Journal of Cross-Cultural Psychology
2017, Vol. 48(6) 914–930

DOI: 10.1177/0022022117702975
journals.sagepub.com/home/jcc
SAGE

When the Majority Becomes the Minority: A Longitudinal Study of the Effects of Immersive Experience With Racial Out-Group Members on Implicit and Explicit Racial Biases

Miao K. Qian[1,2], Gail D. Heyman[3,4], Paul C. Quinn[5], Genyue Fu[1], and Kang Lee[2,4]

Abstract

The present study investigated the effects of immersive exposure to other-race individuals on racial bias. In Study 1, we tracked African students (N = 85) who went to study at a Chinese university and thus experienced daily contact with Chinese individuals en masse for the first time. Using a cohort-sequential longitudinal design, we found that an implicit pro-Chinese racial bias emerged within 3 months after these students arrived in China, and that this bias remained stable for at least a year. In contrast, their explicit racial bias did not change. In Study 2, we assessed another group of African students (N = 47) at 1 month and at 3 months after their arrival in China, looking at not only their implicit and explicit racial bias, but also their intergroup contact quantity, intergroup contact quality, and intergroup friendship. We found that intergroup contact quantity and intergroup friendship predicted implicit but not explicit racial bias 2 months later. The findings suggest that immersive experiences with racial out-groups can have early and lasting effects on implicit racial bias.

Keywords

racial bias, implicit racial bias, explicit racial bias, stereotyping, contact, exposure, social cognition, in-group, out-group, implicit prejudice, longitudinal study

[1]Hangzhou Normal University, Hangzhou, China
[2]University of Toronto, Toronto, Canada
[3]University of California, San Diego, CA, USA
[4]Zhejiang Normal University, Jinhua, China
[5]University of Delaware, Newark, DE, USA

Corresponding Authors:
Genyue Fu, Department of Psychology, Hangzhou Normal University, 2318 Yuhangtang Road, Hangzhou, Zhejiang 311121, China.
Email: fugenyue@hznu.edu.cn

Kang Lee, Dr. Eric Jackman Institute of Child Study, University of Toronto, 45 Walmer Road, Toronto, Ontario M5R 2X2, Canada.
Email: kang.lee@utoronto.ca

Racial bias has negative consequences at both individual and societal levels (Hardin & Banaji, 2013; Pascoe & Smart Richman, 2009; Pearson, Dovidio, & Gaertner, 2009; Rutland & Killen, 2015). It takes two forms. One is implicit bias, referring to unconscious stereotypes, prejudices, and discriminatory behaviors based on race. The other is explicit bias, referring to consciously accessible bias based on race. A possible strategy for combating racial bias is direct exposure to and interaction with racial out-groups (Henry & Hardin, 2006; Pettigrew & Tropp, 2000, 2006; Pettigrew, Tropp, Wagner, & Christ, 2011; Pinkston, 2015).

Allport (1979) proposed that intergroup contact could promote increased liking and respect for members of a disliked group when the contact involves equal status, common goals, intergroup cooperation, and cultural support of norms. Subsequent research has examined how well the contact hypothesis can account for the reduction of racial bias. The effects of contact on intergroup bias have been assessed by the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) and explicit self-report measures (Binder et al., 2009; Brown, Eller, Leeds, & Stace, 2007; Eller & Abrams, 2003, 2004; Rae, Newheiser, & Olson, 2015). In some cases, contact reduced racial bias (Binder et al., 2009; Brown et al., 2007; Eller & Abrams, 2003, 2004; Pearson et al., 2009; Rae et al., 2015; Turner, Hewstone, & Voci, 2007, Study 1), but in other cases there was no effect (Aberson, Shoemaker, & Tomolillo, 2004; Brown & Hewstone, 2005; Hewstone & Brown, 1986). Also, there is substantial variability in effect size, with affective measures revealing significantly larger effects than cognitive indicators (Tropp & Pettigrew, 2005; see Pettigrew et al., 2011, for a meta-analysis).

There are three gaps in the literature that make the mixed findings difficult to interpret. First, little is known about the effects of long-term immersive contact on implicit and explicit racial biases. Previous studies have found that immersive contact typically reduces explicit racial bias (Binder et al., 2009; Brown et al., 2007; Eller & Abrams, 2003, 2004; Levin, Van Laar, & Sidanius, 2003; Pettigrew & Tropp, 2006; Pettigrew et al., 2011). However, it is unclear whether long-term immersive intergroup contact also reduces implicit bias because implicit and explicit racial biases have been shown to have either low or no significant correlations (Augoustinos & Rosewarne, 2001; Dunham, Baron, & Banaji, 2006; McConnell & Leibold, 2001; Qian et al., 2016). Cross-sectional studies have provided mixed evidence: some indicate that contact reduces both implicit and explicit racial biases (Henry & Hardin, 2006; Prestwich, Kenworthy, Wilson, & Kwan-Tat, 2008; Rae et al., 2015), whereas others indicate that there is only an effect on implicit racial bias (Aberson & Haag, 2007; Aberson et al., 2004; Turner et al., 2007). Moreover, findings from laboratory interventions examining contact effects have only provided clear evidence for immediate, but not long-term, effects (Dasgupta & Greenwald, 2001; Lai et al., 2016; Marini, Rubichi, & Sartori, 2012; Olson & Fazio, 2006). It has been suggested that repeated contact with other-race individuals over time could facilitate long-term effects on racial bias reduction (Lai et al., 2016).

