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UNIVERSITY OF CALIFORNIA

Los Angeles

Implicit Ethnic Group Attitude and Stereotype Development:

Causes and Consequences

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Psychology

by

Cari Gillen-O'Neel

2014

ABSTRACT OF THE DISSERTATION

Implicit Ethnic Group Attitude and Stereotype Development:

Causes and Consequences

by

Cari Gillen-O'Neel

Doctor of Philosophy in Psychology

University of California, Los Angeles 2014

Professor Andrew J. Fuligni, Chair

Ethnicity is an important social category, one that becomes the basis for intergroup attitudes and stereotypes early in life (Bigler & Liben, 2006). In two studies, this dissertation examined implicit (sub-conscious) ethnic attitudes and academic stereotypes among White-American and Latino-American children, ages 7−12 ($N = 262$, $M_{age} = 10.05$ years, $SD = 1.46$). Using evaluative priming (Fazio, Sanbonmatsu, Powell, & Kardes, 1986), children viewed various priming stimuli (e.g., pictures of White and Latino children) and responded to various target words (e.g., positive and negative words). Systematic variations in participants' reaction times across different prime−target combinations were used to infer implicit: ethnic identification, ethnic attitudes, ethnic academic stereotypes, self-esteem, and academic self-concepts. Study 1 focused on group differences in implicit identification and attitudes, and tested the prediction that group identification should be associated with positive group attitudes (Nesdale, 2004). Results

indicated that although White children demonstrate implicit ethnic bias (i.e., a preference for their in-group relative to out-groups), this bias is primarily driven by positive in-group attitudes (not negative out-group attitudes); Latino children, on the other hand, demonstrate neutral in- and out-group attitudes and, therefore, no implicit ethnic bias. The association between identification and attitudes was supported for White stimuli—participants who identified with Whites tended to have positive attitudes towards White, but there was no such association between identification with and attitudes towards Latinos. Study 2 examined associations between in-group attitudes and self-attitudes (Greenwald et al., 2002). Results indicated that group–self associations depended on children's ethnicity and attitude domain. In the general domain, White children's positive in-group attitudes were associated with positive self-esteem, but only among those who strongly identified with being White; among Latinos, positive in-group attitudes were associated with positive self-esteem regardless of in-group identification. In the academic domain, White children's in-group academic stereotypes were independent from their academic self-concepts, whereas Latino children's positive in-group academic stereotypes were associated with negative academic self-concepts. Overall, this dissertation suggests that implicit ethnic attitude and stereotype development may vary depending on whether youth have ethnic-majority or ethnic-minority backgrounds. Societal and contextual reasons for these ethnic differences are discussed.

The dissertation of Cari Gillen-O'Neel is approved.

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2014

For Chuck.

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for the writing dates and the moral support. To everyone at IDP, but especially Sydney Barnes, Lauren Pritchard, Tracy Zieve, and Sara Beckley, thank you for helping raise my child. And finally, thank you to my mom—as stressed as I've been the last few months, it would have been ten times worse without all of the help you've given me. More than that, though, thank you for teaching me to care about the world and to care about myself. You are awesome.

CARI GILLEN-O'NEEL

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Rodriguez, V. C., **Gillen-O'Neel, C.**, Mistry, R. S., Brown, C. S., Chow, K. A., & White, E. S. (*invited revision*). Racial-ethnic and national identification in middle childhood: What does it mean to be American?

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Implicit Ethnic Group Attitude and Stereotype Development: Causes and Consequences

As social creatures, humans employ a number of heuristics for predicting the behavior of others, and one common heuristic we use is expectations based on social group membership (e.g., race, gender, age, etc.; Fiske & Taylor, 2007). Through some combination of perceptual, emotional, cognitive, motivational, and environmental factors, we develop associations between certain attributes and certain social groups (Bigler & Liben, 2007). These associations are generally called social group attitudes, and are sometimes more specifically called bias, prejudice, or stereotypes. Although these attitudes are prevalent among adults, they do not spring, fully-formed, into adults' minds (Bigler & Liben, 2007; Olson & Dunham, 2010). A key question, therefore, is how do social attitudes develop?

To track the development of social group attitudes, we must distinguish between those that are *explicit* (i.e., can be measured directly because these attitudes are introspectively-available and people are willing to report them) and those that are *implicit* (i.e., must be measured indirectly because these attitudes either exist below conscious awareness or people are unwilling to report them; Devine, 1989; Greenwald & Banaji, 1995). Explicit social group attitudes are certainly important, but as social norms against overt prejudice have become more prevalent, researchers are increasingly interested in implicit attitudes (Fazio & Olson, 2003).

Implicit measures are less influenced by social desirability; thus, they are especially useful for studying socially charged topics like intergroup bias and prejudice (Kim, 2003). This characteristic of implicit measures is also a reason why they are interesting for developmental research. As children mature, their social group attitudes and awareness of social desirability develop concurrently (Aloise-Young, 1993). Thus, observations of developmental change in explicit reports of social group attitudes could be changes in these attitudes, but they could also

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be changes in social desirability (Apfelbaum, Pauker, Ambady, Sommers, & Norton, 2008; Rutland, Cameron, Milne, & McGeorge, 2005).

Although implicit measures are less subject to social desirability, I do not consider them to be windows into participants' "true" attitudes (i.e., as though the only reason why implicit and explicit attitudes might differ is dishonesty on self-reports). Certainly, dishonesty can cause discrepancies between implicit and explicit attitudes (Hofmann, Gschwendner, Nosek, & Schmitt, 2005; Nosek, 2007), but there are many other causes, including genuine desires to hold different attitudes or recent experiences that differ from early ones (Karpinski & Hilton, 2001; Rudman, 2004; Rudman, Phelan, & Heppen, 2007). Thus, I align with Devine (1989) in that I approach implicit and explicit attitudes not as more or less valid, but simply as distinct. In fact, research suggests that explicit and implicit attitudes are distinct neurally, and each has unique predictive power for behaviors (Fazio & Olson, 2003; Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Phelps et al., 2000). I think of implicit attitudes as associations between particular groups and particular attributes, associations that are "unavailable to self-report or introspection" (Greenwald & Banaji, 1995, p. 5). The source of implicit attitudes is still an empirical question, but the currently favored theory is that they develop from a general cognitive mechanism that detects patterns of covariation in one's environment, with early environments being especially influential (Baron, Schmader, Cvencek, & Meltzoff, in press; Rudman, 2004).

Extant research on social group attitude development has mostly focused on explicit attitudes. Developmental researchers are beginning to study implicit attitudes, and the work that has been done so far suggests that these measures are relevant for even very young children (Cvencek, Greenwald, & Meltzoff, 2011; Dunham, Baron, & Banaji, 2008). There are, however, three big limitations in the current body of research:

1. With just one exception (Degner & Wentura, 2010), research has failed to distinguish the developmental path of in-group implicit attitudes from that of out-group implicit attitudes. This distinction is critical in the understanding of explicit attitude development (Cameron, Alvarez, Ruble, & Fuligni, 2001), but research has yet to determine the extent to which it also applies to implicit attitude development.

2. Most social group attitude research (both explicit and implicit) has been motivated by the United States' history of discrimination and, as such, has focused on White Americans' prejudice against African Americans. Social group attitude development among minority group members has been especially understudied. Furthermore, in the few cases where minority group participants have been included in research, the focus has generally been on describing group differences rather than examining the mechanisms responsible for these differences (cf. Newheiser & Olson, 2011).

3. By focusing on discrimination, most research has also focused on the types of attitudes that are associated with discrimination (i.e., general positivity and negativity). Especially when considering in-group attitudes, other domains are important. For children, attitudes about in-group academic ability are especially relevant (McKown & Strambler, 2008), yet the development of these attitudes has not been examined with implicit methods.

In two studies, my dissertation sought to address these issues. Specifically, I examined the development of implicit ethnic attitudes and academic stereotypes among White-American and Latino-American children. I focused on middle childhood and early adolescence, as previous research has identified these as key developmental periods for other aspects of ethnic understanding (e.g., ethnic identity and social meanings of ethnicity; French, Seidman, Allen, & Aber, 2006; Quintana, 2008; Ruble et al., 2004).

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In Study 1, I examined general implicit ethnic attitudes (i.e., the extent to which children are implicitly positive versus negative towards Whites and Latinos), and the extent to which these attitudes differ by the child's age, gender, and ethnicity. I also test the proposition of a key theory of social attitude development, Social Identity Theory (Tajfel & Turner, 1979), by examining whether implicit ethnic identification is a significant predictor of ethnic attitudes.

In Study 2, I explored whether children's implicit attitudes about their ethnic groups were associated with implicit attitudes about themselves. Applying models of cognitive consistency (e.g., Heider, 1958) to social cognition, I examined whether implicit group attitudes, group identity, and self-attitudes are linked in logically consistent ways. For example, among children who have positive attitudes towards their ethnic group and who strongly identify with this group, I expected their self-esteem to be positive. These links between attitudes, identity and self-esteem (called a balanced identity) have been consistently demonstrated among ethnic majority people, but the few studies that have included people with ethnic minority backgrounds have yielded inconsistent results (Greenwald et al., 2002). In Study 2, therefore, I examined the extent to which a balanced identity design applied to both White and Latino children. In Study 2, I also examined whether a balanced identity applies beyond general attitudes and self-esteem by examining academic stereotypes and their association with academic self-concepts.

Altogether, my dissertation addresses these questions:

- Study 1a: What are children's implicit attitudes towards Whites and Latinos, and do these attitudes differ by the child's own ethnicity, gender, or age?

- Study 1b: Do children who implicitly identify with an ethnic group have more positive implicit attitudes towards that group?

- Study 2a: Are children's implicit attitudes towards their ethnic in-group associated with their implicit attitudes towards themselves (i.e., implicit self-esteem)? Does the association between ethnic attitudes and self-esteem differ by ethnic identification or ethnic heritage?

- Study 2b: What are children's implicit academic stereotypes towards Whites and Latinos, and do these stereotypes differ by the child's own ethnicity, gender, or age?

- Study 2c: Are children's implicit academic stereotypes towards their ethnic in-group associated with their implicit academic self-concepts? Does the association between ethnic stereotypes and self-concept differ by ethnic identification or ethnic heritage?

In answering these questions, I employed an implicit attitude measure (evaluative priming) that has rarely been used with children. Before presenting studies 1 and 2, therefore, I present a preliminary study in which I validated my experimental paradigm.

Preliminary Study

Evaluative Priming as an Assessment of Implicit Attitudes among Children

Implicit attitudes are under the control of automatically activated concept–attribute associations; by definition, implicit attitudes must be measured indirectly because they are not available to introspection (Greenwald, McGhee, & Schwartz, 1998). One common strategy for assessing implicit attitudes is to exploit the fact that tasks congruent with concept–attribute associations will be facilitated (i.e., sped up), whereas tasks incongruent with these associations will be hindered (i.e., slowed down; Fazio & Olson, 2003). In these types of implicit measures, reaction time is the key dependent variable, and implicit attitudes are inferred from systematic variations in participants' performance between trials that are either consistent or inconsistent with hypothesized concept–attribute associations.

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The most popular reaction-time based assessment of implicit attitudes is the Implicit Association Test (IAT; Greenwald et al., 1998). In a social group attitude IAT, participants categorize four types of stimuli (e.g., White faces, Latino faces, positive words, and negative words) using two responses (e.g., left and right computer keys). Across different blocks, the stimuli are differentially mapped onto the responses. For White participants, for example, a block that is "consistent with in-group preference" would involve using one response key for White faces and positive words while using the other response key for Latino faces and negative words (i.e., White/positive & Latino/negative). Another block that is "inconsistent with in-group preference" would have response–stimuli mapping of White/negative & Latino/positive. To the extent that White participants implicitly prefer their group over Latinos, the White/positive & Latino/negative response mapping should facilitate faster reaction times, whereas the White/negative & Latino/positive response mapping should hinder reaction times.

Undoubtedly, the IAT has a number of good psychometric qualities and has made many contributions to the field (Greenwald et al., 2009). The IAT does, however, have one important limitation: it can only assess the relative difference between two attitudes (Blanton, Jaccard, Christie, & Gonzales, 2007). The ethnic attitude IAT described above, for example, can assess *bias*—participants' relative preference towards Whites versus Latinos. This IAT cannot, however, yield separate assessments of participants' attitudes towards each ethnic group.

Another implicit attitude measure—evaluative priming—is similar to the IAT in that it that uses reaction time as a measure implicit attitudes, but unlike the IAT, it allows for separate attitude assessments (Fazio & Olson, 2003). In an evaluative priming task, participants are presented with two stimuli in quick succession. The first stimulus is the prime (e.g., pictures of White and Latino people), to which participants must simply attend; the second stimulus is the

target (e.g., positive and negative words) which participants must evaluate. The theory behind evaluative priming is that presentation of the primes automatically activates a network of associations from the participant's memory. If the valence of the activation matches that of the target, target response is facilitated; if the valence of the activation and the target are incongruent, target response is hindered (Wentura & Degner, 2010).

Most of the research that has used evaluative priming has been conducted with adults, and this research has indicated that evaluative priming is a reliable measure of implicit attitudes (Fazio, 2001). For example, priming estimates of intergroup attitudes are associated with adults' intergroup behaviors (e.g., friendliness and nonverbal behavior when interacting with people from different ethnic backgrounds; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Fazio, Jackson, Dunton, & Williams, 1995). Among younger participants, most implicit attitude research has employed the IAT, but two studies suggest that evaluative priming is a reliable measure for younger participants. Degner, Wentura, Gniewosz, and Noack (2007) employed a priming task similar to evaluative priming to assess German adolescents' (ages 13-15) implicit attitudes towards Turks. The adolescents who demonstrated implicitly negative attitudes towards Turks on the priming task were more likely to discriminate against a supposed Turkish peer during a simulated game. Degner and Wentura (2010) used both evaluative priming and IAT to assess implicit attitudes towards Germans and Turks among majority group German children ages 9 to 14. Although evaluative priming offered slightly more nuanced results than the IAT (thanks to evaluative priming's ability to assess in-group and out-group attitudes separately), overall implicit results from the two measures were very similar.

In the current study, I used evaluative priming to assess implicit ethnic attitudes among White and Latino children, ages 7-13, in the U.S. Despite evidence that evaluative priming can

successfully be used with developing populations, the current study uses it with slightly younger participants in different social contexts than previous studies. In this study, therefore, any null results could, on the one hand, represent genuine null findings (e.g., young children in this context have not yet developed implicit ethnic stereotypes). On the other hand, null results could represent failure of the measure to detect an effect. To try and disentangle these possibilities, I included three validation checks in the current study.

First, I included memory tests for all priming stimuli. As discussed above, the underlying mechanism of evaluative priming is that a priming stimulus prompts the automatic activation of a network of associations from participants' memories which, in turn, influences the speed with which participants can respond to a target stimulus. Thus, evaluative priming can only tap implicit associations to the extent that participants are attending to the primes. Furthermore, unlike the IAT in which participants must actively respond to all stimuli (thereby enforcing attention), evaluative priming only requires responses for the targets. In my study, participants were instructed to pay close attention to the primes under the cover story that their memory for the pictures would be tested. Thus, including a memory test served the dual purposes of (1) bolstering the cover story and (2) providing an indication of how well participants followed directions and actually attended to the primes.

As a second validation of evaluative priming among this population, I included an assessment of two non-social attitudes—attitudes towards flowers and insects. IAT studies with participants ranging from ages 3 to 93 indicate that implicit associations with flowers are more positive than implicit associations with insects, although among younger participants, the implicit preference for flowers may be stronger among girls as compared with boys (Baron & Banaji, 2006; Cvencek, Greenwald, et al., 2011; Greenwald et al., 1998; Hummert, Garstka,

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O'Brien, Greenwald, & Mellott, 2002; Thomas, Smith, & Ball, 2007). Despite using a different method, I expected to replicate this finding; I expected that my participants would demonstrate more positive implicit attitudes towards flowers as compared with insects.

Finally, as a third validation of my method, I included an assessment of a social attitude that has been well-documented in previous developmental work. A number of studies have demonstrated that, when the comparison out-group has lower social status, many groups of children in many different contexts display an implicit ethnic in-group bias (Olson & Dunham, 2010). For example, when the comparison out-group is Black children, White children in the U.S. and the U.K., Latino children in the U.S., and Japanese children in Japan all demonstrate in-group bias. These in-group biases were observed among the youngest children assessed (age 6), and they remained consistent across the course of childhood (Baron & Banaji, 2006; Dunham, Baron, & Banaji, 2006, 2007; Rutland et al., 2005). Thus, for my sample of 7 to 13-year old White and Latino children in the U.S., I expected that participants would implicitly prefer their ethnic in-group relative to a Black out-group.

Data for all three parts of my dissertation—the preliminary study, Study 1, and Study 2—were drawn from different parts of one experimental procedure that was conducted with the same group of participants. This first method section, therefore, includes a full description of participants and procedures from which all three parts of my dissertation were derived.

Method

Recruitment

Elementary-age participants were drawn from three schools in California. These schools were selected because a high proportion of their student bodies were White or Latino. All three schools were similar in size (serving between 300 and 450 students). They differed, however, by

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type (public or private), setting (urban or rural), demographics of the students that they served (e.g., grade level, ethnicity, and socioeconomic status), and average levels of achievement.

School 1 was a public, independent charter school that served students in grades K−5 and was located in an urban area of Southern California. Most of the students at school 1 (95.5%) were Latino, and the remaining students had African American (3.5%), White (0.6%), or multiracial/ethnic (0.3%) backgrounds. School 1 primarily served families with lower- to lower-middle class educational and occupational statuses, as evidenced by the 87.0% of the student body who were eligible for free or reduced meals. Year-end standardized test results indicate that achievement at school 1 was above state averages in both English-Language Arts and Mathematics (California Department of Education, 2014).

School 2 was a public school that served students in grades K−8 and was located in a rural area of Northern California. Most of the students at school 2 (79.3%) were White (non-Latino), and the remaining students had Latino (11.3%), multiracial/ethnic (7.2%), Native American (1.4%), or Asian (0.9%) backgrounds. School 2 primarily served families with lower-middle to middle-class educational and occupational statuses—46.9% of the student body was eligible for free or reduced meals. At the time of the study, achievement at school 2 was at the state average for English-Language Arts and slightly below average for Mathematics (California Department of Education, 2014).

Finally, school 3 was a private secular elementary school that served students from grades PreK−6 and was located in an urban area of Southern California. The ethnic composition of school 3's student body was considerably more diverse than the other recruitment sites—36% White, 20% Latino, 9% Asian, 7% African American, 20% multiracial/ethnic, and 8% another race or ethnicity. The school is tuition-based, but scholarships are available on a sliding scale.

Nonetheless, the school primarily serves families with upper-middle to high class educational and occupational statuses; the annual household income at this school ranges from less than $10,000 to more than $1,000,000, but the median is between $150,000 and $199,999. Since it is a private school, this school does not publish results from state-wide achievement tests.

In the original study design, my goal was to recruit students from 2nd, 4th, and 6th grades. At school 1, however, the highest grade was 5th grade, so I recruited students from 2nd, 4th, and 5th grades at this school. At schools 2 and 3, I recruited students from 2nd, 4th, 5th, and 6th grades. Although only students with White or Latino heritage were eligible for the study, schools 1 and 2 requested that all students in the target grades be allowed to participate. I presented the study in classrooms and I distributed packets containing: (1) information about the study, (2) parental consent forms, and (3) a brief demographic survey. All study materials were provided in English and in Spanish. Interested families completed and returned consent forms and demographic questionnaires in sealed envelopes to the classroom teachers. All families who returned a completed consent form (whether or not consent was granted) were entered for a chance to win one of several $10 gift cards. All families who returned a completed demographic questionnaire were entered for a chance to win one of several $50 gift cards.

The recruitment rate was 86.2% at school 1 and 80.1% at school 2. Children who completed the study were offered a small gift (e.g., pencils or erasers) as incentives for participation. At school 3, I recruited only students in the target grades whose ethnicity (according to school records) was White or Latino. School 3 is designed as a laboratory for teachers and researchers, and parents enrolling their children in this school sign "blanket consent" for certain types of studies. The school's internal research review board determined that this study fell under the purview of this blanket consent, so parental consent was collected

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passively—information about the study was published in the school's newsletter and parents had

the opportunity to call and withdraw their child from potential participation. No parents

withdrew their children from the study. To comply with school policy, no incentives were

offered to participants at school 3.

