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From American City to Japanese Village: A Cross-Cultural Investigation of Implicit Race Attitudes

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This study examined the development of implicit race attitudes in American and Japanese children and adults. Implicit ingroup bias was present early in both populations, and remained stable at each age tested (age 6, 10, and adult). Similarity in magnitude and developmental course across these 2 populations suggests that implicit intergroup bias is an early-emerging and fundamental aspect of human social cognition. However, implicit race attitudes toward favored outgroups are more positive in older than in younger participants, indicating that "cultural prestige" enjoyed by a group moderates implicit bias as greater knowledge of group status is acquired. These results demonstrate (a) the ready presence, (b) early cultural invariance, and (c) subsequent cultural moderation of implicit attitudes toward own and other groups.

Social group categories such as race are a near-ubiquitous feature of human societies, functioning as markers of role and status as well as providing a foundation for the development of identity, beliefs, and attitudes. Knowledge of the social group to which someone belongs does not just indicate the mere fact of group membership, but a varied and inferentially rich set of associations that emanate from membership, including not only the obvious and visible but also the nonobvious and invisible attributes of what it means to be a group member (Hirschfeld, 1996). In many cases, these attributes are nonproblematic, as in the assumption that a doctor, as opposed to a lawyer or accountant, possesses specialized knowledge about disease. Other inferences, though a reflection of the same basic categorization processes, raise questions concerning the underlying fairness of the judgment. That is, when group membership rather than individual qualities becomes the basis by which an individual is judged, the individual is at the mercy of putative stereotypical features of the group, features that may or may not be diagnostic of the individual's actual qualities. Given disparities between the characteristic traits associated with particular groups, such as differences in their relative status within a culture, such inferences can motivate prejudice and reinforce social and political inequality.

If knowledge about an individual's group membership is capable of promoting stable patterns of inference, then knowledge about that group must be largely consistent across members of a given community. Indeed, *stereotypes* are defined as consensually shared beliefs about social groups, and this consensus must be the result of information common to the social backdrop. In a similar vein, we generally assume that negative *attitudes* toward racial outgroups are learned from the regular presence of negative portrayals of such groups in our shared environment, and that such learning trumps countervailing attempts to foster egalitarian social norms.

Yet some analyses suggest that humans are equipped with a basic tendency to partition the world into ingroups and outgroups (Tajfel, 1970) and to favor the ingroup over these outgroups (e.g., Vaughn, Tajfel, & Williams, 1981). As a putative human universal with potential evolutionary underpinnings (Sidanius & Pratto, 1999), this view suggests that social stratification into favored and disfavored groups may, to some extent, be independent of a specific cultural backdrop. Instead, such views hold that humans and other animal groups form hierarchies naturally, and that such hierarchies are a fact of social life that will be difficult to overcome. The present research will attempt to explore the joint contribution of contingent social information and shared human tendencies in the

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development of racial evaluations. By focusing on more recently developed implicit measures of attitude, new discoveries about these age-old questions of nature and nurture become possible.

Social psychologists make a distinction between *belief*, reflecting knowledge or stereotypes, and *attitude*, reflecting evaluation or preference. In what follows, we restrict our discussion to *race attitudes*, positive or negative evaluations of racial groups. In the North American context, there is evidence for pervasive negative evaluations of many racial and ethnic groups beginning in early childhood. Beginning with the well-known doll studies of Clark and Clark (1947), researchers have charted the emergence of racial evaluation, usually by measuring children's preference for ingroups and outgroups represented by dolls, pictures, or photographs (e.g., see review by Brand, Ruiz, & Padilla, 1974). While the methodologies used in early studies have come under significant criticism (Aboud, 1988), other research paradigms have converged on the same conclusions, at least in North American majority children: Race bias emerges early, as young as 3 or 4, and appears to peak in middle childhood before undergoing a gradual decline through adolescence (Aboud, 1988; Augoustinos & Rosewarne, 2001; Davey, 1983).

Yet this picture is difficult to reconcile with behavioral developments over this same period, a point brought out starkly by research on school demographics and friendship patterns. Over the same period that race bias appears to decline, the rate of cross-race interactions and interracial friendships, even in racially mixed schools, declines precipitously (Moody, 2001; Smith, 2003) as schools undergo a dramatic process of self-segregation. And of course, several parallel literatures have firmly established the presence of pervasive race-based discrimination in adults, in areas as diverse as housing (Turner, Ross, Galster, & Yinger, 2002), employment (Deitch, Barsky, Butz, Chan, & Bradley, 2003), access to quality health care (Williams, Neighbors, & Jackson, 2003), and education (Farkas, 2003). Thus, throughout development, we have a prima facie paradox between increasingly positive attitudes and increasingly negative (or at least relatively stable) behavior.

Implicit Social Cognition

This paradox raises a question about most existing work on the development of prejudice: Most methods used to date have relied on direct questioning, in which children are asked to report on their own attitudes, or make deliberative choices between options from which their attitudes can be inferred. For example, children may be interviewed about their race attitudes, or asked to rate or sort race-related stimuli. Such methodologies, while a valuable source of insight into children's thinking, make two important assumptions. First, they assume that children are honestly reporting their beliefs and attitudes. This assumption may be warranted, but it is worth noting that the period during which children manifest a decline in race bias is also a period in which they are developing greater second order perspective-taking skills, as well as a burgeoning interest in social norms (Eisenberg, Losoya, & Guthrie, 1997). It may not have escaped a child's attention that race talk is charged talk, that certain opinions carry with them the risk of disapproval. It is possible that these factors lead children to naturally self-censor, to suppress opinions they know will create disfavor in the experimental setting and beyond; indeed, it has long been known that anonymity can increase candor in adults (Evans & Miller, 1969), and more recently, in children (Rutland, Cameron, Milne, & McGeorge, 2005). On the other hand, these same social pressures are also socializing forces that might lead children to actually adopt values more in line with egalitarian social norms. So while the honesty assumption may well be valid in children, it would be reassuring if we knew more about the extent to which these demand characteristics affect children's response to racial attitude assessments.