Second, little is known about the effects of intergroup contact between races other than in contexts where participants start out with a negative bias for other-race people. This is because previous work has focused on intergroup relationships that are embedded in the history of conflicts (e.g., European Americans vs. African American, Mexican vs. American, Anglo vs. French), which tend to show initial negative other-race bias (Binder et al., 2009; Eller & Abrams, 2004). It cannot be assumed that such effects would apply when the contact is between groups that may initially lack this negative bias.

Third, little is known about the effects of contact when individuals from one racially homogeneous country gain exposure to individuals of another country where they become racial minorities, a situation that is becoming increasingly common because of increased globalization and immigration. Past results indicate that contact effects tend to be weaker among minority than majority groups (Pettigrew et al., 2011; Tropp & Pettigrew, 2005). For members of minority groups, a perception or expectation of prejudice from the majority group inhibits the potential for

positive contact effects, whereas the perception or expectation of prejudice from minority groups is unlikely to occur among members of the majority group (Monteith & Spicer, 2000). Moreover, this work has been limited to cases where the participants have had prior contact with other-race people (Binder et al., 2009; Eller & Abrams, 2004; Henry & Hardin, 2006; Pettigrew, 1997; Prestwich et al., 2008; Turner et al., 2007). It is therefore unclear whether and how individuals who have no exposure to other-race people would change their racial bias over time after their majority-minority status changes.

Given these gaps in the literature, we conducted two longitudinal studies to examine the effects of an intensive (immersive) contact with other-race individuals on implicit and explicit racial biases in a context where individuals from a racial majority become a racial minority. Our sample consisted of university students from Central Africa who went to study in China and who had extremely limited exposure to individuals from other races before their arrival. We specifically targeted these participants to control for potential confounds such as direct other-race contacts before testing. After their arrival in China, the African students lived and studied in an area that was racially homogeneous with 99.99% Han Chinese (Qian et al., 2016), and thus for the first time had intensive and daily contact with Chinese individuals en masse. We tracked their implicit and explicit racial biases toward Chinese over a period of 6 months to examine how the bias changed with increased immersive exposure to Chinese people.

Our approach has many advantages. First, it offers a unique window to examine the effects of contact on implicit and explicit racial biases in a context where individuals who have been a racial majority in a homogeneous country become a racial minority in a homogeneous country that has an other-race majority. Second, our research focuses on *immersive* intergroup exposure in which there are frequent and repeated face-to-face interactions between members of clearly defined groups across settings. Immersive intergroup exposure is especially likely to have clear-cut effects because of its comprehensive nature (Pettigrew et al., 2011; Riek, Mania, & Gaertner, 2006; Stephan & Stephan, 2000). Third, unlike other studies that have focused exclusively on short-term effects on explicit racial bias, our approach can answer questions about the long-term effects of intergroup contact on both implicit and explicit racial biases. Thus, our approach has the potential to shape theories about how immersive contact affects the development of racial biases over time (Lai et al., 2016; Lebrecht, Pierce, Tarr, & Tanaka, 2009; Xiao et al., 2015), and it can inform policies designed to reduce racial conflict and help immigrants adjust to new cultural environments.

Based on Allport's (1979) contact hypothesis, we expected that immersive daily exposure to out-group Chinese individuals would lead to a reduction in implicit and explicit racial biases toward Chinese. However, given the paucity of existing longitudinal studies, we had no specific predictions about the time course of such effects. There are three possibilities. One is that the effects may increase over an extended period of contact (The Slow Changing Hypothesis). Another possibility is that the effects may be observable shortly after initial contact and then go away (The Temporary Effect Hypothesis) given the short-term effects observed in previous studies (Aboud et al., 2012; Lai et al., 2014; Lai et al., 2016). A third possibility is that the effects may emerge early and then remain stable over time (The Early and Lasting Effect Hypothesis).

Study 1

In Study 1, we used a cohort-sequential longitudinal design (Eller & Abrams, 2003, 2004; Levin et al., 2003) to assess the racial biases of African students who were studying at a Chinese university. Three cohorts were included. The first cohort just arrived in China within the last month (1-month cohort), the second had been in China for 3 months (3-month cohort), and the third had been in China for 6 months (6-month cohort). We assessed their implicit and explicit racial biases at three different time points. For the 1-month cohort, the first assessment (T1) took place at 1

month after their arrival in China, the second assessment (T2) took place at 3 months after arrival, and the third assessment (T3) took place at 6 months after arrival. For the 3-month cohort, the first assessment (T1) took place at 3 months after arrival, the second assessment (T2) took place at 6 months after arrival, and the third assessment (T3) took place at 9 months after arrival. For the 6-month cohort, the first assessment (T1) took place at 6 months after arrival, the second assessment (T2) took place at 9 months after arrival, and the third assessment (T3) took place at 12 months after arrival.

Method

Participants. The sample consisted of 85 university students from Central Africa who were attending a Chinese university (51 males, 34 females). They were contacted through an advertisement by the College of International Education, Zhejiang Normal University. The study was approved by the university research ethics review committee. All participants provided written consent prior to their participation and were compensated for their participation. Approximately 50% of participants were selected to study abroad by the Chinese government under the Chinese Government Scholarship Program, 30% were selected by Confucius Institute at the University of Yaounde II in Cameroon, and 20% were self-funded. The students came from upper-middle class families in Cameroon. The university was located in a medium-sized city in East China with a population of 5 million, where Han Chinese make up 99.99% of the population. None of the participants had ever been to China before their arrival and thus all were experiencing intense and daily contact with Chinese individuals for the first time in their life.

