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Patterns of Implicit and Explicit Attitudes in Children and Adults: Tests in the Domain of Religion

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Abstract

Among the most replicated results in social cognition is the split between explicit and implicit attitudes; adults demonstrate weaker group-based preferences on explicit rather than implicit measures. However, the developmental origins of this pattern remain unclear. If implicit attitudes develop over a protracted period of time, children should not demonstrate the implicit preferences observed among adults. Additionally, unlike adults, children may report group-based preferences due to their lesser concern with social desirability. In Study 1, Christian adults showed the expected pattern of robust implicit preference but no explicit preference. In four additional experiments, 6–8 year old children whose parents identified them as Christian viewed characters described as belonging to two starkly different religious groups ("strong religious difference") or two relatively similar religious groups ("weak religious difference"). Participants then completed explicit and implicit (IAT) measures of attitude toward Christians and either Hindus (Study 2) or Jews (Studies 3–5). Three main results emerged. First, like adults, children showed significant implicit pro-Christian preferences across all studies. Second, unlike adults, children in the "strong religious difference" case reported preferences of approximately the same magnitude as their implicit attitudes (*i.e.*, no dissociation). Third, even in the "weak religious difference" case, children showed implicit pro-Christian preferences (although, like adults, their explicit attitudes were not sensitive to intergroup difference). These data suggest that the seeds of implicit religious preferences are sown early and that children's explicit preferences are influenced by the social distance between groups.

After decades of psychological research on intergroup relations, the knowledge that social categories influence attitudes and beliefs comes as no surprise. Starting in infancy (Kelly *et al.*, 2005; Quinn, Yahr, Kuhn, Slater, & Pascalis, 2002) and continuing into the elementary school years (Aboud, 1988; Baron & Banaji, 2006), group memberships such as race, gender, and age influence perceptions of others (Allport, 1954; Fiske & Taylor, 1991).

As strong as the evidence is that social categories matter, it is equally well documented that that explicit endorsements of group stereotype and expressions of negative attitudes toward out-group members have diminished (Devine & Elliot, 1995; Madon *et al.*, 2001). Some have taken this as a cause for optimism, arguing that individuals have become increasingly egalitarian (Arkes & Tetlock, 2004). Others argue that such changes, while genuine, are restricted to expressions of conscious cognition (Banaji, Nosek, & Greenwald, 2004). In fact, on implicit measures of social group attitudes and beliefs—those that use reaction times or other difficult-to-control responses to measure attitudes and beliefs—adults demonstrate robust intergroup preferences based on race, gender, age, and physical appearance (Nosek *et al.*, 2007; Rudman & Goodwin, 2004). Such preferences predict voting behavior (Greenwald, Smith, Sriram, Bar-Anan, & Nosek, 2009), economic discrimination and

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physical harm against stigmatized group members (Rudman & Ashmore, 2007), and hiring decisions (Rooth, 2009). In fact, in socially sensitive domains such as race, implicit measures predict behaviors such as social distancing and non-verbal indicators of discomfort beyond the variance accounted for by self-reports (Greenwald, Poehlman, Uhlmann, & Banaji, 2009).

These differences in consciously expressed explicit attitudes and less consciously accessed implicit attitudes have produced a signature result in a wide variety of tests of social intergroup cognition: implicit and explicit attitudes are dissociated such that expressions on explicit measures favor the in-group or dominant group to a relatively small degree, whereas implicit attitudes demonstrate robust preferences (Nosek *et al.*, 2007). This dissociation has been observed so often that indeed we might say that "the dissociated state" characterizes the intergroup attitude profile of our generation (Brauer, Wasel, & Niedenthal, 2000; Devine, 1989; Fazio, Jackson, Dunton, & Williams, 1995; Fazio & Olson, 2003; Greenwald & Banaji, 1995; Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005).[1]

How Does the Dissociated State of Attitudes Develop?

Building on prior work conducted with adults, we investigated implicit and explicit attitudes among children. This approach allowed us to answer two important questions. First, to what extent do children's implicit and explicit attitudes resemble those of adults, particularly in a domain not marked by perceptual difference? Second, what factors might attenuate self-reported preferences in their earliest state?

To answer these questions, we utilized children's propensity to report group-based attitudes even in the presence of societal norms censuring expressions of intergroup bias. Adults' lack of explicit preferences may partially derive from their desire to appear egalitarian; however, children younger than approximately 9 years of age typically do not show evidence of spontaneous socially desirable responding in intergroup domains. Younger children report preferring those who share their race (Baron & Banaji, 2006), language/accent (Kinzler, Shutts, Dejesus, & Spelke, 2009), and minimal group designation (Dunham, Baron, & Carey, 2011)—preferences that may be based on a number of factors, including group identity, social-conventional norms, and moral judgments (Rutland, Killen, & Abrams, 2010). Because these studies did not measure children's awareness of or desire to comply with social norms, it is not possible to say that young children never demonstrate susceptibility to social desirability. In fact, children as young as six may be aware of social desirability norms and respond in socially desirable ways under some circumstances (*e.g.*, when accountable to teachers and classmates; FitzRoy & Rutland, 2010; Rutland, Cameron, Milne, & McGeorge, 2005). Additionally, even preschool-aged children conceal opinions that may be perceived as socially undesirable, such as negative evaluations of someone's drawing or a gift that one has received (Fu & Lee, 2007; Talwar, Murphy, & Lee, 2007). However, there is a lack of evidence demonstrating that children younger than 9

[1]Several explanations have been offered to account for dissociations in attitudes. Some researchers (*e.g.*, Devine, 1989; Strack & Deutsch, 2004; Wilson, Lindsey, & Schooler, 2000; see Chaiken & Trope, 1999) have put forth dual-process models, proposing that implicit and explicit attitudes result from multiple processes. Hofmann and colleagues (2005) propose several additional explanations for implicit-explicit dissociations, including the following: 1) Adults may knowingly conceal their attitudes on self-report measures due to social desirability concerns; 2) Adults may be unaware of their own attitudes; 3) Implicit and explicit measures may be conceptually mismatched; 4) Implicit and explicit attitudes may represent independent constructs; 5) The measures used may be unreliable. Several of these explanations are addressed in the methods of the current research. For example, the present research uses implicit measures previously shown to be reliable (see Nosek, Greenwald, & Banaji, 2007, for a review) and adapts explicit measures that have reliably distinguished between preferred and subordinate groups in past work (*e.g.*, Baron & Banaji, 2006; Kinzler, Shutts, Dejesus, & Spelke, 2009). Additionally, the current work includes relative explicit measures and incorporate affective (*e.g.*, friendship choice/liking) as well as cognitive (*e.g.*, behavioral ascription) variables, making a conceptual mismatch account unlikely for these data. Because we do not seek to establish the cause of implicit-explicit dissociations, potential causes will not be discussed further.

spontaneously respond in socially desirable ways in intergroup domains; in fact, in situations similar to the one created in the current experiments (*e.g.*, no experimenter-imposed motivations to respond in an egalitarian fashion), children reported social preferences based on a variety of groups.

Children's tendency to report their intergroup preferences regardless of societal norms allowed us to test a factor that may attenuate self-reported bias. Specifically, we examined whether children's preferences depend on the strength of group differences. Because adults' self-reported preferences tend to be quite low, it is difficult to determine what factors might reduce adults' conscious preferences. However, a developmental approach allows us to determine whether emphasizing similarity between groups might attenuate such preferences. We drew on the Common In-Group Identity Model (Gaertner & Dovidio, 2000), which proposes that one way to reduce bias is to highlight group similarities. For example, heterosexual students may exhibit less prejudice against gay students at their university if they re-categorize them as in-group members (students at the same university) rather than out-group members. We tested whether a more subtle manipulation—simply highlighting similarities between groups rather than encouraging participants to re-categorize individuals—might also attenuate preferences.

The Importance of Religious Differences

Examining preferences in the domain of religion provides several advantages to testing children in domains that have been extensively studied in prior research. First, religion offers a number of out-groups that vary in the degree to which they differ from one's own. For Christians, the Judeo-Christian tradition provides a close cousin in Judaism, another monotheistic religion with shared origins (“weak religious difference”) compared to Hinduism, a polytheistic religion with strikingly different beliefs, rituals, and sacred texts (“strong religious difference”).

