

CHILDREN'S UNDERSTANDING AND USE OF INTERSECTIONAL
STEREOTYPES

BY

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LIST OF ABBREVIATIONS

1	Stereotype Content Model.....	SCM
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ABSTRACT

Stereotypes based on race and gender emerge early in childhood, shaping children's perceptions of social groups and leading to intergroup discrimination. Extensive previous research has examined children's racial and gender stereotypes separately, however, few studies have explored children's simultaneous use of multiple social categories to form intersectional stereotypes. The current study addresses this gap by examining whether children aged 6 to 10 years ($N = 148$; 56.8% girls, 43.2% boys, 59.8% white, 21.2% Asian, 7.6% Latinx, 6.1% Multiracial, 5.3% Black) hold intersectional stereotypes about six social groups differing in race and gender. The study specifically focuses on warmth and competence stereotypes due to their central role in predicting behaviors and attitudes across the lifespan (see Stereotype Content Model; Fiske et al., 2002). For each dimension, children completed a forced-choice task in which they viewed 15 pairs of faces representing different race-gender combinations and rated who was nice (warmth) or smart (competence) from each pair. Children applied various intersectional stereotypes such as rating white and Asian women as nicer than Black women, or viewing Asian men as more competent than Black or white men. Exploratory analyses revealed additional effects of age, children's gender, and experimenter race. The current study demonstrated that by early elementary school, children can encode and functionally use multiple social categories together. Further, the current study identifies children's endorsement of stereotypes and thus informs early bias interventions that promote more equitable social perceptions and interactions.

Keywords: Stereotypes, Intersectionality, Developmental Social Cognition

INTRODUCTION

Stereotypes are described as overly generalized beliefs about the characteristics of certain social groups (American Psychological Association, 2018). These overly generalized beliefs shape perceptions and behaviors, often reinforcing inequalities by perpetuating negative outcomes on personal and societal levels (Banaji et al., 2021; Berg et al., 2006; Clark et al., 1999; Mulvey et al., 2010). For example, prolonged exposure to racial stereotypes is associated with chronic stress among African Americans (Clark et al., 1999), and exposure to degradation based on gender stereotypes is associated with more posttraumatic stress among women (Berg et al., 2006). Projecting gender and racial stereotypes onto unfamiliar others also contributes to social exclusion, resulting in more intergroup conflicts and segregation (Banaji et al., 2021; Mulvey et al., 2010).

Importantly, stereotypes are not limited to individual interactions; they are reflected in and reinforced by societal structures. In education, for instance, girls may lose interest in STEM subjects due to internalized gender stereotypes linking boys with intelligence (Cheryan et al., 2015). These internalized stereotypes are often exacerbated by discouragement from girls' social environment, leading to gender gaps in STEM fields (Cheryan et al., 2015). Similarly, in healthcare or the justice system, racial and gender stereotypes lead to various unequal treatment and differential resource distribution, contributing to persistent disparities (Banaji et al., 2021; Cheryan et al., 2015; Pager & Shepherd, 2008). Together, these examples indicate that stereotypes are one of the key mechanisms that maintain and reproduce inequalities. Although people hold stereotypes towards various social groups, gender and racial stereotypes are particularly impactful because they tend to be immediately visible and are typically the first categories by which

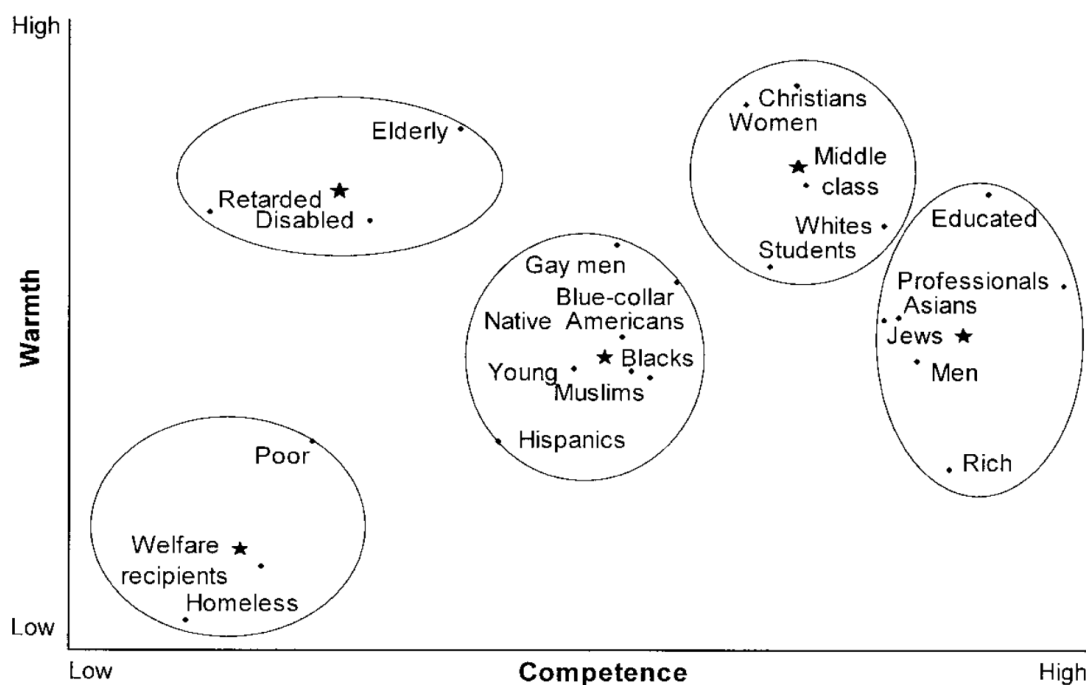
people are judged (Stangor et al., 1992). Hence, understanding gender and racial stereotypes is fundamental to addressing inequalities.

Theoretical Framework

One prominent theoretical framework that has helped psychologists understand people's stereotyping is the Stereotype Content Model (SCM; Fiske et al., 2002). The SCM proposes that people typically stereotype along two dimensions: warmth and competence. These dimensions capture how social groups are perceived based on trustworthiness (warmth) and capability (competence), two factors that shape social interactions (Fiske et al., 2002). A group's perceived warmth predicts whether the group will be approached or avoided; a group's perceived competence predicts whether the group will be respected or admired (Fiske et al., 2002). The SCM positions each social group within a two-dimensional space of warmth and competence, allowing researchers to examine how specific groups are perceived, and how such perceptions shape affective and behavioral reactions towards different groups (Fiske et al., 2002; see Figure 1).

Figure 1

Stereotype Content Model (Fiske et al., 2002)



Notably, although the SCM was initially developed to describe stereotypes of individual social categories (e.g., gender or race), its two-dimensional structure can also capture the complexity of intersectional stereotypes, which arise at the intersection of multiple social groups. For example, although women in general are considered friendly, Black women are often stereotyped as aggressive or angry. This shift in perceived warmth shows that intersecting group identities can alter a group's stereotype, placing the group in a different position in the SCM dimension than would be predicted based on either group identity alone. Such divergence in stereotypes when considering intersectional groups indicates stereotypes are not simply additive. Rather, the perceptions of different groups interact to form unique perceptions. Therefore, it is crucial to examine stereotypes from an intersectional perspective.

By specifying dimensions of stereotypes and linking them with different consequences, SCM highlights the nuances in which people with different group memberships (e.g., gender and race) are perceived (Fiske et al., 2002). For example, groups perceived as warm but incompetent (e.g., white women) may be treated with sympathy but also excluded from positions of power, while those seen as competent but cold (e.g., Asian men) may be respected but disliked (Fiske et al., 2002). Therefore, SCM is crucial to study gender and racial stereotypes, as well as the intersection between the two.

Children's Stereotyping

Gender and racial stereotypes are not formed suddenly in adulthood but develop in early childhood. From a young age, children are particularly sensitive to gender and race, which continue to be two of the most robust types of stereotypes throughout their

lifespan (Rhodes & Baron, 2019). For example, three-year-olds demonstrate knowledge of gender-stereotyped activities, associating dolls with girls and cars with boys (Martin & Ruble, 2010), and five-year-olds associate both positive and negative stereotypes with different racial groups (Pauker et al., 2010). These early stereotypes are critical for shaping children's understanding of and interactions with their social world, and the influence of stereotypes can have lasting consequences affecting children's socioemotional well-being and adjustment across development (Rhodes & Baron, 2019; Shutts, 2015). Therefore, understanding the developmental origins of these stereotypes, especially in the context of gender and race, is crucial for addressing stereotypes before they are deeply entrenched.

Children's Racial Stereotyping

Children begin showing racial stereotypes around 5 years old. Prior to exhibiting concrete racial stereotypes, there are several foundational capacities that children develop. One foundation of stereotyping is children's recognition of racial groups as salient social categories (Bigler & Liben, 2007). Around 3 months old, infants who are presented with faces of their own race and faces of other races look at their own race faces for a longer time, suggesting infants' detection of differences in skin color (Bar-Haim et al., 2006). In the following 3 to 6 months, infants are able to form mental representations of racial groups (Quinn et al., 2016). Notably, infants do not show noticeable social preferences or stereotypes based on racial groups (Kinzler & Spelke, 2010). Following infants' attention to and recognition of race, children between 3- and 4 years old start to show a stable ability to classify people based on race, signaling their functional use of race and building a solid cognitive foundation for exhibiting

stereotypical knowledge at a later age (Aboud, 1988; Pauker et al., 2017). Children start displaying racial stereotypes around 5 years old, and with age, children display racial stereotypes that more closely resemble adult stereotypes along the two dimensions of competence and warmth (Baharloo et al., 2022; Fiske et al., 2002; Pauker et al., 2010).

In the competence dimension, research has shown that children around age 5 frequently associate high competence with white people (Baharloo et al., 2022; Jaxon et al., 2019; Lazaro & Bian, 2024; Mandalaywala et al., 2020, 2021; Shu et al., 2022; Sierksma et al., 2022). Specifically, past studies have often evaluated children's competence stereotypes about Black and white people by assessing who children view as smarter. Studies have typically found that children from diverse racial backgrounds tend to believe that white people are smarter than Black people (Jaxon et al., 2019; Lazaro & Bian, 2024; Shu et al., 2022; Sierksma et al., 2022). When considering other social groups, Sierksma and colleagues (2022) investigated children's rating of common stereotypes (e.g., smart, rich) about three racial groups (Asian, Black, and white). They found that children rate white people as similarly smart to Asian people but smarter than Black people (Sierksma et al., 2022). Children also rate white people as wealthier than both Asian people (Mandalaywala et al., 2020, 2021; Sierksma et al., 2022) and Black people (Mandalaywala et al., 2020, 2021). Children's wealth stereotypes about white people possibly reflect their beliefs about white people's high competence in gaining more resources (Mandalaywala et al., 2020, 2021; Sierksma et al., 2022). Moreover, some evidence suggests that children's racial stereotype about competence might follow a developmental trend: children select white people as being highly competent starting at 5

years old, but start to associate high competence more with Asian people around the age of 7 years old (Baharloo et al., 2022).