We assigned all participants to three cohorts based on how long it had been since they arrived in China: 19 participants were in the 1-month cohort (M age = 27.19 years, SD = 2.35; 8 males), 27 were in the 3-month cohort (M age = 24.54 years, SD = 2.85; 18 males), and 39 were in the 6-month cohort (M age = 26.13 years, SD = 3.12; 25 males). As in most longitudinal studies, not all students participated in the study in the following 6 months: nine participants (10.6%) were missing at T2 and seven participants (9.5%) were missing at T3.

Procedure and measures. All sessions of the study were conducted individually in a quiet room with a female Chinese graduate student serving as the experimenter. Participants gave written informed consent and received compensation for their participation.

To measure implicit racial bias against Chinese individuals, we tested African students using the Implicit Racial Bias Test (IRBT; Qian et al., 2016; Qian et al., 2017), based on Cvencek, Greenwald, and Meltzoff (2011). Unlike the prior IAT, the lexical processing demands of the IRBT are minimal, thereby helping to rule out language-specific effects, which can influence IAT performance (Danziger & Ward, 2010). This feature of the IRBT, as well as its simple instructions, makes it appropriate for use with samples across a wide range of ages, education levels, and linguistic backgrounds.

Also unlike the IAT, which has been developed in Western populations, the IRBT was specifically developed for use in diverse populations. The IRBT has additionally been cross-validated by yielding effects in both Africa and China that are consistent with the prior literature (Qian et al., 2016; Qian et al., 2017). Low error rates (less than 10%) and a moderate effect size (Cohen's d = .40) indicate the effectiveness and appropriateness of the IRBT for assessing implicit racial bias among African participants.

As illustrated in Figure 1, participants viewed Black faces and Chinese faces on a Microsoft Surface Pro with touch-sensitive screen, using E-prime 2.0 (Psychology Software Tools, Sharpsburg, Pennsylvania). They were presented with congruent and incongruent blocks and were instructed to touch the smile or frown symbol when they saw a face of a particular race: For the "congruent" block, participants were told to touch the smile symbol when they saw a Black

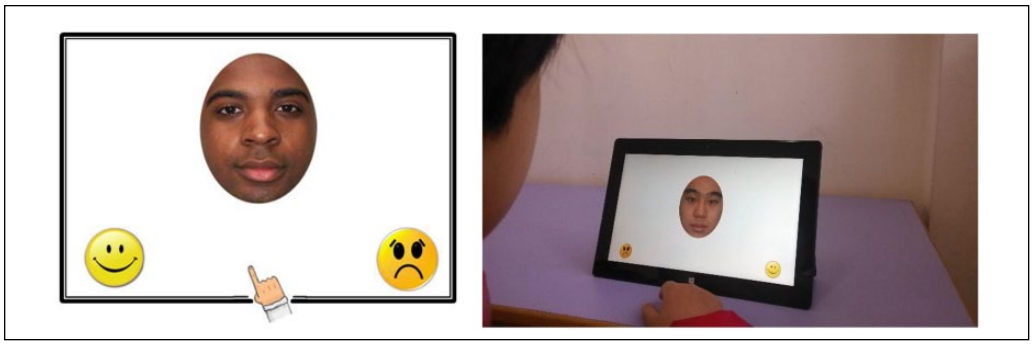

Figure 1. The participant's view of the screen for the Chinese-Black Implicit Racial Bias Test (IRBT).

face and to touch the frown symbol when they saw a Chinese face, and for the "incongruent" block, they were told to touch the smile symbol when they saw a Chinese face and to touch the frown symbol when they saw a Black face.

There were eight practice trials for each block (congruent and incongruent), allowing for familiarization with the procedure. In the first two practice trials for each block, the experimenter showed the participants how to respond. The participants then were asked to respond on their own for the remaining six practice trials within each block. There were 40 test trials for each of the blocks (congruent and incongruent) after the practice trials. Color photos of 20 Chinese faces (10 females and 10 males) and 20 Black faces (10 females and 10 males) were used as stimuli. All photographs were chosen from an existing face database (Ge et al., 2009), standardized at 480 pixels (17 cm) wide and 600 pixels (21 cm) high, and had a resolution of 72 pixels per inch. The face images were frontal view without obvious marks such as beards, glasses, or facial makeup. All faces were overlaid with the same elliptical shape so that hair was not visible, and were matched in terms of attractiveness and distinctiveness by Chinese adults who did not participate in the current study.

To measure explicit bias against Chinese, we used a semantic differential scale adapted from Aberson et al. (2004). Participants separately made ratings of Africans and Chinese on the following seven contrasting trait pairs: detestable–likable, malevolent–kindhearted, mean–nice, repulsive–attractive, selfish–selfless, deceptive–honest, and untrustworthy–trustworthy. Participants performed their ratings by marking on a 7-point Likert-type rating scale ranging from −3 to 3, with higher scores on each item indicating the more positive trait.

Results and Discussion

Preliminary analyses revealed no significant effects of participant gender, and the data were thus combined on this factor in the subsequent analyses.