Second, self-report methods carry the assumption that research participants *can* introspectively report on their attitudes. Yet adult cognition provides numerous examples of the failure of this assumption, most prominently the well-established dissociation between explicit and implicit forms of memory (see review by Schacter, 1987). More recently, social psychologists have proposed a similar division for other constructs, including self-esteem, stereotypes, and most important for our purposes, attitudes (Bargh, Chaiken, Govender, & Pratto, 1992; Devine, 1989; Greenwald & Banaji, 1995). Less conscious, "implicit" forms of attitude can now be measured using a variety of techniques (Banaji, 2001), and they relate to a wide range of subtle behaviors such as impressions of facial threat (Hugenberg & Bodenhausen, 2003), subtle verbal behavior and overall friendliness toward outgroup members (Dovidio, Kawakami, & Gaertner, 2002), and trait ratings of outgroup members (Olson & Fazio, 2004; see Poehlman, Uhlmann, Greenwald, & Banaji, 2005, for a review). Through these subtle and relatively noncontrolled types of

behavior, implicit bias can underlie acts of everyday discrimination (Bazerman & Banaji, 2004); indeed, in the context of discrimination, a recent meta-analysis concluded that implicit attitudes are often *better* predictors of discriminatory behavior than are their explicit counterparts (Poehlman et al., 2005). This raises the possibility that implicit attitudes could drive the changes in children's race-related behavior discussed previously.

In the research we present here, we sought to chart the emergence of implicit attitudes in early and middle childhood. In Study 1, we examined 6- and 10-year-old White American children and adults' implicit and explicit race attitudes toward their own group, compared with two outgroups: Black Americans and Japanese. By measuring attitudes toward both a relatively high-status outgroup (Japanese) and a relatively low-status outgroup (Black), we can see whether and when young children's implicit attitudes are sensitive to the ''cultural prestige'' of a given group. We also measure explicit race attitudes, allowing us to compare the development of implicit and explicit attitudes in the same children.

Of course, as we have emphasized, attitudes toward social groups are clearly sensitive to social information relative to a particular cultural context. Limiting our focus to a single population would make it impossible to generalize beyond our White American sample, and would prevent this research from weighing in on the question of an automatic, early-emerging tendency to favor the ingroup. We therefore conceptually replicated Study 1 in rural Japan (Study 2). Scholars have long considered Japan to be quite different in its orientation toward the self and the group (Benedict, 1946; Markus & Kitayama, 1991; Nisbett, 2004), and thus patterns of similarities and differences across these two populations will provide initial evidence as to the relative contribution of learned social information at various points in development. What is more, as our Japanese participants come from a small town in a remote part of Japan, they have little or no opportunity for direct contact with racial outgroups, as well as limited early exposure to U.S. cultural norms, this study will also provide some evidence as to the role of direct contact and exposure in the formation of implicit race attitudes. Again, we measured implicit and explicit attitudes toward a relatively high-status outgroup (White) and a relatively low-status outgroup (Black) in 6- and 10-year-olds, as well as in adults.

In summary, we sought to answer four related questions: (1) *Stability across age:* Do implicit attitudes emerge early, and how do they differ for older and younger children? (2) *Stability across culture:* Does the developmental course of these attitudes vary by culture? (3) *Stability across outgroups:* When do implicit attitudes reflect the ''cultural prestige'' of the group, in other words, when will we find greater liking for a privileged group, and (4) R*elationship between implicit and explicit attitudes across development:* How do these trends compare across age and culture?

Given the paucity of developmental data on implicit attitudes (but c.f. Skowronski & Lawrence, 2001 on gender attitudes in older children; Craeynest et al., 2004 on food-related attitudes; and Sinclair, Dunn, & Lowery, 2005 on race attitudes in older children and their parents), it was difficult to generate compelling predictions. Indeed, we hoped that examining two divergent samples would provide us with suggestive initial data to both enable and constrain theory-building, allowing for the formulation of specific hypotheses that could be tested in future research. In particular, we considered the question of cross-cultural difference to be an open one. Nonetheless, we began with several general intuitions. Given recent evidence in adults showing rapid formation of stable implicit attitudes (Greenwald, Pickrell, & Farnham, 2002; Lane, Mitchell, & Banaji, in press), coupled with a prior finding of early and stable implicit bias in White American 6- and 10-year-old children (Baron & Banaji, 2006; see also McGlothlin, Killen, & Edmonds, 2005, for converging evidence using children's interpretations of ambiguous situations), we expected to observe negative implicit race attitudes in our American 6-year-olds. We also expected that older children and adults would display sensitivity to the difference between the high- and low-status outgroups, although we were less sure whether this difference would appear in younger children. Finally, we expected that implicit and explicit attitudes would begin to diverge in our 10-year-old sample, driven primarily by the revision of children's self-reported attitudes to reflect egalitarian social norms.

Experiment 1: American City

Baron and Banaji (2006) found that implicit race bias emerged early in White American children, and remained stable into adulthood. That study measured attitudes toward Black Americans in 6- and 10-year-old children, so we sought to replicate and extend those findings by including a second outgroup. We selected Japanese, both because we intuited that it is a group generally liked and admired as compared with Black Americans, and because it would facilitate comparison with Study 2's Japanese ma-

jority population. Thus, Study 1 both seeks to elucidate the normative developmental pattern of implicit race bias while exploring the impact of social-status information on children's developing race attitudes.

Method

Participants. The sample contained fifty-two 6-year-olds (30 boys and 22 girls, mean age = 6 years 4 months, range = 5 years 10 months to 7 years 3 months), fifty-eight 10-year-olds (27 boys and 31 girls, mean age = 10 years 1 month, range = 9 years 3 months to 11 years 5 months), and 46 adults (20 men and 26 women). No participants of Asian descent were included in the sample. Children were recruited from a largely homogenous, predominately middle-class private elementary school in New England and from visitors to Harvard University museum. Both recruitment pools were primarily White, and only data from White participants will be discussed here. Adults were White American undergraduates at Harvard University participating in exchange for credit in an introductory psychology course or for monetary compensation ($5). Parental consent was secured in advance of testing all children, and informed consent was secured before testing adult participants. All participants were informed that they could terminate the procedure at any time without penalty, and that their data would be identified only by a random participant identification number.