Second, others' religious identities are not necessarily obvious. While some group memberships are perceptually salient (*e.g.*, gender, race, age), in secular societies religious differences are more hidden. Because it can require more effort to determine who is a religious out-group member (*e.g.*, one must rely on cues that may be less apparent than skin color or secondary sex characteristics), children have little direct knowledge of others' religious backgrounds. Some research shows that children do not routinely report group-based preferences unless members of the out-group are physically distinguishable and this perceptual dissimilarity is salient (Bigler, Jones, & Lobliner, 1997; Bigler, Spears Brown, & Markell, 2001). This finding highlights the importance of examining social preferences in a non-perceptual domain to determine whether even young children can form preferences when out-group members are not physically distinguishable.

Third, religion is a particularly important, yet understudied, group membership. Most people in the world are theists (Lynn, Harvey, & Nyborg, 2009), and religious beliefs appear culturally universal (Atran, 2002; Boyer, 2001). Children as young as five categorize others on the basis of religious group membership (Diesendruck & haLevi, 2006), suggesting that even young children are sensitive to religious differences. Ten-year-old children apply religious concepts to explanations of morality (Nucci & Turiel, 1993), five-year-old children may be “intuitive theists” when reasoning about the origins of animate beings and inanimate objects (Kelemen, 2004), and starting at the age of six or earlier, children use religious teachings to help them understand the broader meaning of life (Coles, 1991). We asked if children would use religious identification as a basis for social preference.

Overview of Current Studies

In five experiments, we examined adults' (Study 1) and children's (Studies 2–5) preferences for members of groups demarcated by differences in religious beliefs and behaviors. The purpose of these studies was two-fold. We sought to examine the similarities and differences between children's and adults' implicit and explicit attitudes with a focus on the patterns of dissociation between the two. We also investigated the magnitude of religious differences to view whether the more automatic attitudes are visible even prior to the presence of explicit attitudes.

Study 1

Numerous prior experiments, both in the traditional laboratory and on the web, have established that adults report more egalitarian attitudes than those observed implicitly (Baron & Banaji, 2006; Dovidio, Kawakami, Smoak, & Gaertner, 2008; Hofmann *et al.*, 2005; Nosek, 2007; Nosek *et al.*, 2007). We sought to replicate this finding 1) in the new domain of religion; 2) in a sample drawn from the same geographic population as child participants; and 3) using stimuli that could easily be adapted for use with children. These data will provide a baseline against which data from children in the next sequence of four studies can be compared.

Method

Participants—Participants were recruited through the Psychology Department Subject Pool and received either course credit or $5. They were 33 self-identified Christians (36% Protestant, 64% Catholic; 17 women) between the ages of 21 and 48 years (mean age=32;8). The sample was 67% White, 18% African American, and 9% Hispanic; 9% selected “other” as their racial identification. Participants identified their religious affiliation, as well as other relevant demographic characteristics, on a questionnaire completed at the end of the study. Two questions measured religiosity. First, we asked participants to indicate how often they attended services at a place of worship. Response options were: “never” (coded as 0), “less than once a year,” “once a year,” “a few times a year,” “once or twice a month,” and “every week or more often” (coded as 5). On average, participants reported attending services “a few times a year” (M=3.18, SD=1.49). Second, participants responded to the question, “How important is your religious tradition to you?” Responses ranged from 1 (“not at all important”) to 7 (“very important”), M=4.73, SD=1.77. Since participant religion was not known before the study, a small set of data were collected from non-Christian participants; these are presented briefly, together with data from non-Christian children, after the presentation of data from all studies.

Procedure—Adults were informed that they were completing a study similar to one run with children to reduce incredulity at the child-like stimuli. In Part 1, participants read one story about a Jewish child and another story about a Christian child. We chose these religious groups because many Americans identify with the “Judeo-Christian” tradition, and this choice allowed us to begin our investigation with the two most reliably familiar religious groups. Stories were written at a first grade reading level to allow comparison with child participants and were matched in length; we also equated relevant aspects of the stories for familiarity. For example, we described one character as celebrating Easter and the other as celebrating Hanukkah because these are both well-known religious holidays that do not carry the secular connotations of Christmas or Passover (holidays that are often described as “family holidays” and therefore have strong cultural as well as religious associations). Characters were described as having traits that would be shared with most members of their religious in-group broadly construed; for example, the Christian character was not described

in specifically Protestant or Catholic terms and was therefore expected to be similar to Christian participants.

Stories were accompanied by illustrations. All characters were portrayed as White because this is the modal racial identification in the location where these studies were conducted; however, both characters were matched in gender to the participant. Six pictures of children obtained from publicly accessible web sites represented the characters. Child pictures were used to equate adult stimuli with those shown to children; because children may feel uncomfortable indicating preferences between two adults, all characters were represented as children of approximately the same age as the child participants. Each adult was only exposed to two of the six pictures, and the pictures they saw (as well as the match between picture and religious affiliation) were counterbalanced across participants. In this and all subsequent studies, the pictures were counterbalanced such that the same image was portrayed as Christian to some participants and as non-Christian (in this case, Jewish) to others.

Stories were counterbalanced such that approximately half of the participants read the Jewish story first while the other half read the Christian story first (Appendix A). The first page introduced participants to the character and was not accompanied by a religious description. Each subsequent illustration was accompanied by a description of a practice; one of these illustrations was also accompanied by an explicit statement concerning belief. However, characters' religious affiliations were never labeled.

After reading both stories, participants answered face-valid questions concerning their preferences (*e.g.*, which character was nicer). Additionally, adults answered questions adapted from Dunham and colleagues (2011). Specifically, adults read a series of verbal descriptions of the actions performed by unidentified characters. These actions represented both good (*e.g.*, “helped their friends with schoolwork”) and bad (*e.g.* “stole a toy from a neighbor”) behaviors. Participants indicated which character they thought performed each behavior. We used such questions to determine whether any in-group preferences indicated positive in-group evaluations, negative out-group evaluations, or a combination of the two. As a neutral control, participants were also asked to select the character that they thought had a peanut butter and jelly sandwich for lunch. The order of these questions was randomized and counterbalanced across participants (Appendix B).

In Part 2, adults completed a computerized Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) in which they categorized words as quickly as possible. Some words were categorized along a valence dimension (*i.e.*, participants pressed one key if they saw a positive word and a different key if they saw a negative word), while others were categorized along the dimension of religion (*i.e.*, participants pressed one key if they saw a word related to Judaism and a different key if they saw a word related to Christianity). Of particular interest are trials where participants used the same key to categorize words according to both valence and religious category. For example, in one block, participants pressed one key if they saw a good word (*e.g.*, marvelous, superb) or a word related to Judaism (*e.g.*, synagogue, rabbi) and a different key if they saw a bad word (*e.g.*, tragic, horrible) or a word related to Christianity (*e.g.*, church, priest). A separate block switched the pairing, such that participants used the same key to respond to good+Christianity and a different key to respond to bad+Judaism. Block order was counterbalanced across participants. A positive IAT score in this instance indicates faster reaction times when pairing good+Christianity/bad+Judaism; for brevity, we refer to such a result as a pro-Christian preference, though the results could also indicate an anti-Jewish bias.

The IAT differs from the explicit measure in several respects (*e.g.*, it requires fast responses and categorization of images as Jewish or Christian). However, the two measures are commensurate in several important ways related to the question of interest. As with explicit items, IAT scores have been interpreted as indicators of preference (Baron & Banaji, 2006; Cvencek, Greenwald, & Meltzoff, 2011; Greenwald *et al.*, 1998; Newheiser & Olson, 2012). Additionally, despite playing a role in preferences, familiarity alone cannot explain IAT effects (Dasgupta, McGhee, Greenwald, & Banaji, 2000; Ottaway, Hayden, & Oakes, 2001; Rudman, Greenwald, Mellott, & Schwartz, 1999).

Results and Discussion

We used a one-sample *t*-test to compare IAT scores (*D*s) to 0, a score that would indicate no difference in reaction times between the Jewish+good/Christian+bad and the Christian +good/Jewish+bad conditions. We followed the IAT data reduction protocol outlined by Greenwald, Nosek, and Banaji (2003); this resulted in the removal of one participant's score from the final analyses. Participants exhibited a strong implicit pro-Christian preference (mean D=.43, SD=.45, $t(31)$=5.43, p<.001).

