal endorsement of segregation no longer exists today, the consequences of these directives are still felt. That is, even when policies shift and no longer explicitly enforce racial segregation, racial segregation does not simply disappear. People are still exposed to and must live within neighborhoods that were designed to isolate Black and White individuals from each other. Given that experimental evidence demonstrates that exposure to segregated environments leads people to develop ingroup preferences (Enos & Celaya, 2018), growing up in an environment that continues to reflect the same patterns of segregation created by past state directives contributes to the development of same-race as opposed cross-race preferences. Thus, people's current choices and preferences cannot be separated from the lasting structural effects of state sanctioned segregation.

Overall, this research program lays the foundation for a richer understanding of how people make meaning from the social environment, and also shed light on a process by which segregation may be perpetuated. Together, these findings demonstrate that the structure of our social environments hold important meaning for observers. Specifically, the presence of racial segregation leads people to make inferences about others' racial attitudes, and in turn these inferences may work to normalize the persistence of racial segregation. Although future work is needed to continue to unpack this process, what is clear is that our societal structure matters. Without explicit attention to the role of racial segregation in shaping people's perceptions of others', movement towards a more integrated society may be particularly slow or stagnate.

General Discussion

The aim of the current dissertation was to take a critical eye at one process that may be stagnating change towards the creation of a more racially integrated and egalitarian landscape. In particular, I argued that aspects of the sociocultural context, specifically the pervasive patterns of structural segregation reflected currently within the United States have the power to both create and augment the perception that people prefer same-race to cross-race peers. In line with this assertion, I provide data from three sets of studies, using different manipulations and age ranges, which each demonstrate that pervasive patterns of structural segregation shape perceptions of others' racial attitudes, in ways that may prevent change.

In Paper 1, I focus on the pervasive pattern that interpersonal relations are largely between same-race, same-gender peers (MacDonald, Lin, & Ao, 2009). I demonstrate that, at least by 5 years of age, White children report that friendships *will* (Study 3) and *should* (Studies 1 & 2) occur between same-race *and* same-gender peers. These results provide evidence that: 1) children recognize a pattern of structural segregation within the sociocultural context—people's friendship networks and 2) that children may also be thinking in ways that work to reify the pervasive patterns of structural segregation that they observe. In particular, people face social sanctions when they are perceived to violate norms about what should happen (Cooley & Killen, 2015; Hardecker, Schmidt, Roden, & Tomasello, 2016; Rakoczy & Schmidt, 2013), whereas this is not necessarily true when people are perceived as violating descriptive norms (i.e., norms about what actually does happen). Thus, children who violate the expectation that friendships are same-race and same-gender may face negative evaluation and pressure from peers to behave normatively. These negative consequences ultimately work to suppress deviation and reinforce the perception that friendship are and should be same-race, same-gender.

In order to more directly test whether children's judgments about same-race, same-gender friendship serve to reify the existing racial landscape, future work may consider explicitly testing whether there are social consequences when a child does not adhere to this same-race, same-gender friendship norm. For example, within the laboratory context, researchers can ask 4- to 6-year-old children to evaluate other individuals based on their friendship networks (see also Castelli, DeAmicis, & Sherman, 2007). More positive evaluations of children with predominantly same-race, same-gender friendship networks compared to children with diverse friendship networks, would provide stronger and more direct evidence of the fact that children are reinforcing the pervasive pattern of same-race, same-gender friendships. Similarly, within the school context, observational studies could also assess whether children whose friendship networks consist largely of same-race, same-gender peers face lower rates of bullying and are more well liked by their peers compared to children with more diverse friendship networks.