Measures. Given the introspectively inaccessible nature of implicit attitudes, their measurement presents obvious difficulty. In the last decade, however, several candidate measures have emerged. Based on response latency, these measures assess the degree to which positive or negative adjectives can be rapidly paired with target ingroups and outgroups. One of these measures, the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), has received extensive psychometric validation and thus has emerged as the most widely used and most reliable measure of implicit attitudes (Cunningham, Preacher, & Banaji, 2001; Greenwald & Nosek, 2001). In the IAT, participants first practice classifying social group stimuli into one of two categories, for example categorizing faces by race into a ''White'' and a ''Black'' category, each mapped to a particular computer key. After this, participants practice classifying positive and negative adjectives using the same two response keys. Finally, in the first critical block, participants perform both categorization tasks simultaneously, alternately categorizing Black and White faces and positive and negative adjectives. This means that one social group and one evaluative category share a response key (e.g., White faces and positive words share one response key, and Black faces and negative words share the other response key). Because this example mirrors the assumed stereotypical value of those social categories, it is considered the *compatible* block. After completing this condition, the social category labels are reversed, creating the opposite, or *incompatible*, block. In this case, the stereotypical associations corresponding to the social group are in conflict with the adjectives that need to be categorized using the same key; this is assumed to create cognitive interference, leading to longer reaction times. The difference in mean latency between the incompatible and compatible condition becomes the dependent variable of interest in subsequent analyses.

In producing a child-friendly IAT, we made several substantive changes to make the procedure more accessible (Child IAT, following Baron & Banaji, 2006). We replaced the usual adult faces with full-color head and shoulder photographs of children's faces (pretested to be of equal attractiveness and to be easily identifiable by race). To control for expected variation in reading ability, we replaced the usual written trait stimuli with recordings of spoken words, spoken by a female native English speaker with congruent affect (i.e., positive adjectives were spoken with positive affect, negative adjectives with negative affect). Finally, to reduce the reliance on fine motor skills, we replaced the keyboard responses with two large response buttons, color-matched to the left and right portion of the computer screen. Pilot testing confirmed that this procedure was easily learnable by children down to age 5 (see Baron & Banaji, 2006, for a more detailed comparison between the standard adult IAT and the Child IAT).

For our explicit measure, we adapted a simple photograph-based version of the classic doll task (Clark & Clark, 1947). Children were presented with color photographs of two children's faces, side by side on the computer screen. The race and gender of each face were randomized, but in eight critical trials the gender was matched so that only the race varied. Children were asked ''who do you like better?'' and responded by pointing at one of the photographs. Adults responded by pressing the response key on the same side as their preferred response. While a simple assessment of explicit race attitude, this measure has the advantage of paralleling the structure of the IAT, which also obtains a relative preference measure, and can easily be compared with much prior literature using forced-choice paradigms.

Both adults and children were encouraged to take their time and consider their responses before answering. Six 10-year-olds did not complete the explicit portion of the experiment because the time allotted for their participation had elapsed.

Procedures. All testing was conducted by a White Male experimenter. To insure that attention and motivation remained high, the experimenter was present throughout testing for all child participants. Adult participants were provided with initial instructions and then they completed the test in a quiet room. All participants completed the Child IAT as an implicit attitude measure, followed by the measure of explicit attitude. Implicit attitudes were assessed toward either ''Black'' or ''Japanese,'' as a between-subjects factor, while explicit attitudes were assessed toward both outgroups. After completion of both measures, participants were debriefed, compensated, and released.

Analysis strategy. Traditional IAT analysis has tended to look at mean-level effects. Early work with the IAT compared logarithmically transformed mean latencies across each condition (Greenwald et al., 1998), while other authors have used untransformed mean differences or, more recently, effect sizes standardized by the individual participant's variability in response times (Greenwald, Nosek, & Banaji, 2003). However, all these strategies have the consequence of reducing the multiple trials that make up a single test to a single data point per participant, resulting in a significant loss of power, especially given the increased variability expected in our young sample. In order to capture the true nature of the IAT effect with more power and precision, we used a more sophisticated modeling technique, multilevel modeling (Goldstein, 1995), which allows the direct analysis of the individual response latencies. As individual trials cluster within participants, trials of a given participant are not independent observations, a likely violation of the traditional regression assumption of uncorrelated residuals. Multilevel modeling is able to overcome this obstacle. By specifying a regression model with trials nested within participants such that the residuals associated with the trials of a particular participant can covary, the model produces appropriate estimates of regression parameters.

Reaction time data are highly skewed, resembling a Poisson distribution with a characteristic long positive tail. Based on extensive analysis of simulated reaction time data, Ratcliff (1993) recommended eliminating the upper tail of the distribution, which nearly always represents momentary task disengagement rather than the meaningful variation. Following these suggestions, we eliminated exceedingly long trials, those over 6,500 ms and representing extreme outliers more than five standard deviations from the mean of that test and age group. We then performed a square root transformation on the raw latencies, the characteristic transformation for a Poisson distribution, and used the transformed latencies in our model fitting. In the final step of data preparation, we eliminated participants with exceedingly high error rates (over 20%), and participants whose overall mean latencies were more than three standard deviations above the mean for their age group.

Preliminary analysis of the raw latencies revealed the necessity of controlling for two aspects of the raw latency data that did not bear on our substantive research questions. First, participants gradually increase their speed as they proceed through the task. To control for this practice effect, we introduced a control predictor to represent trial number. Second, to control for latency differences as a function of whether the trial was visual (race face) or auditory (trait word), we coded each trial with a dummy variable indicating stimulus type and introduced it as a second control variable. Using these predictors and their two-way interaction, we fitted a baseline control model containing these terms. We then fitted a series of multilevel models in which we added first our main effect predictors Block (the key IAT effect; whether the trial was drawn from a compatible or an incompatible block) and Age (the age of the participant, 6, 10, or adult, actualized as two dummy variables *10* and *adult*) to produce a single fitted model for each test type (whether the outgroup was Black or Japanese), and then in a subsequent model we combined these two models, including all interactions among the main effect predictors as well as between these predictors and our control variables. Finally, we fitted a final model in which we dropped interaction terms that did not reach statistical significance and then verified that the reduced model thus produced fitted as well as the full model, using the $-2LL$ goodness-of-fit statistic.

The data on explicit race attitude were analyzed in a more straightforward manner. A preference measure was defined as the proportion of ingroup selections against a particular outgroup target. By computing such a preference measure for each population at each age, we can compare across ages and outgroups using traditional analysis of variance (ANOVA).