In the warmth dimension, research has shown that children around age 5 also tend to associate high warmth with white people. For example, children frequently rate white people as nicer than Asian people (Baharloo et al., 2022), and some studies have also found that children rate white people as nicer than Black people (Ruba et al., 2022). However, the latter effect is less consistent, as other studies suggest no notable difference in children's ratings of niceness between white and Black people (Baharloo et al., 2022; Sierksma et al., 2022). These inconsistencies might be due to sample diversity. Specifically, in predominantly white samples, children may exhibit ingroup favoritism by perceiving white people as nicer than Black people (Ruba et al., 2022). For instance, Ruba and colleagues (2022) found that when children were presented with Black and white faces displaying the same facial expressions, they perceived the white targets as nicer and attributed more positive emotions to the white targets. In contrast, racially diverse children might not show a strong tendency to stereotype white people as nicer than Black people (Baharloo et al., 2022; Sierksma et al., 2022; Ruba et al., 2022). Thus, the warmth stereotype favoring white people over Black people may simply reflect ingroup favoritism. Despite some mixed findings regarding white and Black targets, there is consistent evidence across studies that Asian people are rated as lower in warmth, and children's racial stereotypes of warmth overall tend to align with adult stereotypes (Fiske et al., 2002). Children at 5 years old begin to express racial stereotypes of warmth; additionally, some evidence suggests that children around the age of 7 years stably attribute warmth to white people more so than Asian people (Baharloo et al., 2022).

Children's Gender Stereotyping

Children's gender stereotyping begins as early as 3 years old (Kuhn et al., 1978). Similarly to race, recognition and categorization of different genders serve as the cognitive foundations of gender stereotyping (Bigler & Liben, 2007). Infants around 3 months can distinguish gender information in faces (Quinn et al., 2002), and by 10 months, they associate gendered faces with stereotyped objects like scarves (i.e., women) or hammers (i.e., men) by looking at corresponding objects (Levy & Haaf, 1994). Before the first two years of their lives, infants recognize gender labels and can categorize people based on gender (Martin & Ruble, 2004). Overall, infants' capacity to process gender information visually from a very early age is essential for understanding more complex gender stereotypes in later years (Martin & Ruble, 2010).

At 2 years of age, children display some knowledge of gender-stereotyped toys and activities (Kuhn et al., 1987; Poulin-Dubois et al., 2002). For example, they associate girls with dolls and women with household tasks like vacuuming, while boys are linked with cars and men with fixing things (Kuhn et al., 1987; Poulin-Dubois et al., 2002). These associations signify some rudimentary gender stereotypes. At 3 years old, children can not only assign gender labels but also infer gender-based traits, even when they are shown mislabeled targets that have conflicting gender labels with the target's appearances (Gelman et al., 1986). Although 2- and 3-year-olds are beginning to show some rudimentary stereotypes, these stereotypes become more complex and nuanced as children age. At a later stage of childhood, children express adult-like gender stereotypes based on both warmth and competence (Fiske et al., 2002).

In the competence dimension, research has shown that children frequently associate high competence with men or boys over women or girls. By 6 years old, children associate boys with math and see men as more competent and intelligent than women (Cvencek et al., 2011; Bian et al., 2017). For example, Bian and colleagues (2017) found that when children are told a story involving a smart protagonist and are asked to guess the gender of the protagonist, they often choose male targets. Additionally, children at 6 years old understand that men typically occupy higher-status roles and expect boys to have more decision-making power, further demonstrating children's understanding of competence stereotypes (Liben et al., 2001; Mandalaywala et al., 2020).

Alongside competence, children's understanding of gender stereotypes also extends to the warmth dimension. Children aged 5 to 7 years old perceive girls as more emotional than boys and associate caregiving roles with women more so than with men (Giles & Heyman, 2005; Sinno & Killen, 2009). For example, Giles and Heyman (2005) found that 5-year-olds, regardless of their own gender, believe that girls show more relational (vs. physical) aggression. This finding implies that children have gender stereotypes about girls being more emotionally expressive, and therefore warmer compared to boys. Similarly, Sinno and Killen (2009) observed that 7-year-olds associate caretaking qualities with women but not men. Collectively, this reflects children's tendency to equate highly warm traits, such as emotionality and caretaking, with women over men.

Impact of Children's Background on Stereotyping

Although children develop stereotypes about both in-group and out-group members, research shows that children's stereotyping can vary based on their own social

group background in several ways (Pauker et al., 2010). On the one hand, children's own background can influence their out-group stereotyping; specifically, children tend to hold more negative stereotypes about out-group members than about in-group members (Mulvey et al., 2010; Nesdale, 2004). For instance, research on gender stereotypes finds that children overall associate crying more with girls than with boys, but boys are more likely than girls to make this association (Powlishta, 1995). In other words, although children, regardless of their own gender, have knowledge about gender stereotypes of girls, those who perceive girls as out-group members (i.e., boys) tend to show stronger endorsement of the negative stereotype.

On the other hand, children's own background might also affect in-group stereotyping. Children often internalize stereotypes of their own social groups and apply stereotypes to themselves and their in-group members (Bian et al., 2017; Shu et al., 2019). For example, group membership can magnify in-group stereotyping of positive stereotypes due to in-group favoritism. For instance, although boys and girls both show gender stereotypes that associate boys with brilliance, boys are more likely to endorse such stereotypes about their in-group members than girls do (Bian et al., 2017; Shu et al., 2019). However, some past studies do not find an effect of children's own group membership on their stereotyping (Jaxon et al., 2019). In conclusion, these findings provide mixed evidence that group membership might lead to both more in-group and out-group stereotyping, especially when comparing intersectional social groups. Therefore, it is necessary to examine the effect of children's social background.

Impact of Exposure to Diversity on Racial Stereotyping

Another factor that influences children's stereotyping is their exposure to diversity. Greater exposure to neighborhood diversity not only predicts lower levels of racial bias but also leads to less out-group stereotyping among children (Hwang & Markson, 2023; Pauker et al., 2016; Rutland et al., 2005; Skinner & Meltzoff, 2019). Although extensive research has documented the relationship between higher neighborhood diversity and reduced racial bias, fewer studies have directly examined the impact of neighborhood diversity on stereotyping. Nonetheless, the evidence about the impact of neighborhood diversity on reducing bias suggests that diverse environments may also diminish out-group stereotyping. Much past research has suggested that children who live in more diverse neighborhoods tend to exhibit less pro-white bias (Hwang & Markson, 2023; Skinner & Meltzoff, 2019). For example, white children who live in racially diverse neighborhoods tend to have less racial bias such that when they are presented with a white and a Black teacher, they tend to choose a Black teacher more (Hwang & Markson, 2023). Some research has also suggested that greater neighborhood diversity predicts less out-group stereotyping among children (Pauker et al., 2016; Rutland et al., 2005). For example, Rutland and colleagues (2005) found that British children living in racially diverse areas exhibit less stereotyping of their out-group members. Similarly, in the U.S., children living in Massachusetts demonstrate more out-group stereotyping than their peers in Hawaii, a more racially diverse state (Pauker et al., 2016). Although direct evidence on the effect of neighborhood diversity on children's racial stereotyping remains limited, existing findings suggest that exposure to neighborhood diversity could play a crucial role in shaping children's perceptions of others and thus should be further examined.

Children's Understanding of Intersectional Stereotypes

Despite robust research on children's gender and racial stereotyping, fewer studies have explored the intersection of race and gender stereotyping. Yet intersectionality is critical because the perception of others' multiple identities places them in different positions within power hierarchies (Crenshaw, 1989). For instance, although women overall are stereotyped as less intelligent, Black women are perceived as more intelligent than Black men (Jaxon et al., 2019). Intersectionality captures the complexity of real-world experiences and thus it is crucial to understand how intersectionality shapes children's stereotypes.

Children's understanding of intersectional stereotypes, like gender and racial stereotypes, depends on their cognitive ability to use multiple social categories at once (Lei et al., 2022a). Recent evidence shows that by the age of 6 years, children are able to encode both gender and race categories simultaneously (Lei et al., 2022a). In one study, children were presented with a protagonist and a brief story (e.g., "This kid saw a cow at a farm") and then asked to recall who saw the cow by selecting a matching face (Lei et al., 2022a). Even when children did not accurately identify the protagonist, children were most likely to choose faces that matched the protagonist's gender and race, suggesting that they had simultaneously encoded both the race and the gender of the protagonist (Lei et al., 2022a).

In addition to early-emerging intersectional processing, young children start to display some intersectional stereotypes around the age of 6 (Leshin et al., 2022; Lei et al., 2022b). For example, when children aged 7 to 11 years old are asked to sort photos by gender, they are often slow or make more mistakes when sorting Black women as

women, but not when sorting white women as women or Black men as men (Leshin et al., 2022). The hesitation to associate Black women with femininity reflects children's awareness of Black women's dual identity, as Black women are stereotyped as less feminine (Crenshaw, 1989). In another study, children demonstrate similar intersectional stereotypes about Black women. Namely, children are more likely to associate stereotypically feminine traits with white or Asian targets than Black targets (Lei et al., 2022b). Children are also more likely to associate stereotypically masculine traits with white or Black targets than Asian targets, and such stereotyping is more pronounced with age (Lei et al., 2022b). Together, evidence illustrates that children by the age of 6 years old develop an early capacity for intersectional processing and exhibit some stereotypes based on intersectional groups (Lei et al., 2022a).

Recently, several studies have shed light on the specificity of children's intersectional stereotyping surrounding warmth and competence (Fiske et al., 2002). In the warmth dimension, children rate Black boys as less nice compared to Black girls or white boys (Perszyk et al., 2019). In the competence dimension, many past studies focused on children's understanding of "brilliance" stereotypes (e.g., Jaxon et al., 2019, p.1192). For example, children think that white men, but not white women or Black men, are more brilliant, regardless of their own race (Jaxon et al., 2019). Children also think Black women are more brilliant than Black men (Jaxon et al., 2019; Lazaro & Bian, 2024). Furthermore, children across the U.S. and China associate more brilliance with white men (vs. Asian men and white women; Shu et al., 2022).

However, not all studies find robust evidence for intersectional stereotypes in the competence dimension (Zhao et al., 2022). For example, Zhao and colleagues (2022)

have found a robust association only between men and brilliance stereotypes, but not white and brilliance stereotypes. The discrepancies might be explained by the different age ranges of participants. Studies reporting robust intersectional brilliance stereotypes focused on younger children (5- to 7-years-old; Jaxon et al., 2019; Lazaro & Bian, 2024; Shu et al., 2022), whereas those reporting primarily gender-based stereotypes examined slightly older children (8- to 12-years-old; Zhao et al., 2022). Older children, around the age of 10, might start to purposefully avoid talking about race and thus suppress their stereotypes of racial groups (Apfelbaum et al., 2008). Despite some inconsistencies, the broader literature suggests that children form intersectional stereotypes of race and gender groups in the dimensions of warmth and competence.