Participants

In total, data from 262 elementary-age students were included in this study (M_{age} = 10.05

years, SD = 1.46, range = 7.26–12.87). As shown in Table 1, participants were fairly evenly split

by ethnicity and gender. Of the 135 Latino children who participated, 96 (71%) attended school

1, 1 (1%) attended school 2, and 38 (28%) attended school 3. Of the 127 White children who

participated, 1 (1%) attended school 1, 65 (51%) attended school 2, and 61 (48%) attended

school 3. At the time of the study, participants were in 2nd (n = 73), 4th (n = 68), 5th (n = 78), or

6th (n = 43) grade. Participants' age distribution is shown in Figure 1; as can be seen, each grade

spanned a relatively large and overlapping range of ages. In developmental analyses, therefore, I

used age as a continuous variable (instead of using grade level as a discrete variable). In addition

to the 262 participants whose data were included here, 94 other children completed the task but

were excluded from analyses—60 of these children were excluded because they did not meet the

study's inclusion criteria for ethnicity and 34 children were excluded because they did not follow

task directions (e.g., insisted on keeping their eyes closed).

Participant demographic data was drawn from parent questionnaires, which 201 (77%) of

the parents completed. In the cases where parent surveys were not completed, participant gender

and ethnicity were gathered from school records. Two indicators of family socioeconomic status

were collected. For income, parents answered the question: *Please check the category that tells*

us your approximate total family income for this year (2013). Please consider all sources of

income, including earnings, welfare cash assistance, child support, alimonies, support from other members of your household who regularly contribute to your household, etc. Parents responded by checking one of 12 boxes ranging from 1: *less than $10,000* to 12: *more than $750,000*. Across the sample, families spanned the entire range, with mean income just over $50,000 per year ($M = 4.75$, $SD = 2.82$, on a 12-point scale), and median income just under $50,000 per year. For parental education, parents selected one of 11 boxes to indicate how far they and their partner (if applicable) had gone in school. Choices ranged from 1: *some elementary school* to 11: *graduated from medical, law, or graduate school*. Averaging across parents, families spanned the entire range, with mean parental education corresponding to "trade or vocational school" ($M = 6.97$, $SD = 2.42$). An Analysis of Variance (ANOVA) indicated that White participants' families had higher incomes ($M = 6.33$, $SD = 2.87$) than their Latino peers ($M = 3.47$, $SD = 2.03$), $F(1,181) = 62.37$, $p < .001$. Likewise, White participants came from families with higher educational attainment ($M = 8.29$ [between *some college* and *graduated from college*], $SD = 1.68$) than did their Latino peers ($M = 5.86$ [between *some high school* and *graduated from high school*], $SD = 2.39$), $F(1,193) = 64.99$, $p < .001$. In order to use these measures as controls in further analyses, they were each standardized and then averaged.

Parents also answered questions regarding their child's, their, and their partner's places of birth. All but 3 participants were born in the U.S., and these 3 children were White children who were born to U.S.-born parents. Of the 106 Latino children whose parents completed the birthplace questions, 34 (32%) had at least one parent born in the U.S., and 72 (68%) had two parents born outside of the U.S. Mexico was the most common country of origin for these families. Of the 90 White children whose parents completed the birthplace questions, 89 (99%) had at least one parent born in the U.S., and 1 (1%) had two parents born outside of the U.S.

Materials

In general, the evaluative priming protocol consists of a series of trials in which participants see two stimuli in quick succession. The first stimulus is the prime; it is intended to activate a particular concept in participants' minds. The second stimulus is the target; it represents particular attributes. In this study, I used pictures as primes and words as targets.

Priming pictures. There were two sets of priming pictures: a set of flowers and insects and a set of children's faces.

Flowers/insects. This set of priming pictures included eight photographs of flowers and eight of insects (see Appendix A). These pictures were initially downloaded from publically available internet sites, and they were then edited to have a standard size, resolution, and background. All of the photos were full color and centered, with a white background and a black border. The pixel dimensions of each photo were 640 x 360, with a resolution of 72 x 72 pixels per inch.

Faces. This set of priming pictures included 48 photographs of children's faces (eight each of boys and girls who were White, Latino, and Black). As shown in Appendix A, these pictures were formatted exactly like the flower and insect pictures. The final set was selected from a larger pool of photos based on results from pretesting. A convenience sample of adult participants ($N = 64$) viewed 141 photos of children who appeared to either be White, Latino, or Black boys and girls. Participants answered several questions about each photo: *Based on the picture above, what is your best guess for this child's …gender?* (*boy*, *girl*, *not sure*), *…race/ethnicity?* (*Black*, *Latino*, *White*, *other / not sure*), *…age?* (1: *4 years or younger*, 2: *5 to 6 years old*, 3: *7 to 8 years old*; 4: *9 to 10 years old*, 5: *11 to 12 years old*, 6: *13 years or older*); *Please rate this child's …facial expression* (-6: *extremely unhappy* to 6: *extremely happy*),

…*level of attractiveness* (-6: *extremely unattractive* to 6: *extremely attractive*). As shown in Table 2, the final set of pictures only included photos for which participants unanimously agreed upon the gender of pictured children. Although I hoped to use pictures with unanimous agreement for the race / ethnicity of the pictured children, no pictures intended to represent Latinos reached unanimity. I selected pictures with the highest rates of agreement on pictures' depicted race / ethnicity, but an ANOVA confirmed that this agreement was lower among pictures intended to represent Latino boys and Latina girls than among pictures intended to represent Whites or Blacks of either gender, $F(5,42) = 68.91$, $p < .001$. Additional ANOVAs indicated that there were no differences between photos of the six social groups (i.e., White boys, White girls, Latino boys, Latina girls, Black boys, and Black girls,) in terms of average perceived age of the photos, $F(5,42) = 0.27$, $p < .925$, or average perceived happiness of the pictures' facial expressions, $F(5,42) = 1.29$, $p < .288$. There were, however, a few differences in the perceived attractiveness of the photos, $F(5,42) = 4.18$, $p = .004$. Follow up tests indicated that, on average, the photos used to represent Latino boys were rated as less attractive than the photos used to represent Black boys and Black girls (see Table 2).

Filler pictures. An additional 22 pictures (eight flowers, eight insects, and six faces) were used for various purposes throughout the experiment. Some of these pictures were used during practice tasks and some were used as distractors for memory tests. These pictures were formatted identically to the priming pictures described above.

Target words. Altogether, there were three sets of target words: *good/bad* words, *good for school/bad for school* words and *me/not me* words.

Good/bad words. The *good/bad* word set comprised eight words—four positively valenced (*friend*, *good*, *love*, and *nice*) and four negatively valenced (*enemy*, *bad*, *hate*, and

mean). These specific words were chosen because they appear frequently in young children's

vocabulary and they have successfully been used in similar previous research with elementary-

age children (Baron & Banaji, 2006; Dunham et al., 2007).

      Good for school/bad for school words. In final analyses, this word set included six

words—three words associated with academic success (*smart*, *hardworking*, and *neat*) and three

words associated with academic failure (*dumb*, *lazy*, and *sloppy*). The experimental paradigm

included two additional words—*quick* and *slow*. I intended these words to represent *good for*

school and *bad for school*, respectively (e.g., She is mentally quick.). Several children, however,

commented during the task that I had the words backwards (e.g., If you are too quick, you will

make mistakes.). Indeed, participants made the most number of "errors" in trials involving the

classification of *quick* and *slow* as *good for school* or *bad for school*; therefore, I excluded all

trials involving these words from the final analysis.

      Me/not me words. The *me/not me* word set comprised eight words—four words

associated with the self (*I*, *me*, *my*, and *myself*) and four words associated with others (*they*, *them*,

their, and *themselves*).

Procedure

      Participants completed the study in a quiet room at their school, either individually or in

small groups. Researchers presented the study as a computer game that tests how well people are

able to do two things—memorizing pictures and categorizing words—at the same time. After

providing their assent, children indicated their age and gender, and the computer program was

started. Following the methods of Fazio et al. (1995), with modifications to make the task more

appropriate for elementary-age children (Baron & Banaji, 2006; Dunham et al., 2006, 2007), the

full procedure consisted of ten phases, which all participants completed in the same order. Each

phase comprised a unique combination of priming and target stimuli. A summary of the phases is presented in Table 3, and the full procedure of each phase is described below. Older participants (i.e., 4th-6th grade students) completed all phases in one sitting, which lasted approximately 40 minutes; younger (i.e., 2nd grade) participants completed phases 1−6 in a first sitting, which lasted approximately 25 minutes, and they completed phases 7−10 in a second session, which lasted approximately 15 minutes. Researchers monitored all children's progress throughout the session(s) and provided appropriate directions just before participants began each phase.

Phase 1: *good/bad* word-meaning task. The purpose of this task was to obtain baseline reaction time data for participants' responses to the *good/bad* target words. These data were used in the final calculation of implicit attitudes to control for overall differences in responding to positive versus negative stimuli and responses given with one's dominant versus non-dominant hand (Wentura & Degner, 2010).The words appeared on the computer screen, one at a time. To avoid reliance on elementary age participants' reading ability, the visual presentation of each word was accompanied by a voice recording of each word, played through headphones. Male participants heard a male voice; female participants heard a female voice. The participants' task was to indicate, via button press, whether each word was good or bad as quickly as possible. To reduce reliance on fine motor ability, large sticker "buttons" labeled "good" and "bad" were placed over several keys on a traditional keyboard. If a participants pressed anywhere within these buttons, their response were recorded.

The order of word presentation was randomized for each participant. A row of asterisks preceded the presentation of each word, serving as a warning signal that a word was about to appear. Each target word remained on the screen until the participant responded correctly (i.e., indicated that *friend*, *good*, *love*, and *nice* are "good" and that *enemy*, *bad*, *hate*, and *mean* are

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"bad"). If the participant responded incorrectly, a red question mark appeared at the bottom of the screen, indicating that the participant needed to change his or her answer. A 500-millisecond (ms) interval separated each trial. The first eight trials were practice trials to ensure that participants understood the task. After that, participants responded to each word four times, for a total of 32 trials. Participants' actual responses (good vs. bad) and the latency of their response to the nearest ms (from word onset to response) were recorded. The exact length of this phase depended on the speed with which participants responded to the words. On average, however, this phase lasted approximately 2 minutes.

Phase 2: preparation for the flower-insect attitude measure. The purpose of this phase was to introduce participants to the visual presentation of pictures on the computer screen. This phase was presented to participants as a memory task. Participants were asked to attend to pictures as they appeared, one at a time, on the computer screen. Each picture was displayed for 315 ms, and there was a 500-ms interval between pictures. Participants saw 12 of the filler pictures (six flowers and six insects); each picture was presented twice, and the order in which they appeared was random. In accordance with the cover story that this task was a memory test, participants were given a matrix of six photos (four of which were presented during phase 2 and two of which were new filler pictures), and they were asked to circle the pictures that they had seen during the phase. These memory test results, however, were not analyzed. Altogether, this phase lasted approximately 3 minutes.

Phase 3: flower-insect attitude measure. This phase was the first priming task of interest; data from this phase were used to infer implicit attitudes towards flowers and insects. Researchers explained this task as a combination of the two previous tasks—participants were asked to alternate between (1) attending to pictures of flowers and insects for a memory test and

(2) quickly classifying target words as good or bad. The computer procedure was identical to phase 1, with the exception that the rows of asterisks were replaced by priming pictures of flowers and insects. Over the course of this phase, each of the 16 prime pictures was paired with one of the positive and one of the negative target words. Thus, there were a total of 32 trials in this phase, and these trials occurred in a random order. The specific pairings of prime pictures and target words were counterbalanced across participants. For example, a particular flower picture preceded the words *good* and *bad* for one quarter of the participants, whereas the same picture preceded the words *friend* and *enemy* for a different quarter of the participants, etc. Finally, as in phase 2, upon completion of the computer portion of the task, participants were asked to identify the pictures that they had seen during this phase from a matrix of six flower and insect photos (four of which they had seen before). This memory test served two purposes: it corroborated the cover story that this computer game tests how well people are able memorize pictures while categorizing words, and it also provided data indicating the extent to which participants attended to the priming pictures. This phase lasted approximately 4 minutes.

Phase 4: social group attitude measure. This phase, which lasted approximately 6 minutes, was the second priming task; data were used to infer implicit attitudes towards Black, White, and Latino boys and girls. The procedure was similar to that of phase 3, with three exceptions. First, the priming pictures were the 48 pictures of children's faces, and since each picture was paired with one positive and one negative target word, there were a total of 96 trials. Second, due to the greater number of trials, there was a rest break halfway through this phase; participants were encouraged to rest, stretch their hands, and press the space bar when ready to continue. Finally, because the prime pictures of children's faces were used in subsequent phases (phase 6 and 8), the memory test for these pictures did not occur during this phase.

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Phase 5: *good for school/bad for school* **word-meaning task**. The purpose of phase 5 was to obtain baseline reaction time data for participants' responses to the *good for school/bad for school* target words; participants' task was to indicate, via button press, whether each presented word was good for school or bad for school as quickly as possible. The procedure of this phase was identical to that of phase 1 and lasted approximately 2 minutes.

Phase 6: social group academic stereotype measure. Phase 6, which lasted roughly 6 minutes, was the third priming task. It supplied data to infer participants' implicit associations between social groups and academic success versus failure. In this phase, participants were primed with the same pictures of faces from phase 4, and they categorized the *good for school* and *bad for school* words. The procedure for this phase was identical to that of phase 4.

Phase 7: *me/not me* **word-meaning task**. The purpose of phase 7 was to obtain baseline data for participants' reaction times to the *me/not me* target words; participants' task was to indicate, via button press, whether each presented word was me or not me as quickly as possible. The procedure of this phase was identical to that of phase 1 and lasted approximately 2 minutes.

Phase 8: social group identification measure. Phase 8 was the fourth priming task; data were used to infer participants' implicit associations between social groups and themselves. Participants were primed with the same pictures of faces from phase 4, and they categorized the *me* and *not me* words. The procedure for this phase was identical to that of phase 4 and lasted approximately 6 minutes.

Phase 9: self-esteem/self-concept measure. Phase 9 was the fifth and final priming task; data were used to infer two implicit associations—participants' implicit self-esteem (i.e., the association between *good/bad* words and the self) and implicit academic self-concepts (i.e., the association between *good for school/bad for school* words and the self). Like other priming

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phases, each trial in this phase consisted of a priming stimulus and a target stimulus. The primes were the *good/bad* and the *good for school/bad for school* words. Priming words appeared on the screen in a gray font for 615ms. After a 135-ms interstimulus interval, a target *me/not me* word appeared in a black font. Each target word remained on the screen until the participant responded correctly. If the participant responded incorrectly, a red question mark appeared at the bottom of the screen, indicating that the participant needed to change his or her answer. A 500-ms interval separated each trial. As in previous phases, visual presentation of each word was accompanied by a voice recording of the word. Participants' instructions were to look at and listen to all of the words, but to only respond to the black *me/not me* words. There were several practice trials before the actual trials, and like phases 4, 6, and 8, there was a rest break halfway through this phase. This phase lasted approximately 7 minutes.

Phase 10: final memory test and debriefing. In this final phase, which lasted roughly 2 minutes, participants completed a memory test for the faces. Like the previous memory tests, this test served the dual purposes of corroborating the cover story and providing data indicating the extent to which participants attended to the primes. From a matrix of twelve photos (six of which were seen previously, and six of which were new filler pictures), participants circled the pictures that they had seen previously. After the memory test, participants were debriefed, thanked, and offered a small prize (i.e., a pencil or an eraser) for their participation.

Data Preparation

Data trimming. Reaction time (RT) was the dependent variable of interest. To prepare the RT data for analyses, I first excluded RTs from error trials (i.e., trials in which participants incorrectly classified target words) and RTs from the first two trials of any block. Next, in accordance with previous research, I excluded trials in which participants' responses were

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anticipatory (i.e., RTs less than 300ms) and all trials in which participants were momentarily inattentive (i.e., RTs greater than 1.5 interquartile ranges above the third quartile of each individual's RT distribution; Tukey, 1977; Wentura & Degner, 2010).

Implicit association estimates. During phases 3, 4, 6, 8, and 9, priming manipulations comprised the factorial combination of prime stimulus (e.g., flower vs. insect pictures) and target word category (e.g., good vs. bad words). This within-subjects design allowed me to calculate several priming indices. Overall, the logic of priming is that implicit associations are implied by systematic differences in RTs across different prime–target combinations. In the paragraphs that follow, I detail the calculations used to infer implicit attitudes towards flowers and insects. Then, I outline how I used similar calculations to estimate all other assessed implicit associations.

Implicit flower/insect attitudes. In phase 3, participants completed a series of trials in which priming pictures of flowers and insects were followed by positive (i.e., *friend, good*, *love*, and *nice*) and negative target words (i.e., *enemy*, *bad*, *hate*, and *mean*). Using participants' reactions times from these trials, I calculated four averages:

flowers–positive = average RT when flowers preceded positive words

flowers–negative = average RT when flowers preceded negative words

insects–positive = average RT when insects preceded positive words

insects–negative = average RT when insects preceded negative words

The ultimate goal was to determine whether participants were faster or slower when certain primes were paired with certain types of words (e.g., *flowers–positive* versus *flowers–negative*). However, previous research indicates that participants are generally faster when responding to positive targets and responding with their dominant hand (Wentura & Degner,

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2010). To control for these effects, I calculated each participant's baseline RT for positive and for negative words across all instances of these words in the full experiment:

positive baseline = average RT to all instances of *friend*, *good*, *love*, and *nice*

negative baseline = average RT to all instances of *enemy*, *bad*, *hate*, and *mean*

Next, I subtracted the appropriate baseline RT from each of the priming task averages to calculate facilitation scores (i.e., the extent to which RTs for a particular prime–target pairing differed from the baseline of that word category):

flowers–positive facilitation = *flowers–positive - positive baseline*

flowers–negative facilitation = *flowers–negative - negative baseline*

insects–positive facilitation = *insects–positive - positive baseline*

insects–negative facilitation = *insects–negative - negative baseline*

I calculated a single index of implicit attitudes towards each type of picture by subtracting the positive facilitation scores from the negative facilitation scores:

flower attitude = *flowers–negative facilitation - flowers–positive facilitation*

insect attitude = *insects–negative facilitation - insects–positive facilitation*

The results of these calculations can be interpreted as overall indices of positivity towards each picture type. For example, participants who associate flowers with positive concepts will, on average, have shorter RTs when pictures of flowers are paired with positive words and longer RTs when pictures of flowers are paired with negative words; this will results in a positive value for *flower attitude*. Likewise, participants who associate flowers with negative concepts will, on average, have longer RTs when pictures of flowers are paired with positive words and shorter RTs when pictures of flowers are paired with negative words—resulting in a negative value for *flower attitude*. Finally, participants who are neutral or ambivalent towards flowers will not vary

in average RTs between trials in in which pictures of flowers are paired with positive versus negative words, resulting in a value of *flower attitude* that is at or near zero.

Implicit ethnic attitudes. In phase 4, participants completed trials in which priming pictures of Black, White, and Latino boys and girls were followed by positive and negative target words. As with the flower and insect attitude estimates, I calculated separate facilitation scores for each prime–word category pairing (i.e., *Black boy–positive*, *Black boy–negative*, *Black girl–positive*, *Black girl–negative*, *White boy–positive*, *White boy–negative*, *White girl–positive*, *White girl–negative*, *Latino boy–positive*, *Latino boy–negative*, *Latina girl–positive*, *Latina girl–negative*). Previous studies that have used pictures of faces as ethnic primes have controlled for gender by using priming stimuli of only one gender (e.g., White and Turkish men; Degner & Wentura, 2010). With my focus on in-group versus out-group attitudes, I did not want the ethnic stimuli to be a gender in-group for some participants, but a gender out-group for others. Thus, I included priming pictures of both boys and girls, but when I calculated ethnic attitudes, I controlled for gender by only using data from each participants' in-group gender. For example, to calculate boys' implicit *Black attitudes* I took the difference between boys' facilitations scores in *Black boy–negative* trials and *Black boy–positive* trials; for girls' implicit *Black attitudes*, I used *Black girl–negative* and *Black girl–positive* facilitation scores. Positive values for ethnic attitude estimates indicate that participants more readily associated the social group with positive concepts as compared with negative concepts.