Results

Child IAT results: implicit race preference. Exclusion criteria led to the removal of two 6-year-olds and six

10-year-olds from the implicit analysis. Preliminary analyses revealed no differences in overall latencies as a function of participant gender; we therefore omitted gender as a predictor in subsequent analyses. The main IAT predictor Block (whether the block was made up of compatible or incompatible trials) was a statistically significant predictor of reaction time in all models containing that term, all $F > 69$, $p < .001$, indicating that participants were faster to respond when their ingroup (White) was paired with positive traits and outgroups were paired with negative traits. The overall effect of IAT block at different ages is depicted in Figure 1, which provides prototypical fitted plots of this main effect at each age for each test.

We next examined the effect of participant age on the main IAT effect Block (i.e., the two-way Age × Block interaction) in each of our two test models. In the White–Black model, the Age × Block interaction did not reach significance, $F(2, 9605) = 1.82$, $p = .16$, and planned comparisons revealed that the effect of compatibility was significant at all ages, all $t(9591) > 2.26$, $p < .026$. On the other hand, in the White–Japanese model, the Age × Block interaction did approach significance, $F(2, 8824) = 2.58$, $p = .076$. Planned comparisons revealed that the simple effect of compatibility was significant in 6-year-olds, $t(8825) = 4.73$, $p < .0001$ and 10-year-olds, $t(8825) = 2.03$, $p = .043$, but only marginal in adults, $t(8825) = 1.84$, $p = .065$. Furthermore, for this test the effect of compatibility was stronger in 6-year-olds than in 10-year-olds or adults, $t(8825) = 1.98$, $p = .047$, but this was not the case on the White–Black test, $t(9606) = 0.79$, $p = .43$. In other words, the strength of White over Japanese implicit preference but not of White over Black implicit preference appeared to show an age-related decline in strength.

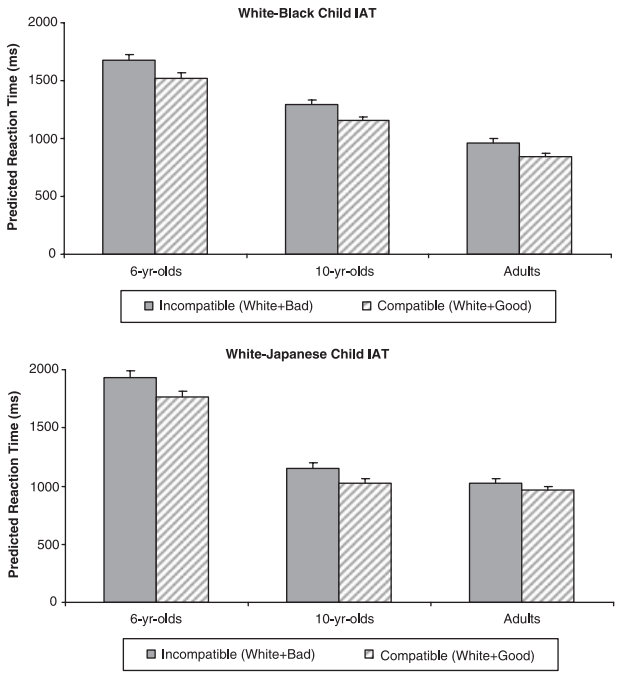

Figure 1. Prototypical fitted plot showing predicted mean reaction times (least-squared means) and standard errors from final multilevel regression models, American sample.

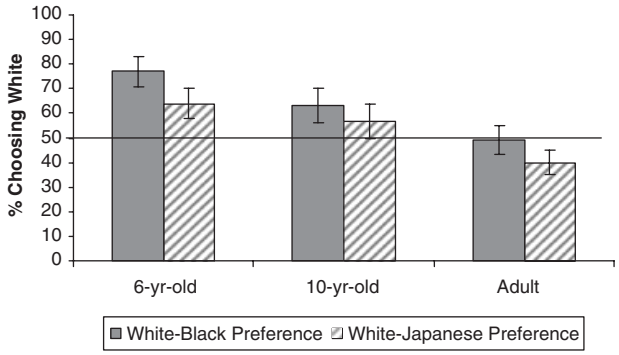

Figure 2. Observed explicit (self-reported) mean preference and standard errors for White over Black and White over Japanese preference, American sample.

Explicit preference results. Explicit preferences for White over both Black and Japanese are presented in Figure 2. Participant preference measures were submitted to a 2 (outgroup: Black or Japanese) × 3 (age: 6, 10, or adult) mixed ANOVA to examine differences by outgroup or age, with outgroup as a within-participants factor and age as a between-participants factor. This analysis revealed the expected main effect of participant age, with younger age groups exhibiting stronger ingroup preference than older age groups, $F(2, 298) = 7.94$, $p < .001$. Planned contrasts revealed that while 6- and 10-year-olds did not differ from one another, $t(299) = 1.45$, $p = .15$, children as a group (with a mean ingroup preference of 65%) did differ from adults (with a mean ingroup preference of 47%), $t(299) = 3.71$, $p < .001$.

The effect of test type (White–Black or White–Japanese) was also significant, $F(1, 299) = 4.30$, $p = .039$, indicating that participants exhibited stronger ingroup preference when the outgroup was Black (62%) than when the outgroup was Japanese (50%). The interaction between test-type and age was not significant, $F(2, 298) = 0.15$, $p = .86$, indicating that this effect did not differ as a function of participant age.

As our explicit preference measure used a dichotomous forced-choice procedure, we can also test for differences from chance (which would indicate no preference). One-sample t tests revealed that 6-year-olds robustly preferred White over either

outgroup, both $t > 2.16$, $p < .037$. Ten-year-olds continued to prefer White faces over Black faces, $t(51) = 2.06$, $p = .044$. By this age, however, the preference for White over Japanese was no longer different from what would be expected by chance, $t(51) = 0.91$, $p = .37$. The decline in ingroup preference continued into adulthood; adults preferred the White face over the Black face 53% of the time, a figure that did not differ from chance, $t(45) = 0.52$, $p = .61$. Similarly, they actually manifested a marginally significant reversal on White–Japanese comparisons, preferring the White face only 40% of the time, $t(45) = -1.94$, $p = .058$.

Finally, we sought to compare implicit and explicit attitudes using correlation analysis. To do so, we computed the IAT effect size D (see Greenwald et al., 2003), the relative preference for the ingroup for each participant on each IAT, and correlated this effect size with the self-reported preference for each age group. However, none of these bivariate correlations approached significance (all $r < .10$, $p > .53$), a finding that we will discuss below.