However, past studies have several limitations. First, these studies typically compare only two racial groups at a time (e.g., Asian vs. white or Black vs. white) on one stereotype dimension (e.g., warmth or competence). Given that Asian, Black, and white individuals are the most frequently represented and studied racial groups in prior research on children's stereotypes in the U.S. (e.g., Jaxon et al., 2019; Sierksma et al., 2022), including all three groups provides a more accurate reflection of reality to gauge children's intersectional stereotypes. In addition, no study to date has examined warmth stereotypes for Asian men and women. Hence, the current study included all three major racial groups (Asian, Black, and white) along both stereotype dimensions to allow for direct comparisons among children. Second, most studies only compare same-gender or same-race pairs, limiting our understanding of children's intersectional stereotypes as children's attention is drawn to a specific manipulated dimension rather than displaying all combinations of people as children would see in the real world. Direct comparisons

across different groups are necessary to understand how children think about real-world social identities. Lastly, differences in participants' cultural backgrounds and age ranges make comparisons across studies difficult. For instance, Shu et al. (2022) and Jaxon et al. (2019) focused on 5- to 6-year-olds but conducted studies in different countries (China and the U.S.). Additionally, although Lazaro and Bian (2024) included a wider age range of 5- to 9-year-olds, the study's different age range from other studies (e.g., Jaxon et al., 2019) complicates the comparisons of the results across the study. Therefore, a study containing all the social group comparisons and a wider age range is crucial for addressing these discrepancies, building a deeper understanding of children's intersectional stereotypes across two dimensions.

Current Study

The current study asks the following question: Do children have intersectional stereotypes about warmth and competence for six race and gender groups? This study examined children aged from 6 to 10 years as this is a developmental stage where children are able to categorize people based on both race and gender (Lei et al., 2022a) and during which children have shown large changes in their social biases (e.g., Baron & Banaji, 2006). As such, we sought to evaluate whether children similarly showed changes in their intersectional stereotypes during this key developmental period. Second, past studies on racial stereotypes have shown children's increasing stereotyping with age, starting around the age of 6 (Baharloo et al., 2022; Pauker et al., 2010). Then, beyond the age of 10, children begin to show greater social awareness and may start to mask their biases (Apfelbaum et al., 2008). Thus, focusing on 6- to 10-year-olds allows us to examine intersectional stereotypes at a point when children's stereotyping is most robust.

Given the complexity of the Stereotype Content Model and limited, sometimes conflicting evidence from prior research on children's intersectional stereotyping, we did not preregister directional hypotheses for each group. However, based on the convergence of existing literature reviewed above, we expected that when considering race alone, children would rate Black targets as the least smart and Asian targets as the least nice. Additionally, when considering gender alone, we predicted that children would rate women as nicer than men and men as smarter than women. Finally, we expected potential interactions between race and gender in children's stereotyping across both warmth and competence dimensions, although our directional hypotheses were less clear.

Furthermore, as previously discussed, children's own background can influence their in-group and out-group stereotyping (Bian et al., 2017; Pauker et al., 2010). Even though some studies on intersectional stereotypes do not reveal an effect of children's own background, these studies are limited (Jaxon et al., 2019). To better understand the effect of children's own background on their stereotyping, we conducted an exploratory analysis of the effect of children's own gender and race on their intersectional stereotyping.

Lastly, contextual factors like exposure to diversity in the neighborhood can influence children's stereotyping, especially towards out-group members (Pauker et al., 2016; Rutland et al., 2005). To understand the effect of children's neighborhood diversity on their racial stereotyping, we conducted an exploratory analysis of neighborhood diversity on children's intersectional stereotyping.

Methodological Considerations for Intersectional Research

The current study utilizes an experimental paradigm to assess children's intersectional stereotypes. However, integrating intersectionality into current research poses challenges for quantitative methods, especially experimental paradigms (Lei & Rhodes, 2021; Syed & Ajayi, 2018). First, studying intersectional stereotypes requires more trials and higher statistical power (Lei & Rhodes, 2021). These challenges complicate experimental designs because they require more participants and have higher demands on children's ability to concentrate during a longer task time.

Second, some prior studies attempted to address intersectionality by examining statistical interactions between social groups (e.g., race and gender), allowing researchers to see how children's stereotyping of one group is moderated by that of the other (Jaxon et al., 2019; Lazaro & Bian, 2024; Shu et al., 2022). For example, some experiments ask children to compare several sets of same-race targets (e.g., a white woman vs. a white man and a Black woman vs. a Black man) on one stereotypical trait. A significant interaction between children's choices across different sets would suggest that children's gender stereotyping is moderated by the race of the target. Researchers might then conclude that children hold intersectional stereotypes based on this statistical interaction. Syed and Ajayi (2018), however, have argued that analysis of intersectionality should go beyond a statistical interaction, as it flattens the complexity of intersectional experiences and ignores broader macrosystemic influences. According to Syed and Ajayi (2018), the example experiment above fails to capture children's intersectional experiences, as it only asks children to compare within one social group. Going beyond a statistical interaction, in this case, could involve asking children to compare multiple social groups simultaneously (e.g., a white woman vs. a Black man).

Though experimental paradigms come with limitations, they remain valuable for studying young children, because young children are less capable of articulating the idea of intersectionality through qualitative methods, such as surveys or interviews. In this case, experiments are better for gauging their knowledge, especially identifying whether children hold specific intersectional stereotypes (Lei & Rhodes, 2021). Hence, in the light of integrating experiments into intersectionality research, previously discussed reservations are addressed as follows. First, we captured the nuances of intersectionality by evaluating direct comparisons between 6 social groups. Second, we inserted two open-ended questions to probe children to identify the reasons behind their choices. Lastly, we utilized a sample large enough to maintain high statistical power and added a short break for children to maintain concentration.

METHOD

Participants

Participants were 148 6- to 10-year-old children recruited via an online platform called Children Helping Science, which allows for online studies with diverse families across the country ($M = 7.87$ years; $SD = 1.33$ years; 56.8% girls, 43.2% boys, 59.8% white, 21.2% Asian, 7.6% Latinx, 6.1% Multiracial, 5.3% Black; see Appendix B). Parental consent was obtained prior to the study and child assent was obtained from any children 7 years and older; participants and their parents received a \$10 gift card for participating.

Materials

The materials were developed to assess children's warmth and competence stereotypes about six different social groups (Fiske et al., 2002). These groups included Asian women, Asian men, Black women, Black men, white women, and white men. The two dimensions being evaluated were "smart" (related to competence) and "nice" (related to warmth).

Children completed 15 trials capturing warmth stereotypes and 15 trials capturing competence stereotypes. In addition to 30 trials across two stereotype dimensions, there were 4 screener questions before each set of 15 trials, totaling 36 questions. Children completed the tasks in a counterbalanced order. They began with either "smart" or "nice" screener questions, depending on the randomly assigned sequence. After completing the stereotyping questions for the first dimension, children took a short break to watch a cartoon video that was unrelated to the content of the study. Following the break, they

proceeded with the second set of screener and stereotyping questions for the other dimension. All trials within each dimension were randomized.

Screener Questions

To ensure children understood the “smart” and “nice” traits in later stereotyping questions, they were presented with screener questions that consisted of stories describing someone smart (e.g., solves hard questions, learns things quickly, etc.; see Figure 2). Then, children were asked to rate the protagonist as “smart,” “not smart,” or “not sure” on 4 trials. The screener consisted of 4 questions: 3 questions where the correct answer was “smart” or “nice,” and 1 where the correct answer was “not sure.” Children who incorrectly answered 2 out of 3 screener questions where the correct answers were “smart” or “nice” were excluded from analyses ($n = 2$). Children would not be excluded for incorrect answers to the “not sure” question if they meet the prior criteria for the “smart” or “nice” questions.

Figure 2

Sample Trial for Smart Screener Questions

Okay, I am going to tell you about a person,
and you can tell me what you think about
this person!

This person can quickly solve hard math
problems.

Do you think this person is smart, not smart,
or are you not sure?

$$15 + 23 = 38$$

Stereotyping Questions

In every trial within each dimension, children were presented with 2 adults (side of screen counterbalanced across trials) and asked to choose one who was smarter or nicer (See Figure 3). Example trials for the smart stereotypes were “One of these people is really really smart, who do you think it is? This one, or this one?” Children responded by telling the experimenter the color that is behind their choices (i.e., blue or green). Adult face stimuli were drawn from the Chicago Face Database and were matched on perceived age and attractiveness within each trial (Ma et al., 2015). The facial expressions of all stimuli were neutral.

The materials provided all possible combinations of comparisons between 6 social groups: Asian women, Asian men, Black women, Black men, white women, and white men. Such comparisons allowed a nuanced understanding of children’s intersectional knowledge.

Scoring. Within each dimension, children were given a score for the number of times they selected someone of each race and gender combination within each stereotype dimension (possible scores range from 0 to 5). Each child had a total of 12 scores – one score per race and gender combination within each dimension.

Figure 3

Sample Trial for Smart Stereotype Questions



Break Between Questions

To avoid participants' fatigue, between the first and second sets of 15 trials, children watched a short video as a break and were asked how much they liked the video. The video did not provide any information relevant to the study, and we did not collect any real data about children's responses to the video.

Open-ended Questions

After all 15 trials for each stereotype dimension, children were shown their choices and asked why they made their choices (e.g., "You said these people are really really smart/nice. Why do you think they are really really smart/nice?"). Their responses were transcribed and coded by two trained coders according to the following categories: 0 = no meaningful response or no response at all; 1 = appearance-based or inferred

reasoning beyond photo stimuli; 2 = social-group explicit reference; 3 = resistance to stereotyping (for the complete coding scheme, see Appendix A).

Cohen's kappa from two independent coders was 0.97 for the smart dimension and 0.95 for the nice dimension. The discrepancies between the two coders were reconciled by a third coder.

Methodological Considerations for Material Development

Rationale for Using Adult Stimuli

This study used adult face stimuli to assess children's intersectional stereotypes. A key reason to use adult (vs. child) stimuli is that adult face databases are more accessible, standardized, and abundant compared to child face databases, allowing for better control over variables such as age, attractiveness, and facial expression. Second, research suggests that target age has minimal effects on children's stereotyping, at least in the gender domain. For example, Alto and Mandalaywala (2023) found that children apply gender stereotypes to adult and child targets similarly.