Results

Two types of participants were excluded from certain analyses. First, to conserve power, I did not exclude participants from the study based on error rates. If, however, error trials left participants with valid data for fewer than 50% of trials used to calculate a particular measure,

they were assigned "missing" for just that measure. Second, since initial analyses indicated that extreme data points unduly influenced some results, I excluded participants from analyses that included measures on which their responses were outliers (i.e., more than 3 interquartile ranges outside the midrange of each measure's distribution; Tukey, 1977). As a result of these exclusions, the degrees of freedom differ slightly for different analyses.

Here, I report three tests of the validity of my priming method. First, I analyzed memory test data to confirm participant attention to pictures intended to serve as priming stimuli. Second, I examined implicit attitudes towards flowers and insects to replicate a non-social implicit attitude that has been previously observed among children when assessed with the IAT (Baron & Banaji, 2006; Cvencek, Greenwald, et al., 2011; Thomas et al., 2007). Finally, I examined participants' implicit attitudes towards their ethnic in-group and Blacks to replicate a social implicit attitude that has been previously observed among children when assessed with the IAT (Baron & Banaji, 2006; Dunham et al., 2006, 2007; Newheiser & Olson, 2011).

Memory Tests

For each memory test (flower/insect and faces), I calculated a detection score by subtracting the proportion of *false alarms* (pictures that did not appear, but the participant incorrectly indicated that they did) from the proportion of correctly identified *hits* (pictures that did appear, and the participant correctly indicated as such). With these calculations, performance at chance levels would be indicated by detection scores of zero. Average performance on both tasks was significantly higher than zero (flower/insect: $M = 0.20$, $SD = 0.46$, $t(260) = 7.24$, $p < .001$; faces: $M = 0.31$, $SD = 0.28$, $t(254) = 17.54$, $p < .001$). It is worth noting, however, that several participants performed at or below chance on these memory tests (flower/insect: 116 (44.4%) participants; faces: 51 (20.0%) participants). Memory task performance was not

correlated with participant age (flower/insect: $r = 0.09$, $p = .164$; faces: $r = 0.09$, $p = .143$). These results suggest caution in interpreting null results from the priming tasks, especially the insect–flower task. Since almost half of the participants did not remember the insect and flower pictures well enough to perform above chance on a memory test, it is possible that many participants did not attend to the pictures closely enough for these pictures to influence their ability to respond to different types of targets.

Flower and Insect Attitudes

I submitted participants' implicit attitudes towards flowers and insects to a mixed-design ANOVA with attitude target (flowers and insects) as a within-subjects factor, participant age as a covariate, and participant ethnicity (White and Latino) and gender (male and female) as between-subjects factors. Although average attitudes towards flowers ($M = 7.63$, $SD = 106.83$), and insects ($M = -5.28$, $SD = 109.78$) were in the expected direction, the ANOVA revealed no main effect of attitude target, $F(1,208) = 1.26$, $p = .264$, $\mu = .01$. There was, however, a marginal interaction between attitude target and participant age, $F(1,208) = 2.84$, $p = .094$, $\mu = .01$. To follow up on this interaction, I ran a set of linear regressions in which participant age (sample mean centered), ethnicity (effect coded: Latino = -1, White = 1), and gender (effect coded: female = -1, male = 1) predicted (1) attitudes towards flowers and (2) attitudes towards insects. As shown in Figure 2, attitudes towards flowers and insects diverged among older participants. However, neither the seemingly positive slope of flower attitudes across age, $b(SE) = 5.51(4.91)$, $p = .263$, nor the seemingly negative slope of insect attitudes across age, $b(SE) = -5.50(7.23)$, $p = .448$, differed significantly from 0. Furthermore, follow-up regressions with age recentered at various values indicated that implicit attitudes towards flowers and insects never significantly differed from 0, even among the oldest participants in the sample. No analyses indicated

significant effects of ethnicity or gender, indicating that flower and insect attitudes did not differ by these participant characteristics.

Overall, these analyses suggest that the priming manipulation may have been more effective among older participants. However, as discussed above, poor performance on the insect–flower memory test may indicate that participants did not attend to the pictures closely enough for these pictures to serve as primes. Additional analyses limited only to participants who scored above chance on the flower/insect memory test did not change any results, but since these analyses included only 55.6% of the participants, limited power is a concern.

Ethnic In-Group and Black Attitudes

I submitted participants' implicit attitudes towards their ethnic in-groups and towards Blacks to a mixed-design ANOVA with attitude target (in-group and Black) as a within-subjects factor, participant age as a covariate, and participant ethnicity (White and Latino) and gender (male and female) as between-subjects factors. Average attitudes towards ethnic in-groups ($M = 16.06$, $SD = 125.75$), and towards Blacks ($M = -3.43$, $SD = 114.15$) differed in the expected direction, yet the ANOVA revealed only a marginally significant main effect of attitude target, $F(1,222) = 3.75$, $p = .054$, $\mu = .02$. Limiting the sample to the 80% of participants who scored above chance on the faces memory task resulted in a significant difference between implicit attitudes towards ethnic in-groups ($M = 23.13$, $SD = 127.05$) as compared with attitudes towards Blacks ($M = -3.19$, $SD = 113.00$), $F(1,172) = 4.50$, $p = .035$, $\mu = .02$. In all analyses, effects of age, ethnicity, and gender were non-significant, indicating that the preference for one's ethnic in-group relative to Blacks was consistent across White and Latino boys and girls of different ages.

Discussion

In this study, I used evaluative priming because, unlike the more commonly used IAT, priming can provide separate assessments of in- and out-group ethnic attitudes. Even with priming, I expected to replicate effects that have previously been demonstrated with IAT— implicit preferences for flowers over insects and for one's ethnic in-group over a lower status ethnic group (Baron & Banaji, 2006; Newheiser & Olson, 2011). Preliminary analyses indicated partial support for these replications with some caveats. Specifically, for implicit attitudes towards flowers and insects, there was a trend that these attitudes became increasingly consistent with the hypothesis among older participants, but the difference between flower and insect attitudes never reached significance. Thus, assessing implicit attitudes with priming may have been more effective among older rather than younger participants. Indeed the only previous study that has used priming to explore developmental differences in implicit attitudes relied on a slightly older sample (i.e., 9 to 15 years old) than the 7 to 12 year-old children who participated here (Degner & Wentura, 2010). For implicit ethnic attitudes, the hypothesized difference between in-group and Black attitudes was marginal among all participants and significant among the subset of participants who scored above chance on the faces memory test. Memory test performance was not correlated with age; thus even among older participants, (in)attention to the primes may have influenced some results.

Another feature of these preliminary results that is worth mentioning is the large variance in implicit attitudes across participants (as can be seen in the reported standard deviations above). Although this variance may indicate true variance in the population, it may also indicate that there was substantial noise in these data. There are several factors that may have contributed to the noise of these data. First, there seems to have been individual differences in attention to

the primes that influenced the results. Although average performance on the memory tests was above chance, several participants performed at or below chance, especially on the flower/insect memory test. Thus, some participants may simply have not paid close enough attention to the stimuli. Even beyond attention, there were likely variations in the extent to which (1) the priming stimuli actually primed the relevant categories and (2) the participants were able to maintain high levels of response focus across all phases of the study.

In priming tasks, experimental stimuli appear and participants passively attend to them. Even if participants did attend to the stimuli, there was likely variation in which aspects of the stimuli they were attending to. Although systematic variation in the stimuli (e.g., pictures of faces varying by ethnicity and gender) likely made these particular categories salient, priming results are still influenced by individual differences in the salience of those categories. If some participants did not process the stimuli according to the categories I intended, this would result in noisier data, making actual differences difficult to find.

Second, priming demonstrates effects when participants push themselves to the limit of their reaction time ability (Wentura & Degner, 2010). It is possible that my young participants had difficulty maintaining task focus for the duration of the study. Like individual differences in category salience, differences in task focus would also increase noise in the data. The paradigm could have been improved to help participants maintain a focus on speed. Although participant directions emphasized speed, the experimental program itself only provided accuracy feedback; perhaps I should have provided latency feedback (e.g., if participants did not provide a response within a certain time window, they would have been told that they were going too slow).

Altogether, these preliminary results suggest caution in interpreting the substantive results of this study, especially null and developmental results. Although it is possible that null

results indicate a truly neutral implicit attitude, they may also represent failure of priming to detect this attitude. Likewise, although it is possible that observed age-related results are true developmental changes in implicit attitudes, it is also possible that these are changes in the appropriateness of the measure for participants of different ages. With these cautions, I now turn to the first substantive study of my dissertation—an investigation of implicit attitudes towards Whites and Latinos among White and Latino children in the U.S.

Study1

Distinguishing the In-group from Out-groups in Children's Implicit Ethnic Attitudes

Implicit social group attitudes have important consequences for our lives. Most obviously, implicit attitudes about out-groups (depending on whether they are positive or negative) are associated with friendliness or discrimination towards members of those groups (Dovidio, Kawakami, & Gaertner, 2002; Fazio et al., 1995; McConnell & Leibold, 2001). Implicit attitudes about one's own in-group are important as well. General positivity towards one's in-group, for example, can contribute to self-esteem (Foels, 2006). Importantly, these effects of implicit attitudes occur even when people explicitly disavow holding the attitudes (McConnell & Leibold, 2001; Nosek & Smyth, 2011).

An important question, therefore, is how implicit social group attitudes develop. Researchers are beginning to examine this issue, and the work that has been done so far suggests that implicit attitudes are relevant for even very young children (Cvencek, Greenwald, et al., 2011; Dunham et al., 2008). There are, however, two big limitations in the current body of research. First, most research has been motivated by the history of discrimination in the U.S. and, as such, has largely focused on White Americans' attitudes towards African Americans. Thus, there is a need to explore the perspectives of more groups, especially minority groups (Dunham et al., 2007; Newheiser & Olson, 2011). Second, with just one exception (Degner & Wentura, 2010), research has failed to distinguish the developmental paths of in-group implicit attitudes from out-group implicit attitudes. When it comes to explicit attitudes, we know that in- and out-group social attitudes develop along different trajectories and, among adults, in- and out-group social attitudes are independent (Aboud, 2003; Brewer, 1999; Cameron et al., 2001). Yet, nearly

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all research examining the development of implicit attitudes has relied on a measure that confounds in-group and out-group attitudes (Blanton et al., 2007).

In the current study, I addressed these limitations by (1) examining the development of implicit attitudes among White and Latino children, ages 7 to 13 and (2) employing a measure of implicit attitudes that can assess implicit attitudes towards Whites separately from implicit attitudes towards Latinos. In the sections that follow, I first discuss the dominant method that has been used to assess children's implicit attitudes. Next, I review the theoretical perspectives on the development of social group attitudes, specifically the effects that group identity and group status are predicted to have on attitudes, and I discuss the importance of assessing in- and out-group attitudes separately. Then, I summarize extant research on implicit attitude development and discuss it in the context of in- and out-group identity and status. Finally, I offer my hypotheses for the development of White and Latino children's implicit social-group attitudes.

Assessing Implicit Attitude Development

Most studies of implicit attitude development have relied in the Implicit Association Test (IAT; Greenwald et al., 1998). Although the IAT has many good psychometric qualities, it is limited in that it can only assess the relative difference between two attitudes (Blanton et al., 2007; Greenwald et al., 2009). As described above, the IAT simultaneously assesses implicit attitudes towards two targets. In an ethnic IAT, for example, the test might include a participants' in-group and an out-group. Thus, because of the way it is structured, an ethnic IAT can provide an estimate of ethnic *bias* (i.e., the extent to which participants prefer their in-group relative to an out-group), but it cannot provide separate assessments of participants' attitudes towards each group. If IAT performance suggests in-group bias, therefore, we know that participants' implicit in-group attitudes are relatively higher than their out-group attitudes. However, since several

permutations of attitudes could underlie this bias (e.g., positive in-group and neutral out-group; neutral in-group and negative out-group; etc.), we do not know the exact constellation of participants' in- and out-group attitudes. Likewise, if IAT performance suggests no implicit in-group bias, we know that participants' in- and out-group attitudes are comparable, but we do not know whether these attitudes are equally positive, equally negative, or equally neutral. Despite the fact that the IAT does not assess in- and out-group attitudes separately, this distinction is integral to the theories that have driven this research. In the next section, I outline these theories and summarize the current research on implicit social attitude development.

Theoretical Perspectives and Extant Research

In social attitude development, two factors—identity and status—are key predictors (Dunham, Chen, & Banaji, 2013; Hailey & Olson, 2013). *Identity* refers to group membership; people tend to have more positive attitudes towards their in-groups than towards their out-groups (Ellemers & Haslam, 2012). *Status* refers to social position in the cultural milieu; people tend to have more positive attitudes towards high status groups than towards low status groups (Jost, Banaji, & Nosek, 2004). Two classes of theories—self-interest theories and social stratification theories—propose that motivational forces underlie these in-group and high-status biases.

Self-interest theories (e.g., Social Identity Theory; Tajfel & Turner, 1979) focus on identity. These theories propose the following: (1) humans have a universal motivation to hold favorable self-views, (2) belonging to a favorable social group is one source of favorable self-views, and (3) group identity, therefore, is a driving force of social group attitudes (Ellemers & Haslam, 2012). One self-interest theory, Social Identity Development Theory (SIDT; Nesdale, 2004) outlines four stages of social group attitude development. In the first two stages, children have no social group attitudes because they either have no notion that people can be sorted by

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social groups (undifferentiated stage) or they are just developing this notion (awareness stage). In the third stage (preference), children develop positive attitudes towards their in-group as an automatic consequence of developing group identification. In this stage, children will be neutral or indifferent towards out-groups, but in the fourth and final stage (prejudice), children acquire the capacity to develop negative attitudes towards out-groups. Unlike in-group positivity which is proposed to be ubiquitous, out-group negativity is proposed to only develop under certain circumstances (e.g., perceived competition or threat from the out-group; Nesdale, Durkin, Maass, & Griffiths, 2005). For ethnic attitudes specifically, self-interest theories predict that in-group positivity will emerge in early middle childhood because this is the age when children begin to self-identify as ethnic group members (Ruble et al., 2004). For ethnic out-groups, these theories predict that attitudes will be neutral in early middle-childhood, but may become negative across the course of middle childhood (Nesdale, Durkin, Maass, & Griffiths, 2004).

Social stratification theories (e.g., System Justification Theory and Social Dominance Theory; Jost & van der Toorn, 2012; Sidanius & Pratto, 2012) focus on status. These theories propose that the key motivational force in social attitude development is a desire to legitimize the social and political systems of one's society. Since societal groups tend to be hierarchically organized (i.e., some groups have higher status than others), social stratification theories predict that even at the expense of personal interest, people will adopt social group attitudes that mirror the societal hierarchy (Jost et al., 2004). Thus, these theories predict that as soon as children are aware of the relative status of social groups, attitudes will develop in kind. Research indicates that awareness of ethnic hierarchies develops early in middle childhood (Bigler, Averhart, & Liben, 2003; Gillen-O'Neel, Ruble, & Fuligni, 2011). By ages 6 or 7, therefore, social

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stratification theories predict that children should have positive attitudes towards high status ethnic majority groups and negative attitudes towards lower status ethnic minority groups.

Empirically, research has indicated some support for both self-interest and social stratification theories. However, methodological limitations have made it impossible to test some of the key predictions of each theory. For White children, the ethnic in-group is also the societal high-status group. Thus, for White children's in-group attitudes, self-interest and system justification theories converge to predict in-group positivity developing early in middle childhood. Indeed, across several studies, White children explicitly and implicitly prefer their ethnic in-group over other groups, and this in-group preference is present as young as age 6 (Aboud, 2003; Baron & Banaji, 2006; Newheiser & Olson, 2011).

For White children, ethnic out-groups generally have lower societal status. Thus, both self-interest and system justification theories suggest that White children will ultimately be negative towards other ethnic groups. However, self-interest theories predict later emergence of out-group negativity than system justification theories. Unfortunately, with data derived from IAT, we do not have a clear articulation of the developmental trajectories of White children's implicit out-group attitudes. IATs indicate that White children are relatively more positive towards their in-group than towards out-groups, but we do not know whether or when their out-group attitudes actually reach negativity. To date, one series of studies has examined implicit attitude development using evaluative priming, a method that allows separate assessment of in- and out-group attitudes (Degner & Wentura, 2010). Across four cross-sectional studies, Degner and Wentura examined implicit attitudes among majority group German and Dutch children between the ages of 9 and 14. Similar to IAT results discussed above, these studies indicated that implicit in-group attitudes were consistently positive across all ages tested. Unlike findings

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derived from IATs, however, these studies demonstrated that White German children's implicit

attitudes towards Turkish immigrants and White Dutch children's attitudes towards Moroccans

were neutral among younger children, but became negative around the age of 12.

In terms of adjudicating between self-interest and system justification theories, Degner

and Wentura's (2010) findings of early in-group positivity and later out-group negativity are

more consistent with the predictions of self-interest theories. Unfortunately, this study did not

include ethnic minority participants. In assessing the influences of identity versus status on

implicit attitudes, research with ethnic minority children is especially important. For ethnic

majority people, identity and status pull attitudes in similar directions, and the two theories are

only distinguished by subtle differences in timing for out-group attitudes. For ethnic minority

people, on the other hand, ethnic in-groups generally have lower social status, which means that

identity and status are predicted to pull attitudes in opposite directions.

Despite their potential to offer critical data in the debate, few studies have included ethnic

minority participants and even fewer have included ethnic minority children. When assessed

explicitly, attitudes among ethnic minority children are consistent with identity—ethnic minority

children are generally very positive about their in-groups (Baron & Banaji, 2009). When

assessed implicitly, however, ethnic minority children's attitudes depend on status—they show

implicit in-group bias when the comparison out-group has relatively lower social status, but no

implicit in-group bias when the comparison out-group has relatively higher status (Baron &

Banaji, 2009; Newheiser & Olson, 2011). This modulation of social group attitudes by status is

often interpreted as support for system justification theory. For example, Dunham et al. (2007)

found that Latino children demonstrated no implicit in-group bias when contrasting Latinos with

Whites, and they interpreted this as possible evidence of "internalized negativity associated with

the in-group" (p. 250). Given previously discussed limitations of the IAT, however, interpreting a lack of in-group bias as an indication of in-group negativity reaches beyond the data.

Overall, self-interest theories focus on identity and the distinction between in- versus out-groups, whereas and system justification theories focus on status and the distinction between groups that are highly regarded in the larger society versus those that are not. In previous studies, results from ethnic majority children have generally been interpreted according to self-interest theories, while results from ethnic minority children have generally been interpreted according to system-justification theories. Although ethnicity may tend to be experienced differently among majority versus minority group children (e.g., Akiba, Szalacha, & García Coll, 2004; McKown & Strambler, 2009; McKown & Weinstein, 2003; Spencer & Markstrom-Adams, 1990; Turner & Brown, 2007), there is little reason to suspect that a completely different set of forces underlies the development of ethnic attitudes among different groups of children. By definition, implicit attitudes are "traces of past experience [that] affect some performance, even though the influential earlier experience is not remembered in the usual sense" (Greenwald & Banaji, 1995, pp. 4-5). Thus, in thinking about "traces of past experience," we likely need to consider both group identity and group status. To do this, we need to separately assess in- and out-group attitudes among children from high status and low status groups.

Current Study

In this study, I employed evaluative priming (Fazio et al., 1995; Fazio, Sanbonmatsu, Powell, & Kardes, 1986) to assess implicit in- and out-group attitudes among White and Latino children in the U.S. Overall, I expected that patterns of children's implicit attitudes would be consistent with the combined influence of identity and status. For White children, I expected to replicate the findings of Degner and Wentura (2010). For attitudes towards their in-group, I

expected that across all ages in my sample, the White children would have positive implicit

attitudes. For implicit attitudes towards out-group Latinos, I expected that White children would

become progressively more negative over time.