Implicit racial bias. We used the conventional *D* scores to indicate whether participants showed a systematic bias toward Chinese faces. The *D* score is the difference between the average of response latencies between contrasted conditions divided by the standard deviation of response latencies across the conditions (Greenwald, Nosek, & Banaji, 2003). Consistent with procedures from previous IAT studies with adults (Greenwald et al., 2003), data were excluded from participants based on three criteria: (a) ≥ 10% of responses faster than 300 ms, (b) ≥ error rate of 30%, or (c) average response latency 3 *SD* above the mean response latency for the whole sample. Practice trials were excluded, as were response latencies above 10,000 ms. Analyses reported below are of test trials only. Analyses were also conducted including the six practice trials that

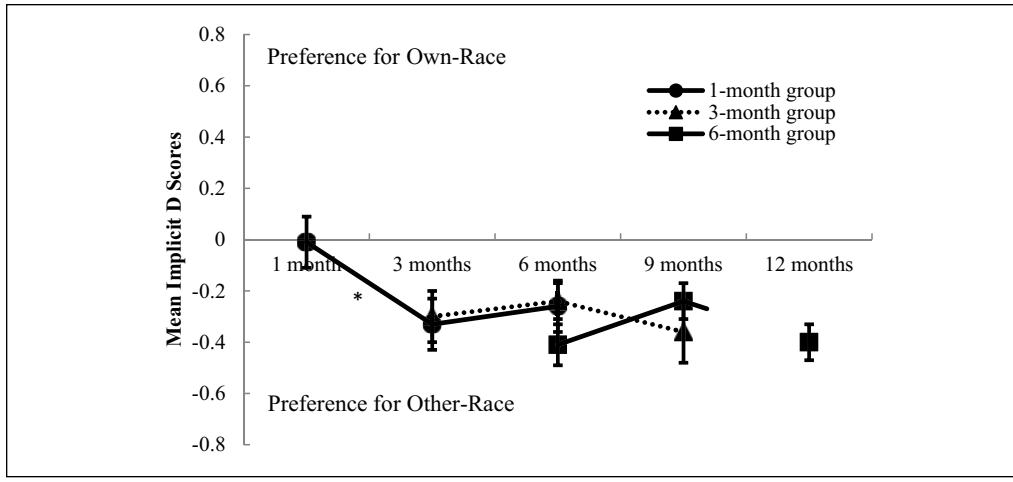

Figure 2. Mean implicit racial bias scores of the three African cohorts at different time points after arrival in China.
Note. A negative *D* value indicates a pro-Chinese bias. Error bars represent standard errors. The no bias score is zero. The asterisk denotes $p < .05$.

participants completed on their own for each block (congruent vs. incongruent), and there were no differences in any of the reported effects.

Given the exclusion criteria, four participants (4.1% of the sample) were excluded at T1 either due to an error rate above 30% or extreme values above 3 standard deviations from the mean *D* value. These exclusions left 81 participants for analyses at T1: 19 participants were in the 1-month cohort, 25 participants were in the 3-month cohort, and 37 participants were in the 6-month cohort. Nine participants (11.1% of the sample) were unavailable at T2, leaving 72 participants for analyses at T2: 13 participants were in the 1-month cohort, 25 participants were in the 3-month cohort, and 34 participants were in the 6-month cohort. Ten participants were unavailable at T3, leaving 62 participants for analyses at T3: 11 participants were in the 1-month cohort, 20 participants were in the 3-month cohort, and 31 participants were in the 6-month cohort.

The mean *D* scores and standard errors for the three cohorts are shown in Figure 2. We initially performed one-sample *t* tests to compare each age group's mean *D* score against zero (no bias). This analysis revealed that the 1-month group showed no preference for Chinese at T1, $t(18) = -.09$, $p = .925$, or T3, $t(10) = -1.87$, $p = .085$, but a significant preference for Chinese at T2, $t(12) = -2.38$, $p = .035$. In addition, the 3-month and 6-month groups showed reliable implicit racial preference for Chinese at T1, T2, and T3, all ts < -2.84, ps $< .01$. The results indicate that between the first and third months after arrival in China, African students developed a pro-Chinese implicit bias. This bias remained stable over time for at least a year.

To further examine the developmental course of implicit racial bias, we conducted a one-way repeated-measures ANOVA with time as the repeated measure (T1, T2, T3) for each cohort. For the 1-month cohort, we did not find any testing time effect, $F(2, 9) = 3.64$, $p = .070$, $\eta_p^2 = .45$. A priori contrast with T1 as the reference revealed that the 1-month cohort showed a significant increase in racial preference for Chinese individuals between 1 month ($D = .04$, $SD = 0.48$) and 3 months after arrival ($D = -.33$, $SD = 0.50$), $p = .024$. However, there was no significant difference between 3 months and 6 months after arrival ($D = -.26$, $SD = 0.47$), $p = .117$. The pro-Chinese bias of the 3-month cohort remained the same at 3 months ($D = -.30$, $SD = 0.54$), 6 months ($D = -.24$, $SD = 0.34$), and 9 months after arrival ($D = -.36$, $SD = 0.56$), $F(2, 18) = 1.61$, $p = .228$, $\eta_p^2 = .15$. Similarly, the 6-month cohort did not change their pro-Chinese bias at 6 months ($D = -.41$, $SD = 0.56$), 9

months ($D = -.25$, $SD = 0.41$), or 12 months after arrival in China ($D = -.40$, $SD = 0.39$), $F(2, 29) = 1.45$, $p = .250$, $\eta_p^2 = .09$. Overall, the analyses of the developmental course of the bias converge with those of performance versus zero to indicate that within the first 3 months after arrival in China, African students became implicitly pro-Chinese and this bias remained stable for at least 1 year.

To examine possible cohort effects, we compared the racial bias scores of participants in the different groups at T1, T2, and T3. This analysis did not yield evidence of any cohort effects at the three different time points, all ps > .296.

The findings that (a) African students developed a pro-Chinese implicit bias between the first and third months after arrival in China, and (b) the bias remained stable over time for at least 1 year, support the Early and Lasting Effect Hypothesis, and are consistent with Allport's (1979) contact hypothesis that intergroup contact can promote increased liking for members of an other-race group. The increased liking of the other-race Chinese group seemed to shift the Africans from being unbiased initially to being positively biased toward Chinese. The yearlong durability of the effect is noteworthy because it extends cross-sectional studies of contact effects on reducing implicit racial bias (Aberson & Haag, 2007; Aberson et al., 2004; Henry & Hardin, 2006; Prestwich et al., 2008; Rae et al., 2015; Turner et al., 2007). The stability of the effect may be due to immersive exposure of the African participants: They lived and studied among Chinese individuals, interacted with them on a daily basis, and learned their culture and language.