In Paper 2, I focus on the pervasive pattern that the average school and classroom lacks racial diversity (U.S. Department of Education, 2006). That is, schools and classrooms primarily consist of children from a single racial background, and feature only a few children from another racial background. I demonstrate that within low diversity classrooms, 7- to 10-year-old children perceive friendships with members of the numerically underrepresented group to serve as a strong indication of an individual's racial attitudes, whereas friendships with members of the majority group serve as a weak indication of an individual's racial attitudes. Given that the majority of White children in America are in predominantly White schools (KewalRamani et al., 2007; U.S. Department of Education, 2006), these findings suggest that White children may be especially likely to develop the belief that Black people strongly prefer Black peers to White peers. At the same time, White children may come to perceive that their White peers have little if

any racial preferences. This asymmetric pattern of inferences is particularly problematic as it can fuel the perception that Black people are the ones responsible for a lack of intergroup interactions, leading Whites to forego future cross-race interactions (Shelton & Richeson, 2005).

Moving forward it is important to understand the conditions necessary to reduce the likelihood of asymmetric inferences of other individuals' racial attitudes within low diversity contexts. One potentially fruitful avenue for future research on the topic would be to consider whether a critical mass of individuals from different racial backgrounds works to reduce these asymmetric inferences. Although policies and court rulings have struggled to precisely define critical mass, the idea is that "when a critical mass of underrepresented minority students is present, racial stereotypes lose their force because non-minority students learn there is no 'minority viewpoint', but rather a variety of viewpoints among minority students" (Grutter v. Bollinger, 539 U.S. 306, 2003). With this in mind, might prompting people to individuate majority and minority group individuals, reduce the likelihood that people make asymmetric inferences about racial attitudes, even in places where minorities are underrepresented? Furthermore, does close personal contact across racial lines, which has been shown to reduce the likelihood of viewing racial outgroup members through the lens of stereotype (Tropp & Pettigrew, 2006), also reduce the likelihood that people will make asymmetric patterns of inference about others' racial attitudes within low diversity environments. Finally, do such asymmetric inferences about racial attitudes occur in situations where there are multiple racial groups and no one group represents is the majority in the context? By answering questions such as these we can better understand the conditions necessary to reduce asymmetric patterns of inference about others' racial attitudes given that children still attend schools that are racially homogenous.

Finally, in Paper 3, I focus patterns of structural segregation manifested in residential neighborhoods across the United States (i.e., Black and White individuals occupy distinct physical and geographic spaces). I demonstrate that White adults perceive residents of racially segregated neighborhoods to prefer same-race to cross-race individuals to a greater extent than residents of racially integrated neighborhoods (Studies 1 & 2). Moreover, people normalize (and may even legitimize) the continued existence of racially segregated neighborhoods (Study 3). Specifically, when asked to think about Black individuals' ideal neighborhoods, White people create predominantly Black neighborhoods. Furthermore, within these neighborhoods, Black and White residents occupy relatively distinct, and non-overlapping areas. Similarly, when asked to think about White individuals' ideal neighborhoods, White people create predominantly White neighborhoods. Again within these neighborhoods, Black and White residents occupy relatively distinct and non-overlapping parts of the neighborhood. Moving forward it will be important to understand whether it is possible to interrupt the relation between the presence of racial segregation and perceptions of others' racial attitudes. One possibility is that informing people of the lasting effects of policies, such as redlining, or making people aware of the fact that discriminatory housing practices still exist may lead people away from making inferences about individuals, and instead lead them to make inferences about these systemic factors.

Taken together, each of these studies provide initial evidence that at least three widespread patterns of structural segregation within our sociocultural context, have the power to augment the perception that people prefer same-race to cross-race. These perceptions may work to justify and reify the current racial landscape. However, before extrapolating too far beyond the data presented in each of the three papers, it is important to note two sets of limitations: 1) I focused on Black-White relations and 2) the samples in my studies were predominantly White.

Although my research program focused on Black-White relations, the racial landscape of the United States includes more than just Black and White individuals. Therefore, to gain a more comprehensive understanding of how the sociocultural context and patterns of structural segregation shape perceptions of other individuals, future research must expand beyond Black-White relations. On the one hand, we might expect research programs that expand beyond Black-White relations to find similar patterns of results as those presented within this dissertation. Specifically, Latinos, Asians, and Native Americans also have relatively homogenous friendship networks (Currarini, Jackson, & Pin, 2010), are likely to attend schools that lack racial diversity (Orfield, Frankenber, Ee, & Kuscera, 2014), and live in segregated neighborhoods (Iceland & Weinberg, 2002), although to a lesser extent than Black individuals. Therefore, people may infer that non-Black and non-White individual prefer same-race to different race individuals, and that the patterns of structural segregation within the sociocultural context shapes people's perceptions of others' same-race preferences in ways analogous to what was presented in this dissertation.