Additionally, although the majority of existing study measures used child stimuli, they often focused more on children's intergroup biases (e.g., like or not like) than trait-specific stereotypes (e.g., smart or nice; Fukuda et al., in press). Even for studies that measured trait-specific stereotypes using child stimuli, the researchers often aggregated multiple traits into a single score, making it difficult to isolate whether children attribute specific traits to different racial groups (e.g., Pauker et al., 2010). In contrast, many studies using adult stimuli examined stereotypes of specific traits (e.g., Bian et al., 2017), which not only aligns with the goal of the current study but also makes the findings

comparable across the studies. Therefore, given several considerations above, the current study used adult face stimuli.

Selection Criteria for Adult Stimuli

While selecting adult stimuli, perceived attractiveness and perceived age were potential confounding variables that could influence children's stereotype judgments. Research suggests that children tend to associate attractive people with more positive traits, including intelligence and kindness, which could bias children's responses (Rennels & Langlois, 2014). Similarly, age-related perceptions may influence competence judgments, as older adults are often stereotyped as more experienced or knowledgeable than younger adults (Rhodes, 2009). To minimize these potential confounds, adult stimuli were selected based on their reported perceived age and attractiveness ratings from the Chicago Face Database (Ma et al., 2015).

Stimuli were selected within 1 standard deviation of the grand mean for each dimension (see Table 1 for descriptive statistics). This threshold ensured that the stimuli retained natural variability within the sample while filtering out extreme values that could introduce unintended biases.

Table 1

Perceived Age and Attractiveness Descriptive Statistics

	Lower Range	Upper Range	Mean	Standard Deviation
Perceived Age	25.7	32.1	28.88	6.36
Perceived Attractiveness	2.45	4.01	3.23	0.78

Other Measures

Children's Own Background

We collected demographic information about children's race and gender from parent reported information.

Exposure to Diversity

Exposure to diversity was measured by neighborhood-level diversity. We collected children's neighborhood zip codes through parent reports and calculated the proportion of minority group members within each zip code (i.e., Asian, Black, American Indian and Alaska Native, Native Hawaiian and Pacific Islander, and multiracial population). All data regarding the population estimate were obtained from the U.S. Census Bureau, American Community Survey (2023).

Procedure

Families signed up through Children Helping Science and participated in an online session with an experimenter who guided them through the study via a Zoom call. The study was administered using Qualtrics, and each trial included pre-recorded audio clips that automatically played alongside the visual stimuli. The experimenters remained present throughout the session to ensure children's engagement, clarify instructions when necessary, and prompt children if they became distracted or did not respond. Children provided their answers aloud, and the experimenter recorded their responses by clicking on the corresponding options in the Qualtrics interface. The experimenters did not provide any additional information that could sway children's choices; all children chose the targets independently.

Positionality Statement

My identity as a Chinese woman played a role in both the conceptual framing and methodological choices of this work. My position as both a woman and a member of a

racial minority group inspired me to adopt an intersectional lens to recognize that intersectional identities interact in shaping one's experiences and others' perceptions. Further, when designing the study, I chose to include Asian targets alongside Black and white targets primarily to reflect the racial dynamics of current U.S. society in which children live and to support a more representative understanding of how children reason about race. My identity as Chinese further contributed to this decision such that including these three racial groups also helps expand research beyond the typical binary (Black vs. white) comparisons and ensures that Asian identities are not overlooked in developmental research.

RESULTS

Analytic Plan

Our preregistered model was a linear mixed-effects model regressing children's stereotyping scores onto target gender, target race, stereotype dimension, and all possible interactions. To examine the effect of each target race, we created two different sets of contrasts that were entered into the model in sets, in turn, to compare across the three target races (white vs. Black, white vs. Asian; Black vs. white, Black vs. Asian). We also included a by-subject random intercept in all of the models to account for the within-subjects nature of the analysis. However, we deviated slightly from our preregistration by adding children's own gender as a covariate to control for children's well-established ingroup gender preference and our modestly skewed sample (57% girls). This adjustment did not meaningfully alter the pattern or significance of our primary effects. Next, to isolate the overall effect of target gender, we created a second model where target race was removed from the model. For any significant interactions in either model, we unpacked the interactions by examining simple effects.

In preregistered exploratory analyses, we evaluated the effects of child age, child race, child gender, and the child's neighborhood zip code diversity by adding each variable to the model and allowing it to interact with all other predictors, in turn. In a post-hoc exploratory analysis, we examined the effect of the experimenter's race using the same approach.

Analyses

There was a significant three-way interaction between target gender, stereotype dimension, and target race (see Figure 4). Specifically, two significant three-way

interactions were found between target gender, stereotype dimension, and white vs. Black contrast, $\beta = -.82$, $F(1, 1617) = 8.95$, $p = .003$, 95% CI: [-1.36, -.29], as well as white vs. Asian contrast, $\beta = -.78$, $F(1, 1617) = 8.1$, $p = .004$, 95% CI: [-1.32, -.25]. There was not a significant three-way interaction between target gender, stereotype dimension, and the Black vs. Asian contrast ($p > .05$).

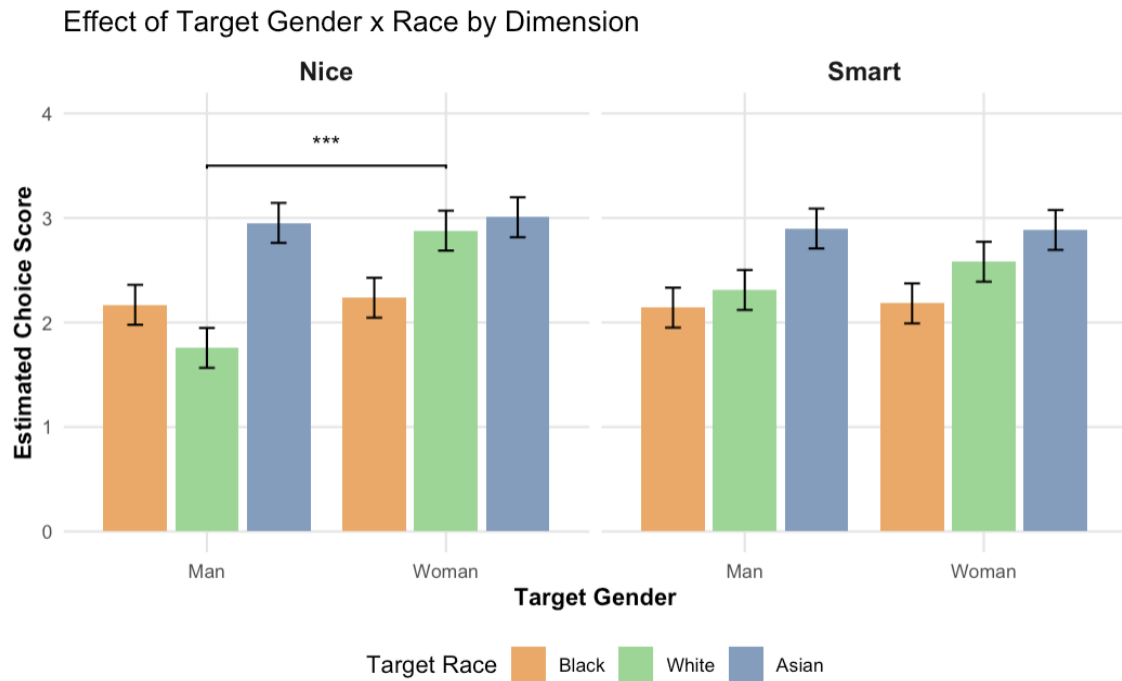
To unpack this interaction, we first examined simple effects to evaluate children's choices in the nice dimension. When considering the nice dimension, there were significant two-way interaction effects between target gender and two target race contrasts (white vs. Black: $\beta = -1.05$, $F(1, 1617) = 29.26$, $p < .001$, 95% CI: [-1.43, -.67]; white vs. Asian: $\beta = -1.07$, $F(1, 1617) = 30.02$, $p < .001$, 95% CI: [-1.45, -.69]). There was not a significant interaction between target gender and the Black vs. Asian contrast ($p > .05$). Hence, we examined how race influenced children's perceptions of niceness within each gender group. For male targets, children rated Asian men as significantly nicer than white men ($\beta = 1.20$, $F(1, 1617) = 75.39$, $p < .001$, 95% CI: [.93, 1.47]) and Black men ($\beta = .78$, $F(1, 1617) = 32.36$, $p < .001$, 95% CI: [.51, 1.05]), and rated Black men as nicer than white men, $\beta = .41$, $F(1, 1617) = 8.95$, $p = .003$, 95% CI: [.14, .68]. For female targets, children rated white women as nicer than Black women, $\beta = -.64$, $F(1, 1617) = 21.70$, $p < .001$, 95% CI: [-.91, -.37], and rated Asian women as nicer than Black women, $\beta = .77$, $F(1, 1617) = 31.26$, $p < .001$, 95% CI: [.50, 1.04]. However, there was no significant difference between white and Asian women ($p = .35$). Finally, we considered gender differences within each racial group. White women were rated as significantly nicer than white men, $\beta = 1.12$, $F(1, 1617) = 66.31$, $p < .001$, 95% CI: [.85, 1.39]. However, this pattern did not extend to other racial groups; there was no significant

difference in niceness found between Black women and Black men or between Asian women and Asian men (both $ps > .1$). Finally, when considering the main effect of gender in the nice dimension, women overall were rated as nicer than men, $\beta = .41$, $F(1, 1617) = 24.83$, $p < .001$, 95% CI: [.25, .58].

In the smart dimension, there was a significant effect of target race. Asian targets were considered the smartest overall, followed by white targets and Black targets (white vs. Black: $\beta = -.28$, $F(1, 1617) = 8.48$, $p = .004$, 95% CI: [-.47, -.09]; white vs. Asian: $\beta = .45$, $F(1, 1617) = 20.95$, $p < .001$, 95% CI: [.26, .64]; Black vs. Asian: $\beta = .73$, $F(1, 1617) = 56.10$, $p < .001$, 95% CI: [.54, .92]). There were no significant two-way interactions within the smart domain (all $ps > .05$). When children's own gender was controlled, there was no effect of target gender in the smart dimension, $p = .23$). Namely, children rated women as equally smart as men across all racial groups.

Figure 4

Interaction between Target Gender, Target Race, and Stereotype Dimension



Note. Error bars represent the standard error of the point estimate.

Children's Response to Open-Ended Questions

Children's open-ended responses were coded into four categories. In the smart dimension, 29.7% of children provided no meaningful responses, 66.9% stated that they chose based on target appearances or other inferred information beyond the photo stimuli, 1.4% explicitly linked their choices to social groups, and 2% explicitly refused to stereotype others based on their looks (see Table 2). In the nice dimension, 23.6% of children provided no meaningful responses, 73.6% used appearance-based or inferred reasoning, 1.4% named social groups, and 1.4% explicitly refused to stereotype others (see Table 2).