Discussion

While our explicit measures produced a replication of the now classic finding of an age-related decline in self-reported race bias, our implicit results reveal a different pattern. Replicating prior work in our lab (Baron & Banaji, 2006), we identified an implicit preference for White over Black from the youngest age tested, and this bias did not differ as a function of age. However, while our youngest sample showed implicit bias against Japanese, the strength of this bias appears to undergo a moderate age-related decline.

These data allow us to begin to address several of the research questions we began with. First, implicit race bias emerges early, at the youngest age tested here (age 6). Anti-Black and anti-Japanese bias begin at very similar levels, and anti-Black bias holds steady over age. While not definitive given the marginal level of significance, our data suggest that anti-Japanese bias declines in strength over development, pointing to the internalization of specific social status differences between Black and Japanese (although only after age 6). Finally, implicit and explicit attitudes are directionally consistent at age 6, are beginning to dissociate by age 10 (as explicit attitudes grow more positive), and are highly divergent by adulthood (where explicit bias has disappeared but implicit bias remains present against both groups). The lack of correlation between implicit and explicit forms of attitude in our sample is suggestive of independent developmental trends, at least by age 6. However, we would be wary of overinterpreting this finding given that meta-analysis and research with large data sets have both revealed a modest implicit–explicit correlation, which we may not have the power to detect here (Cunningham et al., 2001; Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005).

One possible interpretation for the different age-related trends shown by Black and Japanese bias is that a younger child may show a fairly undifferentiated bias against outgroups in general, perhaps driven by strong ingroup preference without sensitivity to specific outgroups. Later in development, however, information about the social status of particular outgroups begins to be internalized, with high-status outgroups growing more positive. Our data fit this pattern; anti-Japanese bias appears to grow weaker over development, but anti-Black implicit bias does not, despite the decline in explicit bias against both social groups.

Of course, these conclusions are qualified due to our investigation's focus on a single population. To what extent is this pattern specific to majority children in the United States, or might it reflect more basic features of the implicit system? Study 2 sought to address this question.

Experiment 2: Japanese Village

Study 2 had two primary aims. First, we sought to explore the emergence of both explicit and implicit race bias in a group that varied dramatically from our population in Study 1. Besides having little or no direct contact with, and limited early exposure to, racial outgroups, our Japanese participants are all native to one of the most rural parts of Japan. They can thus also be assumed to have limited early exposure to norms of American culture. How will these differences affect the developmental trend we established in Study 1?

Second, we wanted to test the prediction (generated from Study 1) that early implicit bias might reflect a general response to outgroups, but that an age-related decline in prejudice would emerge in the case of a high-status outgroup, as the cultural prestige associated with that group is internalized. To this end, we again tested race attitudes toward one high-status outgroup (White) and one low-status outgroup (Black).

Method

Study 2 was designed to replicate Study 1 as closely as possible. Except as noted below, its

procedure and analysis strategy were identical to Study 1.

Participants. Participants in this study were monolingual native Japanese children and adults from a small town (population approximately 6,000) in Kagoshima Prefecture in southern Japan. Thirty-eight 6-year-olds (20 boys and 18 girls, mean age = 6 years 3 months, $S = 6$ months, range = 5 years 5 months to 7 years 3 months), thirty-four 10-year-olds (17 boys and 17 girls, mean age = 9 years 10 months, $S = 4$ months, range = 9 years 1 month to 10 years 4 months), and 20 adults (12 men and 8 women) participated in Study 2. Children were recruited from two public schools with no non-Japanese students or teachers, and were predominately middle class. Adult participants were recruited from the surrounding community. Parental consent was secured in advance for all minors; informed consent was secured before testing for all adult participants. All participants were informed that they could terminate the procedure without penalty at any time, and that their data would be paired only to a random participant identification number and not to their names.

Measures and procedures. Testing procedures and study design were closely modeled after Study 1, above, with the following modifications. Instructions and trait adjectives were translated from the English by a native Japanese speaker and back-translated into English to ensure reliability. Trait adjectives were then recorded by a female native Japanese speaker. In Study 1, the two outgroups were White and Japanese; in Study 2, the ingroup was now Japanese, and so White and Black were selected as the two outgroups. Finally, while children completed only one Child IAT as a between-participants factor (as in Study 1), adult participants completed both the Japanese–Black and the Japanese–White Child IATs, in counterbalanced order.

Analysis strategy. The analysis strategy used here was identical to that used in Study 1. Owing to time constraints, three 6-year-olds and one 10-year-old failed to complete the explicit portion of the experiment.

Results

Child IAT results: implicit race preference. Exclusion criteria led to the elimination of one 6-year-old, one 10-year-old, and one adult from the implicit portion of the experiment. Preliminary analyses revealed no differences in overall latencies as a function of participant gender or order of IATs for adult participants; we therefore eliminated these variables as predictors in subsequent analyses. The main IAT predictor Block (whether the block was made up of compatible or incompatible trials) was a significant predictor of reaction time in all models containing that term, all $F > 19$, $p < .001$, indicating that participants were faster to respond when their ingroup (Japanese) was paired with positive traits and outgroups were paired with negative traits. The overall effect of IAT block at different ages is depicted in Figure 3, which provides a prototypical fitted plot of this main effect at each age.

Looking first at the Japanese–Black test, we sought to test for an age-related change in the strength of the main IAT predictor Block. The Age × Block interaction term did not approach significance, $F(2, 7939) = 0.06$, $p = .94$, and the simple effect of Block was significant at all three ages (all $t(7939) > 3.15$, $p < .01$). However, turning to the Japanese–White test, the Age × Block interaction was marginally significant, $F(1, 7441) = 2.55$, $p = .079$. The simple effect of Block was significant in 6-year-olds, $t(7441) = 4.55$, $p < .001$ and in 10-year-olds, $t(7441) = 3.31$, $p < .001$, but not in adults, $t(7441) = 1.6$, $p = .11$. Follow-up post hoc comparisons revealed that the effect of Block was stronger in 6-year-olds than in adults, $t(7441) = 2.25$, $p = .025$, and stronger in children overall (ages 6 and 10) than in adults, $t(7441) = 2.04$, $p = .041$. Crucially, looking