Explicit racial bias. The mean scores and standard errors of each training group are shown in Figure 3. To examine the developmental course of the explicit racial bias of African students toward Chinese individuals, we performed a one-way repeated-measures ANOVA with time as the repeated measure (T1, T2, T3) for each cohort. The explicit anti-Chinese bias of the 1-month cohort did not change significantly between one month ($M = -0.18$, $SD = 1.3$), 3 months ($M = 0.53$, $SD = 0.94$), or 6 months after arrival in China ($M = 0.40$, $SD = 0.70$), $F(2, 9) = .82$, $p = .471$, $\eta_p^2 = .15$. Also, the explicit anti-Chinese bias of the 3-month cohort did not differ significantly between 3 months ($M = 1.05$, $SD = 1.1$), 6 months ($M = 0.70$, $SD = 1.63$), or 9 months after arrival ($M = 0.66$, $SD = 0.95$), $F(2, 18) = .80$, $p = .464$, $\eta_p^2 = .08$. The 6-month cohort did not change their explicit racial bias significantly between 6 months ($M = 0.08$, $SD = 1.60$), 9 months ($M = 0.65$, $SD = 1.34$), or 12 months after arrival ($M = 0.64$, $SD = 0.84$), $F(2, 29) = 1.63$, $p = .214$, $\eta_p^2 = .10$. These results indicate that participants showed relatively stable explicit anti-Chinese bias while living in China for up to 1 year.

To examine possible cohort effects, we compared the racial bias scores of participants in the different groups at T1, T2, and T3. This analysis did not yield evidence of any cohort effects at the three different time points, all ps > .121.

We conducted correlation analyses on the implicit and explicit scores of each cohort at each time point after their arrival in China. None of the correlation coefficients were significant, suggesting that the implicit and explicit racial bias scores of the participants were unrelated to each other at the three time points (all rs < .23, all ps > .109).

Thus, in contrast to implicit racial bias, the immersive exposure to Chinese did not alter the anti-Chinese bias of the African students. In fact, the African students showed stable explicit anti-Chinese for at least 1 year after arrival in spite of their immersive exposure to Chinese individuals. Furthermore, no significant correlations between the implicit and explicit racial biases were found at any time point for participants from any of the cohorts.

In summary, Study 1 used a cohort-sequential longitudinal design and revealed that contact with Chinese individuals significantly increased African's implicit pro-Chinese racial bias within 3 months after arrival in China, and that this implicit pro-Chinese bias remained stable for at least 1 year. In contrast, such contact did not change their explicit anti-Chinese racial bias.

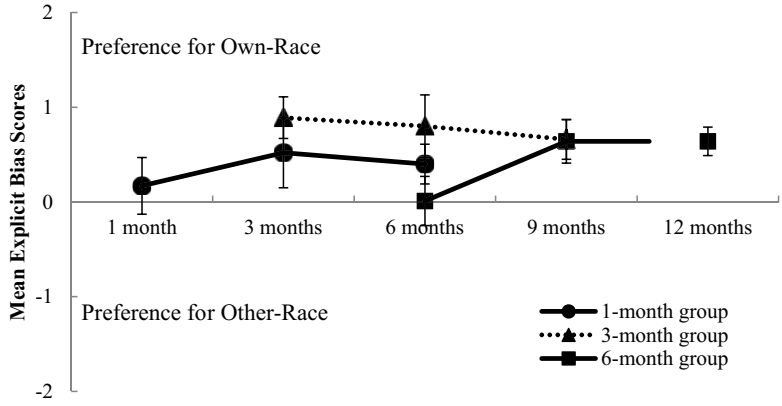

Figure 3. Mean explicit racial bias scores of the different African cohorts at different time points after arrival in China.
Note. A positive value indicates an explicit anti-Chinese bias. Error bars represent standard errors. The no bias score is zero.

Study 2

In Study 2, we examined the replicability of the key findings in Study 1 regarding the time course of bias emergence, and we also explored which aspects of contact might be associated with the development of the pro-Chinese bias. We focused on the contact variables of contact quantity, contact quality, and intergroup friendships, which have been linked to intergroup bias in previous research (Binder et al., 2009; Brown et al., 2007; McConnell & Leibold, 2001; Pettigrew et al., 2011; Prestwich et al., 2008). For example, intergroup contact quantity (Prestwich et al., 2008) and intergroup friendship (Aberson et al., 2004; Feddes, Noack, & Rutland, 2009; Pettigrew, 1997) have been associated with greater positive implicit bias.

Here, we tracked a new group of African students studying at a Chinese University, and assessed their implicit and explicit racial biases 1 month after their arrival in China (T1) and then again at 3 months after arrival (T2). We also measured their intergroup contact quantity, intergroup contact quality, and intergroup friendship longitudinally at T1 and T2 to examine whether these contact variables would differentially predict implicit and explicit racial biases.

Method

Participants. The sample consisted of 47 African students (*M* age = 23.4 years, *SD* = 3.12; 21 males) none of whom had participated in Study 1. Two participants (4%) were missing at T2. As in Study 1, participants were undergraduates and graduate students, and none had been to China before their arrival. Again, the students came from upper-middle class families in Cameroon and were selected to study abroad.