Table 2*Children's Open-Ended Responses Table*

Code & Description	Smart (Count)	Smart (Example)	Nice (Count)	Nice (Example)
0 = No Meaningful Response	44	"I just know."	35	"They are just nice."
1 = Appearance-based or Inferred Reasoning	99	"Because they look like they can be teachers."	109	"Because they are smiling more."
2 = Social-group Explicit Reference	2	"I picked like mostly girls because I think girls are mostly smarter than boys."	2	"I chose mostly girls because in my experience girls are better friends."
3 = Resistance to Stereotyping	3	"I don't really know for sure, but all people are made the same way so really anyone can be smart if they want to, and by practicing stuff anyone can be smart if they want to."	2	"You can't tell if someone's nice just by looking at them. You have to see on their actions like even if they do one thing nice that doesn't mean they're completely nice."

Exploratory Analyses*Effect of Children's Own Background*

Children's race and gender were each added into the primary model one at a time. We examined children's race both as a dichotomous variable (non-white vs. white) and as a categorical variable containing multiple levels, but in both cases, children's own race did not significantly influence their choices (both $ps > .25$). Children's own gender also did not have a main effect on children's choice ($p = .31$). However, there was a robust interaction between children's own gender and the target gender, $\beta = 1.01$, $F(1, 1606) = 27.37$, $p < .001$, 95% CI: [.63, 1.38]. In other words, girls tended to choose more women targets than boys did, $\beta = .55$, $t(1606) = 5.39$, $p < .001$, 95% CI: [.35, .75]; boys tended to choose more men targets than girls did, $\beta = -.48$, $t(1606) = 5.34$, $p < .001$, 95% CI: [-.66, -.30]. There were no other significant interaction effects between the child's gender and other variables (all $ps > .4$).

Effect of Child Age

We first examined the effect of continuous age on children's choices. There was a significant interaction between age and target race (Black vs. Asian contrast), $\beta = .0004$, $F(1, 963) = 6.36$, $p = .01$, 95% CI: [.00008, .0006]. This suggests that as children age, the influence of age on choice scores is more pronounced for Asian targets compared to Black targets such that older children tend to choose Asian targets more frequently than Black targets. There was no significant effect found between age and the other race contrasts (i.e., white vs. Asian, white vs. Black).

Next, to make the current findings more comparable to previous studies (e.g., Baharloo et al., 2022), we also examined the differences in choices among children of different age groups by treating each age in years as a categorical grouping variable. We found a significant interaction between age group and target race, specifically when comparing white and Asian targets ($p = .01$), indicating that children's relative preference for Asian versus white targets changed with age. A three-way interaction between child age, target race, and stereotype dimension was also significant ($p = .04$; see Appendix C), suggesting that these differences among age groups varied based on whether children were judging competence or warmth.

Specifically, in the smart dimension, 6-year-olds did not show a clear preference between Asian and white targets. However, children's tendency to view Asian targets as smarter increased with age, and from ages 7 to 10, children consistently rated Asian targets as smarter than white targets (all $ps < .01$). In the nice dimension, the trend was less consistent; some age groups preferred Asian targets more than white targets, but other groups showed no significant differences.

When comparing choices of Asian and Black targets within different age groups, children across all ages consistently chose Asian targets more often than Black targets, regardless of stereotype dimension (all $ps < .05$). However, no significant age-related interaction was found for Black versus white comparisons.

Effect of Exposure to Diversity in Neighborhood

Neighborhood diversity did not influence children's choices (for all race contrasts, i.e., white vs. Asian, white vs. Black, Black vs. Asian, $ps > .1$). There were no significant interaction effects involving neighborhood diversity and any other predictors in the model (all $ps > .1$).

Effect of Experimenter Race

Finally, given that children chose Asian targets significantly more often than other racial groups across two dimensions, which partially contradicts our initial hypothesis, we conducted a post-hoc exploratory analysis to examine whether children's choices might be influenced by the race of the experimenter. Specifically, because half of the experimenters administering the study identify as Asian ($n = 2$), and more than half of the study sessions were run by Asian experimenters ($n = 94$), we considered the possibility that increased exposure to or social desirability bias with the presence of Asian experimenters may have affected children's responses. Thus, although the study was not originally designed to test for experimenter effects, this analysis was conducted to account for potential contextual influences on children's stereotyping.

No main effect of experimenter race was found on children's choices ($p = .10$). However, there was a significant interaction between experimenter race and target race, particularly for the white vs. Asian contrast, $\beta = -.34$, $F(1, 1624) = 5.47$, $p = .02$, 95% CI:

[-.63, -.06]. Regardless of experimenter's race, children chose more Asian than white targets, but the effect was stronger when the experimenter was Asian, $t(1624) = -7.71, p < .001$, 95% CI: [-.85, -.51], compared to white, $t(1624) = -2.91, p = .004$, 95% CI: [-.57, -.11]. The interaction effect between the experimenter's race and the target race did not differ by stereotype dimensions. For other target race contrasts (e.g., white vs. Black or Black vs. Asian), there was no interaction effect between target race and experimenter race (all $ps > .1$).

DISCUSSION

This study revealed nuanced patterns of children's intersectional stereotyping by examining children's stereotypes pertaining to warmth (i.e., nice) and competence (i.e., smart). Overall, children demonstrated a robust preference for Asian over white targets and white over Black targets; these effects were further moderated by target gender and stereotype dimension.

Additionally, children's intersectional race and gender stereotypes varied when considering smart versus nice stereotypes. In the smart dimension, Asian women and men were considered the smartest, followed by white women and men, with Black women and men perceived as least smart. Overall, this finding aligns with previous studies showing that children typically view white and Asian targets as highly competent, but Black targets as less competent (e.g., Jaxon et al., 2019; Lazaro & Bian, 2024; Shu et al., 2022; Sierksma et al., 2022). However, prior evidence is more mixed about whether white or Asian individuals are viewed as more competent; some studies find that children rate white targets as more competent than or equally competent as Asian targets (e.g., Shu et al., 2022; Sierksma et al., 2022), whereas others find that children rate Asian targets as more competent (e.g., Baharloo et al., 2022). The current finding provides support for the latter claim, indicating that children aged from 6 to 10 years exhibit adult-like stereotypes about competence, consistent with the SCM (Fiske et al., 2002).

When considering gender effects in the smart dimension, past studies (e.g., Bian et al., 2017) have consistently shown that children around age 6 begin to form robust associations between men and high competence. However, the current study did not find such gender differences favoring men over women in perceived competence. One

possible explanation for this discrepancy lies in different study designs. Although our study was modeled after previous paradigms (Baharloo et al., 2022; Bian et al., 2017), our goal of assessing children's stereotypes of intersectional groups introduced key variations. In prior work, children have typically seen pairs of male and female targets whose race matches children's own race. In these cases, race may not have been a salient category influencing children's decisions, allowing gender to stand out more strongly. Repeated exposure to same-race male and female targets may have amplified children's attention to gender, thereby eliciting a strong gender-based stereotype favoring men. In contrast, our study presented children with trials that varied by both race and gender. Some trials compared targets of different races but the same gender; some compared different genders with the same race; and others varied on both groups. As a result, both race and gender were salient throughout the task. When children attend to both categories simultaneously, their stereotypical judgments may shift such that competing stereotypes about intersectional social groups may mitigate traditionally seen stereotypes about one social group alone.

In the nice dimension, women were considered nicer than men, which is consistent with past studies where women are stereotyped as more nurturing and thus nicer than men (e.g., Fiske et al., 2002). When comparing gender differences of niceness in each racial group, white women were considered nicer than white men and Black women, but as equally nice as Asian women. This pattern is partially consistent with the Stereotype Content Model (SCM; Fiske et al., 2002), which suggests that women are considered nicer than men. Notably, Black women were considered less nice than white and Asian women, but equally nice as Black men. This finding possibly reflects

prevailing stereotypes characterizing Black women as assertive, angry, and overall lacking traditionally feminine traits such as warmth (Leshin et al., 2022; Malveaux, 1989). Similar to Black women, Asian women were also not perceived as nicer than their male counterparts, but for entirely different reasons. For Asian women, this finding does not necessarily reflect low warmth or lack of femininity, given that Asian women were rated as similarly nice to white women and are usually stereotyped as hyper-feminine (Lei et al., 2022b; Leshin et al., 2022). Instead, the lack of a difference between Asian men and women may reflect stereotypes about Asian men being perceived as less masculine relative to white or Black men (Chua & Fujino, 1999). This possibility of lacking masculinity was further supported by our finding that Asian men were rated the nicest among their white and Black counterparts. Finally, when comparing the niceness of men across the racial groups, children rated Black men as nicer than white men. This result possibly indicates early-emerging stereotypes associating white men with authority and positions of power (Mandalaywala et al., 2021), which could lead children to perceive white men as less nice.

For the effect of target race in nice dimension, Asian targets were considered significantly nicer than their white and Black counterparts. There was no significant difference in children's choices between white and Black targets. These findings partially support our hypotheses. The observed racial stereotype of white and Black targets being equally warm aligns with the previous studies (e.g., Sierksma et al., 2022). Asian targets were found to be higher in warmth compared to white and Black targets. This pattern was unexpected because both child studies and adult literature suggest that Asian targets were perceived as lowest in warmth across racial groups such that they were consistently rated

as cold (Baharloo et al., 2022; Fiske et al., 2002). Although this finding is somewhat unexpected, the tendency to choose Asian targets as nicest could be interpreted in the light of a sociohistorical perspective. Specifically, Hudson and colleagues (2024) have suggested that due to the different immigration histories of Asian, Black, and white people, Asians, regardless of gender are often stereotyped as sexual and feminine, whereas Black people are stereotyped as tough and masculine, and white people are seen as “neutral” (Hudson et al., 2024, p. 6). In other words, this gendered nature of racial groups indicates that even when only comparing targets differing in race, children may tend to consider Asian targets as overall more feminine and therefore rated them as nicer than Black and white targets. In addition to the core quantitative results, children’s open-ended responses provided us with a glimpse into how 6- to 10-year-old children think and reason about their choices. Most children state the inferred characteristics of targets beyond the given photo (e.g., “They look like they are teachers.”). This pattern suggests that although children in middle childhood pay attention to others’ appearances, are aware of social categories, and can automatically encode both race and gender (Lei et al., 2022a), they may still not have sufficient cognitive or verbal abilities to articulate their social reasoning, or even to reflect on their choices. This observation is consistent with prior work showing that even when children disapprove of racial bias in social interactions, they struggle to explicitly explain why they disapproved of the bias or to describe the discriminatory nature of the bias (Scott et al., 2023).