To examine explicit preferences, we calculated the proportion of trials on which adults selected the Christian character when asked about direct social preference and the performance of good and bad behaviors. In each of these categories, adults responded at chance (social preference: M=.50, SD=.42, $t(31)$=0, p>.05; good behavior: M=.41, SD=.34, $t(32)$=−1.53, p>.05; bad behavior: M=.61, SD=.41, $t(32)$=1.49, p>.05). Adults also responded at chance levels to the control question ($N_{\text{Christian character}}$=21; $N_{\text{Jewish character}}$=12, binomial p>.05).

Christian adults did not report preferring either Jewish or Christian characters. However, they showed an implicit pro-Christian preference. These results are consistent with previous work documenting a discrepancy between adults' implicit and explicit attitudes in non-religion domains.

Study 2

Having established that Christian adults show implicit pro-Christian preferences in the absence of explicit animus, we sought to examine implicit and explicit religion-based preferences in children by investigating children's preferences for Christian v. Hindu characters. We replaced Judaism with Hinduism because adults may have noticed differences between the Christian and Jewish characters that may not be salient to children. For example, adults may have placed a great deal of emphasis on theological differences and therefore perceived the two characters as very different, whereas children, who have had less exposure to theology, may have placed more emphasis on similarities such as believing in one God and attending religious services.

Method

Participants—Participants were 24 children (10 girls) between the ages of 6 and 8 years (M=7;8). During the study, parents completed a demographic questionnaire. They identified their children as Protestant (33%), Catholic (42%), or members of some other sect (25%).[2] On average, parents reported that their children attended services between “every week or more often” and “once or twice a month” (M=4.50, SD=.72) and that it was quite important for them to raise their children in a religious tradition (M=6.08, SD=1.14). The sample was

[2]For brevity, such children will be referred to as “Christian children” subsequently. However, it is important to note that children's beliefs may differ from those of their parents.

58% White, 4% African American, 4% Asian American, and 8% Hispanic; 25% of the parents identified their child's race as "other." Participants were recruited through a departmental database and received a small toy in exchange for their participation; during recruitment, parents were informed that the study contained religious content. An identical recruitment procedure was followed for all subsequent studies.

Procedure—Children viewed a Power Point presentation in which two characters paired with religious objects appeared one at a time. All characters were White and gender-matched to the participant. The experimenter explained each religious symbol and then asked two questions. For example, on one trial, she pointed to the first child and said, "This boy is Hindu, and his favorite holiday is Diwali … Here is a picture of some Diwali lamps down here." The experimenter then pointed to the second child and said, "This boy is Christian, and his favorite holiday is Easter … Here is a picture of the Easter bunny down here" (Appendix C).

After reading both stories, the experimenter elicited participants' explicit preferences using several counterbalanced questions adapted from Dunham *et al.* (2011) and Kinzler *et al.* (2009). Like adults, children were asked to indicate their preference, to guess who had done good and bad behaviors, and to answer a control question. Among adults, asking participants to infer behaviors is often used as an implicit measure (Wittenbrink & Schwarz, 2007). However, among children, such questions have been used to tap conscious processes (Dunham *et al.*, 2011). Again, these items allowed us to determine whether social preferences were driven by positivity toward the Christian character or negativity toward the non-Christian character. Children were also asked to indicate which character they thought was American[3] and which was more like them. After completing these trials, participants completed a Child IAT (Baron & Banaji, 2006) by categorizing good and bad words and faces of the characters as quickly as possible.

To avoid experimenter bias, the experimenter was carefully trained on standard techniques used in developmental psychology to avoid influencing responses. For example, when asking children the explicit questions, the experimenter looked at the child rather than at the screen to ensure that gaze would not serve as a cue to the "correct" answer.

Results and Discussion

Similarly to adults, children exhibited an implicit pro-Christian preference (mean D=.21, SD=.33, $t(23)$=3.08, p<.01). Additionally, they reported preferring the Christian character on nearly all items. Data were analyzed in the same way as Study 1. Participants selected the Christian character on the majority of direct preference trials (M=.75, SD=.39, $t(23)$=3.14, p<.01) but ascribed fewer bad behaviors to the Christian character than would be expected by chance (M=.23, SD=.33, $t(23)$=−4.03, p=.001). Binomial tests revealed that Christian children also selected the Christian character when asked which character was American (Ns=20 v. 4, p<.01), which character had a peanut butter and jelly sandwich for lunch (Ns=19 v. 4, p<.01), and which character was more like them (Ns=21 v. 3, p<.001). The only items on which participants did not display a significant pro-Christian bias were those concerning good behaviors (M=.63, SD=.37, $t(23)$=1.66, p>.05).

[3]Despite the fact that responses to the peanut butter and jelly question were not significantly different from chance in Study 1, the percent of participants selecting the Christian character was higher than we expected. It is possible that participants associated the Christian character with eating a peanut butter and jelly sandwich because peanut butter and jelly is a prototypically American food. Previous work has shown that participants associate Whites with American more than other racial groups, such as Asian Americans (Devos & Banaji, 2005). It is possible that religious groups that are more predominant in American society (*e.g.*, Christians) may also be associated with American to a greater extent than minority religious groups. To test this hypothesis more directly, we included the question, "Which of these children do you think is an American?"

By the age of 6, Christian children, like adults, demonstrate implicit pro-Christian preferences. Unlike adults, children also reported pro-Christian preferences. Children's preferences could not have been driven by perceptual dissimilarities between the characters since both were represented with counterbalanced photographs of White children. Thus, in contrast to prior work (see Bigler & Liben, 2006), Study 2 also demonstrates that perceptual differences are not necessary in order for preferences to emerge.

Study 3

Three potential explanations may account for children's pro-Christian v. Hindu preferences. First, children may indiscriminately prefer their own or the culturally dominant religious group, regardless of any characteristics of the contrast character. (See general discussion for a more detailed account of preferences for one's in-group v. the culturally dominant group.) Second, children's responses may reflect preferences for a member of a familiar religious group. Third, their responses may reflect preferences for the character that is more similar to them.

Study 3 examined the latter two possibilities by presenting children with members of two familiar religious groups (Christianity and Judaism) while highlighting differences between the groups. American adults know more about Judaism than Hinduism; for example, 71% of Christian adults correctly identified Moses as the Biblical figure that led the exodus out of Egypt, a number comparable to the 74% of Christian adults who correctly identified the birthplace of Jesus. This familiarity with Jewish sacred texts is likely driven by the large overlap between the Jewish and Christian scriptures, an overlap that is not found with Hinduism. Tellingly, only 33% of Christian adults correctly identified Vishnu and Shiva as Hindu deities (Pew Forum, 2010). Given that adults can only teach children information that they themselves know, it is highly plausible that American children—particularly those from Christian families—learn more information about Judaism than Hinduism and that, therefore, aspects of both Christianity and Judaism are relatively familiar whereas aspects of Hinduism are less familiar.

Method

Participants—Participants were 35 children (17 girls) between the ages of 6 and 8 years (M=7;5), all of whom were identified as Christian (20% Protestant, 60% Catholic, 20% some other sect) by their parents. On average, parents reported that their child attended services “once or twice a month” (M=4.09, SD=1.24) and that it was moderately important to raise their child in a religious tradition (M=5.06, SD=1.84). The sample was 74% White, 3% African American, 3% Asian American, and 3% Hispanic; 14% of the parents identified their child's race as “other.”

Procedure—The procedure was similar to that used in Study 2; however, the stories concerned Christian and Jewish characters. The descriptions of the Christian character were nearly identical to those used in Study 2, with minor changes (*e.g.*, whether the Christian character thought it was silly to believe that there are many gods [Study 2] or that another name for God is Elohim [Study 3]; see Appendix D). After answering the same explicit questions used in Study 2, participants completed a Christian/Jewish attitude IAT by categorizing the faces of the Christian and Jewish characters as well as good and bad words.

Results and Discussion

When analyzing IAT results, we removed data from two participants due to parental interference (1) and an unusually high number of errors (1; the cut-off for an “unusually high” was taken from the guidelines established by Greenwald, Nosek, and Banaji [2003]).

One additional child did not wish to complete the IAT. Similarly to participants in Studies 1–2, the remaining participants exhibited a significant pro-Christian preference (mean D=.15, SD=.37, $t(30)=2.19$, $p<.05$).