Procedure and measures. The procedure and measures were the same as in Study 1 except that measures of intergroup contact quantity, intergroup contact quality, and intergroup friendship were also included. These constructs were assessed using a questionnaire adapted from Prestwich et al. (2008). Intergroup contact quantity was measured with two items with 5-point response scales ranging from −2 (*none*) to 2 (*a great deal*): (a) How frequently do you have

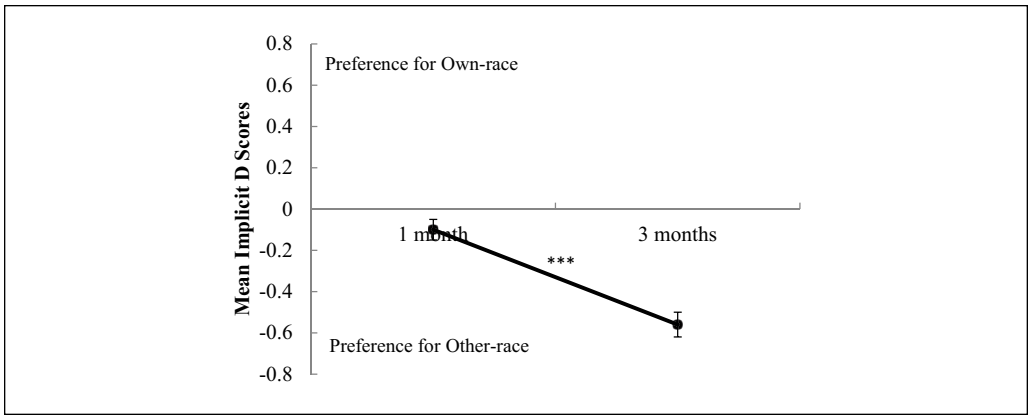

Figure 4. Mean implicit racial bias scores of the 1-month African cohort at two time points after arrival in China.
Note. A negative *D* value indicates a pro-Chinese bias. Error bars represent standard errors. The no bias score is zero. The asterisks denote $p < .001$.

contact with Chinese people? (b) How frequently do you watch Chinese movies or television series? We obtained intergroup contact quantity scores by averaging scores for these two items.

Intergroup contact quality was assessed by a semantic differential scale adapted from Islam and Hewstone (1993). The four items were as follows: unpleasant-pleasant, competitive-cooperative, superficial-intensive, and natural-forced. For each attribute, participants were asked, "When you meet Chinese people, in general do you find the contact _____?" and to indicate their attitude on a 5-point scale ranging from −2 to 2. We obtained an individual's contact quality score by averaging his or her scores on each item, with higher scores indicating more positive contact quality with Chinese.

Intergroup friendship was assessed by participant responses to a single question adapted from Brown et al. (2007): "How many Chinese friends do you have?"

Results and Discussion

Preliminary analyses revealed no significant effects of participant gender, and the data were thus combined on this factor in the subsequent analyses.

Implicit racial bias. Mean *D* scores and standard errors for the implicit racial bias scores are shown in Figure 4. *D* scores were computed in the same way as in Study 1. No participant was excluded, leaving 47 participants for analysis. We first performed one-sample *t* tests to compare each age group's implicit scores against zero (no bias). This analysis revealed that the participants did not show a significant preference for Chinese at T1, $t(46) = -1.94$, $p = .079$, but did show a significant preference for Chinese at T2, $t(44) = -9.90$, $p < .001$. The results indicate that African students showed no initial bias within 1 month after their arrival in China, but developed a pro-Chinese bias at 3 months after their arrival.

To confirm the conclusion from the analysis of performance versus zero, we conducted a one-way repeated-measures ANOVA with time as the repeated measure (T1, T2). We found a significant effect of time, $F(1, 44) = 32.74$, $p < .001$, $\eta_p^2 = .43$. Results showed a significant increase in pro-Chinese bias between 1 month ($D = -.10$, $SD = 0.37$) and 3 months after arrival ($D = -.56$, $SD = 0.38$). Thus, the effect of time is consistent with the analysis versus zero. The outcomes

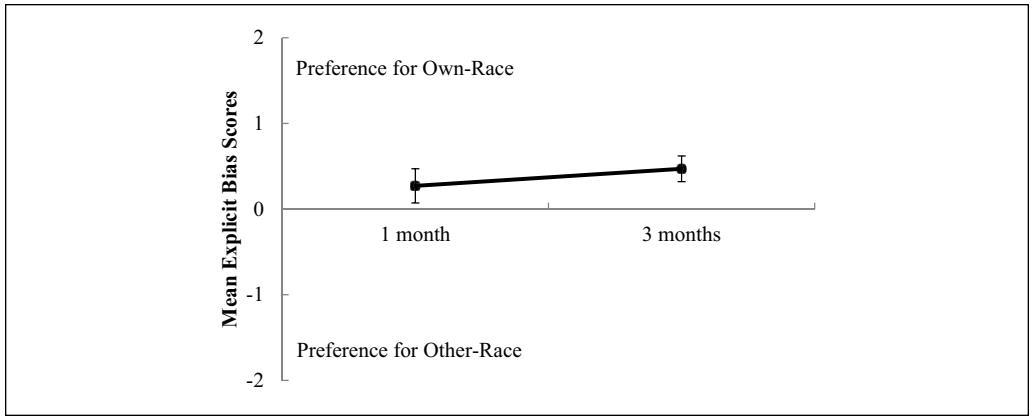

Figure 5. Mean explicit racial bias scores of the 1-month African cohort at two time points after arrival in China.
Note. A positive value indicates an explicit anti-Chinese bias. Error bars represent standard errors. The no bias score is zero.

from Study 2 converge with those of Study 1 in showing that between 1 month and 3 months, the African students developed an implicit pro-Chinese bias.