For Latino children, I expected to replicate previous results and find no implicit in-group

bias (Dunham et al., 2007). However, since previous results were demonstrated with the IAT, the

underlying constellations of in- and out-group attitudes have yet to be determined, and I had two

competing hypotheses. One prediction was that identity might be more influential for in-group

attitudes, whereas status might be more influential for out-group attitudes. Children have a lot of

direct experience with their in-groups. Except in the case of inter-ethnic adoption, family

members are, by definition, members of one's ethnic in-group, and early experiences with this

in-group is likely to be positive. Thus, as predicted by social interest theories, as soon as children

self-identify with their group, it can serve as a source of positive social esteem (Ellemers &

Haslam, 2012). Direct experiences with out-groups, conversely, are likely to be more limited; for

many children, societal representations are the earliest and most enduring experience with ethnic

out-groups (Abraham & Appiah, 2006; Calvert, 1999; Pettigrew, Tropp, Wagner, & Christ,

2011; Tropp, 2006). It is possible that as children develop awareness of our society's ethnic

hierarchy across the course of middle childhood, their out-group ethnic attitudes will

increasingly mirror groups' societal status (McKown & Weinstein, 2003). If identity and status

are differentially associated with in- and out-group attitudes in these ways, I expected that,

towards their in-group, Latino participants would be consistently positive across all ages

sampled, whereas towards out-group Whites, Latino participants would become progressively

more positive over time. On the other hand, another possible prediction was that by middle

childhood, identity and status affect in- and out-group attitudes equally. If this is the case, I

expected Latino children to be implicitly neutral towards both Latinos and Whites. Essentially, I expected the influences of identity and status to cancel each other out.

So far, I have described hypotheses regarding age-related changes in White and Latino children's implicit attitudes as indirect evidence for the predictions made by self-interest and system justification theories. In this study, I directly tested one proposition of self-interest theories—that identification is a key predictor of attitudes (Nesdale et al., 2004). Most of the research that has examined links between identity and attitudes has been conducted with adults and has employed explicit measures (Ellemers & Haslam, 2012). The few studies that have employed *implicit* measures of identity and attitudes among adults have found mixed results— although some studies conclude that identification increases in-group bias (Perreault & Bourhis, 1998, 1999), other studies have found no association between identity and attitudes (Brown, 2000; Brown & Capozza, 2006).

In terms of developmental research, the few studies that have directly tested associations between group identity and group attitudes have relied on experimentally created groups (i.e., novel group studies) and explicit assessments of group identity (Bigler, Jones, & Lobliner, 1997; Patterson & Bigler, 2006). These studies indicate that factors that increase group identification (e.g., functional use of group names by teachers) also increase in-group bias. In terms of real-world groups, a handful of studies have indicated that *explicit* group identification is associated with group attitudes (Corenblum, 2014; Davis, Leman, & Barrett, 2007). Interestingly, Davis and colleagues (2007) found that the link between identification and attitudes was significant among Black children, but not among White children, suggesting that these associations may be moderated by ethnicity. I was able to locate exactly one study that assessed *implicit* group identification among children (Dunham et al., 2007). Dunham and colleagues (2007) used the

IAT to assess Latino children's implicit (1) identification with Latinos as compared with Whites, (2) identification with Latinos as compared with Blacks, (3) attitudes towards Latinos as compared with Whites and (4) attitudes towards Latinos as compared with Blacks. Results indicated that, as a group, Latino children more strongly identified with Latinos relative to Black and held more positive implicit attitudes towards Latinos as compared with Blacks. At the individual level, Latino children's implicit in-group identification and in-group attitudes were associated with one another, but only when the comparison out-group was Blacks; when the comparison out-group was Whites, there was no association between Latino children's implicit in-group identification and in-group attitudes. Thus, Dunham and colleagues' study suggests that implicit identification and attitudes may be linked as predicted by self-interest theories, but that these associations may only be present in the context of a lower-status comparison out-group. In this study, I assessed identification and attitudes without a salient out-group, and I included both White and Latino participants. I examined whether the strength of an individual's implicit ethnic identification (as assessed with a variation of evaluative priming) was associated with the strength of their in-group preference.

Overall, this study addressed these key questions:

1. When assessed separately, how do implicit in-group and out-group attitudes differ across the course of middle childhood? Do average attitude levels or age-related changes in attitudes differ between White and Latino children?

2. Is implicit ethnic identification associated with in-group ethnic attitudes, and if so, does identification account for observed age-related or ethnic differences in implicit attitudes towards one's ethnic in-group?

Method

Participants

As a reminder, data from 262 elementary-age students were included in this study (see Table 1, Figure 1, and the method section of the preliminary study above for a full description of the participants and recruitment).

Procedure

As described in detail in the preliminary study above, participants played a computer "game" in which they categorized target words as quickly as possible and attempted to remember priming pictures. In the entire experimental paradigm, there were ten different phases, each composed of a unique combination of target words and priming stimuli (see Table 3). Data for this study were drawn from phases: 1 (baseline for *good/bad* words: primes = none; targets = *good/bad* words), 4 (social group attitude measure: primes = faces; targets = *good/bad* words), 7 (baseline for *me/not me* words: primes = none; targets = *me/not me* words), and 8 (social group identification measure: primes = faces; targets = *me/not me* words).

Measures

Implicit ethnic attitudes. In phase 1, participants categorized positive and negative target words with no primes, and in phase 4, participants categorized positive and negative target words after seeing priming pictures of White and Latino boys and girls. As described in the preliminary study above, I used data from these two phases to calculate facilitation scores for each relevant prime–word category pairing (i.e., *White boy–positive*, *White boy–negative*, *White girl–positive*, *White girl–negative*, *Latino boy–positive*, *Latino boy–negative*, *Latina girl–positive*, *Latina girl–negative*). Previous studies that have used face pictures as ethnic primes have controlled for gender by using stimuli of only one gender (e.g., White and Turkish men; Degner & Wentura,

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2010). With my focus on in- and out-group attitudes, I did not want ethnic stimuli to be from a gender in-group for some participants, but a gender out-group for others. Thus, I included priming pictures of both boys and girls, but when calculating ethnic attitudes, I controlled for gender by only using data from each participants' gender in-group. For example, to calculate boys' implicit White attitude I took the difference: *White boy–negative - White boy–positive*, whereas to calculate girls' implicit White attitude I took the difference: *White girl–negative - White girl–positive*. Positive values for ethnic attitude estimates indicate that participants more readily associated the ethnic group with positive concepts as compared with negative concepts.

Implicit ethnic identification. I calculated participants' implicit ethnic identification in nearly the same way that I calculated their implicit ethnic attitudes. The only difference was that I used data from the phases that included the *me* and *not me* target words (i.e., baseline data from phase 7 and primed reaction times from phase 8). Positive values for this ethnic identification estimate indicate that participants more readily associated the ethnic group with the *me* concepts as compared with the *not me* concepts.

Results

Study 1 results are presented in three parts. First, I describe participants' implicit attitudes towards Whites and Latinos, and I examine the extent to which these attitudes differ according to the participants' own ethnicity, gender, and age. Second, I describe implicit identification with Whites and Latinos, and again, I examine differences by participants' demographic characteristics. Finally, I examine the association between implicit identity and attitudes.

I ran preliminary analyses in which I examined associations between participants' SES and all variables of interest. There were no significant effects. Furthermore, adding SES as a

control variable did not substantively change any of the reported results. Thus, I do not include SES in the reported models.

Implicit Ethnic Attitudes

To examine implicit ethnic attitudes, I ran two regressions in which I predicted implicit attitudes towards (1) Whites and (2) Latinos by child's: age (sample mean centered), ethnicity (effect coded: Latino = -1, White = 1), and gender (effect coded: female = -1, male = 1). I also entered all of the interactions among these variables, but since the three-way interactions were never significant, I only report models including main effects and two-way interactions. As shown in Table 4, for implicit attitudes towards Whites, there was a main effect of participant ethnicity such that White participants had significantly more positive implicit attitudes towards Whites (M = 32.73, SD = 110.89) than did Latino participants (M = -9.33, SD = 113.94). There were no main effects or interactions involving age, indicating that average implicit attitudes towards Whites were consistent across participant ages.

For implicit attitudes towards Latinos, there was a two-way interaction between participant ethnicity and age. To follow up this interaction, I split the sample by ethnicity and ran separate regressions predicting implicit attitudes towards Latinos by child's age, gender, and the interaction between age and gender. As shown in Figure 3, these analyses indicated that for White participants, implicit attitudes towards Latinos were positive among the youngest children, but declined marginally across age: $b(SE)$ = -13.53(6.98); p = .055. For Latino participants (of all ages), implicit attitudes towards Latinos never significantly differed from 0, and the seemingly positive slope across age was, in fact, non-significant: $b(SE)$ = 11.50 (8.79); p = .193.

Implicit Ethnic Identification

Next, I examined group differences in ethnic identification. To this end, I ran two regressions in which I predicted implicit identification with (1) Whites and (2) Latinos by children's: age, ethnicity, gender, and all of the interactions among these demographic variables. Since the three-way interactions were never significant, I only report models including main effects and two-way interactions. As shown in Table 5, for implicit identification with Whites, there was a main effect of participant ethnicity such that that White participants associated pictures of White children with the concept of *self* ($M = 40.35$, $SD = 107.02$) more strongly than Latino participants did ($M = -15.79$, $SD = 134.56$). There were no effects or interactions with age, indicating that the higher level of White identification among White participants was consistent across all ages in the sample (see Figure 4).

For implicit identification with Latinos, there was a two-way interaction between participant ethnicity and age. To follow up this interaction, I split the sample by ethnicity and ran separate regressions predicting implicit identification with Latinos by child's gender, age, and the interaction between gender and age. As shown in Figure 4, these analyses indicated that for White participants, implicit identification with Latinos declined significantly across age: $b(SE) = -17.35(7.72)$; $p = .027$. For Latino participants, on the other hand, implicit identification with Latinos remained consistently neutral across age: $b(SE) = 10.49 (8.62)$; $p = .226$.

Association between Implicit Ethnic Identification and Attitudes

Finally, I examined the extent to which implicit identification with an ethnic group was associated with implicit attitudes towards that group. To this end, I ran three-step regressions predicting implicit attitudes from: participant demographic variables (ethnicity, gender, and age; step 1), implicit identification (step 2), and the interactions between demographic variables and

implicit identification (step 3). For attitudes towards Whites, these analyses indicated that stronger identification with Whites was associated with more positive attitudes towards Whites (see Table 6). In fact, identification with Whites partially but significantly mediated the previously discussed finding that White participants have more positive attitudes towards Whites than their Latino peers (95% CI: 1.2541 to 14.5626; $p < 0.05$, as tested by a bias-corrected bootstrapping procedure; Hayes, 2013). This suggests that White participants have more positive attitudes towards Whites than do their Latino peers, in part, because White participations are correspondingly more identified with Whites than are their Latino peers. None of the interaction terms from step 3 reached significance, indicating that the positive association between White identification and White implicit attitudes was consistent across participant ethnicity, gender, and age. For attitudes towards Latinos, these analyses indicated no significant effects. Implicit identification with Latinos was not associated with implicit attitudes towards Latinos, regardless of participants' ethnicity, gender, or age.

Discussion

In this study, I used evaluative priming to examine implicit ethnic attitudes among White and Latino boys and girls, ages 7 to 13, in the U.S. With separate assessments of participants' attitudes towards in- and out-groups that differed in social status, this study was poised to test the relative predictions of self-interest theories (which offer identity as a key influencer of attitudes) and social stratification theories (which offer status as a key influencer of attitudes). Early studies of implicit attitude development tended to focus on just one of these theories as explanations of observed patterns of social group attitude development. In general, the ubiquitous implicit in-group bias demonstrated among children from majority groups was interpreted as support for self-interest theories (e.g., Baron & Banaji, 2006; Dunham et al.,

2006), whereas the lack of implicit in-group bias demonstrated among children from minority groups was interpreted as support for social stratification theories (e.g., Baron & Banaji, 2009; Dunham et al., 2007). Overall, results from this study were most consistent with the combined influence of identity and status on social group attitudes. As such, this study adds to more recent research that has also focused on identity *and* status as co-influencers of social group attitudes for both majority and minority groups (Dunham et al., 2013; Hailey & Olson, 2013).

For White participants, I replicated the findings of Degner and Wentura (2010) in a different social context—majority group children in the U.S., rather than in Germany. In terms of attitudes towards Whites, White children, on average, demonstrated implicit positivity across all ages tested. In terms of attitudes towards Latinos, White children, on average, demonstrated implicit positivity at the youngest ages tested, but these attitudes became increasingly negative among older participants. Given that White children's ethnic in-group is also the societal high-status group, these patterns of early developing in-group positivity and later developing out-group negativity are consistent with both self-interest and system justification theories (Jost et al., 2004; Nesdale, 2004).

For Latino participants, findings replicated previous research that employed the IAT—Latino children demonstrated no implicit preference for their in-group relative to a White out-group (Dunham et al., 2007). Although I expected to find no in-group bias among Latinos, I had two contrasting hypotheses for the valences of their underlying in- and out-group attitudes. If identity were more associated with in-group attitudes and status were more associated with out-group attitudes, I expected that Latino children's average in- and out-group attitudes would both be positive. If identity and status were associated with both in-and with out-group attitudes, I expected that Latino children's average in- and out-group attitudes would both be neutral. Data

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supported the latter hypothesis—across all ages, Latino participants' attitudes towards both Latinos and Whites were implicitly neutral (i.e., they never differed significantly from zero).

Altogether, results highlight the benefits of assessing in- and out-group attitudes separately rather than only relying on assessments of bias. For White children, this study suggests that although in-group ethnic bias is observable from an early age (Baron & Banaji, 2006; Dunham et al., 2008), this bias is primarily due to in-group positivity; out-group negativity only develops around age 12 (cf. Degner & Wentura, 2010). Although both in-group positivity and out-group negativity can cause discriminatory behavior, these two components of intergroup attitudes are associated with different forms of discrimination (i.e., in-group favoritism and out-group degradation, respectively), and they likely require different interventions to reduce their effects (Brewer, 1999; Wenzel & Mummendey, 1996). With out-group attitudes changing across the course of middle childhood, this study suggests that middle childhood may be an ideal time to intervene and prevent implicit out-group negativity from developing (cf. Pfeifer, Brown, & Juvonen, 2007).

For Latino children, this study suggests that a lack of implicit in-group bias (Dunham et al., 2007), is due to neutrality towards both the in- and the out-groups. Most research on implicit attitude development has relied on ethnic-majority participants or on experimentally created groups (e.g., Baron & Banaji, 2006; Dunham, Baron, & Carey, 2011). Implicit in-group preferences observed in these studies have been interpreted to be the psychological default, the expected norm, and research demonstrating a lack of implicit in-group bias among ethnic-minority youth has interpreted this as a deficiency (Banaji, Baron, Dunham, & Olson, 2008; Dunham et al., 2008). Furthermore, despite only having measures of ethnic bias, previous implicit attitude results among ethnic minorities were sometimes interpreted as "internalized

negativity" (Dunham et al., 2007). Further research is needed to determine whether in-group neutrality is actually psychologically problematic (e.g., whether *positive* in-group attitudes are needed for positive self-esteem; an issue I come to in Study 2). Thus, should we propose interventions to increase Latino children's implicit in-group attitudes (and make their attitudes more like those observed among their White peers)? Or should we interpret Latino children's attitudes as egalitarian? Future research can address these questions.

In addition to providing separate assessments of in- and out-group attitudes there is another distinction between what I assessed with evaluating priming versus what previous researchers have assessed with IAT. In evaluative priming, assessed attitudes are *exemplar-based*—they are the result of children's passive processing of particular stimuli that vary along certain dimensions, including the category of interest (e.g., ethnicity). In the IAT, assessed attitudes are *category-based*—they are the result of children consciously activating specific social categories (e.g., *White* and *Latino*). This may be one reason why developmental change in implicit ethnic attitudes has been observed with evaluative priming, but not with IAT (Degner & Wentura, 2010; Dunham et al., 2008; Newheiser, Dunham, Merrill, Hoosain, & Olson, 2014). From a very young age, children have mental representations of specific social categories (including ethnic and racial groups), and these nascent mental representations can include prejudices and stereotypes (Hirschfeld, 2008). However, young children do not necessarily spontaneously process exemplars according to these social categories (Dunham et al., 2013). Thus, there are two possible explanations of developmental changes in implicit attitudes that have been demonstrated with priming (e.g., the increasingly negative attitudes towards Latinos among White participants observed here). On the one hand, the content of the attitude may be changing (e.g., White children's attitudes may become more negative). On the other hand, the

content may be consistent, but the extent to which that content is activated by a category member may change. Regardless, the findings garnered from priming provide important insights into children's intergroup attitudes. It stands to reason, for example, that the extent to which implicit attitudes are activated by a specific category member may be better predictors of children's intergroup behaviors in real life. Future research could include a direct assessment of children's spontaneous ethnic/racial categorization as either a control or as a predictor of implicit attitudes. Furthermore, research including measures of exemplar-based attitudes, category-based attitudes, and children's behaviors will clarify the meaning of children's implicit attitudes.

In addition to ethnic attitudes, I also assessed implicit ethnic identification—the extent to which children implicitly associated Whites and Latinos with their sense of self. This was interesting in and of itself, since only one other study has assessed children's implicit ethnic identification (Dunham et al., 2007). As a group, White children demonstrated a consistently high implicit association between pictures of White children and the concept of *self* across all ages sampled, and an increasing disassociation between pictures of Latino children and the concept of *self* among older participants. Latino participants, as a group, demonstrated no implicit associations between pictures of either White or Latino children and the concept of *self*.

The finding that White children demonstrated higher identification with their ethnic in-group than did Latino children is certainly inconsistent with previous research examining explicit ethnic identification; White children and adolescents consistently score lower on assessments of ethnic identity than their peers from ethnic minority backgrounds (Phinney & Alipuria, 1990). Given that there has been only one previous study of implicit ethnic identification, there is little empirical evidence to compare with the current findings. Dunham et al. (2007) examined ethnic identification among Latino children and found that children only demonstrated implicit

identification with Latinos when Blacks were the comparison out-group; when Whites were the comparison out-group, Latino children demonstrated equivalent identification with both groups (although since the IAT was used, we do not know whether their Latino and White identities were equally strong, equally neutral, or equally weak). Thus, findings from the current study in which Latinos demonstrated weak implicit identification on an evaluative priming task with no explicit out-group are not wholly inconsistent with previous research. However, it is somewhat surprising that, as a group, the Latino children demonstrated weaker implicit ethnic identities than their White peers. Given experiences related to being a member of groups that are a numerical minority and/or negatively stereotyped, we would generally expect ethnic identity (both explicit and implicit) to be much more salient for ethnic minority people than ethnic majority people (García Coll et al., 1996; Spencer & Markstrom-Adams, 1990). As post hoc explanations for these findings, I offer the participants' school contexts and the specific ethnic stimuli used to prime ethnic categories as possible explanations.

Most participants attended schools in which their own ethnic group was the majority. In their broader social lives (e.g., neighborhoods and media), however, the Latino participants were likely to have had experience interacting with people from ethnic groups other than their own, whereas the White participants were likely to be less accustomed to interacting with diverse others. During the experiment, participants saw pictures of White, Latino, and Black children. Although ethnicity was not made explicitly relevant to the task, it is possible that for the White participants, the diversity of the stimuli made ethnicity (including their own) very salient. For the Latino participants, it is possible that the particular ethnic stimuli explain their relatively lower ethnic identity observed on this task. Pretesting (described in the preliminary study above; see Table 2) suggested that of the pictures used to prime *White*, 98-100% of adults agreed that the

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pictures I used were "White," whereas of the pictures used to prime *Latino*, only 69-89% of adults agreed that the pictures I used were "Latino" (and these were the pictures with the highest levels of consensus). Although there is phenotypic variation in all groups, Latinos, who can be from any race, are especially diverse (De Genova, 2006). Thus although I selected photos that were the most stereotypically evocative, there may have been more variation in the extent to which the "Latino" stimuli actually primed this social group, as compared with the extent to which the "White" stimuli primed that social group. Previous studies of children's implicit ethnic attitudes have used pictures as ethnic stimuli (Baron & Banaji, 2006; Dunham et al., 2007; Newheiser et al., 2014), and this practice seems to be developmentally appropriate, given that elementary-age children primarily understand ethnicity through its visual manifestations (Gillen-O'Neel, Mistry, Brown, & Rodriguez, under review; Quintana, 2008; Rogers et al., 2012). Given that evaluative priming assesses exemplar-based associations, it is possible that even perfectly stereotypical photos are not the best stimuli for assessing Latino identification with priming. Ethnic in-groups can be defined by many different criteria (Quintana & Vera, 1999; Umaña-Taylor, Diversi, & Fine, 2002), and given the phenotypic variation among Latinos, it is possible that many Latino children (even those with strong ethnic identities) would not identify with pictures of "stereotypical" Latinos. Future research can try to replicate these findings with other stimuli to evoke *Latino* (e.g., stereotypical names Weyant, 2005).