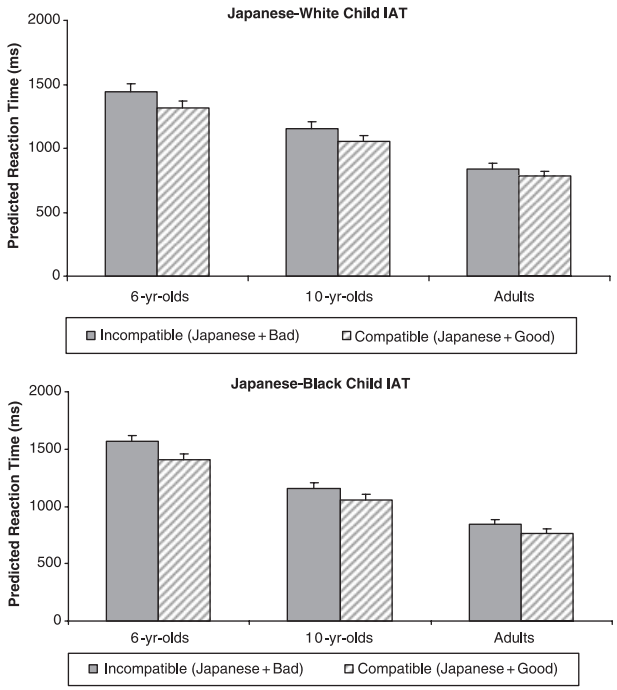

Figure 3. Prototypical fitted plot showing predicted mean reaction times (least-squared means) and standard errors from final multilevel regression models, Japanese sample.

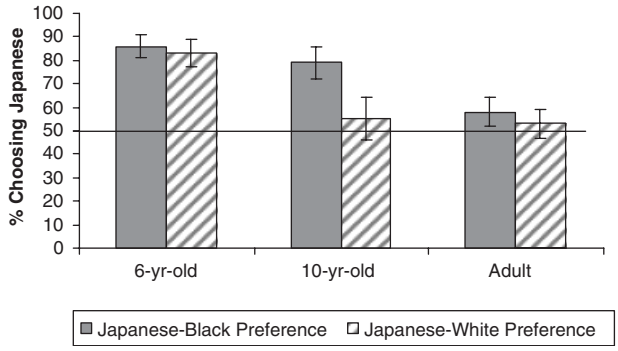

Figure 4. Observed explicit (self-reported) mean preference and standard errors for Japanese over Black and Japanese over White preference, Japanese sample.

across the Japanese–Black and Japanese–White tests revealed that the linear trend in Japanese–Black bias was significantly different from the linear trend in Japanese–White bias, $t(15,380) = 2.02$, $p = .044$, pointing to an increasingly different pattern in the development of the two attitudes.

Explicit preference results. Figure 4 summarizes the self-reported attitudes of our Japanese sample. We submitted the mean ingroup preferences for each participant to a 2 (outgroup: White or Black) × 3 (age: 6, 10, or adult) ANOVA to examine differences by outgroup or age. This revealed an effect of participant age, $F(2,174) = 7.83$, $p < .001$, revealing diminishing ingroup preference as a function of participant age. Planned contrasts revealed that 6-year-olds reliably showed a stronger ingroup preference than 10-year-olds, $t(175) = 2.63$, $p < .01$, and 10-year-olds showed marginally more ingroup preference than adults, $t(175) = 1.68$, $p = .095$, suggesting a fairly steady erosion of ingroup preference as a function of age. Overall, children showed stronger ingroup preference than did adults, $t(175) = 3.18$, $p = .0017$. Returning to the ANOVA itself, the effect of outgroup was marginal, $F(1,150) = 3.54$, $p = .062$, suggesting that ingroup preference was somewhat higher when the outgroup was Black. The interaction term between age and outgroup did not approach significance, $F(2,149) = 1.58$, $p = .21$.

Looking at differences from chance at various ages, we found that 6-year-olds had a strong preference for Japanese over either outgroup. When the outgroup was Black, Japanese children preferred the Japanese face 86% of the time, and when the outgroup was White, Japanese children preferred the Japanese face 83% of the time. Both these figures reliably differed from chance, $t(34) = 7.68$, $p < .001$ and $t(34) = 5.46$, $p < .001$, respectively. By age 10, the preference for Japanese over Black remained strong, with the Japanese face preferred 79% of the time, again different from chance, $t(32) = 3.98$, $p < .001$. Japanese over White bias, on the other hand, disappeared by age 10, with the Japanese face preferred only 55% of the time, a figure that did not reliably differ from chance, $t(32) = 0.52$, $p = .61$. By adulthood, Japanese over Black preference declined to 58% while Japanese over White preference declined to 53%; the first figure was marginally significant, $t(19) = 2.04$, $p = .055$, while the second figure was not different from chance, $t(19) = 0.49$ $p = .65$.

Following the procedure outlined above, we compared the developmental trends of implicit and explicit attitudes using correlation analysis. As in Study 1, none of our age groups showed a significant correlation between implicit and explicit forms of attitude (all $r < .13$, $p > .59$).

Discussion

First and foremost, Study 2 revealed the presence of early implicit and explicit race bias in our Japanese sample. These biases were robust at the earliest age tested, and were of similar magnitude to the biases exhibited by White American children. Thus, early race bias does not appear to be highly dependent on contact or exposure to outgroup members. This finding supports the notion, suggested by Study 1, that younger children's race bias may be a general response to group-level difference, rather than a focused response to a specific outgroup.

Consistent with Study 1, we saw that implicit bias against the low-status outgroup (Black) remained steady over development, while implicit bias against the high-status outgroup (White) grew weaker as a function of age. As with the American sample, implicit attitudes only began to be sensitive to social status information in middle childhood or later.

Explicit race bias follows a pattern similar to that found in White American children, with a strong developmental decline in outgroup bias. Thus, these data suggest that the overall developmental trends are remarkably similar in the White and Japanese sample. To facilitate the direct comparison of our two samples, it will be necessary to combine data from Study 1 and Study 2 into single statistical models.

Comparing Experiments 1 and 2

We now sought to compare across our two samples directly. By pooling data, we can identify trends common to both samples as well as differences between them. In particular, we wondered whether overall levels of outgroup bias were stronger in one

population than the other, and whether the age-related trends that we identified previously differed as a function of population.