Nonetheless, a small number of children did reference social groups or explicitly resist applying stereotypes in their responses. These responses may hint at children’s developing fairness concerns; where their ability to express those concerns strengthens

with age (Shaw et al., 2014). Notably, all children who resisted stereotypes were above the age of 7 years, implying possible age-related growth in this capacity. However, because resistance was extremely rare in the current study, we cannot draw strong conclusions about children's refusal to stereotype from our current data. Additionally, since the study did not explicitly assess stereotype resistance and did not give children an explicit option to avoid applying stereotypes, it is hard to conclude whether and when children may express resistance. Future research is needed to evaluate these questions.

Children's own background can also influence how they apply stereotypes, particularly when evaluating targets who share their group membership. In the present study, exploratory analyses revealed that although children overall prefer women targets, their choices are also influenced by their own gender; children tend to select targets who match their gender. This finding parallels prior research on children's strong preference for their gender ingroup member (e.g., Bian et al., 2017). For example, although children across the board associate brilliance with men more so than women, the tendency to favor men is stronger amongst boys than amongst girls (Bian et al., 2017).

However, when considering the effect of children's own race, the current study found no significant effect of children's own race on their stereotyping choices. The current result aligns with some previous work that also did not find consistent effects of children's race on stereotyping (e.g., Pauker et al., 2010). One possible explanation is that children may refrain from showing racial favoritism due to social desirability, or concerns about fairness. Unlike race, gender remains a more salient and permissible topic in children's social environments, which may explain why we found a strong own-gender bias but not an own-race bias. Another explanation for the null effect concerns the

valence of the traits being assessed. The current study asked children to assign only positive traits (“smart” and “nice”), whereas prior studies that observed effects of children’s race on stereotyping often focused on negative traits. These studies typically find that children apply more negative stereotypes to out-group members (e.g., Nesdale et al., 2005; Mulvey et al., 2010), but they do not provide direct evidence that children’s own race increases the likelihood of applying positive stereotypes to specific racial groups. Thus, the current findings extend prior research and suggest that the influence of children’s group membership may be more context-dependent than previously assumed. Together, these considerations highlight that children’s race may not always translate into explicit stereotyping, and underscore the complex interplay between children’s background and stereotype valence in shaping children’s reasoning.

In addition, an exploratory analysis of children’s age on stereotyping indicated a robust developmental trend of racial stereotypes; as children age, they tend to choose Asian targets over Black targets. This increasing differentiation between two minority groups likely reflects children’s growing awareness of racial stereotypes such as the model minority myth, which positions Asians as more competent and successful than other racial minority groups (Cvencek et al., 2015). When comparing the choices among children in different age groups, there was a three-way interaction between age group, target race, and stereotype dimension. Specifically, in the competence dimension, 6-year-olds showed no clear preference between white and Asian targets, but older children (ages 7 to 10) consistently viewed Asian targets as smarter than white targets. This developmental trend to associate Asians with higher competence was also demonstrated in a previous study (Baharloo et al., 2022). These findings suggest that as

children age, their stereotypes increasingly align with adult-like patterns described in the SCM, which position Asians as high in competence (Fiske et al, 2002).

Our analysis examining the effect of children's neighborhood diversity did not find any effect of neighborhood diversity on children's intersectional stereotyping. Several factors may explain the null results. First, diversity at the zip code level alone does not always reflect the actual social environments children engage in daily (Burke et al., 2022). For example, a child might live in a diverse neighborhood but attend a racially homogeneous school or hang out in a racially homogeneous peer group, thus having limited intergroup contact. Future research could improve the measurement of exposure to diversity by combining neighborhood-level demographic data with parental reports of children's school and peer group diversity. Second, the null results may simply suggest that children's knowledge and endorsement of trait-based intersectional stereotypes are not directly shaped by mere exposure to neighborhood diversity. Prior studies have shown that children of all races living in diverse states or areas tend to show more preference towards Black teachers compared to their peers living in less diverse areas, showcasing children's in-group/out-group bias (e.g., Hwang & Markson, 2023). However, in the current study, stereotyping regarding intersecting groups concerns children's cognitive bias reflecting the cultural narrative of different groups, rather than children's affective or behavioral biases. Unlike affective and behavioral biases, it may take deeper intergroup contact to actually challenge cultural stereotypes and ultimately have an effect on children's cognitive stereotyping. Future work should evaluate the effect of mere exposure versus deep exposure to diversity on children's stereotyping.

A final exploratory analysis revealed a significant interaction between the experimenter's race and the target race. Specifically, although children consistently preferred Asian targets over white targets, this preference was stronger when the experimenter was Asian compared to white. This finding suggests that children's choices may be partially influenced by experimenter characteristics, possibly reflecting social desirability or implicit associations triggered by the experimenter's race. However, the pattern of effects was consistent regardless of the experimenter's race. Future research should systematically investigate experimenter effects, considering experimenter race as a contextual influence on children's racial stereotypes and potentially other forms of racial bias.

The current study offers several contributions to the literature on children's intersectional stereotyping. First, findings provide partial support for the SCM (Fiske et al., 2002) in childhood. Children's perceptions of social groups generally reflected adult-like patterns in both warmth and competence dimensions, such as favoring white women over men in warmth and perceiving Asian targets as more competent than Black or white targets, demonstrating early awareness of stereotypes of different social groups. However, some deviations from SCM predictions were also observed. These deviations suggest that children's stereotype knowledge may not perfectly mirror those of adults and raise questions about whether the original SCM dimensions should be adapted to capture warmth and competence stereotypes in early development. For instance, our findings indicate that competence stereotypes may be more consistently expressed than warmth stereotypes during middle childhood. This pattern may reflect differences in salience of each stereotype dimension for children. One possible avenue for adapting the SCM to

developmental contexts is to assess how children perceive a broader range of traits that fall under each dimension, such as “talented” or “skillful” for competence, and “friendly” or “honest” for warmth. Examining how children respond to multiple traits could help clarify whether certain dimensions are more easily understood or more readily applied across age groups. Such refinements would better account for how different dimensions of stereotypes emerge, develop, and shift across childhood.

Second, the study’s design, which directly compares children’s stereotypes across six different social groups, demonstrates that children as young as 6 years old possess the cognitive capacity to encode and apply stereotypes at the intersection of race and gender. This provides empirical evidence that intersectional representations of social categories are accessible and meaningful to children early in their development. Children’s understanding of intersectional stereotypes also reflects the complexity of learning about different social groups in real-world contexts. In reality, people are not judged based on a single aspect of their social identity. Rather, these perceptions are shaped by multiple group memberships, where stereotypes about one group (e.g., race) could shift those of another group (e.g., gender). Thus, it is important to recognize children’s abilities to observe and process these complex stereotypes. Together, the current study joins existing calls to incorporate intersectionality more systematically into developmental research (Lei & Rhodes, 2021; Syed & Ajayi, 2018).

Finally, the present findings have practical implications. Children’s attributions of competence and warmth to different race-gender groups will likely have differential effects on peer interactions, group-based trust, and perceptions of leadership (Banaji et al., 2021; Mulvey et al., 2010). Thus, the current study points to the urgency of early

interventions that help children question and unlearn biased assumptions before they become deeply entrenched. For example, although few children in the current study explicitly resisted stereotypes, two children rejected making stereotypical assumptions across both warmth and competence dimensions saying that they could not make judgments based on photos. These rare but compelling cases suggest that even young children have the capacity to challenge dominant social narratives. These findings highlighted children's potential to become "refusniks," or individuals who actively choose not to apply stereotypes despite the awareness of them (Devine & Elliot, 1995, p. 1145). In work with adults, refusniks are often motivated by a heightened awareness of the personal and social consequences of stereotyping, personal values condemning prejudice, and a conscious intention to control and override biased responses (Ash et al., 2024; Devine & Elliot, 1995). Future qualitative research could build on these findings by investigating how children articulate such resistance in their own words and what forms resistance takes in early development. Quantitative research could also evaluate the extent to which children reject stereotypes when explicitly told that they do not have to apply a stereotype if they do not think one applies or are not sure. These insights could inform the design of interventions aimed at fostering not just children's awareness of stereotypes, but also their motivation and agency to resist stereotyping.

Limitations and Future Directions

Although the current study offers several novel and insightful findings about children's intersectional stereotypes, it also leaves important questions unanswered and presents limitations that future research should address. One limitation involves measuring stereotypes with only a single trait for each dimension. With adults, Fiske and

colleagues (2002) have measured multiple traits clustered within each stereotype dimension, but our study utilized one trait per dimension (i.e., “smart” for competence, “nice” for warmth) given the cognitive and attention limitations of working with children. Assessing both dimensions with only the trait “nice” or “smart” might put too much weight on the interpretation of one word and overlook nuanced stereotypes. Future research, for example, could focus on just one dimension and examine multiple traits within that dimension to capture more subtle variations in children’s intersectional stereotypes.

Second, in the current study, children consistently rated Black targets as least smart and least nice. Though the findings in the smart dimension align with our prediction, the findings in the nice dimension were not entirely consistent with the hypotheses, as Asian targets were hypothesized to be the lowest in warmth (Baharloo et al., 2022; Fiske et al., 2002). It is possible that the lowest rating of Black targets indicates children’s biases against Black people, and that children’s racial attitudes toward each group influenced their stereotyping. Specifically, because both “nice” and “smart” are positive stereotypes, biased attitudes against Black people could explain children’s reluctance to attribute positive traits to Black targets. However, the current measure gauged children’s stereotypical knowledge but did not measure or account for their racial attitudes. Hence, future research should measure baseline racial attitudes to explore how children’s attitudes might shape their attribution of positive stereotypes.

Another limitation is the forced-choice format in the current study, which required children to select one target over another without the option to reject the comparison. Although the forced-choice format is prevalent and useful for eliciting clear preferences

among young children, it also amplifies children's bias by constraining their responses. Prior work suggests that when selecting the same targets, forced-choice tasks can indicate stronger bias than Likert-scale tasks among the same group of children (deMayo & Olson, 2024). Future studies should examine whether similar stereotyping patterns emerge when children are allowed to select "both," "neither," or "I don't know."

Beyond limitations, an important future direction involves examining whether the age of target stimuli influences children's intersectional stereotyping. The current study used adult face stimuli, which allowed us to better standardize confounding variables (e.g., perceived attractiveness) and made our findings more comparable to previous studies. Nevertheless, since children can encode multiple social categories, including age, we consider the possibility that children's responses might differ depending on the age of the target. Children may hold different stereotypes about adults and peers, especially for traits like "smart" or "nice," which may be interpreted differently depending on the target's age. Supporting this possibility, Alto and Mandalaywala (2023) found that when children are primed with child-centered contexts (e.g., going to school or playing with toys), they apply more stereotypes to child targets than to adult targets. Given that the current study included child-centered activities in screener questions, using child stimuli might have elicited even stronger stereotyping choices. Thus, future research should investigate whether children's intersectional stereotyping differs when considering targets from different age groups.