Explicit data were analyzed as in Studies 1–2. Participants were more likely than chance to ascribe positive behaviors to the Christian character (M=.68, SD=.33, $t(32)=3.20$, $p<.01$) and less likely than chance to ascribe negative behaviors to the Christian character (M=.34, SD=.34, $t(33)=-2.76$, $p<.01$). Additionally, participants reported a nearly-significant pro-Christian preference (M=.64, SD=.40, $t(32)=1.96$, p=.059). Binomial tests revealed that Christian children also selected the Christian character more often than would be expected by chance when asked which character was American (Ns=27 v. 8, $p<.01$), which character had a peanut butter and jelly sandwich for lunch (Ns=24 v. 11, $p<.05$), and which character was more like them (Ns=30 v. 5, $p<.001$).

Even when judging between members of two familiar religious groups, children continued to show implicit and explicit pro-Christian preferences. Additionally, children's responses diverged from those of adults, who failed to report an explicit preference even in the face of implicit bias. Studies 4–5 investigated conditions under which children, like adults, may report weaker explicit preferences than those demonstrated implicitly.

To confirm our assumptions concerning children's perceptions of Christianity, Judaism, and Hinduism, we collected data from an independent sample of 20 children (M_{age} = 7;8). We described three characters using descriptions from Studies 2–3 and including information about both beliefs and practices (*i.e.*, the Christian character was described as celebrating Easter and believing in Jesus, the Jewish character was described as celebrating Hanukkah and believing in Elohim, and the Hindu character was described as celebrating Diwali and believing in many gods; none of the characters referred to another person's belief as silly). After reading the paragraph-long description of each character, the experimenter asked, “Which of these two people [pointing to the Jewish and Hindu characters] is most like this person [pointing to the Christian character]?” Fifteen of the children selected the Jewish character, and a binomial test indicated that this proportion was significantly above chance ($p<.05$). These data indicate that, as we predicted, children perceived the Christian and Jewish characters to be more similar to each other than the Christian and Hindu characters. These data may also be consistent with the idea that the beliefs and practices associated with the Jewish character in this study may have seemed more familiar to participants than those associated with the Hindu character; if children perceived the Hindu character to be more familiar, they likely would have responded that the Hindu and Christian characters were most similar to each other, given that the Christian character was described using well-known aspects of Christianity.

Study 4

To examine the boundary conditions of children's preferences, and to determine whether children may demonstrate the same pattern of results obtained among adults (greater implicit rather than explicit preferences) in some contexts, we first conducted a pilot test to establish conditions under which an explicit preference does not emerge. Children reported pro-Christian preferences when judging between two very different characters; however, adults failed to report a preference when judging between characters who may seem quite similar to children. If children's explicit preferences depend on a strong contrast between the two groups, such preferences should be attenuated if two relatively similar characters are presented. On the other hand, if Christian children indiscriminately prefer Christians to members of all other religious groups, they should continue to report pro-Christian attitudes. Thus, in the pilot study, 30 children (15 girls; 30% Protestant, 53% Catholic, 17% some

other sect; M_{age}=6;3) heard the same stories read by adults in Study 1 and responded to the same behavioral questions. Questions of direct social preference, adapted from Kinzler *et al.* (2009), asked which character the child would rather befriend and which character the child would rather invite to a party. Participants responded at chance levels to all items (social preference: M=.57, SD=.41, $t(29)$=.89, p>.05; good behavior: M=.50, SD=.39, $t(29)$=0, p>.05; bad behavior: M=.45, SD=.39, $t(28)$=.48, p>.05; control question: $N_{\text{Christian character}}$=18, $N_{\text{Jewish character}}$=12, p>.05)[4], demonstrating that when two characters were presented as relatively similar, children exhibited the same lack of explicit preference shown by adults.

Given that children failed to report pro-Christian attitudes when deciding between two similar characters, it is possible that under these conditions, they would demonstrate the same implicit-explicit dissociation seen among adults. On the other hand, because the explicit system failed to differentiate two similar characters among children, it is possible that the implicit system would respond similarly. In this case, children should exhibit neither explicit nor implicit pro-Christian preferences when judging between two similar characters. Thus, the main goal of Studies 4–5 was to determine whether it is possible to attenuate explicit preferences among children too young to demonstrate spontaneous socially desirable responding. Because children's lack of reported pro-Christian preference stands in stark contrast to their explicit preferences in perceptually salient domains (Baron & Banaji, 2006; Bigler *et al.*, 1997, 2001; Dunham *et al.*, 2011; Fabes, Martin, & Hanish, 2003; Kinzler *et al.*, 2009), a second goal of Studies 4–5 was to serve as a conceptual replication of the pilot study.

Method

Participants—Participants were 17 children (9 girls) between the ages of 6 and 8 years (M=8;0), all of whom were identified as Christian (53% Protestant, 47% Catholic) by their parents. On average, parents reported that their children attended religious services “once or twice a month” (M=4.36, SD=.79) and that it was moderately important to them to raise their child in a religious tradition (M=5.59, SD=1.62). The sample was 82% White and 6% Asian American; 12% of the parents identified their child's race as “other.”

Procedure—The procedure was identical to Study 3 with the exception that the Christian and Jewish characters were portrayed as relatively similar (Appendix E).

[4]We also included a number of additional, exploratory questions in this pilot study. We asked children to a) respond to a set of 4 manipulation check questions at the end of the study, replicating the procedure from Study 1; b) label the religious affiliation of each character; and c) label their own religious affiliation.
Children demonstrated correct recall on 82% of memory trials, an accuracy rate significantly above chance (50%) as measured by a one-sample t-test, $t(29)$=6.42, p<.001. To test their prior knowledge of religious differences, we calculated accuracy in identifying characters' religions by coding responses as correct (1) or incorrect (0) and computing the proportion of correct answers. A one-sample t-test using .50 as the comparison indicated that responses did not differ from chance (M=.48, SD=.44, $t(29)$=−.21, p>.05). However, a regression using participant's age in days at time of study as the predictor and accuracy as the dependent measure indicated that older children responded more accurately than did younger children (B=.001, SE=.00, Beta=.49, adjusted R^2=.21, $F(1, 29)$=8.73, p<.01). In fact, 6–7 year old children provided accurate labels more often than chance (M=.75, SD=.40, $t(11)$=2.17, p=.05), indicating familiarity with religious labels. We conducted three additional regression analyses entering age in days as the predictor and an explicit-question category (direct social preference and ascriptions of good and bad behaviors) as the dependent measures. All analyses were non-significant, indicating that although age influences accuracy of religious labeling, it does not influence explicit preferences.
We computed accuracy in identifying one's own religion by comparing children's responses to the question, “What religion are you?” with adults' responses to, “How would you identify the religious affiliation of your child?” Responses were scored as a match when children and parents provided the same label (*e.g.*, “Protestant”) or when one label was a sub-set of the other (*e.g.*, parents identified as Protestant and child identified as Christian). Though only 14 out of 30 Christian children self-identified as Christian, 10 out of 12 older children did so, indicating that the ability to accurately self-identify as a member of one's religious group increases between 6 and 7 years of age. Because age did not influence self-reported preferences, it appears that age-related religious developments (*e.g.*, ability to self-identify as a member of a religious group) do not scale with religion-based preferences.

Results and Discussion

Replicating the findings from adults (Study 1), as well as children responding to quite distinct characters (Studies 2–3), participants demonstrated an implicit pro-Christian preference (mean D=.29, SD=.36, $t(16)$=3.35, p<.01). Additionally, participants were significantly more likely to say that the Christian character was like them (Ns=16 v. 1, binomial p<.01). Despite this acknowledgement of similarity, like adults—and unlike children responding to distinct characters—participants responded at chance levels to all other explicit questions, analyzed the same was as Studies 1–3 (social preference: M=.68, SD=.39, $t(16)$=1.85, p>.05; good behavior: M=.65, SD=.34, $t(16)$=1.79, p>.05; bad behavior: M=.44, SD=.39, $t(16)$=−.62, p>.05; American: $N_{\text{Christian character}}$=12, $N_{\text{Jewish character}}$=5, binomial p>.05).

Study 4 reflects a difference between the implicit and explicit systems in their early forms. Whereas the explicit system did not strongly differentiate between the two characters, the implicit system responded with a pro-Christian preference. Thus, the implicit system may be more sensitive to slight group differences, and implicit preferences in non-perceptual domains may emerge earlier in development.