Method

To compare trends across the American and Japanese samples, we combined the final multilevel models from each study into a global model, with participants and trials designated as either American or Japanese by a dummy-variable *group*. Because the exact tests taken by each group differed, we recoded each test as either ''high-status'' or ''low-status''; thus, for the American sample, the White–Japanese test served as the high-status test, and the White–Black test served as the low-status test, while for the Japanese sample, Japanese–White was high status and Japanese–Black was low status. This final model allowed us to test for differences in age-related trends across the two populations.

For the explicit results, we were able to directly compare the preference ratings produced for the high- and low-status outgroups in a single ANOVA.

Results

Child IAT results: implicit race preference. First, we examined the global effects of the main IAT effect Block as a function of high or low status, irrespective of population group. The two-way Block × Status interaction was marginally significant, $F(1, 33814) = 2.93$, $p = .087$, indicating that bias was somewhat stronger when the outgroup was low status. This interaction was further qualified by the three-way interaction between Status, Block, and Age, $F(2, 33813) = 2.79$, $p = .062$. Exploratory contrast testing revealed that bias was stronger against the low-status than the high-status outgroup for 10-year-olds, $t(33814) = 2.38$, $p = .018$, and adults, $t(33814) = 1.92$, $p = .055$, but not for 6-year-olds, $t(33814) = 0.91$, $p = .36$. In other words, a differentiation between high- and low-status outgroups emerged by age 10 and held steady into adulthood, but was absent in younger children.

Next, we looked across groups to see whether bias was stronger in either the American or Japanese sample. The two-way Block × Group interaction was not significant, $F(1, 33814) = 2.38$, $p = .12$, nor was the three-way interaction between Block, Group, and Age, $F(2, 33813) = 0.50$, $p = .61$, indicating neither a global nor an age-related difference in the strength of the main IAT effect as a function of population, American or Japanese.

Explicit preference results. To compare explicit results across groups and ages, we submitted the explicit preference measure data to a 2 (group: American or Japanese) × 2 (status: high or low) × 3 (age: 6, 10, adults) mixed ANOVA with explicit preference as the dependent variable and status as a within-subjects variable. This analysis revealed a significant main effect of age, $F(2, 474) = 14.75$, $p < .001$; ingroup preference was high in 6-year-olds (77%), moderate in 10-year-olds (64%), and absent in adults (49%), with all pairwise comparisons between age groups significant at $p < .05$. The main effect of status was also significant, $F(1, 475) = 7.69$, $p = .0058$; overall levels of bias were higher against the low-status outgroup (69%) than the high-status outgroup (56%). Finally, there was a main effect of group, $F(1, 475) = 6.04$, $p = .014$; Japanese participants exhibited more explicit bias than did American participants (the mean ingroup preference was 69% for Japanese and 56% for Americans). No interaction terms approached significance, all $F < 1.3$, $p > .27$.

Discussion

Comparision across our Japanese and American samples produced two interesting findings. First, the global pattern of bias at age 6 was undifferentiated with respect to outgroup at both the explicit and implicit level, with implicit attitude differentiation between high- and low-status outgroups emerging only by age 10. Thus, early implicit bias is most plausibly a fairly general phenomenon, not yet encoding social status information in any rich way. Explicit bias, on the other hand, was remarkably similar regardless of outgroup, showing the steady age-related decline common from the literature (e.g., Aboud, 1988). However, explicit bias was stronger in the Japanese children, perhaps as a result of different social norms regarding the expression of bias. Alternatively, it could reflect the attenuating effect of contact on explicit bias; we return to this point below. Implicit bias did not differ as a function of group; at the implicit level, American and Japanese implicit attitudes are remarkably similar.

General Discussion

Our examination has ranged across three social groups (White, Black, and Japanese), and two participant populations (White Americans and Japanese). These variations allowed us to compare the development of race attitudes toward both a high- and a low-status outgroup in each population. We sought to compare the well-established trend in

explicit, self-reported race attitudes to both White American implicit race attitudes, and the attitudes of a low-contact, low-exposure group, native Japanese children and adults. Our findings suggest several central answers to the research questions we began with.

(1) *Stability across development*: Across both populations and all outgroups tested, implicit bias was robustly present at age 6, the youngest age tested here. While these data do not allow us to answer definitively the age of emergence question, given the attentional and inhibitory demands of all existing implicit attitude measures (including our Child IAT), it appears that implicit attitudes are present from the earliest ages at which they can currently be measured.

(2) *Stability across culture*: The overall similarity in the developmental trends that we identified in our Japanese and U.S. population is remarkable given the many differences in social context. It suggests that implicit race attitudes are not highly dependent on degree of contact or exposure to outgroup members, nor are they contingent upon a highly specific cultural setting. Whether growing up in a relatively diverse North American city or a homogeneous and rural Japanese village, the development of implicit race attitudes follows a near-identical course. That said, a limitation of this conclusion is that our studies did not include a direct measure of outgroup contact or exposure. It is possible, for example, that Japanese children are exposed to substantial negative portrayals of racial outgroups through media and other sources. Thus, while suggestive, these data do not allow a definitive conclusion.

(3) *Stability across outgroups*: Implicit bias against low-status outgroups emerges early and remains stable with age, while implicit bias against high-status outgroups appears to undergo a gradual, age-related decline in strength. Our 6-year-olds, and to some extent our 10-year-olds, showed an ''undifferentiated'' pattern in which attitudes toward the high- and low-status outgroups were indistinguishable. By adulthood, bias against high-status outgroups declined in both populations, while bias against the low-status outgroups remained steady. This suggests that social status information influences implicit attitudes only relatively late in development, and that early implicit attitudes may reflect a more general reaction to an outgroup.

(4) *Relationship between implicit and explicit attitudes across development*: First, we replicated the common pattern of findings from prior work: Explicit, self-reported bias against both a high- and low-status outgroup declines as a function of age, largely disappearing by adulthood. As noted, implicit bias shows a much more stable pattern, showing little age-related change for low-status outgroups and moderate age-related decline for high-status outgroups. The different trends in explicit and implicit attitude development led to the increasing age-related divergence of the two forms of attitude.

Elaborating on these conclusions, it is interesting to note that the Japanese population did express higher levels of self-reported race bias. Two explanations present themselves here. It may be that social norms against expressing race bias are less pervasive in the Japanese setting, leading children there to express bias more freely even later in development. On the other hand, it is also possible that more frequent contact with and exposure to outgroup members serves to attenuate explicit bias in the American children. Even if the latter explanation should prove correct, these data do not allow us to be overwhelmingly optimistic about the effects of contact, as implicit bias against both high- and low-status outgroups did not differ as a function of group. So while the high-contact American sample showed *less* explicit bias, they also showed *equal* levels of implicit bias.