Despite the potential limitations of my assessment of implicit in-group identification, including this assessment allowed me to move beyond using group difference patterns to infer whether attitudes are consistent with the predictions of identity and status (as I have done so far) and to directly test the association between identification and attitudes that is predicted by self-interest theories such as SIDT (Nesdale, 2004). For attitudes towards Whites, identification with

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Whites was a significant predictor—the more that participants associated Whites with the self, the more positive their attitudes towards Whites were. This association held for both White and Latino children, but since average White participants were more likely to associate Whites with the self, the link between identification and attitudes partially explained why White participants tended to be more positive towards Whites than were Latinos. For attitudes towards Latinos, however, I found no association between identification with and attitudes towards Latinos.

The association between identity and attitudes differed by the ethnicity of the stimuli— the association held for White stimuli, but not Latino stimuli. As already discussed, one possibility could be that lower validity and/or the reliability of assessment of Latino identification and Latino attitudes could obscure true associations between these variables. However, it is important to remember that I used the same stimuli to assess both attitudes and identification. Although there was probably participant-to-participant variation in what the pictures of Latinos primed, to the extent that participants did identify with these pictures, SIDT would predict positive attitudes towards these same pictures. Yet, results indicated no association between identification with and attitudes towards Latinos. Thus, another possible interpretation of these results is that the association between identification and attitudes is only significant for higher status groups. SIDT predicts that children derive self-esteem from both group membership and group status (Nesdale, 2004). Merely belonging to a group is expected to cause positive in-group attitudes as a way to enhance self-esteem, but perhaps these associations are problematic for children who identify with groups that are relatively lower status in the larger society (Nesdale & Flesser, 2001). We know that perceptions of group status affect implicit attitudes towards that group (Dunham, Newheiser, Hoosain, Merrill, & Olson, in press; Newheiser et al., 2014). Unfortunately, I did not assess children's perceptions of status, so I

cannot directly test how it might moderate the associations between identification and attitudes. This will be a goal for future research.

Conclusions and Future Directions

This study examined implicit ethnic attitudes and identifications among White and Latino children. Unlike most previous studies, which have relied on the IAT and assessed in-group bias and relative identification with one group as compared to another, the current study relied on evaluative priming and, therefore, assessed children's in- and out-group attitudes and identifications separately. This study, therefore, offers insights to the constellations of attitudes and identifications that may underlie previously observed IAT results. This method, however, has its own limitations. Specifically, the assessed attitudes and identifications were exemplar-based, established with particular stimuli representing *White* and *Latino*, rather than the social categories themselves.

Overall, this study indicated several ethnic differences in ethnic attitudes, identification, and the associations between them. White children demonstrated consistent in-group positivity, which was associated with their consistent in-group identification. Across the ages tested, White children also demonstrated more negativity towards Latinos and increasing disidentification from Latinos, although attitudes towards and identification with Latinos were not directly associated with one another. At the group level, Latino children demonstrated few significant effects—implicit neutrality towards both Latinos and White and non-significant identification with either Whites or Latinos. At the individual level, Latino children's identification with Whites was associated with their attitudes towards Whites, but their identification with Latinos was independent of their attitudes towards Latinos.

I have already discussed some of the methodological idiosyncrasies that might have contributed to the different findings between participating White and Latino children. Of course, there are other contextual factors that might have contributed to these seemingly ethnic differences. I was able to test one obvious contextual factor—socioeconomic status—and it did not contribute to current findings. All ethnic differences held, even after controlling for individual differences in SES. Previous research has demonstrated that SES does play a role in implicit attitudes (Rudman, Feinberg, & Fairchild, 2002). However, it is perceptions of societal-level status (e.g., an association between *White* and *rich*, irrespective of one's own SES) that seems to make a difference (Dunham et al., 2013; Dunham et al., in press; Newheiser et al., 2014). Of course, other factors such as school context and immigrant heritage likely play a role in implicit attitudes, and are relevant to the current study (McGlothlin & Killen, 2010). However, since the same children participated in Study 2 (below), and these same factors are relevant there, I save the discussion of these contextual factors for the general discussion at the end. I now turn to Study 2, in which I add implicit self-esteem and self-concepts into the consideration of ethnic attitudes and ethnic identification.

Study 2

Balanced Implicit Identities: Implicit Group and Self Attitudes

Attitudes about the self play a primary role in social cognition, and they are associated with several other important outcomes (Sedikides & Spencer, 2007). For example, generally positive attitudes about one's self (i.e., positive self-esteem) are associated with psychologically adaptive affect regulation and general satisfaction with one's life (Diener & Emmons, 1984; Taylor & Brown, 1988). And specific attitudes about one's self in particular domains (e.g., academic self-concepts) can affect motivation for and performance in those domains (Major & O'Brien, 2005; Pinel, Warner, & Chua, 2005).

Attitudes about one's social groups are some of the many factors that can affect self-attitudes (Aberson, Healy, & Romero, 2000; Cvencek, Meltzoff, & Kapur, 2014; Luhtanen & Crocker, 1992; Smith & Tyler, 1997). Applying principles of cognitive consistency to social cognition (e.g., Heider, 1958), group identity, group attitudes, and self-attitudes should be linked in logically consistent ways—what Greenwald et al. (2002) call *balanced identity theory* (BIT). Logically, BIT makes sense. If a group is strongly connected to a person's sense of self, positive or negative attitudes about that group should contribute, respectively, to positive or negative self-esteem. Likewise, if a group is not connected to a person's sense of self, there should be no particular association between group attitudes and self-esteem. Importantly, implicit (i.e., sub-conscious) measures of social cognitions may provide better tests of BIT than explicit measures because some of the hypothesized links between group identity, group attitudes, and self-attitudes may not be available to introspection and, therefore, cannot be accurately assessed with self-reports (Greenwald & Banaji, 1995; Greenwald et al., 2002).

In theory, for people from groups that face negative stereotypes, the predictions of BIT could be psychologically problematic (Crocker & Major, 1989; Greenwald et al., 2002). For ethnic minority people in the United States, for example, negative ethnic attitudes prevalent in the larger society may lead to negative implicit attitudes, even if in-group negativity is explicitly disavowed (Haye et al., 2010; Rudman et al., 2002). To the extent that implicit group attitudes are associated with self-attitudes, therefore, people with ethnic minority heritage may be at risk for decreased self-esteem (Corenblum, 2014; Verkuyten, 2008).

Luckily, in terms of general group attitudes and self-esteem, there is little empirical evidence of internalized negativity among ethnic minorities in the U.S. (Crocker & Lawrence, 1999; Verkuyten, 2005). Some researchers have suggested that ethnic minority people maintain high self-esteem by specifically avoiding balanced associations between group attitudes, group identification, and self-esteem (Crocker & Major, 1989). Spencer (1985), for example, suggests that African American children may partition conceptions of their racial group from conceptions of their selves. Crocker and Lawrence (1999) propose several strategies that ethnic minority people might employ to avoid balance (e.g., changing the contingencies upon which self-esteem is based). In these writings from the 80s and 90s, the focus was primarily on explicit group attitudes and self-esteem, but research with implicit measures also supports dissociation between group attitudes, group identity, and self-esteem among ethnic minority participants. Despite generally demonstrating implicit in-group attitudes that are ambivalent or negative (Baron & Banaji, 2009; Corenblum & Armstrong, 2012; Dunham et al., 2007; Nosek, Banaji, & Greenwald, 2002) and high levels of implicit group identity (Corenblum, 2014; Devos, 2006), on average, ethnic minority participants demonstrate high levels of self-esteem (Dunham et al., 2007; Nosek et al., 2002; Verkuyten, 2005). Thus, unlike people with ethnic majority heritage

whose patterns of group identity, group attitudes, and self-esteem strongly support BIT (Greenwald et al., 2002), the hypothesized associations are weak or non-existent among people with ethnic majority heritage (Devos & Torres, 2007; Dunham et al., 2007; Rudman, Greenwald, & McGhee, 2001).

Differences in BIT between ethnic majority versus ethnic minority adults lead to two sets of questions. The first is developmental. How do the associations predicted by BIT develop? For example, is a balanced identity a psychological norm, developed among all children, but then gradually lost among children from ethnic minority backgrounds? Or, is a balanced identity only ever developed among children from ethnic majority backgrounds? The second set of questions regards domain specificity. Does BIT only apply to general group attitudes and self-esteem (i.e., the extent to which group and self are associated with positive or negative concepts), or does it also apply to specific group stereotypes and self-concepts (e.g., the extent to which group and self are associated with particular traits like *smart* or *dumb*)? Are there majority–minority group differences in these domain-specific applications of BIT? In the current study, I address these questions. In the sections below, I start with a discussion of the development of BIT, and then I discuss applying BIT to a specific domain that is very relevant for children—academics.

Development of BIT

BIT comprises three links: group–valence (ethnic attitudes), group–self (ethnic identity), and self–valence (self-esteem). Several studies have examined each of these links, although few studies have included both ethnic majority and ethnic minority children. Research examining implicit ethnic attitudes (group–valence link) among children was discussed in detail in Study 1 above. Overall, this research suggests that from the youngest ages tested (6 years old), ethnic majority children tend to demonstrate positive implicit attitudes towards their ethnic in-group,

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whereas ethnic minority children tend to demonstrate neutral or slightly negative implicit attitudes towards their in-group (see Study 1 above and Banaji et al., 2008; Baron & Banaji, 2009; Baron & Banaji, 2006; Corenblum, 2014; Corenblum & Armstrong, 2012; Dunham et al., 2006, 2007; Dunham et al., 2013; Dunham et al., in press; Newheiser et al., 2014).

Most research on children's ethnic identities (group–self link) has employed explicit measures and has only included ethnic minority youth (Akiba et al., 2004; Corenblum, 2014; Quintana et al., 2006, but see Brown, Spatzier, and Tobin (2010) for one study of White children's ethnic identity). These studies indicate that, when asked explicitly, children report strong connections with their ethnic groups. Research examining implicit self–group associations among children is sparse. I was able to find exactly one study of implicit ethnic identity among children (Dunham et al., 2007). Dunham and colleagues found that Latino children, as a group, demonstrated stronger identification with Latinos than with Blacks, but equal identification with Latinos and Whites. Results from Study 1 (reported above) suggest that White children, as a group, implicitly identified with Whites.

Unlike the limited research on children's implicit ethnic identification, several studies have examined children's implicit self-esteem (self–valence link). Overall, these studies suggest two things. Children's implicit self-esteem is generally positive (Corenblum, 2014; Dunham et al., 2007; Yamaguchi et al., 2007), and there are few group differences in implicit self-esteem. At the group level, children from ethnic majority and ethnic minority group demonstrate similar levels of implicit self-esteem (Davis et al., 2007; Verkuyten, 2005, 2007). Even when there are group differences in explicit self-esteem, these differences are not apparent when self-esteem is assessed implicitly (Yamaguchi et al., 2007).

At the level of group differences, therefore, there is consistent evidence for BIT among ethnic majority children (i.e., positive in-group attitudes, strong in-group identities, and positive self-esteem). For ethnic minority children, the group difference evidence paints a less clear picture (i.e., in-group attitudes and in-group identification that are neutral or that only hold when a lower-status out-group is used as comparison, but positive self-esteem). Tests of BIT however, are not done at the group level; BIT proposes that intra-individual social cognitions will form logically consistent structures.

To date, only one study (Dunham et al., 2007) has examined BIT with ethnic attitudes and identities among children. Dunham and colleagues assessed ethnic attitudes, ethnic identification, and self-esteem among Latino children (ages 5.5-12) and Latino adults. Since Dunham et al. employed the IAT, they needed an out-group comparison for all of their assessments, and they decided to use two—half of the participants completed assessments of Latino versus White attitudes and identification, and half of the participants completed assessments of Latino versus Black attitudes and identification. Results indicated that the comparison out-group made a difference. When the comparison was Latino versus Black, results were more-or-less consistent with BIT; Latino children who identified with Latinos more than Blacks and who had more positive attitudes towards Latinos as compared with Blacks tended to have positive self-esteem. When the comparison was Latino versus White, however, results were inconsistent with BIT; there were no significant associations between Latino children's implicit identification with Latinos versus Whites, attitudes towards Latinos versus Whites, and self-esteem. Thus, Dunham and colleagues conclude that, for young children, balance may be contingent upon "positive differentiation from another disadvantaged minority" (p. 251).

Dunham et al.'s (2007) findings raise some interesting questions. First, do ethnic minority children's balanced identities require a lower-status comparison group, or is balance merely inhibited by the presences of a higher-status comparison group? What about balanced identities among ethnic majority children—do they require a lower-status comparison group? Finally, do children (both minority and majority) display balanced identities beyond general ethnic attitudes, identity, and self-esteem? Do the associations of BIT hold among ethnic minority and majority children in the specific domain of academics? This current study was designed to answer these questions. By employing evaluative priming as an implicit measure, I assessed implicit ethnic attitudes and identification without a specific comparison out-group (see discussions of this method in the preliminary study and Study 1 above). By including both Latino and White children as participants, I can test the predictions of BIT among both ethnic minority and ethnic majority children. Finally, by examining both general and academic attitudes and self-concepts, I can test the domain generality of BIT. This is the issue I turn to next.

BIT in Other Domains: From Attitudes to Stereotypes

In their original conception of BIT, Greenwald and colleagues (2002) propose that the theory applies at both the level of general attitudes (i.e., links between self, group, and general valence) and at the level of more specific stereotypes (i.e., links between self, group, and specific traits). Specific stereotype BIT would comprise these three links: group–trait (ethnic stereotypes in a specific domain), group–self (ethnic identity), and self–trait (self-concept in a specific domain). The research reviewed above suggested that majority and minority people might differ in the extent to which their social cognitions are balanced. Specifically, because they face negative societal stereotypes, ethnic minority people may protect their self-esteem by dissociating group status from self-esteem and making self-esteem contingent upon other factors.

This strategy may be successful for avoiding general social-cognitive balance because there are several factors upon which one might derive general self-esteem. In a specific domain, however, avoiding balance between group stereotypes, group identity, and self-concepts may be more difficult because there are fewer bases for specific self-concepts.

In this study, I focused on the academic domain, and I examined BIT for children's implicit ethnic academic stereotypes, ethnic identification, and academic self-concepts. There are three main reasons why I focused academics for this study. First, academics is an especially relevant domain for children (Cole et al., 2001). Second, stereotypes impugning the academic capacities of certain ethnic groups remain prevalent in our society, and specifically, Latinos are stereotyped as less intelligent that Whites (Gonzales, Blanton, & Williams, 2002; Swim & Stangor, 1998; Weyant, 2005). Third, although no previous research has directly tested BIT in terms of ethnic groups and academics, there is empirical evidence hinting at how children's conceptions of *ethnic group*, *self*, and *academics* might be associated. Specifically, stereotype threat research provides evidence of children's academic ethnic stereotypes (i.e., group–trait link; McKown & Weinstein, 2003), and research examining children's gender–math stereotypes and math self-concepts suggest that children's content-specific social cognitions are associated with one another as predicted by BIT (e.g., Cvencek et al., 2014). In the next paragraphs, I review these lines of research and then offer my hypotheses for the current study.

Stereotype threat is a situational phenomenon in which stereotypes can become self-fulfilling prophecies. When a group stereotype is salient and a member of that group performs a task related to the stereotype, the individual's performance tends to change in a way that is consistent with the stereotype (Nguyen & Ryan, 2008; Steele, 1997). A number of studies have demonstrated that children, some as young as 5, are susceptible to stereotype threat (Ambady,

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Shih, Kim, & Pittinsky, 2001; Muzzatti & Agnoli, 2007; Neuville & Croizet, 2007). McKown and Weinstein (2003), for example, demonstrated that the academic performance of children from academically-stigmatized groups (i.e., African-American and Latino children) suffers under conditions of stereotype threat. Presumably, susceptibility to stereotype threat requires some awareness of the stereotype, even at the implicit level (Nosek & Smyth, 2011; Schmader, Johns, & Forbes, 2008). Thus, these studies suggest that young children who are stigmatized by societal stereotypes may implicitly associate their group with those negative stereotypical traits.

In terms of the BIT, I predicted that balance would be evident in the associations between children's implicit ethnic academic stereotypes, ethnic identification, and academic self-concepts. Although balance between these social cognitions is inconsistently observed when explicit measures are used (Kurtz-Costes, Rowley, Harris-Britt, & Woods, 2008; Okeke, Howard, Kurtz-Costes, & Rowley, 2009), there is some evidence that this balance does exist when implicit measures are used. Girls' implicit stereotypes about gender and math versus language ability, for example, are associated with their math versus language self-concepts (Cvencek, Meltzoff, & Greenwald, 2011; Steffens, Jelenec, & Noack, 2010). Cvencek et al. (2014) examined implicit math–gender stereotypes, gender identities and math self-concepts among Singaporean elementary school children and directly tested all of the associations among these variable as proposed by BIT. Results suggested that the predictions of BIT held for both boys and girls—children with strong gender identities who associated their own gender with math were more likely to have positive math self-concepts. Thus, I expected that this same balance would be evident between children's ethnic academic stereotypes, ethnic identification, and academic self-concepts.

Current Study

In the current study, I used evaluative priming to assess all components of BIT, both generally and in regard to academics, among White and Latino children in the U.S. Specifically, I assessed children's implicit ethnic identities, general ethnic attitudes, academic ethnic stereotypes, self-esteem, and academic self-concepts. Following the recommendations set forth by Greenwald and colleagues (2002), I examined the extent to which the associations between these aspects of children's social cognitions formed balanced identities. Altogether, I addressed the following questions:

1. Is there evidence of balance between children's ethnic identities, general ethnic attitudes, and self-esteem?

2. Is there evidence of balance between children's ethnic identities, ethnic academic stereotypes, and academic self-concepts?

3. For both questions 1 and 2, are there ethnic or age differences in the extent to which the predictions of BIT are supported?

Method

Participants

The same 262 elementary-age White and Latino boys and girls who participated in the studies presented above were the participants for this study (see Table 1 and Figure 1).

Procedure

As described in detail in the preliminary study above, participants played a computer "game" in which they categorized target words as quickly as possible and attempted to remember priming pictures. In the entire experimental paradigm, there were ten different phases, each

composed of a unique combination of priming stimuli and target words (see Table 3). Data for this study were drawn from all phases except for the insect/flower phases (2 and 3).

Implicit in-group attitudes. In phase 1, participants categorized positive and negative target words, and in phase 4, participants categorized positive and negative target words after seeing priming pictures of White and Latino boys and girls. As described in detail in the preliminary study above, I used data from these two phases to calculate separate facilitation scores for each relevant prime–word category pairing (i.e., *White boy–positive*, *White boy– negative*, *White girl–positive*, *White girl–negative*, *Latino boy–positive*, *Latino boy–negative*, *Latina girl–positive*, *Latina girl–negative*). In this study, the focus was on in-group attitudes, so I used each participant's responses to their in-group ethnicity and gender for the calculation of this variable. For example, for White boys, this variable was calculated as the difference between their facilitations scores in *White boy–negative* trials and *White boy–positive* trials. Positive values for these in-group attitudes, therefore, indicate that participants more readily associated their in-group with positive concepts as compared with negative concepts.

Implicit in-group academic stereotypes. I calculated participants' implicit in-group academic stereotypes in nearly the same way that I calculated their in-group attitudes, but I used data from the phases that included the *good for school* and *bad for school* target words (i.e., baseline reaction times from phase 5 and primed reaction times from phase 6). Positive values for these academic stereotypes indicate that participants more readily associated their in-group with the *good for school* concepts as compared with the *bad for school* concepts.

Implicit in-group identification. Using data from phases with the target words *me* and *not me* (i.e., baseline data from phase 7 and primed reaction times from phase 8), I calculated participants' implicit in-group identification in nearly the same way that I calculated their in-

group attitudes and academic stereotypes. Positive values for this measure indicate that participants more readily associated their in-group with *me* as compared with *not me*.

Implicit self-esteem. In phase 9, participants were primed with *good/bad* words and they categorized *me/not me* target words. I calculated facilitation scores for the *positive–me* and *negative–me* prime–target pairing. Then, I used the difference: *negative–me - positive–me* as an overall estimate of implicit self-esteem. Positive values for this measure indicate that participants more readily associated themselves with positive as compared with negative concepts.