Another future direction is that the current study focused solely on children's stereotype endorsement, but did not assess how these stereotypes might translate into children's behavior. It remains an open question how stereotypes about warmth and

competence could guide children's real-world interactions, such as friendship preferences or leadership judgments. Future research should investigate how early intersectional stereotypes shape social behaviors among children.

A final consideration involves the role of the experimenter's race. The current findings indicate that children's preference for Asian targets was more pronounced when the experimenters were also Asian. Although the overall pattern of findings did not differ based on the experimenter's race, this result highlights the potential for subtle contextual and interpersonal cues to shape children's responses in studies about race. Future research should systematically investigate experimenter effects and examine experimenter race as a potential contextual influence on children's racial stereotypes. Alternatively, the confounding effect of experimenter race underscores the potential for unmoderated studies, which reduce demand characteristics and allow for more unbiased responses from children (Rhodes et al., 2020). This opens up possibilities to replicate the current study in an unmoderated format.

Conclusion

Overall, the present research provides substantial evidence that children as young as 6 years old hold intersectional stereotypes, which mostly reflect but do not entirely mirror adult-like stereotypes. Although some findings diverged from initial hypotheses, the results offer valuable insight into how children evaluate race and gender simultaneously. Children consistently rated Asian targets as more competent and showed a preference for women targets, particularly in the warmth domain. However, these patterns varied across specific race-gender groups and stereotype dimensions, demonstrating the nuances of children's social evaluations. Importantly, these evaluations

were also shaped by contextual cues and children's own social backgrounds. Together, the findings highlight the early emergence of intersectional stereotypes and point to the importance of considering both external and developmental factors in future research. Continued investigation is needed to understand how these stereotypes influence children's behaviors and relationships, and how they might be disrupted through early intervention.

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APPENDIX A

Open-Ended Coding Schemes

0 = No meaningful response (no response, uncertainty, unclear reasoning, mumbling, or completely irrelevant)

e.g., “I don’t know.”, “Not sure.”, “Uh...”, “Um... just because.”

1 = Imaginative or Appearance-based, inferred reasoning (usually made-up, beyond the characteristics/information of provided photos without explicit mention of gender/race/group)

e.g., “Because they look like teachers.” “They wear glasses.” “They are hard workers.” “They look smart.” “They seem nice.” “They look like it.”

2 = Social-group explicit reference (explicit reasoning based on gender or racial groups)

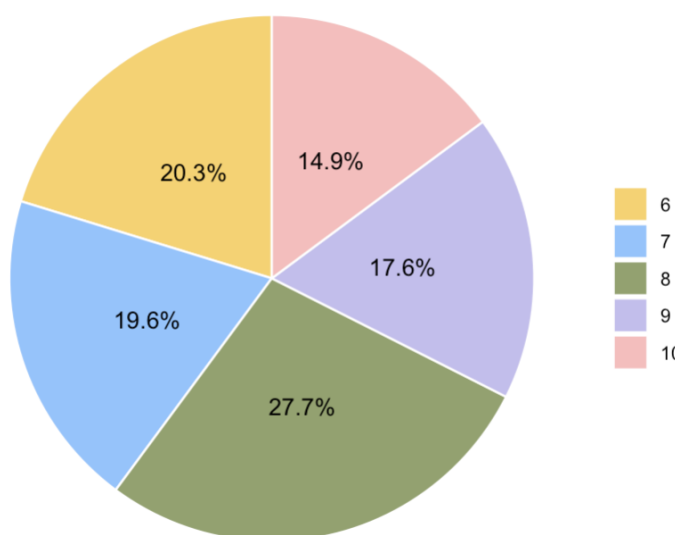
e.g., “Because girls are smarter.” “Because they’re Asian.”

3 = Resistance to stereotyping (explicitly refusing to judge people based on how they look, though may or may not explicitly refer to names of social groups)

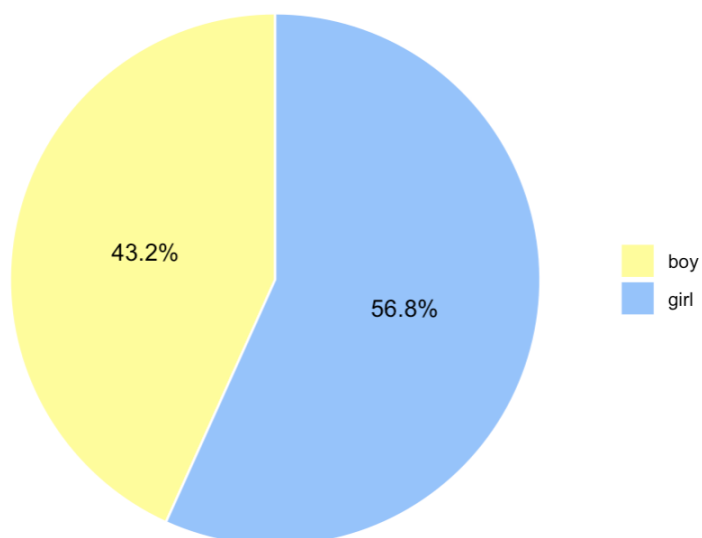
e.g., “It’s hard to tell who’s smarter because you can’t judge based on how people look”