On the other hand this view may be too simplistic, because each racial group has unique social, economic, and political histories. As a consequence, people may come to understand and normalize the patterns of structural segregation for each group differently. For example, although Native Americans face residential racial segregation similar to Black Americans, Native American segregation often is organized around tribal communities and is often linked to the presence of nearby reservations. In other words, reservations and the surrounding metropolitan areas, in which Native American individuals are likely to live, consist of Native American individuals who share cultural traditions, languages, and tribal affiliation. These clear indications of similar cultural and linguistic heritage are not as evident as explanations for the residential segregation of Black Americans, which generally occurs in inner city spaces. Furthermore,

because people have little knowledge of or experiences with contemporary Native Americans (Pewewardy, 1995; Eason, et al., unpublished data), they may especially be likely to draw on their historical knowledge of the group, compared to when thinking about Black Americans. Specifically, people may recognize that reservations were created after Native American Peoples were forcibly removed from their ancestral lands. As a consequence, people may be more likely to infer that the segregation of Native Americans reflects historical policies, or cultural similarities rather than reflecting the current racial attitudes of Native American individuals. Taken together this suggests that caution must be taken in assuming that the patterns of results reported in this dissertation will generalize to Latino-White, Asian-White, Native-White or intra-minority relations.

The second limitation of note is the demographic characteristics of the participants used across the three sets of studies. In particular, the samples were either all White (Papers 1 & 3) or predominantly White (Paper 2). This is particularly important given that research has demonstrated that White individuals are especially likely to endorse the idea that people create and shape their social environment (see Markus & Connor, 2013 for discussion) and relative to non-White individuals are more likely to focus on internal, relatively stable characteristics, such as preferences, when making inferences about the causes of others behaviors (Krull, Loy, Lin, Wang, Chen, & Zhao, 1999). Moreover, specific to the domain of race relations, White individuals are less likely to acknowledge that structural barriers (such as discrimination), as opposed to individual behavior, shape social outcomes (Major, Quinton, & McCoy, 2002). As a consequence, White people may be especially likely to view residential segregation, school diversity, and same-race friendship networks as consequences of individual choices. Non-White communities, on the other hand, may be more reluctant to make inferences about other

individual's racial attitudes based on the patterns of structural segregation evident within the sociocultural context. Instead, non-White individuals may highlight the structural constraints that affect these pervasive patterns of structural segregation. Therefore, future research needs to expand the populations of study beyond the predominantly White samples presented here.

Beyond these limitations, the data present in this dissertation build upon the prior literature to explicitly highlight the power of the sociocultural context in shaping and maintaining social outcomes, such as racial segregation. From a social psychological perspective, the study of intergroup relations has focused on the relation between interactions, interpersonal experiences, and people's thoughts, feelings, and behavior (Fiske, 2000; Pettigrew, 2018). Implicitly underlying such a focus is the idea that the features of the sociocultural context influence people indirectly, by making some personal experiences more likely to occur than others. In line with this assertion, researchers offer interpersonal mechanisms as the process by which intergroup biases develop within segregated contexts (Ananat & Washington, 2009; Uslaner, 2012). For example, when neighborhoods are racially segregated and schools are racially homogenous, individuals have fewer opportunities to engage in cross-race interactions compared to when neighborhoods are racially integrated and schools are racially diverse. As a consequence, people develop few close relationships across racial lines, and therefore maintain their same-race biases (Pettigrew & Tropp, 2006; Pettigrew, Wagner, & Christ, 2010) and perceptions that same-race interactions are normative. However, the data from this dissertation highlight an additional process—that the sociocultural context directly impacts individuals' thoughts, at least in the domain of intergroup relations. Specifically, the three papers of this dissertation demonstrate that merely observing the patterns of structural segregation within the sociocultural context, independent of personal experiences, are enough to shape the way that

people think about race relations. Moreover, because the sociocultural context by definition conceptualizes the commonality among people within a given culture (Choudhury & Kirmayer, 2009; Gone & Kirmayer, 2010), the patterns of structural segregation evident within the sociocultural context are likely to have widespread influence.