Implicit academic self-concepts. In phase 9, participants also completed a series of trials in which priming *good for school/bad for school* words were followed by target *me/not me* words. Using these trials, I calculated implicit academic self-concepts in the same way that I calculated implicit self-esteem. Positive values for this measure indicate that participants more readily associated themselves with *good for school* as compared with *bad for school* concepts.

Results

Results are presented in two sections. In the first section, I explore in-group attitudes, identification, and self-esteem. In the second section, I explore in-group academic stereotypes, identification, and academic self-concepts. Within each section, I first describe ethnic, gender, and age differences in each variable of interest. Then, I test associations between variables according to BIT. Finally, I examine whether the predictions of BIT hold across participants' ethnicity, gender, and age.

General In-group Attitudes, Identification, and Self-Esteem

Descriptives. Descriptive analyses for implicit in-group attitudes and identification were conducted in study 1 (see Tables 4 and 5, and Figures 3 and 4). To review briefly, White children (as a group) were implicitly positive towards and implicitly identified with their in-group across

all ages tested. Latino children (as a group) were implicitly neutral towards and neither identified nor unidentified with their in-group across all ages tested.

Here, I ran descriptive analyses for implicit self-esteem. I regressed implicit self-esteem on children's demographic variables: age (sample mean centered), ethnicity (effect coded: Latino = -1, White = 1), and gender (effect coded: female = -1, male = 1). I also included interactions among demographic variables, but the three-way interactions were never significant, so I only report coefficients from the models with main effects and two-way interactions. Average implicit self-esteem was neutral (i.e., did not reliably differ from zero, M = -15.13, SD = 113.48). As shown in Table 7, there were no significant differences in implicit self-esteem across participant age, ethnicity, or gender.

Self-esteem balanced identity. To examine associations between in-group attitudes, identification, and self-esteem, I followed the conventions of Greenwald et al. (2002) who propose that any one of the three constructs (attitudes, identification, or self-esteem) can be predicted by the association between the other two. For example, if participants have positive in-group attitudes in conjunction with strong identities, they are predicted to also have positive self-esteem. Statistically, this logic can be tested by using the interaction of two variables as the key predictor of the third. To this end, I ran a two-step regression in which I predicted self-esteem from the interaction between in-group attitudes and identification (step 1) and the main effects of attitudes and identification (step 2). According to Greenwald et al. (2002), results in support of the BIT would be as follows. In step 1, the interaction term should be numerically positive and account for significant variance in the outcome. In step 2, the interaction term should remain positive and significant, and neither of the main effects nor the increment in variance explained in step 2 should be significant.

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As shown in Table 8, results did not support BIT. In step 1, the interaction between attitudes and identification did not explain a significant proportion of variance in self-esteem. In step 2, the interaction term remained non-significant, and the main effect of attitude (but not identification) was significant. Altogether, step 2 contributed a significant amount of incremental variance in self-esteem, whereas step 1 did not. According to BIT, the association between group attitudes and self-esteem should be completely attenuated when participants' group identification is zero. In these results, the main effect of attitudes on self-esteem was significant, regardless of participants' identification.

To test whether the predictions of BIT were consistent across participant demographics, I repeated the above analyses, but I included an additional step in which I included demographic variables (age, ethnicity, and gender) and the three-way interactions between attitudes, identification, and these demographic variables (step 3). This analysis indicated a significant interaction between attitudes, identification, and participant ethnicity, which suggests that the key prediction of BIT—the interaction between attitudes and identification predicting self-esteem—differs by participants' ethnicity.

To follow up this interaction, I split the sample by ethnicity and ran the original two-step regression in which I predicted self-esteem from the interaction between attitudes and identification (step 1) and the main effects of attitudes and identification (step 2). As shown in Table 9, when the sample was limited to White participants, results were largely supportive of balanced identity theory. In step 1, the interaction term was significantly positive, and explained a significant proportion of variance in self-esteem. In step 2, no additional variance was explained with the addition of attitude and identity main effects, and the interaction term remained positive, but became marginally significant. As shown in Figure 5 (left panel), among

White children with low in-group identification, in-group attitudes and self-esteem were completely independent. Among White children with high in-group identification, however, more positive in-group attitudes were associated with more positive self-esteem.

When the sample was limited to Latino participants, results did not support balanced identity theory. In step 1, the interaction between attitudes and identification was not significant. In step 2, the main effect of attitudes was significantly positive, the main effect of identification was marginally negative, and together, these main effects explained a significant proportion of variance in self-esteem. Figure 5 (right panel) shows the independent effects of implicit in-group attitudes and implicit in-group identification on Latino children's implicit self-esteem. Regardless of Latino children's level of in-group identification, more positive in-group attitudes were associated with more positive self-esteem. And regardless of Latino children's level of in-group attitudes, higher in-group identification was associated with marginally lower self-esteem.

In-group Academic Stereotypes, Identification, and Academic Self-Concepts

Descriptives. In-group identification was discussed in study 1 (see Table 5 and Figure 4). Here, I ran descriptive analyses for in-group academic stereotypes and academic self-concepts. As before, I ran regression models with demographic variables (age, ethnicity, gender, and all of their interactions) as predictors. Since the three-way interactions were never significant, I only report coefficients from the models with the main effects and two-way interactions.

For academic stereotypes about Whites, the constant was significantly positive, indicating that average academic stereotypes about Whites were positive (see Table 10, left column and Figure 6). The main effect of age indicated a marginal decline in academic stereotypes about Whites across age. None of the main effects or interactions of ethnicity were significant, indicating academic stereotypes about Whites were consistent among both White and Latino

participants. For academic stereotypes about Latinos, a significant main effect of age indicated that academic stereotypes about Latinos increased across age (i.e., became more associated with the concept of *good for school*; see Table 10, right column and Figure 6).

For academic self-concepts, there was a significant interaction between ethnicity and age. To follow up this interaction, I split the sample by ethnicity and ran separate regressions predicting implicit academic self-concept by child's age, gender, and their interaction. For White participants, average academic self-concepts were neutral and did not vary by age (see Table 11, middle column and Figure 7). There was, however, a significant effect of gender among White children such that White boys demonstrated significantly higher implicit academic self-concepts than White girls. For Latino participants, average academic self-concepts increased across age (see Table 11, right column and Figure 7). Follow-up regressions with age recentered at different values indicated that implicit academic self-concept was negative among the youngest Latino participants, but it was positive among the oldest Latino participants.

Academic self-concept balanced identity. Once again, I followed the conventions of Greenwald et al. (2002) and ran a two-step multiple regression in which I predicted academic self-concepts from the interaction between in-group academic stereotypes and identification (step 1) and the main effects of academic stereotypes and identification (step 2). Results did not support BIT for in-group academic stereotypes, identification, and academic self-concepts (see Table 12). In steps 1 and 2, the interaction term was significant, but it was numerically negative. An additional step that included participant demographics (age, ethnicity, and gender) and the three-way interactions between stereotypes, identification, and demographics (step 3) indicated a marginally significant interaction between stereotypes, identification, and participant ethnicity.

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This suggests that the key prediction of BIT—the interaction between stereotypes and identification predicting self-concept—marginally varied by the participants' ethnicity.

To follow up this interaction, I split the sample by ethnicity and ran the original two-step regression in which I predicted academic self-concepts from the interaction between in-group academic stereotypes and identification (step 1) and the main effects of academic stereotypes and identification (step 2). As shown in Table 13 neither White nor Latino participants demonstrated the BIT-predicted associations between in-group academic stereotypes, identification, and academic self-concepts. For White participants, there were no significant associations among these variables—implicit academic self-concepts were independent of both in-group academic stereotypes and identification (see Figure 8 left panel). For Latino participants, there were significant associations among these variables, but the pattern of associations was inconsistent with the predictions of BIT. As shown in Figure 8 (right panel), the pattern among Latino children with low in-group identities was as predicted—for these children, implicit in-group academic stereotypes were independent of academic self-concepts. The pattern among Latino children with high in-group identities, however, was contrary to the predictions of BIT. For Latino children with high in-group identities, higher implicit in-group academic stereotypes were associated with *lower* academic self-concepts.

Discussion

In this study, I examined BIT across two domains (general and academic) among children from two different ethnic groups (White and Latino). Patterns of results differed by both domain and participant ethnicity. First, I discuss results from the test of BIT between general in-group attitudes, in-group identification, and self-esteem. Then, I discuss results from the test of BIT between academic in-group stereotypes, in-group identification, and academic self-concepts.

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General BIT

Support for the general BIT was found among White participants, but not among Latino participants. As predicted, among White children who strongly identified with their in-group, there was an alignment between group and self-attitudes (e.g., those who had positive implicit in-group attitudes were more likely to have positive implicit self-esteem); among White children who did not identify with their group, there was no association between group and self-attitudes. Since these data were collected with evaluative priming, White children's assessments of group attitudes and identification were made without an explicit comparison out-group. Therefore, these results suggest that for this societal high-status group, explicit differentiation from a lower status group is not required for social cognitive balance. Of course, the fact that children saw pictures that included both in-group White children and out-group Latino and Black children may have subtly suggested positive differentiation (Wentura & Degner, 2010). However, since naming the ethnic group of each picture was not a part of the task (as is in the IAT, for example), social comparisons were likely less strong in the current study than in previous research, yet the White participants still demonstrated balanced identities.

Among Latino children, current results did not support BIT. Dunham et al. (2007) found that Latino children's identities were balanced when implicit measures included comparison to a lower-status group, but not balanced when implicit measures included comparison to a higher-status group. The current study assessed implicit measures without an explicit out-group and thus supports Dunham and colleagues' contention that, for children from lower-status groups, balance may be contingent upon downward comparisons. As discussed in Study 1, pictures intended to prime *Latino* may have been less self-relevant for Latino participants than pictures intended to prime *White* were for the White participants. This limitation needs to be especially taken into

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account when interpreting the fact that balance was not observed among Latino children, but it was observed among White children. However, I would expect that a less reliable in-group manipulation for Latino children would result in finding no significant effects. Interestingly, Latino children's group attitudes and identification were associated with self-esteem, but they were associated independently and not interactively as BIT suggests.

Specifically, Latino children who had more positive implicit in-group attitudes tended to have higher self-esteem (regardless of their level of identification). This association is consistent with several theories and empirical findings that suggest direct associations between group- and self-attitudes (Patterson, Bigler, & Swann, 2010; Rudman et al., 2001; Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). However, this finding is in contrast to both BIT and results from Dunham et al. (2007) who did not find bivariate associations between Latino children's implicit group- and self-attitudes. Since this is only the second study to examine these issues, more work is needed to discern the conditions, if any, under which Latino children's implicit in-group attitudes and self-esteem are associated. There was also a marginally significant association between Latino children's in-group identification and self-esteem—higher identification was marginally associated with lower self-esteem, regardless of participants' group attitudes. This finding is certainly in contrast to results from explicit reports—Latino's stronger ethnic identity is consistently linked with higher self-esteem (Umaña-Taylor, 2004; Umaña-Taylor & Fine, 2004), and it is also in contrast to results from Dunham et al. (2007) who did not find bivariate associations between Latino children's implicit identity and self-esteem. Given that this effect was marginal, I do not want to over interpret it. Once again, however, it is possible that this finding is due to the specific pictures that I used to prime *Latino*. Since these pictures were stereotypical representations of Latinos, most of the pictured children had brown or dark

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brown skin, hair, and eyes, which certainly does not represent the phenotypic diversity among Latino people. There is evidence that Latinos who have darker skin or more stereotypically indigenous features experience more discrimination and lower social status (Montalvo & Codina, 2001; Vazquez, Garcia-Vazquez, Bauman, & Sierra, 1997). Thus, perhaps identifying with these stereotyped images is associated with lower self-esteem for this group. Again, however, these results were marginal, and further studies are needed to determine if they are replicable.

Overall, data from this study provides some hints about the possible development of balanced identities, but there are still many unanswered questions. In this study, there was no evidence of developmental change in the variables that compose BIT or in the associations between these variables. Among both White and Latino children, average implicit in-group attitudes, in-group identification, and self-esteem were quite consistent across ages 7 to 12. Likewise, the balance observed among these variables for White children and the lack of balance observed among Latino children were consistent across the ages tested—there was no evidence of increasing or decreasing balance for either group. For White participants, the pattern of balance observed among White children is consistent with previous results from White adults (Greenwald et al., 2002). For this ethnic majority group, therefore, adult-like patterns of balanced identity seem to develop early and remain stable. For Latino participants, results are less clear. Among Latino children, I found an association that was related to a balanced identity (i.e., group- and self-attitudes), but not balance per se; Dunham et al. (2007) found balance, but only in the context of a downward social comparison. Among Latino adults, there is no evidence of balanced identities (Dunham et al., 2007). For Latinos, therefore, there seems to be limited or provisional balance in middle childhood that transitions into no balance in adulthood.

For all people, a balanced identity requires developing group identification, group attitudes, self-attitudes, and the integration of these social cognitions (Greenwald et al., 2002). The order in which these social cognitions develop is still not understood, and there are several possible sequences. For example, after developing a group identity, children's attitudes towards the group may influence their self-attitudes (i.e., group identity → group attitudes → self attitudes; Corenblum, 2014). Alternatively, after developing a group identity, preexisting self-attitudes may be generalized to the group (i.e., group identity and self-attitudes → group attitudes; Patterson et al., 2010). Another possibility is that all three of these social cognitions and the connections between them develop concurrently with bidirectional patterns of influence (Cvencek, Greenwald, & Meltzoff, 2012). Whichever sequence is correct, this and previous studies suggest that at least part of the process differs between people with ethnic majority and ethnic minority heritage, and that the difference is evident from a young age (Davis et al., 2007). However, the exact nature and timing of the group differences, and most importantly, the mechanisms responsible for these differences remain answered questions. Longitudinal studies with diverse children would be especially informative.

Academic BIT

Beyond the general BIT, this study also examined an academic-specific version of BIT. Using evaluative priming, I assessed children's implicit academic ethnic stereotypes, ethnic identification, and academic self-concepts. Like the general BIT, results suggested differences by participants' ethnicity; however, the predictions of BIT were not supported among either group of children. As this is one of the first studies to directly assess children's implicit academic stereotypes and self-concepts, I first discuss group differences in the levels of these variables. Then, I turn to a discussion of BIT results.

At the group level, White children's in-group academic stereotypes were generally positive, but they marginally declined across participants' ages; average in-group identification was consistently high, and average academic self-concepts were consistently neutral. Latino children's in-group academic stereotypes and academic self-concepts both became significantly more positive across participants' ages; in-group identification was consistently neutral. These group differences in academic stereotypes and academic self-concepts are in opposition to what would be expected from previous research indicating that implicit stereotypes are a reflection of societal-level stereotypes in the cultural milieu (Rudman et al., 2007). For ethnic minority youth, research suggest that they are aware of the academic stereotypes impugning their groups, and that these stereotypes can affect their academic motivation and performance (Ambady et al., 2001; Gillen-O'Neel et al., 2011; McKown & Weinstein, 2003). On the one hand, therefore, it is somewhat surprising that Latino children in the current study demonstrated positive in-group academic stereotypes and academic self-concepts. On the other hand, all but one of my Latino participants attended very high-achieving schools, which makes these findings less surprising.

School 1, from which almost three-quarters of my Latino sample was drawn, was especially interesting. It is a public school in a major urban school district, but it operates as an independent charter, and it is therefore free to set its own practices. This particular school's founding mission is to eliminate the achievement gap that exists between low-income Latino and African-American students and their more affluent White peers. Its staff of highly qualified and dedicated teachers employs an arsenal of research-based best practices to accomplish this goal. Importantly, enrollment at this school is done by lottery. Parents enter their children into the lottery, so there is some selection bias by the families who want their children to attend (although the school campaigns itself heavily in the community); after that, enrollment is random. The

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school is located in a highly concentrated, lower SES, urban neighborhood (zipatlas.com, 2014), and all of the children who attend this school live in the same zip code as the school or in one of the immediately surrounding zip codes. As mentioned above, achievement at this school is high, and test scores indicate that they are eliminating the achievement gap. The school's average achievement is in the top 10% state-wide, and the 95.5% Latino student body scores at or higher than the average of White students state-wide (California Department of Education, 2014).

Within this school context, it makes sense that older Latino children (who have been at the school longer) would have increasingly positive academic associations with their ethnic group and themselves. On the other hand, implicit attitudes seem to form early and are difficult to change (Baron & Banaji, 2006; Joy-Gaba & Nosek, 2010). The fact children at this school have implicit attitudes in opposition to societal stereotypes is very encouraging. Surprisingly few studies have examined the role that school contexts play on implicit attitude formation. Vezzali, Giovannini, and Capozza (2012) demonstrated that teachers' implicit attitudes are associated with the implicit attitudes of their students. McGlothlin and Killen (2010) found that White children's implicit intergroup attitudes were moderated by the ethnic diversity of their school—children attending a homogenous school in which their group was the majority demonstrated in-group bias, whereas children attending a diverse schools had more egalitarian implicit attitudes. Thus, there is some evidence of schools' influence on students' implicit attitudes. Interestingly, in Study 1, Latino participants did not demonstrate general in-group bias (as might be expected given their school's homogeneity in conjunction with the findings of McGlothlin and Killen). But these same Latino participants did demonstrate increasingly positive implicit stereotypes about their in-group's academic abilities. This suggests that it is not the homogeneity of their school, but it is the academic quality that is making a difference in Latino students' implicit

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social cognitions. Future studies should include schools that vary both by ethnic compositions and achievement levels to examine how these contexts affect children's implicit attitudes.

Beyond group differences in implicit academic stereotypes, in-group identifications, and academic self-concepts, I also examined the associations between these variables according to BIT. Once again, patterns of results differed by participant ethnicity, but neither White, nor Latino children demonstrated results that were consistent with BIT. For White children, all associations were non-significant—academic self-concepts were completely independent from in-group academic stereotypes and in-group identification. When negatively stereotyped groups fail to demonstrate balanced identities, one common explanation is that group members have engaged various coping strategies to prevent the group stereotype from affecting the self-concept (e.g., Fries-Britt & Griffin, 2007; Nussbaum & Steele, 2007). In this case, Whites' academic abilities are positively stereotyped in the larger society, the schools that these participants attend are average to high achieving, and the participants themselves demonstrate generally positive in-group academic stereotypes. So, it is difficult to envision what motivation might prompt these students to avoid balance. Furthermore, these same participants did demonstrate balance among general attitudes, identity, and self-esteem. One possibility is that general balance develops earlier than specific balance. There is some evidence that this is the case with implicit gender attitudes—balance between general implicit gender attitudes, gender identification, and self-esteem was demonstrated among 5-year-old children, but balance between content-specific implicit math-gender stereotypes, gender identification, and math self-concepts was not demonstrated until a full 3 years later, among 8-year-olds (Baron et al., in press). Given that ethnic attitudes and identities are generally delayed relative to gender attitudes and identities (Ruble et al., 2004), it is possible that participants in the current study (ages 7-12) had just

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developed general balanced identities and are in the process of developing academic balanced identities. Further research with a wider age range is needed to answer this question.

For Latino participants, results were quite different. As predicted by BIT, Latino children with weak in-group identities had no association between in-group academic stereotypes and self-concepts. Contrary to BIT, however, Latino children with strong in-group identities had a *negative* association between in-group academic stereotypes and self-concepts. For strongly in-group identified Latino children, having a positive in-group academic stereotype was associated with a negative academic self-concept, and having a negative in-group academic stereotype was associated with a positive academic self-concept. Going into this study, I had two hypotheses about how Latino's academic associations might relate to BIT. On the one hand, given that members of negatively stereotyped groups may employ strategies to specifically avoid balance (e.g., Fries-Britt & Griffin, 2007; Nussbaum & Steele, 2007), I thought that it was possible that there would be no associations between Latino children's stereotypes, identification, and self-concepts. On the other hand, given that Latino children are susceptible to the effects of stereotype threat (McKown & Weinstein, 2003), I thought it was possible that Latino children who strongly identified with their group would have corresponding group- and self- attitudes. The observed negative association between group- and self-attitudes was completely unexpected.