An interesting possibility raised by these findings is that contact is more effective in moderating explicit than implicit race bias. Indeed, the large literature on the contact hypothesis (Dovidio, Gaertner, & Kawakami, 2003, for a recent review) provides robust evidence that contact, at least of the right sort, reduces self-reported bias, but little or no research has yet addressed its effects on implicit bias. Exploring this possibility would be an important line of work: If contact fails to moderate implicit bias, we will need to reevaluate our assumptions about how to ameliorate negative race attitudes.

Most broadly, these data suggest that younger children manifest a rather general, undifferentiated bias against racial outgroups, at both the implicit and the explicit level. Both American and Japanese 6-year-olds showed robust implicit and explicit bias against a high- and a low-status racial outgroup; at this age, neither our implicit nor our explicit measure show evidence of differentiation of outgroups by social status. It seems plausible that this effect is driven by ingroup favoritism, which has been shown to underlie much self-reported bias at this age (Aboud, 2003). This would also provide an explanation for the similar patterns in American and Japanese children: If these effects are driven by ingroup favoritism rather than outgroup derogation, similarity across these otherwise divergent populations would be predicted. By age 10, however, and continuing

into adulthood, ingroup favoritism cannot be the whole story, because attitudes toward low- and high-status outgroups have now diverged, providing clear evidence of the internalization of social information.

Nature of the Implicit Attitude System

Within the adult social cognition literature, a common assumption has been that implicit attitudes are a property of a "slow-learning" system that gradually internalizes regularities present in the environment (Devine, 1989; Greenwald & Banaji, 1995; Smith & DeCoster, 2000). However, recent evidence suggests that implicit attitudes can form rapidly in adults, and are surprisingly stable once formed (Greenwald et al., 2002; Gregg, Seibt, & Banaji, in press; Lane et al., in press). This implies that automatic evaluations may be a pervasive feature of social representation, as has been suggested by Bargh et al. (1992). Interestingly, these two claims make quite different developmental predictions: If implicit attitudes are some function of the amount and kind of input, we would expect to see pronounced developmental change as the amount of input accumulates. On the other hand, if implicit attitudes form automatically as soon as a social group is represented, we would expect early and pervasive bias. Our data suggest that early implicit attitudes *are not* merely an internalization of societal information; rather, they may be automatic processes of categorization that only become sensitive to societal information well after their initial emergence. Thus, we interpret our data as supporting the second possibility, that of automatic implicit attitudes arising as a by-product of social categorization. However, more work will be required to settle this question definitively. For example, as a reviewer of this manuscript noted, it is possible that it is not the *frequency* but rather the *ratio* of positive and negative information that determines the strength of implicit attitudes. In this case, we would not expect developmental change in implicit attitudes unless this ratio of positive to negative exposure changed at some point during development.

Relationship With Other Theoretical Perspectives

The distinction between implicit and explicit attitudes is reminiscent of Devine's (1989) notion of the societal versus the personal dimension of attitude, in which the societal attitude is automatically activated in the presence of attitude objects even if its content is quite different from one's personal and controlled attitude. However, Devine's distinction implies a stronger assumption of social learning than seems plausible given our data. Instead, our data suggest that early implicit attitudes *are not* merely an internalization of societal information; rather, they may be automatic processes of categorization that only become sensitive to societal information well after their initial emergence.

The idea that merely categorizing others as belonging to an outgroup can lead to intergroup bias also recalls work within the minimal group paradigm, and Social Identity Theory more broadly (Tajfel & Turner, 1979, 1986). On these views, group memberships serve to define social identities based around the many groups to which we belong, and once membership is established, the desire to differentiate positively from others who do not share these memberships can lead to intergroup bias. Some preliminary work suggests that implicit attitudes can form in settings that are at least superficially similar to the minimal group paradigm (Greenwald et al., 2002; Lane et al., in press). Given this, Social Identity Theory appears quite compatible with the primary claims advanced here; indeed, by presenting a racial ingroup and a racial outgroup as maximally contrasting pairs, as we did here, we likely encouraged increased identification with the ingroup, and thus differentiation from the outgroup. It remains to be seen how children would evaluate groups or pairs of groups when the ingroup was not included in the comparison.

Another interesting possibility is that the pervasive bias revealed in minimal group settings is in fact the direct result of the automatic evaluative system that is engaged as soon as a social group is represented as an outgroup. If so, implicit bias as measured by the IAT ought to predict the degree of bias shown in minimal group experiments. We hope to explore this possibility in future work.

Final Thoughts

The presence of implicit bias in the youngest children tested, the enduring stability of those biases into adulthood, and their presence in a population that rarely encounters racial outgroups, is disconcerting. But perhaps we should not be surprised: Automatic evaluation appears to be a pervasive feature of human cognition, in the social domain and beyond (Bargh et al., 1992). And despite the disconcerting nature of these findings, overcoming them requires first understanding them for what they are. As Richard Dawkins wrote about our genetic predispositions in 1976, "(L)et us understand what our

own selfish genes are up to, because we may then at least have a chance to upset their designs, something that no other species has ever aspired to do'' (Dawkins, 1976).

Adopting a similar tact, Dovidio and colleagues (Dovidio & Gaertner, 1999; Dovidio, Kawakami, & Gaertner, 2000), for example, suggest the possibility of actually recruiting these automatic effects to reduce bias: If intergroup bias is an automatic feature of human social categorization, fostering the creation of more inclusive ingroups that cut across the usually divisive lines of race and gender could make a virtue of what first appears a vice.

In adult social cognition, the investigation of implicit attitudes has provided a richer understanding of social bias and intergroup relations, yielding new insights into the causes and consequences of everyday prejudice and discrimination. Even the best intentioned among us are sometimes guilty of such behavior, and the striking divergence of implicit and explicit attitudes in middle childhood should remind us of where we began: Children are presented with deeply contradictory information about the meaning and importance of race, are at once exposed to repeated negative stereotypes and explicit exhortations against that negativity. The widening gap between implicit and explicit forms of bias may be the unsurprising consequence of that division.

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