The developmental aspect of this dissertation further strengthens the assertion that sociocultural context has a direct and widespread effect on individuals' patterns of thought about same-race preferences. Specifically, preschool-aged children, school-aged children, and adults were all sensitive to information about how people of different races are arranged throughout society. Given that even preschool aged children showed evidence of being affected by patterns of structural segregation within the broader sociocultural context, it is unlikely that the main mechanism by which the sociocultural context exerts its influence is through interpersonal experiences. That is, although adults have extensive personal experiences with same-race peers, and interacting within segregated and low diversity contexts, younger children on the other hand are not as experienced.

This is not to suggest that preschool-aged children are completely naïve. In fact, by 4-years-old children have already developed the expectation that people prefer same-race to cross-race peers (Roberts, Ho, & Gelman, 2016; Shutts, Roben & Spelke, 2013). Thus, the developmental evidence presented in this dissertation can only go so far as to say that the pervasive patterns of structural segregation within the sociocultural context shape or augment perceptions of others' same-race preferences. In order to test whether features of the sociocultural context, specifically patterns of structural segregation, can actually instill or create the perception that people prefer same-race to cross-race individuals, alternative methods are necessary. One possible way to address this open question is to investigate the ontogeny of

perceptions of others' racial attitudes within infancy. Infants, in comparison to young children, have fewer interactions and personal experiences, making them naïve participants relative to young children. As such, future research may consider testing whether infants expect interactions to be same-race or cross-race, and whether they expect people to prefer same-race to cross-race peers. Moreover, using quasi-experimental and correlational methods, such a research program can also investigate macro-level features of the infants' social environment as well as infants' own personal experiences contribute to the development of the perception that other individuals prefer same-race to cross-race peers. For example, researchers could investigate how: 1) the level of segregation within infants' neighborhood, 2) the number of same-race and cross-race individuals within the neighborhood, and 3) how often infants interact with same-race and cross-race individuals, relate to their expectations. This approach can provide evidence as to whether the patterns of structural segregation within the sociocultural context can *create* the perception that people prefer same-race to cross-race individuals. Furthermore, such an approach can shed light on the ways in which the sociocultural context and personal experiences work in tandem, or independently, to influence perceptions of same-race preferences.

Overall, the current dissertation begins to unpack one part of a complex process that works to maintain social outcomes, specifically the current racial landscape. Returning to the sociocultural framework described in the introduction, my research focused on the relation between the sociocultural context and individuals—that is, how people made sense of the patterns they observed within the sociocultural context. Culture can be understood as consisting of four interconnected levels—*societal factors and pervasive ideas, institutions, interactions,* and *individuals*—which each interact with and potentially reinforce the processes occurring at the other levels (i.e., Markus & Kitayama, 2010). By explicitly keeping this broader

conceptualization of culture in mind, we can build a more holistic understanding of how the current racial landscape is maintained and can be changed. For sustained social change, as researchers we need to investigate intergroup dynamics at each level of culture, and understand how the levels interact with each other. When it is time to work towards change, we must understand that action needs to occur at all levels of culture, from the macro- to the micro-level (e.g., Eason, Brady, & Fryberg, 2018; Stephens, Fryberg & Markus, 2012; Fryberg, Covarrubias & Burack, 2016). Thus, as psychologists continue investigate and unpack intergroup relations, it is important that we do not lose sight of the influence of the macro-level, sociocultural context (see also Salter, Adams, & Perez, 2017). As one of the most prominent social psychologists, Jerome Bruner noted, "if we can learn how culture makes mind, perhaps we can make cultures which make better, or at least, more fulfilled, minds (1990, pp.31-32)".

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Vita

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