Explicit racial bias. Means and standard errors for the explicit racial bias scores are presented in Figure 5. To examine the developmental course of the explicit racial bias of African students toward Chinese, we performed a one-way repeated-measures ANOVA with time as the repeated measure (T1, T2). It revealed no significant change between 1 month ($M = 0.31$, $SD = 1.22$) and 3 months ($M = 0.47$, $SD = 1.01$), $F(1, 44) = .54$, $p = .571$, $\eta_p^2 = .01$. Thus, Study 1 and Study 2 taken together show that explicit racial bias toward Chinese remains the same between 1 month and 6 months after arrival.

To examine whether the implicit racial bias scores of the participants were related to their explicit racial bias scores, we conducted correlation analyses on the two scores at T1 and T2. None of the correlation coefficients were significant, suggesting that the implicit and explicit scores of the participants were unrelated to each other at the two time points (all rs < .06, all ps > .689). This result replicated the finding of Study 1, suggesting that the implicit and explicit racial bias scores were unrelated to each other.

Contact variables. The means and standard deviations of intergroup contact quantity, intergroup contact quality, and intergroup friendship are presented in Table 1.

Correlational analyses of the implicit racial bias scores and contact variables at T1 and T2 revealed that intergroup contact quantity at T1 was negatively associated with implicit racial bias at T2, $r(45) = -.31$, $p = .037$, suggesting that higher contact quantity is related to higher implicit pro-Chinese bias. Results also revealed that intergroup friendship at T1 was negatively associated with implicit bias at T2, $r(45) = -.39$, $p = .007$, suggesting that participants with more intergroup friendships showed higher implicit pro-Chinese bias later on.

To identify the predictors of implicit racial bias at T2, hierarchical multiple regression was conducted with D scores at T2 entered as the dependent variable. A summary of the hierarchical regression is presented in Table 2. In the first step of the regression model, age and gender were entered as predictors. They accounted for a nonsignificant proportion of variance, $\Delta R^2 = -.05$, $F(2, 42) = .002$, $p = .962$. Entering contact quantity, contact quality, and intergroup friendship in the second step explained an additional 28.1% of the variance in D scores at T2, and this increase

Table 1. Means and Standard Deviations of Contact Variables at T1 and T2.

Intergroup contact quantity		Intergroup contact quality		Intergroup friendship	
T1	T2	T1	T2	T1	T2
−.50 (1.10)	.32 (1.13)	−.90 (0.61)	−.55 (1.10)	2.85 (1.84)	4.19 (1.58)

Note. Standard deviations in parentheses. T1 = first assessment; T2 = second assessment.

Table 2. Summary of Hierarchical Regression Analyses for Variables Predicting Implicit Racial Bias at T2 (N = 45).

	Model 1			Model 2		
Variables	*B*	*SE* (*B*)	β	*B*	*SE* (*B*)	β
Age	.002	.01	.02	−.02	.01	−.19
Gender	−.03	.12	−.03	.09	.11	−.12
Contact quantity at T1				−.11	.05	−.32*
Contact quality at T1				.11	.09	.17
Intergroup friendship at T1				−.07	.03	−.34*
ΔR^2	−.05			.19		
F for change in R^2	.04			5.06**		

Note. T1 = first assessment; T2 = second assessment.
*p < .05. **p < .01.

in explained variance was significant, $\Delta R^2 = .19$, $F(5, 39) = 3.05$, $p < .05$. Inspection of the model revealed that contact quantity predicted D scores at T2, $\beta = -.32$, $t = -2.16$, $p = .034$, $r_p = -.29$, and that intergroup friendship predicted D scores at T2, $\beta = -.34$, $t = -2.36$, $p = .031$, $r_p = -.29$.

To identify the predictors of explicit racial bias at T2, we also performed the same regression analysis as above with explicit racial bias scores as the predicted variable. We found that the models were not significant.

Thus, intergroup contact quantity and intergroup friendship with Chinese at T1 predicted implicit, but not explicit pro-Chinese bias 2 months later. The results are consistent with previous research, suggesting that intergroup contact quantity (Prestwich et al., 2008), as well as intergroup friendship (Aberson et al., 2004; Feddes et al., 2009; Pettigrew, 1997), are associated with positive implicit racial bias. It is noteworthy that the three contact variables did not predict explicit pro-Chinese bias at T2. The results are inconsistent with other studies, suggesting that contact variables exert a beneficial influence over time on explicit racial bias (Binder et al., 2009; Eller & Abrams, 2003; Prestwich et al., 2008).

To examine whether there was a difference in implicit preference for Chinese at 3 months after arrival between the two studies, we compared the data from Study 1 and Study 2. We performed an independent sample t test and found a significant difference in implicit preference for Chinese at 3 months after arrival between participants in Study 1 ($D = -.31$, $SD = 0.44$) and those in Study 2 ($D = -.56$, $SD = 0.38$), $t(81) = 2.53$, $p = .013$. A possible explanation is that participants in Study 2 had more frequent contact with Chinese people when compared with the participants in Study 1. The data collection of Study 2 occurred in September, a time when more sporting events (e.g., soccer, basketball, volleyball) and university-wide activities (e.g., University Games) facilitate interaction and communication between African and Chinese students. Moreover, new student orientation occurs in September, allowing for further interaction among Chinese and African students.

General Discussion

Across two studies, we examined the effects of immersive exposure to other-race individuals on both implicit and explicit racial biases. Unlike previous work that has been largely limited to longitudinal studies on explicit racial bias, we tracked the long-term effects on both implicit and explicit racial biases after immersive exposure to other-race individuals under naturalistic conditions.