To our knowledge, these are the first findings showing an implicit-explicit dissociation in children's spontaneous attitudes toward social groups. Thus, these results also demonstrate that the implicit-explicit dissociation observed among adults may not require the presence of social desirability motives. Such dissociations can be observed even among children too young to spontaneously provide socially desirable responses in intergroup contexts, indicating that such dissociations may emerge earlier than previously thought and that social desirability may not be a necessary component.

Furthermore, Study 4 points to a unique feature of children's attitudes in non-perceptually salient domains. In perceptually salient domains, explicit preferences emerge early (Aboud, 1988; Baron & Banaji, 2006; Bigler & Liben, 2006). However, when children could not physically distinguish Christian and Jewish characters, and when these characters were portrayed as relatively similar, children's explicit preferences were attenuated. This suggests that explicit preferences in non-perceptual domains may emerge later than preferences in areas that are readily apparent to the senses.

Study 5

Study 5 addressed a limitation of Study 4, in which children categorized the faces of Christian and Jewish characters on the IAT. This procedure differed from the IAT completed by adults, who categorized words related to Judaism and Christianity. Thus, it may be the case that children's implicit attitudes reflect preferences for Christian individuals while adults' implicit attitudes reflect preferences for Christianity in general. To address this concern, participants in Study 5 categorized symbols representing Judaism and Christianity.

Method

Participants—Participants were 24 children (7 girls) between the ages of 6 and 8 years (M=7;4), all of whom were identified as Christian (58% Protestant, 42% Catholic) by their parents. Parents reported that their children attended services “once or twice a month” on average (M=3.52, SD=1.73) and that it was moderately important to them to raise their child in a religious tradition (M=4.39, SD=2.23). The sample was 83% White and 4% Hispanic; 13% of parents self-identified their child's race as “other.”

Procedure—The procedure was the same as Study 4 with one notable exception. Rather than seeing one Christian and one Jewish character, children viewed different characters (all

White and gender-matched to the participant) on each trial. They then categorized the symbols appearing in the stories rather than characters' faces on the IAT.

Results and Discussion

Replicating earlier studies, participants exhibited an implicit pro-Christian preference (mean D=.24, SD=.33, $t(22)$=3.48, p<.01). As in earlier studies, children were also significantly more likely to say that the Christian character was like them (Ns=18 v. 6, binomial p<.05). No other explicit comparisons, calculated in the same way as in Study 1, reached significance (social preference: M=.58, SD=.35, $t(23)$=1.16, p>.05; good behavior: M=.54, SD=.39, $t(23)$=.53, p>.05; bad behavior: M=.48, SD=.35, $t(23)$=−.30, p>.05; American: $N_{\text{Christian character}}$=17, $N_{\text{Jewish character}}$=7, binomial p>.05). Like adults, children showed stronger implicit rather than explicit preferences when presented with two similar characters.[5]

To examine the relationship between implicit and explicit results more formally, we conducted a set of point-biserial correlations on the combined data from Studies 4–5. Because correlation tests are particularly sensitive to sample size, and because the methods of the two studies are almost identical, collapsing across these samples allowed us to compute a more stable result. Despite the greater power of this test, correlations between children's IAT score and their responses to explicit questions did not reach significance on any item, all ps>.05.[6]

One remaining concern focuses on the nature of results indicating a dissociation between implicit and explicit attitudes. It is possible that the null results reflect a measurement artifact rather than a true null result. For example, it is possible that the dependent measures were simply not strong or sensitive enough to detect an effect or that a low sample size contributed to the null findings.

We think this is unlikely for two reasons. First, the explicit questions remained consistent across studies, yet they detected differences in Studies 2–3. Additionally, the sample size was sufficient to detect significant effects on the implicit measure. Thus, we believe it is unlikely that a measurement or statistical artifact accounts for the results.

Second, to address the alternative view more formally, we re-ran the main analyses collapsing across similar studies to increase sample size. Participants were divided into two groups: those who participated in studies that revealed an overall absence of explicit preference (Studies 1, 4 [or the relevant pilot study] or 5, N=104) and those who participated in studies that revealed an overall explicit pro-Christian preference (Studies 2–3, N=59). For each group, we conducted the same analyses used in the original studies. To determine whether participants reported a pro-Christian preference, we calculated the proportion of

[5]We conducted a number of regression analyses on the data sets from each study to examine the influence of religiosity on preferences. In each analysis, we entered one relevant demographic variable (frequency of church attendance or importance of religious tradition) as the predictor and one preference measure (IAT score, reported preference, or ascriptions of good or bad behavior) as the dependent variable. In Study 1 only, the more importance adults placed on their religious tradition, the more likely they were to report pro-Christian direct social preferences (B=.11, SE=.04, Beta=.46, adjusted R^2=.18, $F(1, 30)$=8.00, p<.01) and the less likely they were to attribute negative behaviors to the Christian character (B=−.11, SE=.04, Beta=−.45, adjusted R^2=.18, $F(1, 31)$=8.03, p<.01). In Study 2 only, children who attended services more frequently (B=−.15, SE=.05, Beta=−.49, adjusted R^2=.22, $F(1, 31)$=9.91, p<.01) and children whose parents reported it was more important to raise their child in a religious tradition (B=−.10, SE=.03, Beta=−.54, adjusted R^2=.27, $F(1, 31)$=12.96, p=.001) were less likely to ascribe negative behaviors to the Christian character. In Study 5 only, children who attended religious services more often exhibited stronger implicit pro-Christian preferences (B=.10, SE=.04, Beta=.52, adjusted R^2=.24, $F(1, 20)$=7.54, p=.01). No other regressions reached significance.

[6]In the data set from Study 4 only, IAT scores correlated with children's responses to the question of which of the characters helped their friends with their schoolwork, Pearson's r=.45, p<.05. Participants who exhibited pro-Christian preferences on the IAT were more likely to select the Christian rather than the Jewish character in response to this question. However, this correlation drops to non-significance after controlling for multiple comparisons, and no other correlations reached significance, suggesting a Type 1 error.

trials on which participants reported a direct preference as well as the proportion of trials on which participants ascribed good and bad behaviors to the Christian character. Using one-sample *t*-tests, we then compared each proportion to .50.

Collapsing across studies that originally yielded a null result replicated the null findings (good behaviors: M=.50, SD=.37, $t(102)$=0.13, p>.05; bad behaviors: M=.51, SD=.39, $t(101)$=0.26, p>.05; direct preference: M=.56, SD=.40, $t(102)$=1.49, p>.05). Individuals who participated in Studies 2–3, which revealed explicit preferences, reported direct pro-Christian preferences (M=.68, SD=.40, $t(56)$=3.51, p=.001) and ascribed more positive (M=.66, SD=.34, $t(56)$=3.48, p=.001) and fewer negative (M=.29, SD=.34, $t(57)$=−4.66, p<.001) behaviors to the Christian character than would be expected by chance. A series of independent-samples *t*-tests indicated significant or near-significant differences between the two groups of studies on all explicit measures (good behaviors: $t(157)$=−2.47, p<.05; bad behaviors: $t(157)$=3.66 p<.001; direct preference: $t(157)$=−1.90, p=.059). When sensitivity is increased by increasing sample size, the lack of explicit preference observed among adults and children responding to similar characters remains.

General Discussion

Five studies examined the relationship between children's and adults' implicit and explicit attitudes toward social groups (Table 1). Children, like adults, demonstrated implicit pro-Christian preferences in the absence of self-reported biases when presented with two similar characters. However, when judging between two quite distinct characters, children reported both implicit and explicit pro-Christian preferences (Figure 1).[7]

The Relationship between Explicit and Implicit Social Cognition

Social psychology offers a clear explanation for the dissociation between implicit and explicit associations among adults. Such dissociations have commonly been found among adults in domains such as racial preferences, preferences for thin people over overweight people, and gender stereotypes (Nosek, 2007). Researchers typically argue that adults are either unaware of their attitudes or do not wish to report them due to social desirability concerns (Greenwald & Banaji, 1995; Nosek, 2007). However, research with children suggests that they may not have learned to conceal their attitudes in intergroup domains (Baron & Banaji, 2006; Kinzler *et al.*, 2009). Given these findings, one might have expected children's implicit preferences to match their self-reported attitudes. Indeed, this is the case when children judge between two quite distinct characters. However, when presented with two similar characters, children failed to report an explicit preference, leading to a dissociation similar to that observed among adults. If social desirability were a necessary component in the formation of this dissociation, then children of the age at which participants do not typically respond in socially desirable ways should have reported pro-Christian preferences that matched their implicit attitudes. The dissociation evidenced among the children responding to similar characters indicates that this mismatch can emerge even in the likely absence of social desirability motives.