There are a few possible post hoc explanations for this finding. First, there is some evidence that endorsing a negative in-group stereotype can protect one's self-concept after a failure (Burkley & Blanton, 2008). Additionally, there is evidence that intra-group comparisons and, specifically, one's standing within a group play a role in the development of group attitudes and self-identity (Patterson & Bigler, 2007; Smith & Tyler, 1997). Perhaps in these high-achieving schools, Latino students who are academically struggling (relative to their peers) either

endorse the negative stereotype about their group as a self-protective strategy (explaining the children with high self-concepts but low in-group attitudes) or are hyper aware that they are not living up to the performance of their same-ethnic peers (explaining the children with high in-group attitudes but low self-concepts). Unfortunately, I do not have individual-level achievement data for participants, so I cannot test whether a participant's level of achievement relative to their peers might account for these unexpected findings. As another possibility, there is evidence of other strategies that especially support Latino students' academic self-concepts. Devos and Torres (2007) found that Latino college students who implicitly identified with specific others who were high achievers were able to maintain positive academic self-concepts despite associating their ethnic group as a whole with low achievement. Perhaps factors like these played a role for the Latino participants in this study. Clearly, more work is needed.

Conclusions and Limitations

Overall, this study indicated that patterns of associations between group attitudes, group identity, and self attitudes differ depending on (1) whether the attitudes in question are general (i.e., good/bad) or specific (e.g., academic) and (2) whether the individual holding them is from an ethnic majority or minority background. Unfortunately, this study primarily described these domain and group differences, but offered few concrete explanations for why they might exist. Developmental effects, status in the larger society, school context, and methodological idiosyncrasies were considered as possible explanations for observed patters of results, but testing these possibilities was beyond the scope of the current study. These are important questions for future work.

General Discussion

In this discussion, I start by briefly reviewing the state of implicit attitude development, and I articulate this study's place in this literature. Then, I discuss some of the methodological considerations that arose from this study and how these might be treated in future work. Finally, I summarize the results from this study and discuss limitations and future directions.

Implicit Attitude Development

In this study, I focused on children's implicit attitudes and stereotypes. Implicit attitudes have become an increasingly popular topic in social psychological research (Fazio & Olson, 2003). Studying implicit attitudes is certainly not a replacement for studying explicit attitudes; these two types of attitudes are complementary, each telling different parts of a social cognition story (Ashburn-Nardo, 2010; Olson & Fazio, 2003). Research on the development of implicit attitudes is growing, but as a field, we still have a long way to go (Olson & Dunham, 2010).

Initial research on implicit attitude development focused on whether or not children could actually complete implicit measures. Although there certainly are challenges with this type of work (see below), the evidence is mounting that despite their subtlety, children do demonstrate reliable implicit associations. On the one hand, this is truly shocking—the youngest children tested (4 to 6 years old) implicitly associate *male* with *math*, *White* with *good*, and *rich* with *good*, just as adults do (Baron & Banaji, 2006; Cvencek, Meltzoff, et al., 2011; Newheiser et al., 2014). On the other hand, perhaps these findings should not be that surprising. For example, at its heart, learning a language is essentially associating inherently meaningless signifiers with socially constructed meanings, yet children largely master language within the first few years of life. Language is likely developed via the same implicit learning mechanisms by which we quickly learn many complex associations (Hirschfeld, 2008). Perhaps then, we should not be too

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surprised that 6-year olds demonstrate implicit awareness of the fact that inherently meaningless social categories in our society correlate with status and other traits.

After establishing that implicit measures could be meaningfully used with children, research turned to description, and this is largely where the field remains today. Most studies to date (this dissertation included) have primarily focused on describing group-level (e.g., gender, ethnic, and age) differences in implicit attitudes: Which group has stronger implicit attitudes? At what age are implicit biases evident? These group differences provide some clues about the sources of these stereotypes. For example, as this work was first being conducted, the general mechanism by which implicit attitudes developed was unclear. On the one hand, it seemed reasonable that implicit attitudes might be internalized explicit attitudes, like how the explicit one-two-three of a newly learned dance step only becomes an implicit and automatic procedural memory after extensive practice. If this were the case, implicit attitudes would be acquired slowly, the result of accumulated experience over one's lifetime (Devine, 1989). However, 6-year olds demonstrating adult-like patterns of implicit attitudes suggest that these attitudes cannot result from the gradual internalization of explicit attitudes. The early emergence and relative stability of implicit attitudes suggest that early experiences may be especially influential and that there may even be sensitive periods for these attitudes (Baron et al., in press; Rudman, 2004). Current theories about the sources of implicit attitudes include factors like early family contexts and media, but these sources have not yet been formally tested (Rudman et al., 2007).

In this study, I added to the literature in four ways. First, I employed a different method of implicit attitude assessment than what has been used in most previous studies. In addition to answering new research questions, I also included some questions that were redundant with previous research (e.g., attitudes towards insects and flowers and in-group attitudes among White

children). For the most part, I replicated known findings, suggesting that evaluative priming can successfully be used with children (with caveats, discussed below).

Second, I included participants from two ethnic groups—White and Latino children in the U.S. It is imperative that all psychologists include diverse participants, but this is especially important for research on intergroup attitudes. Initial research on implicit attitude development focused primarily on majority group White participants in the U.S. (Baron & Banaji, 2006; McGlothlin & Killen, 2006), but thankfully, more recent investigations have included more diverse participants, including international samples (Dunham et al., 2013; Newheiser et al., 2014). Throughout the two studies of my dissertation, participant ethnicity was often a significant factor. There were group differences in levels of implicit attitudes, age-related changes in implicit attitudes, and associations between implicit attitudes.

In the discussions above, I primarily focused on majority- versus minority status in the larger society and school context as possible explanations for the observed ethnic differences. There are, of course, several other situational and contextual factors that could have caused these differences. One factor I have not yet addressed was participants' immigrant backgrounds. Although nearly all participants were born in the U.S., most of the White children's parents were born in the U.S., whereas most of the Latino children's parents emigrated from other countries. Compared with people whose families have been in the culture for several generations, people with recent immigrant backgrounds can experience cultural stereotypes differently. For example, Deaux et al. (2007) found that first generation college students from the West Indies were less susceptible to the performance-reducing effects of stereotype threat than were their second generation peers. The reason for this difference was that first generation students were less likely than second generation students to identify as African Americans—a negatively stereotyped

group. Given their different immigrant backgrounds, there was likely more diversity in how Latino participants identified their ethnicity, as compared with their White peers. To give just two examples, some may have identified as "Latino" (the pan-ethnic group representing diverse peoples with Latin-American heritage in the U.S.), whereas some may have identified as "Mexican" (the most common familial country of origin). Research with adolescents suggests that identifying with pan-ethnic versus national-origin ethnic labels is associated with other ethnic attitudes and behaviors among immigrant youth (Fuligni, Kiang, Witkow, & Baldelomar, 2008). Thus, it is certainly possible that my participants' immigrant heritage and corresponding ethnic identity affected how they processed the ethnic stimuli in the studies presented here. For example, perhaps one reason why Latinos, as a whole, demonstrated implicitly neutral in-group attitudes is that this sample actually included two subsamples—for example, children who identified as "Mexican" and had positive in-group attitudes and children who identified as "Latino" and had negative in-group attitudes. Unfortunately, I do not have data on this aspect of children's identification, nor do I have large enough samples of first versus second generation children to examine how parental birthplace might be associated children's implicit attitudes. These are other exciting avenues for future research.

The third main contribution of these studies was that I moved a few small steps beyond just describing group differences. In Study 1, I explored one possible mechanism of group and individual differences in implicit in-group attitudes—implicit in-group identification, an association that was suggested by SIDT (Nesdale, 2004). Results supported SIDT's predictions only among White children. In Study 2, I examined whether implicit group-attitudes, group-identity, and self-attitudes were associated with one another according to BIT. Once again, the predictions of BIT held among White, but not Latino participants. These results suggest that the

methodology was flawed for Latino participants (see discussion below), or that the process of social identity development operates differently for different groups. Regardless, these results call for more work to replicate or refine the current findings.

Finally, this study contributed to the literature by examining content-specific implicit stereotypes with an ethnically-diverse sample. To date, all of the work that has been done with content-specific implicit stereotypes has examined gender-math stereotypes. Among adults, content-specific ethnic stereotypes are important (e.g., Correll et al., 2007; Payne, 2001), but to my knowledge these are the first studies to examine implicit ethnicity-based academic stereotypes. Even young children are susceptible to stereotype threat, and academic achievement gaps remain an issue facing the U.S. education system (Barton, 2003; McKown & Strambler, 2008). By examining Latino students in high-achieving schools, this study offered some optimistic results—these students were increasingly positive about their own and their groups' academic abilities. This suggests that, in the right local contexts, children's implicit attitudes can break from the dominant societal stereotypes.

Methodological Considerations

Through the experience of completing these studies, I gleaned several methodological considerations for future work. One motivation for using implicit measures was their developmental appeal. As children age and become more accustomed to cultural norms for expressing egalitarian attitudes, explicit measures become increasingly susceptible to demands of social desirability (e.g., Rutland et al., 2005). Implicit measures, on the other hand, are less susceptible to self-presentational concerns (Cunningham, Preacher, & Banaji, 2001; Fazio & Olson, 2003). Of course, however, these implicit measures have their own developmental concerns. For example, a common method is to infer implicit attitudes from systematic

differences in reactions across trials that are "attitude congruent" and trials that are "attitude incongruent." Among children—especially young children—reaction time measures can be problematic, and as executive functions improve across childhood and into adolescence, so too do the reliability of these measures (Blakemore & Choudhury, 2006). There is some evidence that lengthy reaction time assessments might not be appropriate for young participants (Ratcliff, Love, Thompson, & Opfer, 2012). Indeed, even though this and previous studies have found meaningful results among children with reaction time-based measures, there is generally considerable variability in the strength of implicit attitudes at the individual level (Dunham et al., 2013). This variability suggests measurement error, which decreases the chances of discerning true associations. There are implicit assessments that do not rely on reaction time. For example, there are various assessments in which participants classify ambiguous stimuli after having been primed with a stereotyped object (Dunham et al., 2013; Payne, Cheng, Govorun, & Stewart, 2005). In these assessments, implicit associations are inferred from systematic variation in participants' actual responses, irrespective of response latency. I believe that future work on the development of implicit attitudes should consider methods like these.

Finally, in order to continue studying ethnic stereotypes, I will need to address the issue of creating ecologically valid assessments for diverse populations. In the current studies, I used pictures of children to prime ethnic categories. But as discussed above, using these stimuli may have resulted in quite a bit of variability between participants in terms of what I was actually assessing. Studying stereotypes can be awkward. I believe that racial and ethnic groups are socially constructed consolidations of peoples who (1) may or may not self-identify with these groups and (2) may or may not share any biological, phenotypical, or cultural characteristics that supposedly underlie these groups (Hollinger, 1995). And yet simultaneously, I recognize that the

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many different people who may be classified into a certain ethnic group suddenly share at least one thing in common—they can be judged by a group stereotype. Race becomes real through racism. I think that these stereotypes and the effects of being judged by them are an important topic to study, but by so doing, I run the risk of reifying the artificial boundaries implied by them. These are issues with which I and other researchers will continue to struggle.

Conclusions

Across two studies, I examined implicit social cognitions in two domains among White and Latino children in the U.S. Major contributions included (1) testing the development of social psychological theories with implicit measures among diverse children and (2) broadening the focus from general implicit attitudes to specific academic stereotypes. Ethnicity is an important social category in our society, one that becomes the basis for intergroup attitudes and stereotypes early in life (Bigler & Liben, 2006). The development of intergroup stereotypes has long been of interest to social psychologists (Allport, 1954), but often there is little cross-talk between social and developmental psychologists (Hailey & Olson, 2013). To improve intergroup relations and prevent the deleterious effects of stereotypes, we need to understand how they develop.

Table 1

Participants by ethnicity and gender

	boys	girls	Total
White American	65	70	135
Latino American	66	61	127
Total	131	131	$N = 262$

Table 2

Perceived gender, race / ethnicity, age, facial expression, and attractiveness of stimuli photos

(results from pretesting with adult participants)

	White Male	White Female	Latino Male	Latino Female	Black Male	Black Female
	M(*SD*) range	*M*(*SD*) range	*M*(*SD*) range	*M*(*SD*) range	*M*(*SD*) range	*M*(*SD*) range
% gender agreement	100.00 (0) 100–100	100.00 (0) 100–100	100.00 (0) 100–100	100.00 (0) 100–100	100.00 (0) 100–100	100.00 (0) 100–100
% ethnicity agreement	99.16 (.01)$_a$ 98–100	100.00 (0)$_a$ 100–100	78.88 (.06)$_b$ 69–88	77.46 (.06)$_b$ 70–89	99.13 (.02)$_a$ 93–100	100.00 (0)$_a$ 100–100
age rating	3.31 (0.92) 1.85–4.41	3.29 (1.15) 2.00–5.44	3.08 (0.79) 1.74–4.23	3.66 (1.25) 2.04–5.17	3.12 (1.47) 1.70–5.22	3.12 (1.27) 1.68–4.87
expression rating	2.69 (1.05) 1.38–4.23	2.50 (0.42) 1.95–3.33	2.28 (1.14) 0.68–3.59	2.91 (0.60) 1.96–3.72	3.22 (1.05) 1.41–4.17	3.12(0.94) 2.02–4.30
attractive rating	2.64 (0.50)$_{a,b}$ 1.74–3.15	3.00 (0.94)$_{a,b}$ 1.48–4.29	2.29 (0.97)$_a$ 1.03–3.57	3.32 (0.56)$_{a,b}$ 2.47–4.00	3.49 (0.49)$_b$ 2.86–4.33	3.54(0.51)$_b$ 2.67–4.27

Note. Differing subscripts within a row indicate significant difference at *p* < .05.

Table 3

Summary of experimental tasks

phase	association assessed	primes	targets
1	baseline *good/bad* word classification	-	*good/bad* words
2	memory test practice	insect and flower pictures	-
3	insect/flower attitude (picture–valence association)	insect and flower pictures	*good/bad* words
4	social group attitude (group–valence association)	social group pictures	*good/bad* words
5	baseline *good for school/bad for school* word classification	-	*good for school/ bad for school* words
6	group stereotype (group–trait association)	social group pictures	*good for school/ bad for school* words
7	baseline *me/not me* word classification	-	*me/not me* words
8	group identification (group–self association)	social group pictures	*me/not me* words
9	self-esteem (self–valence association)	*good/bad* words	*me/not me* words
9	self-concept (self–trait association)	*good for school/ bad for school* words	*me/not me* words

Table 4

Implicit attitudes towards Whites and Latinos

	attitudes towards Whites	attitudes towards Latinos
	b (SE)	b (SE)
intercept	10.57 (7.60)	9.04 (8.30)
age	-2.48 (5.19)	-0.83 (5.70)
ethnicity	22.32 (7.59)**	2.00 (8.29)
gender	3.30 (7.42)	4.10 (8.12)
ageXeth	.42 (5.21)	-12.77 (5.71)*
ageXgen	-7.57 (5.21)	-4.01 (5.71)
ethXgen	-1.21 (7.60)	-1.41 (8.29)

Note. *$p < .05$, **$p < .01$.

Table 5

Implicit identification with Whites and Latinos

	implicit identification with Whites	implicit identification with Latinos
	b (SE)	b (SE)
intercept	14.18 (8.86)	3.36 (8.52)
age	-3.25 (6.16)	-3.42 (5.90)
ethnicity	28.49 (8.88)**	8.91 (8.52)
gender	-6.54 (8.65)	-1.80 (8.36)
ageXeth	-6.89 (6.20)	-14.56 (6.01)*
ageXgen	0.76 (6.19)	-3.42 (6.00)
ethXgen	-9.25 (8.88)	-1.31 (8.53)

Note. *$p < .05$, **$p < .01$.

Table 6

Implicit identification with Whites is associated with implicit attitudes towards Whites

| | implicit attitudes towards Whites | |
	step 1 b (SE)	step 2 b (SE)
intercept	15.43 (8.26)†	12.94 (8.10)
age	-2.32 (5.72)	-1.47 (5.59)
ethnicity	25.74 (8.29)**	19.62 (8.31)*
gender	2.37 (8.09)	3.76 (7.91)
ageXeth	0.30 (5.74)	1.59 (5.62)
ageXgen	-10.92 (5.74)†	-11.10 (5.61)*
ethXgen	1.77 (8.29)	4.13 (8.12)
White identification		0.21 (0.06)**

Note. †$p < .10$, *$p < .05$, **$p < .01$.

Table 7

Implicit self-esteem among all participants

	b (SE)
intercept	-12.13 (7.96)
age	-4.05 (5.52)
ethnicity	10.77 (7.98)
gender	5.97 (7.79)
ageXeth	-7.83 (5.57)
ageXgen	-8.47 (5.56)
ethXgen	-1.76 (7.98)

Table 8

Self-esteem balanced identity: Implicit self-esteem predicted implicit in-group attitudes and identification

	step 1	step 2	step 3
	b (SE)	b (SE)	b (SE)
intercept	-15.913 (8.434)†	-18.245 (8.368)*	-18.846 (8.664)*
attitude X identity	.000 (.000)	.000 (.000)	.001 (.001)
attitude		.211 (.066)**	.158 (.070)*
identity		-.023 (.069)	-.055 (.077)
age			-2.666 (5.938)
ethnicity			7.229 (8.851)
gender			3.626 (8.362)
attitude X identity X age			.000 (.000)
attitude X identity X ethnicity			.001 (.001)*
attitude X identity X gender			.000 (.001)
ΔR2	.004	.054**	.029

Note. †$p < .10$, *$p < .05$, **$p < .01$.

Table 9

Self-esteem balanced identity, separately for White and Latino participants

	White participants		Latino Participants	
	step 1	step 2	step 1	step 2
	b (SE)	b (SE)	b (SE)	b (SE)
intercept	-10.945 (10.609)	-18.747 (11.474)	-24.875 (12.043)*	-24.786 (11.688)*
att X id	.003 (.001)**	.002 (.001)†	.001 (.001)	.000 (.001)
att		.094 (.113)		.175 (.088)*
id		.171 (.104)		-.175 (.094)†
ΔR2	.138**	.036	.003	.076*

Note. †$p < .10$, *$p < .05$, **$p < .01$.

Table 10

Implicit academic stereotypes towards Whites and Latinos

	stereotypes towards Whites	stereotypes towards Latinos
	b (SE)	b (SE)
intercept	26.56 (10.31)*	12.48 (10.16)
age	-13.46 (6.94)†	17.74 (6.79)*
ethnicity	-4.01 (10.29)	-12.70 (10.15)
gender	-14.98 (10.10)	-14.47 (10.00)
ageXeth	-9.16 (6.99)	-0.69 (6.85)
ageXgen	3.43 (6.98)	2.22 (6.85)
ethXgen	-11.00 (10.31)	2.73 (10.16)

Note. †$p < .10$, *$p < .05$.

Table 11

Implicit academic self-concept

	all participants	White participants	Latino participants
	b (SE)	b (SE)	b (SE)
intercept	1.82 (9.32)	3.28 (12.50)	1.59 (13.43)
age	8.22 (6.50)	-6.37 (8.58)	20.94 (9.64)*
ethnicity	1.02 (9.33)		
gender	14.41 (9.11)	25.61 (12.50)*	8.14 (13.43)
ageXeth	-13.65 (6.54)*		
ageXgen	-3.64 (6.53)	-12.05 (8.58)	4.10 (9.64)
ethXgen	8.93 (9.33)		

Note. *$p < .05$.

Table 12

Academic self-concept balanced identity: Implicit academic self-concept predicted by implicit in-group academic stereotypes and identification

	step 1	step 2	step 3
	b (SE)	b (SE)	b (SE)
intercept	-9.893 (10.384)	-8.220 (10.478)	-7.287 (10.811)*
stereotype X identity	-.001 (.000)**	-.001 (.000)**	.000 (.001)
stereotype		-.101 (.072)	-.137 (.079)*
identity		.025 (.089)	-.022 (093)
age			10.045 (7.387)
ethnicity			-1.068 (11.039)
gender			9.657 (10.582)
stereotype X identity X age			.000 (.000)
stereotype X identity X ethnicity			.001 (.001)†
stereotype X identity X gender			.000 (.000)
ΔR2	.047**	.012	.046

Note. †*p* < .10, **p* < .05, ***p* < .01.