APPENDIX B**Charts for Participant Demographic Information**

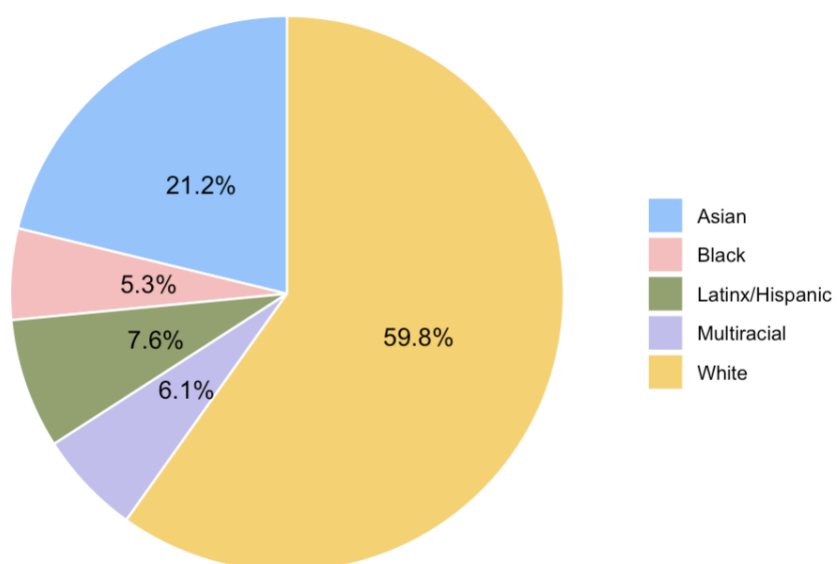
Participant Age Distribution



Participant Gender Distribution

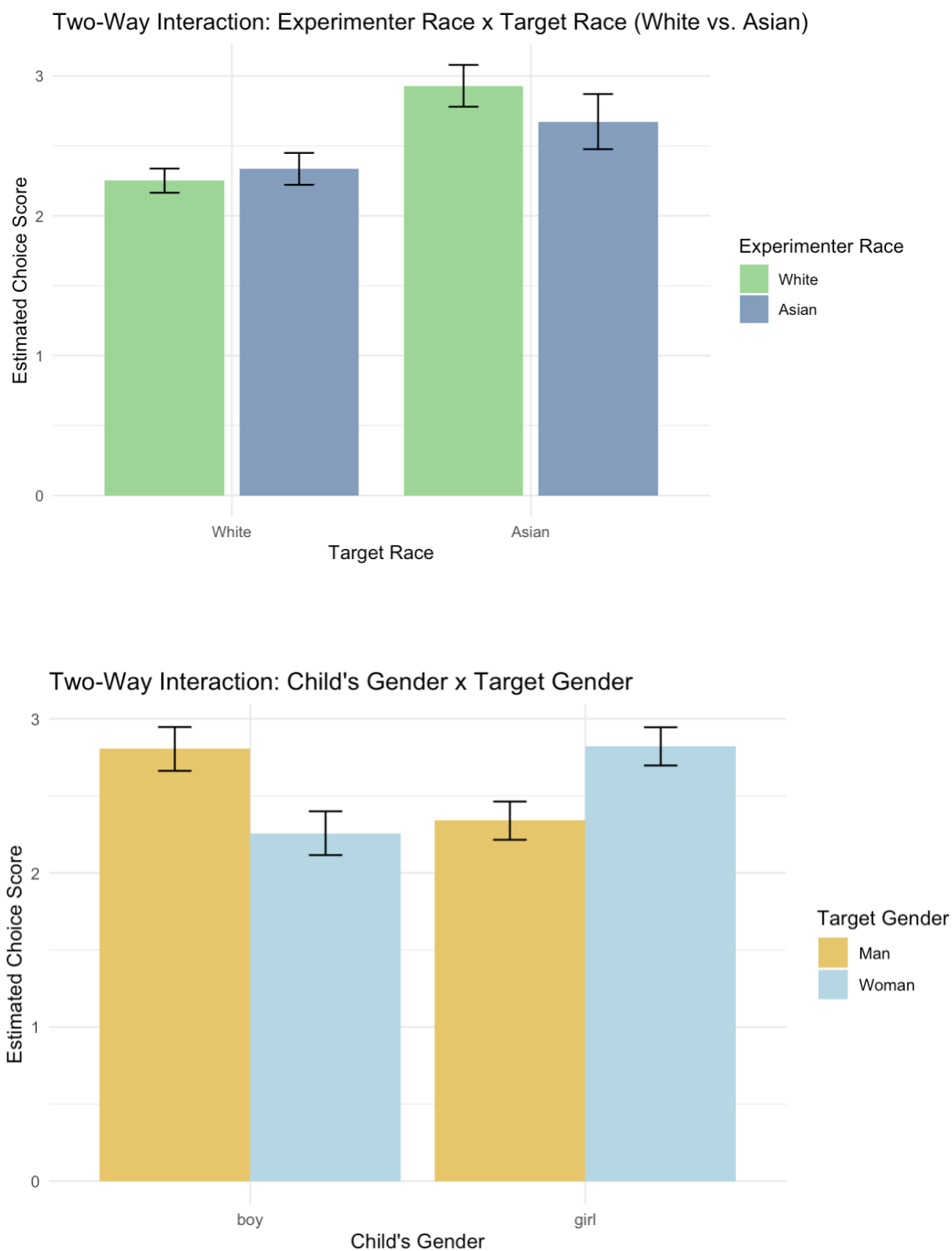


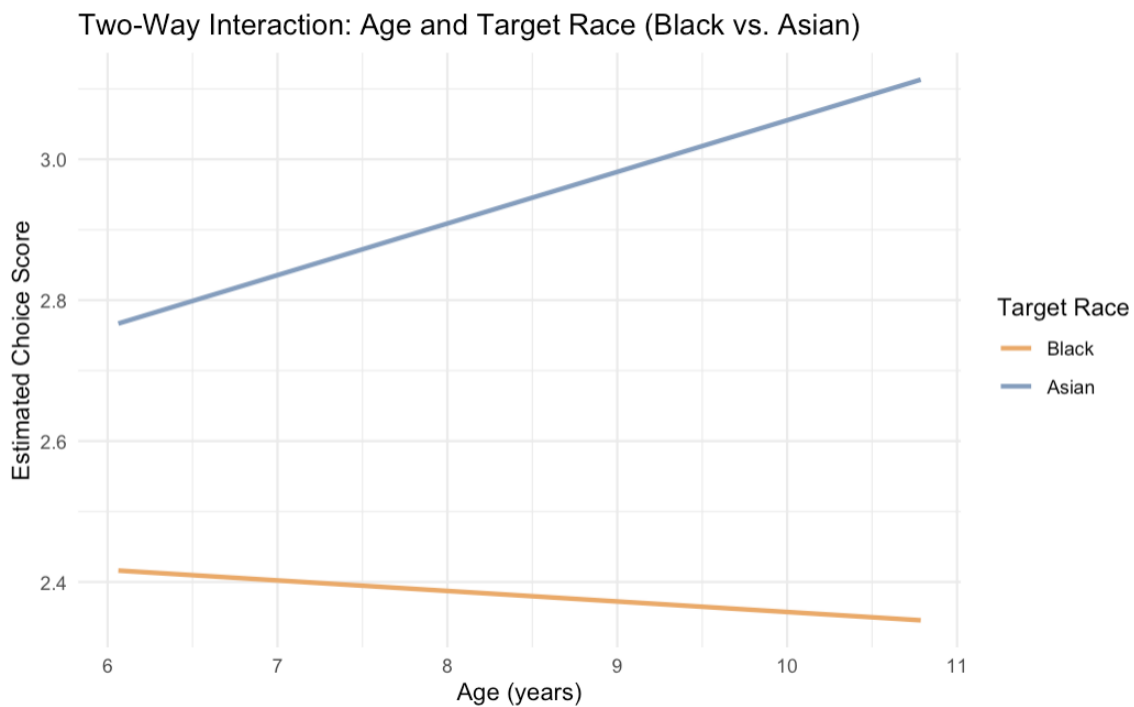
Participant Race Distribution



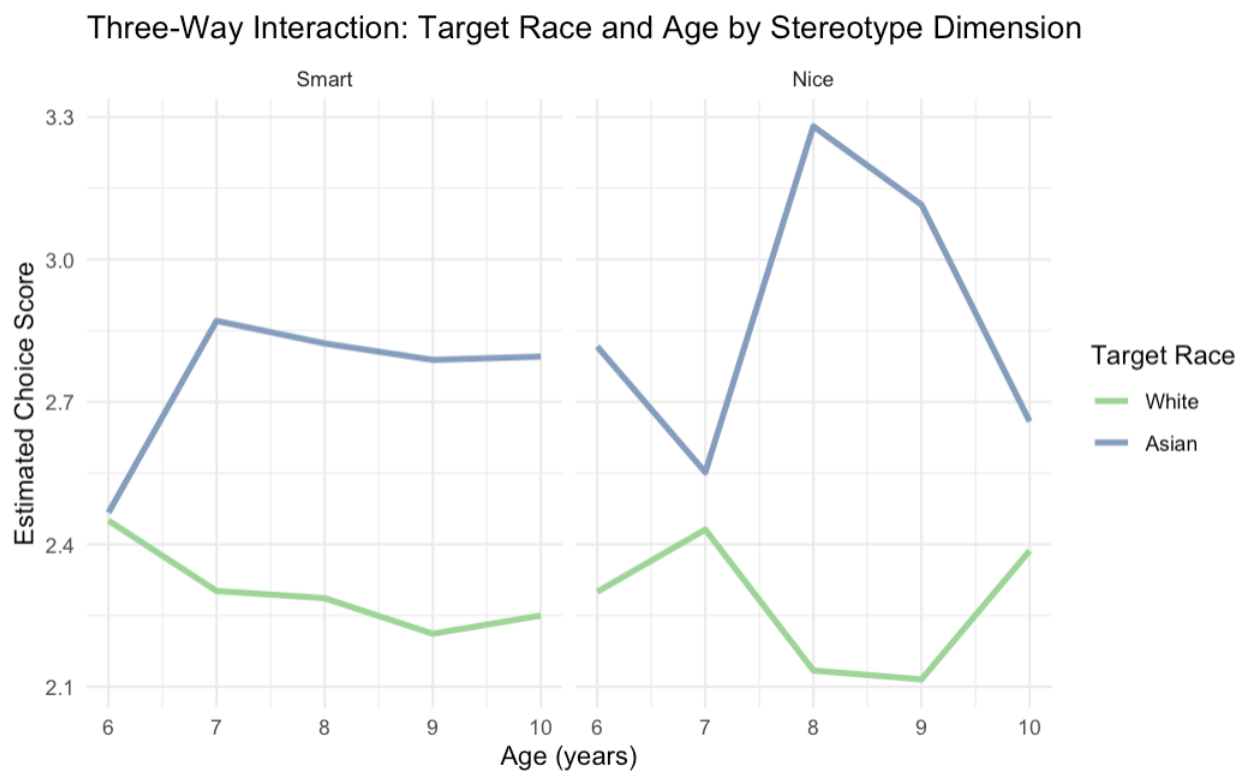
APPENDIX C

Graphs for Significant Effects in Exploratory Analyses





Note. Age was entered as days in the model, but the x-axis is shown in years to ease interpretation.



CURRICULUM VITAE

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Jombock Funds for Travel and Research Wake Forest University	2023-2025
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Founders' Day Award New York University	2023
Teaching Honorarium Department of Psychology, New York University	2023
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PRESENTATIONS & TALKS

† denotes presenting author

Jiao, C. R. & Scott, K. E. (2025, May). *The effect of race labeling on children's reactions to discrimination*. Symposium talk presented to the 2025 Annual Meeting of the Association for Psychological Science (APS), Washington D.C.

Jiao, C. R. & Scott, K. E. (2024, May). *The effect of race labeling on children's reactions to discrimination*. Poster presented at Department of Psychology Graduate Research Conference, Wake Forest University, Winston-Salem, North Carolina.

Jiao, C. R.*, Wang, L. Y.*, Taffe, R. L & Way, N. (2023, October). *Human development in the context of gender ideology: The link between adherence to masculine stereotypes and socioemotional well-being*. Poster presented at the 2023 Biennial Conference of Society for Study in Human Development (SSHD), Philadelphia, Pennsylvania.

Jiao, C. R.*, Wang, L. Y.*, Yang, H. J., Cox, E. B., & Hughes, D. (2023, May). *“She’s talking about us behind our back”: Friendship and internalization of gender stereotypes among adolescent girls*. Poster presented at 2023 NYU Applied Psychology Undergraduate Research Conference, New York, New York.

Sin, E., Friedrich, V., **Jiao, C.†**, Park, W.†, Chen, S., Zhu, S., Li, V., Fu, D., & Way, N. (2023, April). *Mother gender socialization with daughters in the context of the ‘good’ mother ideology*. Poster presented at the 2023 Annual Meeting of the Society for Research on Adolescence (SRA), San Diego, California.

Cox, E. B., Hughes, D. L., Blood, T.*, Boyd, S.*, Elman, E.*, Feng, L.*, Hale, Z.*, **Jiao, C.***, Xu, H.*, Lee, M., Coulanges, V. & Way, N. (2023, March). *Racial regularities: Learning about race and racism from setting-level patterns*. Poster presented at the 2023 Biennial Meeting of the Society for Research on Child Development (SRCD), Salt Lake City, Utah.

RESEARCH EXPERIENCE

Research Assistant

Mar 2024 – Present

One Talk at A Time

Wake Forest University, PI: Drs. Lisa Kiang, Gabriela Livas Stein

- Conducted semi-structured interviews about racial socialization experiences with Asian American families
- Translated study protocol and other necessary documents into Mandarin

Graduate Researcher

Sep 2023 – Present

CARE Lab, Wake Forest University, PI: Dr. Katharine Scott

- Designed and led three projects on race labeling effect, structural explanation (in collaboration with Drs. Rachel Leshin & Mike Rizzo), and intersectional stereotypes
- Created study materials, built an online study through Lookit, and drafted preregistration documents
- Trained undergraduate RAs for data collection and coding; conducted data analyses using R

Research Assistant

Nov 2021 – Present

Learning Race Lab, New York University, PI: Dr. Diane Hughes

- Worked on a longitudinal, qualitative project on racial regularities of 240 interviewees
- Described coding themes and completed qualitative coding with Dedoose
- Drafted method and result sections of the manuscript

Research Assistant

May 2022 – Sep 2023

Science of Human Connection Lab, New York University, PI: Dr. Niobe Way

- Worked on the qualitative project on normative motherhood and gender socialization
- Contributed to creating coding themes of 200+ interviews with in-depth analyses

Research Assistant

Mar 2020 – Jan 2022

L-FELD Lab, New York University, PI: Drs. Adina Schick, Gigliana Melzi

- Observed classroom setting and recorded storytelling videos
- Transcribed recorded videos into text files for coding and analyses
- Assisted with literature reviews and data cleaning using SPSS

TEACHING EXPERIENCE

Guest Lectures

Mar 2024 – Mar 2025

Introductory Psychology (PSY 151), Professor: Dr. Sara Mendonça.

Lecture title: “Learning.”

Stereotyping & Prejudice (PSY 364), Professor: Dr. Katharine Scott.

Lecture title: “Development of stereotypes and prejudice among children.”

Stereotyping & Prejudice (PSY 364), Professor: Dr. Lisa Kiang.

Lecture title: “Development of stereotypes and prejudice among children.”**Graduate Teaching Assistant**

Sep 2023 – May 2025

Data Science for Psychologists (PSY 703), Wake Forest University.*Research in Developmental Psychology (PSY 341)*, Wake Forest University.*Introductory Psychology (PSY 151)*, Wake Forest University.*Social Psychology (PSY 260)*, Wake Forest University.*Research Methods I (PSY 311-B)*, Wake Forest University.**R Tutor for Students with Accommodation**

Sep 2023 – May 2024

Research Methods I & II (PSY 311 - 312), Wake Forest University**Undergraduate Teaching Assistant***Intro to Psychology (PSYCH-UA 01)*, New York University. Jan 2023 – May 2023**PROFESSIONAL MEMBERSHIPS**

Psi Chi Honor Society

Society for Research in Child Development (student member)

Association for Psychological Science (student member)

SKILLS

R, SPSS, Stata, G*Power, Dedoose, NVivo, MAXQDA, Qualtrics, and LookIt programming