[7]We allowed all participants to complete the study, regardless of their religious affiliation. Because of the heterogeneous nature of the non-Christian sample and small *N*s, it is difficult to draw firm conclusions from these data. However, preliminary results suggest that non-Christian adults in Study 1 reported preferring the Jewish character (M=.34, SD=.41, $t(31)$=−2.15, p<.05) while exhibiting implicit neutrality (M=.17, SD=.53, $t(32)$=1.79, p>.05). Additionally, non-Christian children in Studies 2, 4, and 5 were more likely to select the non-Christian character than the Christian character when asked which one was more like them, binomial ps<.05. Finally, non-Christian participants in Study 3 attributed fewer good behaviors to the Christian character than did Christian participants ($M_{\text{Christian}}$=.68, $SD_{\text{Christian}}$=.33, $M_{\text{non-Christian}}$=.39, $SD_{\text{non-Christian}}$=.21, $t(49.31)$=−3.59, p<.001). Across all of the studies reported here, these are the only items on which Christians and non-Christians reliably differed.

The current work highlights an important difference between implicit and explicit attitudes. In their early stages, explicit attitudes appear to be relatively uninfluenced by small group differences. That is, when two people belong to groups that differ along some dimensions but share commonalities that distinguish them from other groups (*e.g.*, monotheism), and when such commonalities are salient, the explicit system does not differentiate between them. Even in its earliest stages, however, the implicit system responds to small group differences. Young children showed implicit but not explicit preferences for Christian over Jewish characters when they were described in relatively similar terms, demonstrating that the implicit system is more sensitive to small group differences than is the explicit system.

In addition to highlighting one distinction between implicit and explicit attitudes, the current work suggests that children may be unaware of their own attitudes when the two characters seem relatively similar. That is, children may require a strong contrast between different social identities in order to gain awareness of their own preferences. This interpretation is supported by the fact that children reported pro-Christian preferences when differences between the characters were highlighted. Implicit attitudes do not need to be articulated or understood; rather, they can be expressed in something as difficult to control as reaction times. Thus, it is possible that in some cases, an implicit measure such as the IAT can tap a preference of which children are not yet aware or which they cannot articulate. Such a result would fit well with studies in developmental psychology demonstrating differential outcomes using measures of responses that are difficult to control (*e.g.*, looking time) and explicit or behavioral items (Baillargeon, Spelke, & Wasserman, 1985; Onishi & Baillargeon, 2005; Piaget, 1954; Wimmer & Perner, 1983). Though the current measures do not include a “correct” answer, similar processes could underlie the different responses to implicit and explicit measures.

Familiarity v. Similarity

This paper argues that children experience difficulty expressing preferences when judging between two relatively similar characters, leading children to express weaker intergroup preferences than those observed on implicit measures when two groups are portrayed as alike. An alternative account posits that children report preferences for what is familiar; when both groups are perceived as relatively familiar, no explicit preference emerges.

We think the latter account is unlikely to serve as the sole explanation for three reasons. First, when familiarity with the target items is statistically controlled, participants continue to exhibit implicit preferences on the IAT (Dasgupta *et al.*, 2000; Ottaway *et al.*, 2001; Rudman *et al.*, 1999). Second, in Study 3, children learned about members of two familiar religions (Christianity and Judaism) yet reported pro-Christian preferences. Thus, the ability to report explicit preferences does not require the presence of a completely unfamiliar religion. Third, it may appear that by emphasizing dissimilarities, the stimuli also portrayed Judaism as an unfamiliar religion. However, the experimenter provided familiar labels (“Christian” or “Jewish”) for both characters. Additionally, the Jewish stimuli included aspects of Judaism familiar to Christian children, including the mention of one God. Though it was impossible to create an entirely familiar character that was also highly distinct from the Christian character, the Jewish story did incorporate many religious aspects familiar to Christian children. Thus, rather than highlighting the unfamiliarity of the non-Christian character, we expect that the familiar religious label and religious tenets in Study 3 combined with the dissimilarity between the characters highlighted differences between the two groups.

Preferences for One's In-Group v. The Culturally Dominant Group

The current work investigates Christian children's pro-Christian preferences. This work was conducted in the United States, a country where most people self-identify as Christian (Pew Forum, 2007). Thus, an open question remains: Do children's preferences reflect an in-group bias or a preference for the culturally dominant group?

Previous literature suggests that both hypotheses are plausible. For example, 5–12 year old Hispanic children showed implicit pro-Hispanic preferences when the comparison group was Black, suggesting that Hispanic children prefer racial in-group members as compared to racially disadvantaged out-groups. However, Hispanic children of the same age demonstrated implicit neutrality when comparing Hispanic and White targets (Dunham, Baron, & Banaji, 2007). One interpretation of these data is that the children possessed both in-group and dominant-group preferences that canceled each other out in the Hispanic/White condition. Thus, it may be possible for children to possess both in-group preferences and dominant-group preferences, though, to our knowledge, no work has examined this question in the domain of religion.

Though the current experiments were not designed to address the issue of in-group v. dominant-group preferences, some preliminary data speak to this question. Specifically, across the experiments reported here, the 10 Jewish children who completed a Jewish/Christian IAT did not show the same robust pro-Christian preference demonstrated by Christian participants ($M_{\text{Jewish children}}$=−.19, SD=.55, $t(9)$=−1.09, p>.05). If anything, the Jewish children's scores reflected a slight pro-Jewish preference, suggesting an in-group preference. However, this preference was non-significant, and the small sample size does not allow for firm conclusions. Additionally, it may be the case that Jewish children prefer in-group members whereas Christian children prefer dominant-group members; it is not possible to draw broad generalizations about one religious group by studying another. Nevertheless, these preliminary data suggest that in-group preferences may account for at least some religion-based attitudes. Addressing this issue in more depth remains a fruitful avenue for future research.

Preferences Based on Religion v. Minimal Groups

A potential explanation for the results reported here is that participants treat religion as a minimal group; that is, they do not come to the experiment with pre-formed religion-based preferences but rather, throughout the course of the experiment, infer that one character is like them along some dimension and therefore express preferences for that character. Under this account, our results show that young children form social preferences based on minimal similarities to the self but do not demonstrate that children's preferences depend on religious similarity.

Such an account provides an unlikely explanation for the current data. Multiple studies conducted with children (Bigler *et al.*, 1997; Dunham *et al.*, 2011; Nesdale, Griffiths, Durkin, & Maass, 2007) and adults (Deffenbacher, Park, Judd, & Correll, 2009; DiDonato, Ullrich, & Krueger, 2010; Tajfel & Turner, 1979) demonstrate explicit as well as implicit in-group favoritism. For example, children explicitly ascribe more positive qualities (Bigler *et al.*, 1997) and more positive behaviors (Dunham *et al.*, 2011, Study 2) to peers who are randomly assigned to wear the same color t-shirt; they also report liking members of their minimal group better than out-group members (Dunham *et al.*, 2011, Study 1). In the present research, however, children did *not* report pro-Christian preferences unless the comparison target was markedly different. In cases where the two targets were relatively similar, children did not report a preference for either character, suggesting that they were not simply responding to religious differences as a type of minimal group.

Social Desirability

An additional alternative explanation posits that the lack of explicit preferences observed in Studies 4–5 is the result of children's unwillingness to report their attitudes. Though social desirability may play some role in young children's social interactions, two pieces of evidence suggest that social desirability may not have been the main factor influencing children's responses in the current research. First, a social desirability account would typically predict null results on all explicit items used in this paper. For example, if children have learned that it is unacceptable to report preferring Christian over Jewish peers, they should not have reported pro-Christian preferences in Study 3. However, when presented with information that made the Christian and Jewish characters seem quite distinct, children did not provide socially desirable responses. A nuanced version of the social desirability argument may claim that children were particularly sensitive to social desirability when learning about two relatively similar characters. Though it is unclear why this context would enhance children's socially desirable responding, the current research cannot definitively rule out this possibility.