Table 13

Academic self-concept balanced identity design, separately for White and Latino participants

	White participants		Latino Participants	
	step 1	step 2	step 1	step 2
	b (SE)	b (SE)	b (SE)	b (SE)
intercept	-8.260 (16.003)	-4.855 (17.011)	-12.467 (13.635)	-8.136 (13.621)*
stereotype X id	.000 (.001)	.000 (.001)	-.002 (.001)**	-.002 (.001)**
stereotype		.056 (.154)		-.190 (.085)*
id		-.117 (.152)		.055 (.115)
ΔR2	.001	.011	.087**	.045†

Note. †*p* < .10, *p < .05, **p < .01.
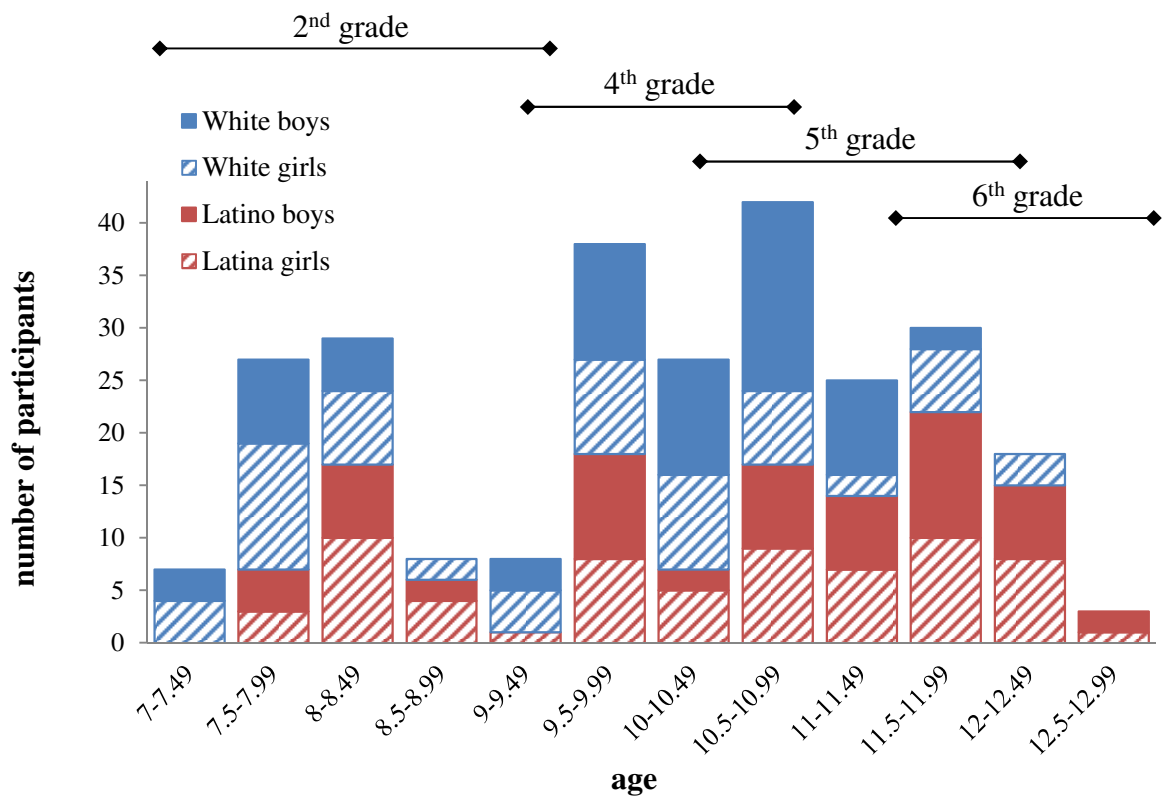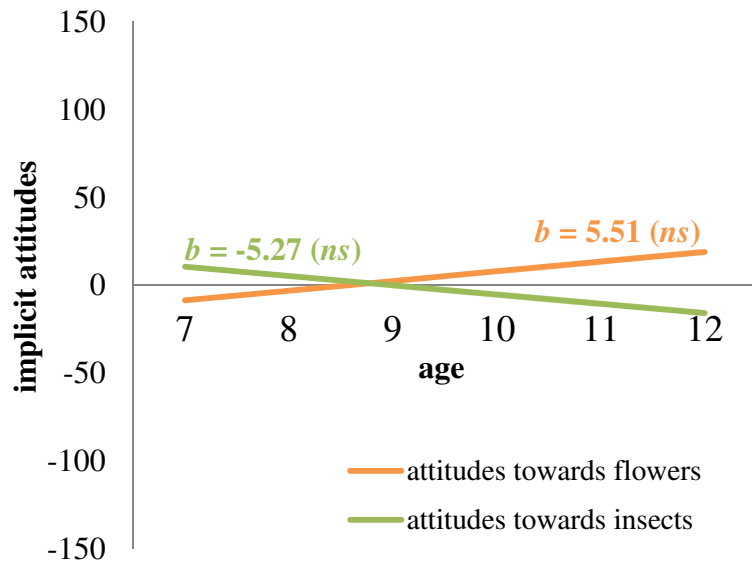
Figure 1. Participant age distribution

Figure 2. Participants' implicit attitudes towards flowers and towards insects by age

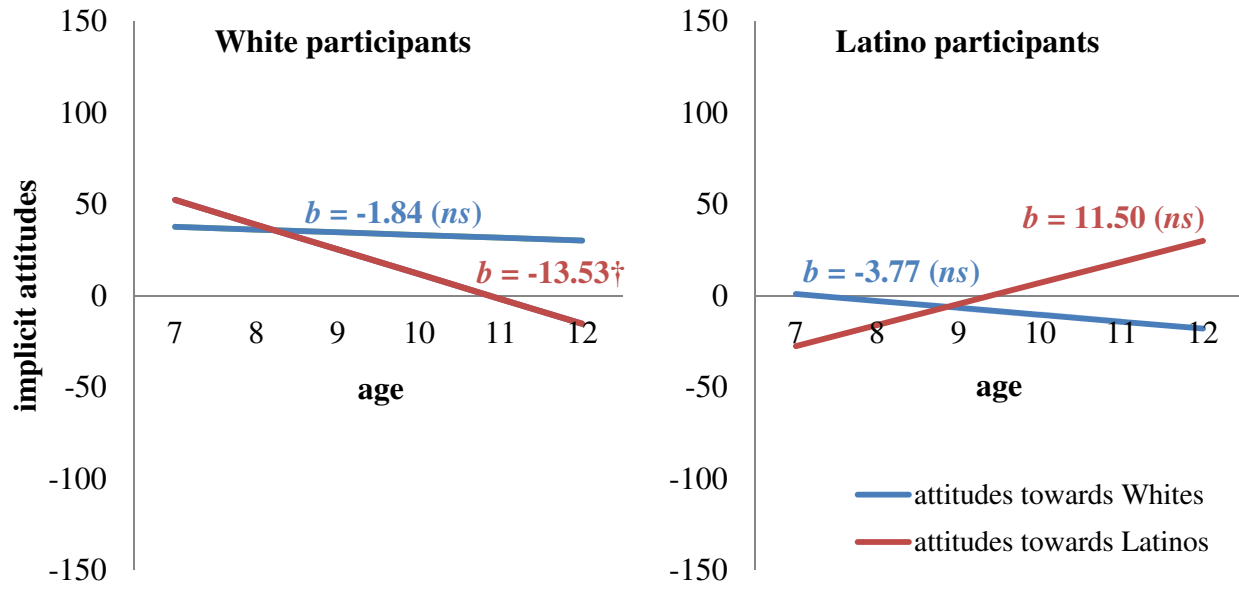*Figure 3*. White and Latino participants' implicit attitudes towards Whites and Latinos by age
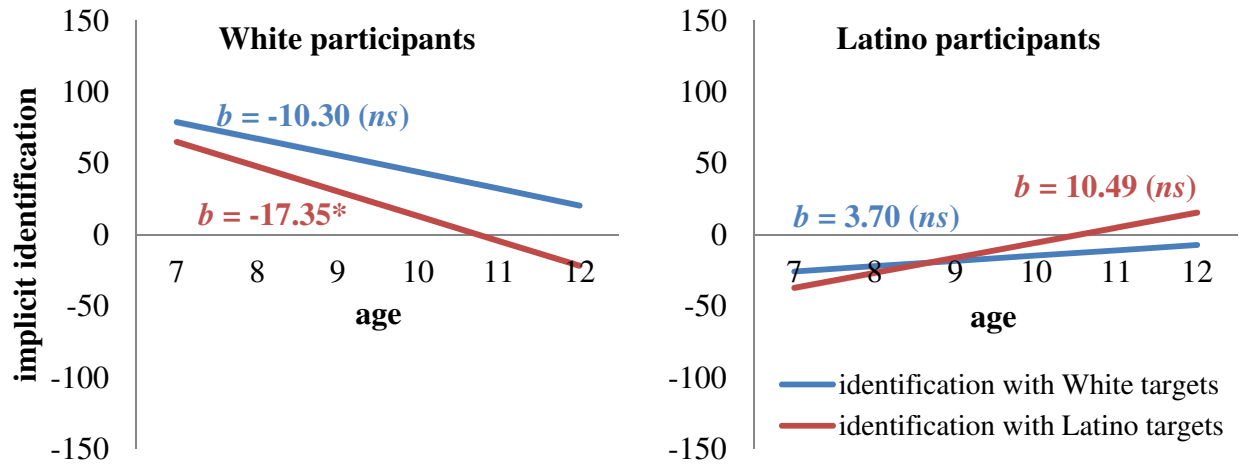
Note. †*p* < .10.

Figure 4. White and Latino participants' implicit identification with White and Latino targets by age
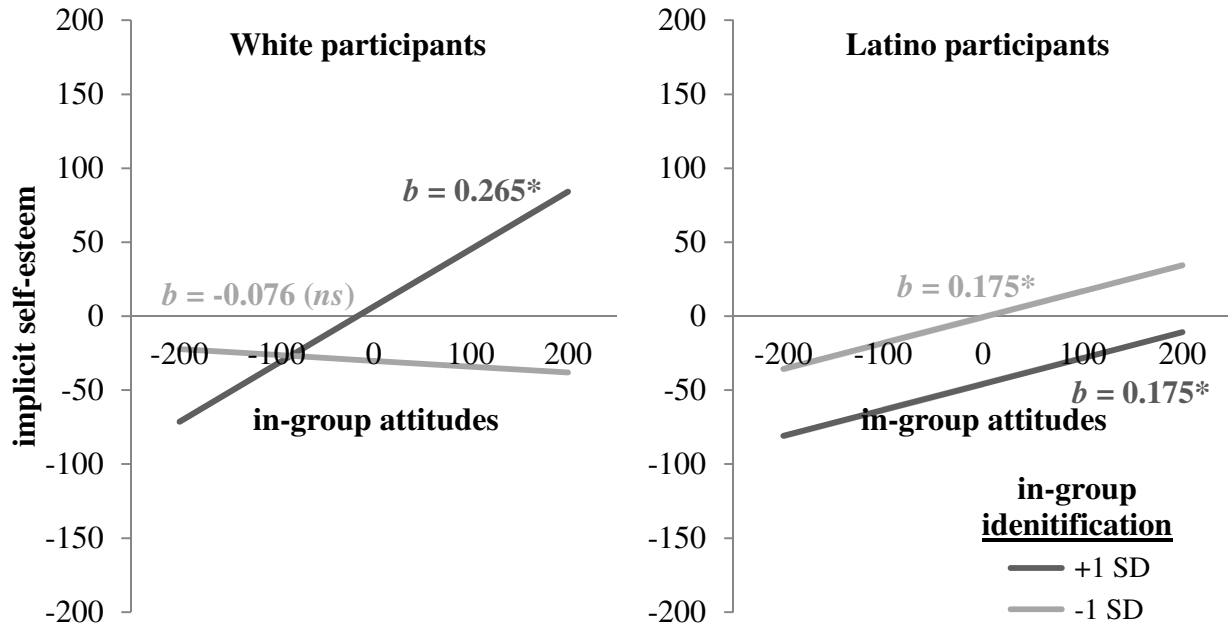
Note. *$p < .05$.

Figure 5. Self-esteem balanced identity: Associations between in-group attitudes and self-esteem among White and Latino children with high and low in-group identification
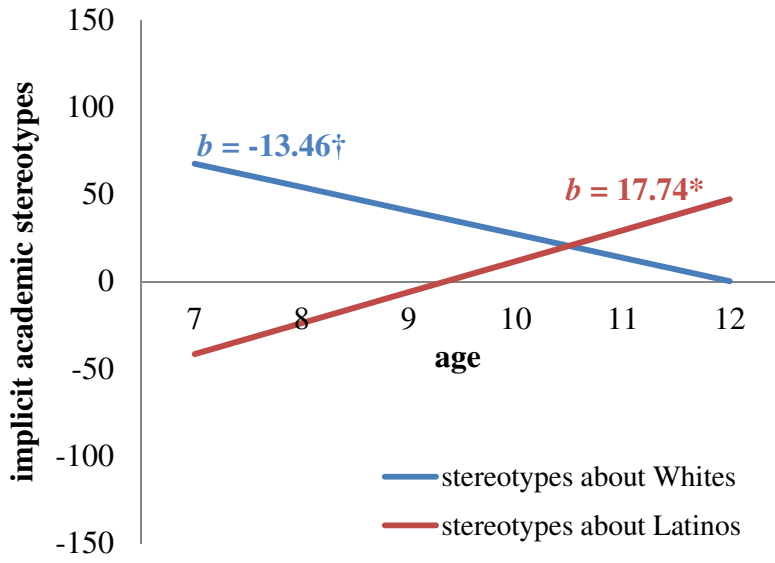
Note. *p < .05.

Figure 6. Implicit academic stereotypes towards Whites and towards Latinos among all
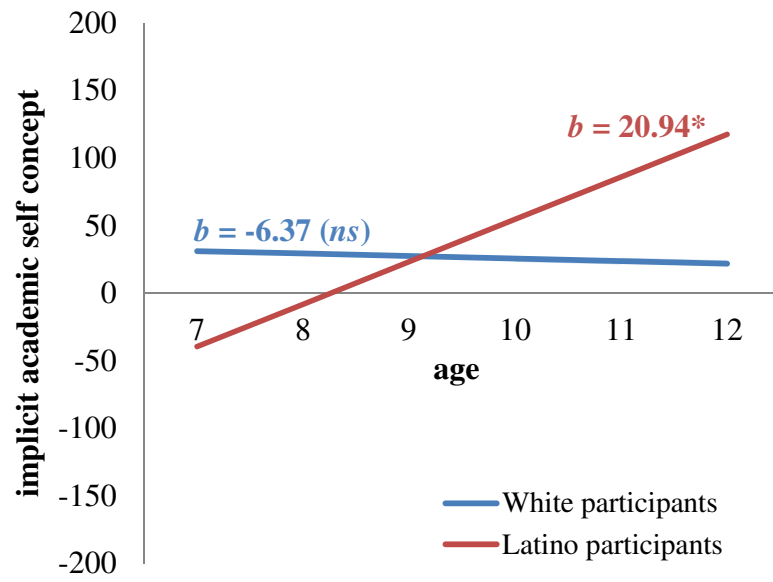
participants by age

Note. †$p < .10$, *$p < .01$.

Figure 7. Implicit academic self-concepts among White and Latino participants by age
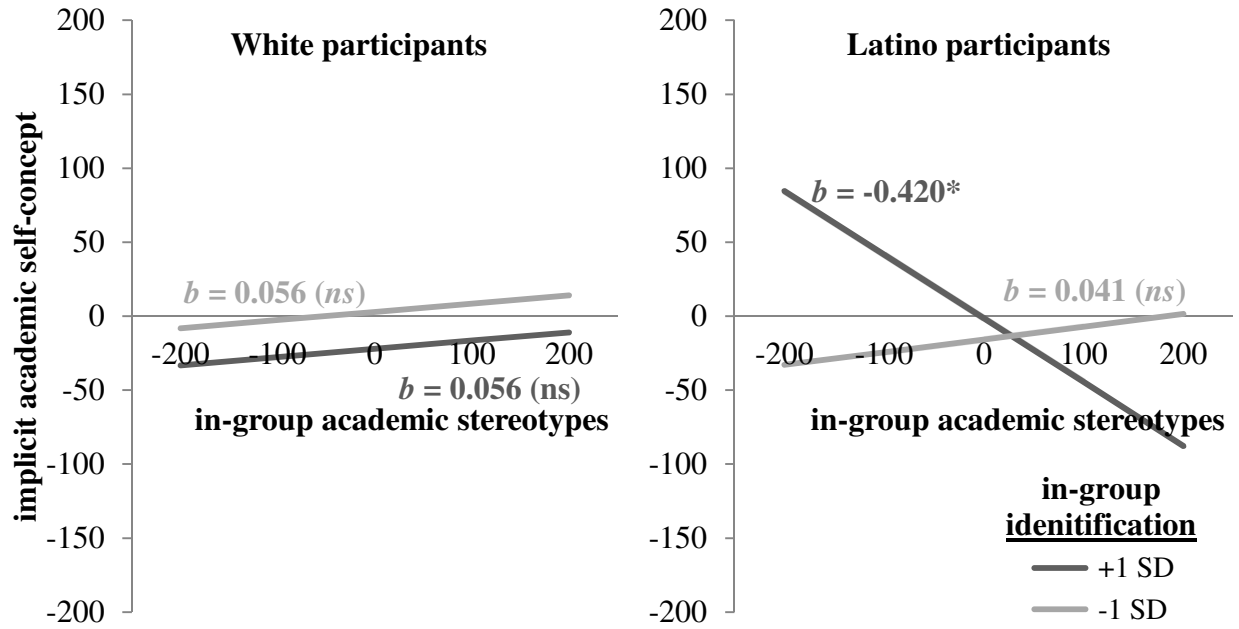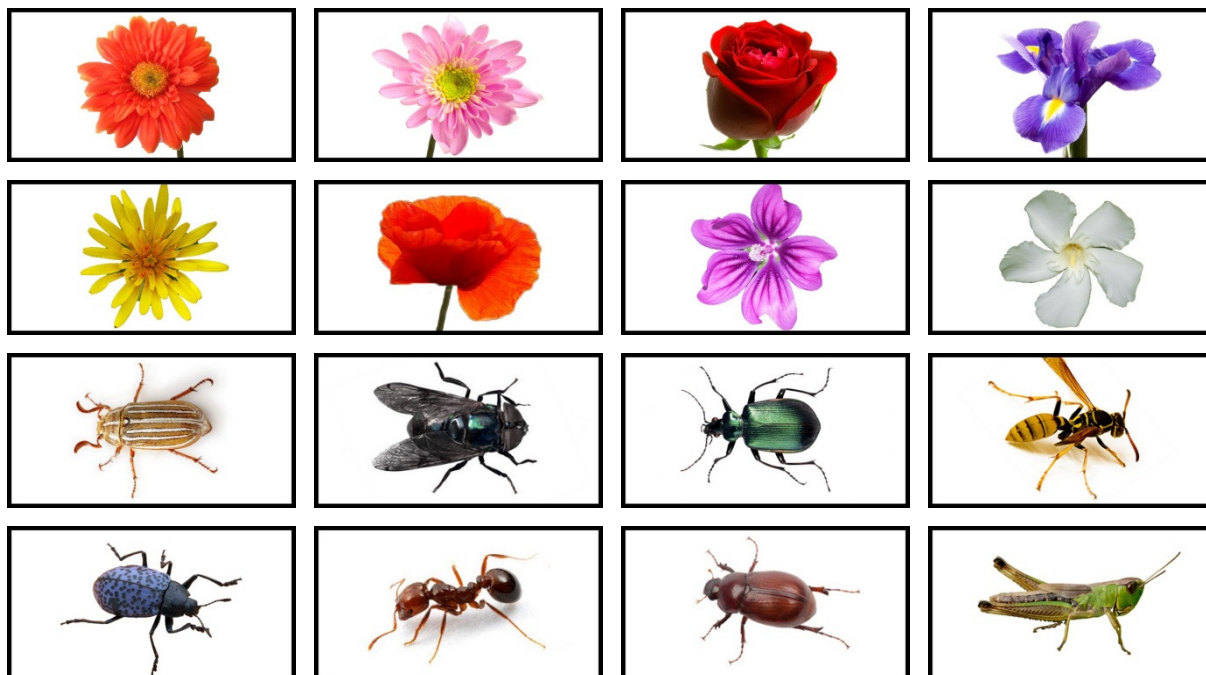
Note. †*p* < .10, **p* < .05.

Figure 8. Self-concept balanced identity: Associations between in-group academic stereotypes

and academic self-concept among White and Latino children with high and low in-group

identification

Note. *p < .01.

Appendix A: Priming Pictures
Flowers/Insects

Faces

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