Second, children of the ages tested in Studies 4–5 fail to demonstrate group-based socially desirable responding in a number of domains, including race (Baron & Banaji, 2006), language/accent (Kinzler *et al.*, 2009), and minimal groups (Dunham *et al.*, 2011). Though 6–8 year old children are capable of responding in socially desirable ways when they feel accountable to others (FitzRoy & Rutland, 2010; Rutland *et al.*, 2005), children of this age have not spontaneously demonstrated group-based socially desirable responding in any domain previously studied. Even in the domain of race—a particularly sensitive area in which parents explicitly teach egalitarian ideals (Hughes *et al.*, 2006; Lesane-Brown, 2006; Smith, Juarez, & Jacobson, 2011)—children report in-group and dominant-group biases. It is unclear why they should do so in the domain of religion.

Some evidence suggests that children as young as 3 years old may demonstrate non-group-based socially desirable responding. For example, preschool-aged children rated a drawing more positively in the presence of familiar individuals (Fu & Lee, 2007) and told white lies about an undesirable gift they had received (Talwar *et al.*, 2007). Such results may indicate a form of social desirability in young children; for example, they may tell white lies in order to appear nice or grateful. These data differ from the current studies, however, which tested attitudes in an intergroup domain. Though 6–8 year old children appear sensitive to social context and may alter their verbal responses to appear socially desirable in some situations, they do not appear to do so in intergroup contexts such as those based on race and language. The question of why socially desirable responding in interpersonal contexts emerges before socially desirable responding in intergroup contexts is a worthy topic for future research.

Conclusion and Future Directions

Three studies demonstrated an implicit-explicit dissociation; children, like adults, demonstrated implicit pro-Christian preferences but explicit neutrality when comparing two relatively similar characters. Two additional studies showed that these attitudes came into alignment when participants compared markedly different characters despite perceptual similarities between the characters. The current work demonstrates that perceptual differences are not necessary for preferences to emerge. Additionally, subtle differences in religion may be less salient than differences in other types of categories to young children on a conscious level; therefore, religious differences may have to be particularly pronounced in order to influence explicit preferences. On the other hand, implicit attitudes are sensitive to less sharply-differentiated religious differences. In cases where children are asked to choose between characters whose religions are similar and familiar, the IAT may tap preferences of which the children are unaware or which they may not yet be able to articulate.

The present findings raise crucial questions for future research concerning the forces that drive the preferences and attitudes observed in children. First, what aspects of religion drive children's preferences? Second, does religion have unique effects on children's social preferences, or do its effects resemble those found in other socially meaningful domains? Third, how might children respond to religious labels alone, without hearing any other individuating information about the characters? Fourth, to what extent do Christians' preferences reflect preferences for their own group, and to what extent to their attitudes reflect preferences for the socially dominant group? Similarly, the extent to which pro-Christian preferences generalize to various sects (*e.g.*, would Protestant children prefer Protestant over Catholic peers?) serves as an additional topic that might fruitfully be explored in future experiments. Future work can shed additional light on these factors' influence on intergroup attitudes in the domain of religion.

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Appendix A: Character Descriptions, Study 1

Note: Character names and introductions were counterbalanced across participants. Female characters were named Amy, Sarah, or Jill. Male characters were named Ethan, Jacob, or Dan. In addition to the two introductions presented here, a third introduction read, “This is [name]. [Name] is a little girl [boy] who lives near a big city with her [his] mommy and daddy. [Name] has a cat named Smokey. She [he] plays with him [her] often.”

This is Amy. Amy is a little girl who lives with her mommy and daddy and their pet dog, Sparky. Amy enjoys playing with Sparky and teaching him new tricks.

Amy's favorite holiday is Hanukkah. Every year she and her parents put a big menorah in their window. Amy loves lighting a bright new candle for each day of Hanukkah.

Amy loves celebrating God on Hanukkah and during the rest of the year. She has a lot of fun worshipping God with her friends at their synagogue. Amy believes that God made a miracle happen to people long ago who needed oil to light a lamp. He made a little oil last for a very long time! Amy does not believe that God ever had a son.

Amy doesn't go to church on Sundays like the other girl I will tell you about. Amy goes to synagogue with her parents on Saturdays. They sing special songs asking God to make the world a good place. They also pray and listen to stories from Torah, which is some people's Holy Book. The rabbi explains what the stories mean. Amy loves learning about people who lived long ago, especially famous rabbis like Rabbi Hillel!

Amy's rabbi taught her the prayers she should say during the day and when she goes to bed at night. Amy likes learning new prayers and saying them every day. She especially likes the prayer to say before falling asleep.

This is Sarah. Sarah is a little girl who lives with her parents and older sister, Jane, in a big city. They live in a blue house near Sarah's school.

Sarah's favorite holiday is Easter. Every year she gets to paint pretty eggs with her mommy and daddy. She also loves looking for the candy the Easter bunny leaves her!

Sarah loves celebrating God on Easter and during the rest of the year. She has a lot of fun worshipping God with her friends at their church. Sarah believes that God has a son who died, but God made a miracle happen and brought his son back to life on Easter Sunday. Sarah does not believe that people can know God without knowing about his son, Jesus.

Sarah doesn't go to synagogue on Saturdays like the other girl I have told you about. Sarah goes to church with her parents on Sundays. They listen to the choir and join in singing special songs. They say prayers together and listen to the pastor read something from the Bible. The pastor explains what all the Biblical stories mean. Sarah loves learning about people who lived in the past, especially Jesus and his loyal followers!

Sarah's pastor says that God hears us when we pray, so Sarah says her prayers every night. She thanks God for her friends and family, and she asks God to bless them. Sarah also asks God to bless their church.

Appendix B: Questions Used in Studies 1–5

One of these children stole a toy from a neighbor. Which of these children do you think did that? (all studies)

One of these children was very naughty in school and didn't do their work. Which of these children do you think did that? (all studies)

One of these children made cookies for all of their friends. Which of these children do you think did that? (all studies)

One of these children helped their friends with their schoolwork. Which of these children do you think did that? (all studies)

Which of these children do you think is nicer? (Study 1)

Which of these children would you rather babysit? (Study 1)

Which of these children goes to church every Sunday? (Study 1)

Which of these children has a menorah at home? (Study 1)

One of these children believes that God had a son who died but who came back to life on Easter. Which of these children believes that? (Study 1)

One of these children believes that God made a miracle happen a long time ago when He made a little bit of oil last for a very long time. Which of these children believes that? (Study 1)

One of these children ate a peanut butter and jelly sandwich for lunch. Which of these children do you think did that? (Studies 1–2)

Which of these children do you think is an American? (Studies 2–5)

Let's pretend that you are having a party and you've invited all of your friends. Then, your mom says that you can invite one other person. If you could, which of these children would you invite? (Studies 2–5)

Which of these children would you most like to be friends with? (Studies 2–5) Which of these children do you think is more like you? (Studies 2–5)

Appendix C: Character Descriptions, Study 2

Note: Girls heard the same story with female characters (and thus female nouns and pronouns).

This boy is Hindu. He celebrates many gods on Diwali and during the rest of the year. He worships many gods with his friends at their temple. He believes that each god does a different thing, like Brahma, who creates everything in the world, and Vishnu, who protects everything. This boy believes that Brahma created seven people who helped him make everything else in the world. He thinks that there are many gods, and he thinks it is silly to believe that Jesus is the son of God. Here is a picture of some of the gods that this boy believes in.

And this boy is Christian. He celebrates God on Easter and during the rest of the year. Here is a picture of some of the eggs this boy paints on Easter. He worships God with his friends at their church. He believes that God has a son named Jesus who died, but God made a miracle happen and brought Jesus back to life on Easter Sunday. This boy believes that Jesus used to live on earth and will come back to earth someday. He thinks that there can only be one god, and he thinks it is silly to believe in many gods.

This boy is Hindu, and he goes to temple with his parents. He doesn't go to church like the other boy. He washes himself in a river and takes off his shoes before he goes inside the temple. Sometimes he and his parents stay very quiet while worshipping the gods, and sometimes they worship by saying words in Sanskrit. This boy loves learning about the different gods and goddesses, especially Shiva, Brahma, and Vishnu. Here is a picture of a temple down here. One of the ways you can tell is because it has this symbol on it called an Om, and a symbol like that usually means something is Hindu.

And this boy is Christian, and he goes to church with his parents. He doesn't go to temple like the other boy. In church, this boy and his parents listen to the choir and sing special songs. They pray together and listen to the pastor read something from the Bible. The pastor explains what all the Biblical stories mean. This boy loves learning about people who lived long ago, especially Jesus and his loyal followers. Here is a picture of a church down here. One of the ways you can tell is because it has a cross on top like this, and a cross like this usually means that something is Christian.

This boy is Hindu, and his favorite holiday is Diwali. Every year he gets to light pretty lamps with his parents and put them all outside. He also loves squirting different-colored water on his friends! Here is a picture of some Diwali lamps down here.

And this boy is Christian, and his favorite holiday is Easter. Every year he gets to paint pretty eggs with his mommy and daddy. He also loves looking for the candy the Easter bunny leaves him! Here is a picture of the Easter bunny down here.

This boy is Hindu. Every morning, this boy puts flowers, fruit, and other kinds of food in front of a statue of one of the gods. Then he asks the gods to bless the food he has given them. Here is a picture of a statue of one of the gods down here.

And this boy is Christian. Every night, this boy says his prayers before he goes to bed. He thanks God for his friends and family, and he asks God to bless them. He also asks God to bless their church. This boy folds his hands like this when he prays.

Appendix D: Character Descriptions, Study 3

Note: Girls heard the same story with female characters (and thus female nouns and pronouns).

This child is Jewish. He celebrates God on Lag Ba'Omer and during the rest of the year. Here is a picture of some of the bonfires this boy lights on Lag Ba'Omer. He worships God with his friends at their temple. He believes that a long time ago, a man was teaching people about God for many days. God made a miracle happen and kept the sun up until the man was done teaching. This boy celebrates Lag Ba'Omer to remember that. This boy thinks that another name for God is Elohim, and he thinks it is silly to believe that another name for God is Jesus.

And this child is Christian. He celebrates God on Easter and during the rest of the year. Here is a picture of some of the eggs this boy paints on Easter. He worships God with his friends at their church. He believes that Jesus died a long time ago and God made a miracle happen and brought Jesus back to life on Easter Sunday. This boy celebrates Easter to remember that. This boy believes that Jesus used to live on earth and that he will come back to earth someday. This boy thinks that another name for God is Jesus, and he thinks it is silly to believe that another name for God is Elohim.

This child is Jewish, and he goes to temple with his parents. He doesn't go to church like the other boy. In temple, this boy and his parents stand up together while someone opens the doors to the ark at the front of the room. Sometimes he and his parents stay very quiet while worshipping God, and sometimes they worship by saying words in Hebrew. This boy loves learning the different prayers. Here is a picture of a temple down here. One of the ways you can tell is because it has a Star of David on top like this, and a star like this usually means that something is Jewish.

And this child is Christian, and he goes to church with his parents. He doesn't go to temple like the other boy. In church, this boy and his parents listen to the choir and sing special songs. They pray together and listen to the pastor read something from the Bible. The pastor explains what all the Biblical stories mean. This boy loves learning about people who lived long ago, especially Jesus and his loyal followers. Here is a picture of a church down here. One of the ways you can tell is because it has a cross on top like this, and a cross like this usually means that something is Christian.

This child is Jewish, and his favorite holiday is Lag Ba'Omer. Every year he gets to light big bonfires outside with his parents. He also loves playing with bows and arrows with his friends! Here is a picture of a Lag Ba'Omer bow down here.

And this child is Christian, and his favorite holiday is Easter. Every year he gets to paint pretty eggs with his mommy and daddy. He also loves looking for the candy the Easter bunny leaves him! Here is a picture of the Easter bunny down here.

This child is Jewish. Every morning, this boy says the Shaharit prayers when he wakes up. He thanks God for the new day. He says another prayer while he washes his hands. This boy reads his prayers from a siddur. Here is a picture of a siddur down here.

And this child is Christian. Every night, this boy says his prayers before he goes to bed. He thanks God for his friends and family, and he asks God to bless them. He also asks God to bless their church. This boy folds his hands like this when he prays.

Appendix E: Character Descriptions, Studies 4–5

Note: Boys heard the same story with male characters (and thus male nouns and pronouns). When definitions were required, the experimenter provided the following definitions: “A synagogue is a place where Jewish people go sometimes to worship God, and a rabbi is the person who leads the services in a synagogue. The rabbi might lead a prayer or teach people about God” and, “The Torah is something that Jewish people read sometimes. It tells them what God wants them to do, and it has stories about God.” These definitions were provided even if children provided a definition of their own (e.g., the experimenter might say, “That's right, a synagogue is. . .” or, “Actually, a synagogue is…”).

Look, this is the first person I'm going to tell you about. This girl is Jewish, and she celebrates Hanukkah by lighting candles in a menorah. Here is a picture of a menorah down here. Have you ever seen a menorah like this?

And here's another child. This girl is Christian, and she celebrates Easter by painting Easter eggs. Here is a picture of some Easter eggs down here.

This girl is Christian. She goes to church every Sunday and listens to her pastor. Here is a picture of a church down here. One of the ways that you can tell it's a church is because it has this cross on top, and a cross like this usually means that something is Christian.

And this girl is Jewish. She goes to synagogue every Friday and listens to her rabbi. Do you know what a synagogue and a rabbi are? Here is a picture of a synagogue down here. One of the ways that you can tell it's a synagogue is because it has this star on top, and a star like this usually means that something is Jewish.

This girl is Jewish. She eats challah every Friday night to celebrate Shabbat. Challah is a special kind of bread that some people eat to celebrate the Sabbath—here is a picture of it down here.

And this girl is Christian. She eats a wafer every Sunday in church. A wafer is a special kind of bread that some people eat to worship Jesus—here is a picture of some wafers down here.

This girl is Christian. She reads the Bible every week. Here is a picture of the Bible down here.

And this girl is Jewish. She reads the Torah every week. Here is a picture of the Torah. Do you know what the Torah is? Here's a picture of the Torah down here.

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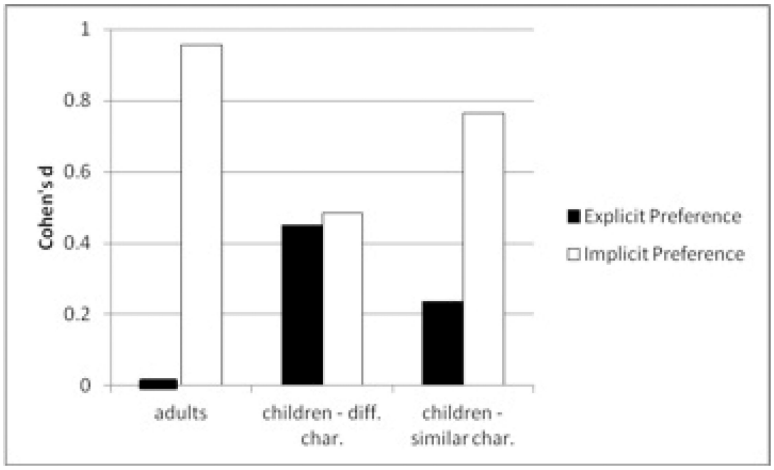

Figure 1.

Effect size for explicit and implicit preferences among adults (Study 1), children judging quite distinct characters (Studies 2–3), and children judging similar characters (Studies 4–5; the explicit data from the pilot study are also included). Effect size for explicit measures was calculated as follows: (*M* - .50) / SD, where *M*=proportion of trials on which participants selected the Christian character when asked about their direct social preference (*e.g.*, which character they would prefer to befriend) and *SD*=standard deviation of the mean. Effect size for implicit measures was calculated as follows: *M* / *SD*, where *M*=mean of IAT score and *SD*=standard deviation of IAT score. Positive scores represent pro-Christian preferences.

Table 1

Summary of Studies 1–5.

	N	Ages	Exp. Preference	Imp. Preference	Religions Compared
Study 1	33	21 – 48 years	None	Pro-Christian	Christianity, Judaism
Study 2	24	6 – 8 years	Pro-Christian	Pro-Christian	Christianity, Hinduism
Study 3	35	6 – 8 years	Pro-Christian	Pro-Christian	Christianity, Judaism
Pilot	30	5 – 7 years	None	N/A	Christianity, Judaism
Study 4	17	6 – 8 years	None	Pro-Christian	Christianity, Judaism
Study 5	24	6 – 8 years	None	Pro-Christian	Christianity, Judaism