In both Studies 1 and 2, African students showed no implicit racial bias during the first month after arrival. However, after 3 months of immersive exposure to Chinese individuals, they began to show a pro-Chinese bias that remained stable for at least 1 year. The findings support the Early and Lasting Hypothesis by showing that contact effects on implicit racial bias emerge early, and then remain stable over time.

Consistent with previous evidence from Africa (Dunham, Chen, & Banaji, 2013; Qian et al., 2016), we found that African students did not show implicit own-race preference. There are at least two possible explanations for this finding. First, had we been able to test the participants on Day 1 of their arrival in China, it is conceivable that we might have uncovered evidence for some level of implicit own-race bias. However, it should be noted that our findings are consistent with the Early and Lasting Hypothesis regardless of whether this may have been the case.

A second possibility is that the lack of implicit bias at 1 month reflects two influences with opposite effects: exposure and social status (Qian et al., 2016). Specifically, immersive contact with in-group members is likely to result in in-group favoritism (Dunham et al., 2013; Harmon-Jones & Allen, 2001), whereas social status differences are likely to result in out-group favoritism when the out-group is of higher social status, as is the case in the present research (Axt, Ebersole, & Nosek, 2014; Qian et al., 2016; Shutts, Brey, Dornbusch, Slywotzky, & Olson, 2016). Moreover, the relative strength of these influences is likely to vary among different African populations and subpopulations, depending on whether they have exposure to out-group members and whether there are perceived social status differences.

Why did our African participants develop more favorable implicit responses to Chinese people over time? There are three possibilities. First, spending time in China may lead Africans to more strongly associate Chinese people with high social status. This suggestion is supported by evidence from a previous study indicating that African adults perceived Chinese to have higher social status than Blacks (Qian et al., 2016). Second, the effect may reflect changes in exposure, with more exposure to out-group members leading to more favorable responding toward out-group members. The results of Study 2 provide evidence supporting this suggestion: We found that Africans who reported more contact with Chinese individuals showed relatively higher levels of pro-Chinese bias. We further found that intergroup friendship was predictive of increases in pro-Chinese bias over time. A candidate explanation for this latter finding is that when individuals have close relationships with out-group members, they generally experience cooperation and common goals and have repeated equal-status contact over an extended period. Friendship also facilitates self-disclosure, an important mediator of intergroup contact's positive effects (Pettigrew et al., 2011; Turner et al., 2007). The third possibility is that the African participants entered contact freely with Chinese people and such voluntary contact may facilitate the positive effects of intergroup contact (Pettigrew & Tropp, 2006).

Another key finding in the present research was that immersive contact with Chinese individuals did not change the explicit racial bias of the African students. In fact, the African participants expressed their unabashed biases against Chinese openly in front of our Chinese experimenters. We also found that none of our intergroup contact measures were correlated with explicit racial bias. The results thus failed to support the hypothesis that immersive exposure to other-race individuals would reduce explicit racial bias against such individuals.

These findings contrast with evidence that contact with other-race individuals can decrease explicit racial biases against other-race people (Brown & Hewstone, 2005; Henry & Hardin, 2006; Pettigrew & Tropp, 2006; Prestwich et al., 2008; Rae et al., 2015; Tropp & Pettigrew, 2005).

One reason that contact might not have influenced the explicit anti-Chinese bias of the African students in the present research is that although the African students were immersed with Chinese individuals in daily life and engaged in intergroup cooperation with Chinese students on campus, they were at least in some instances anecdotally treated poorly outside the campus. This observation might indicate that the African students were experiencing acculturation stress in the move to a different country as they experienced rejection and threats to their social identity and cultural competence (Yu et al., 2014). For example, a few of our participants spontaneously commented that they were charged more than Chinese students for daily supplies and that taxi drivers often refused to serve them because of their race.

We found no correlation between implicit and explicit racial biases at any time point. This result is consistent with previous studies showing a dissociation between implicit and explicit racial biases (Baron & Banaji, 2006; Dunham et al., 2006; Qian et al., 2016). The dissociation has been attributed to social desirability: It is socially unacceptable to explicitly express negative racial attitudes toward other racial groups (Greenwald et al., 1998; Greenwald et al., 2003; Rutland, Cameron, Bennett, & Ferrell, 2005). In the present study, however, social desirability was apparently not at play given that African students showed a reliable anti-Chinese explicit bias. This observation suggests that there might be fundamental differences between implicit and explicit racial biases that cannot be explained simply in terms of social desirability. Such differences may stem from different developmental origins for these kinds of biases. Implicit bias may stem from the early differential processing of own-race versus other-race faces (Quinn et al., 2013) and may be closely tied to perceptual experience with individuating own- and other-race faces (Lebrecht et al., 2009; Xiao et al., 2015). For example, as suggested in the present study, intergroup contact quantity has been associated with more positive implicit bias. It is possible that repeated exposure to other-race individuals increases the ability to individuate or recognize other-race individuals (Anzures et al., 2012; Sangrigoli & de Schonen, 2004), which contributes to more positive implicit bias. By contrast, explicit racial bias might be learned from the quality of social experience. For example, the explicit anti-Chinese bias of the African students might reflect negative experience outside the campus. To facilitate liking of out-group members, the characteristics proposed by Allport (1979) may need to be present (e.g., common goals, intergroup cooperation; see Killen, Hitti, & Mulvey, 2015, for supporting developmental evidence).

Future research should include other types of contact measures to further understand the nature of these effects. For example, one could ask participants to make diary entries of their other-race contact. In addition, other-race friends of participants could be asked to report and verify their quality of interaction and friendship with the participants. Further research is also needed to examine the generalizability of the findings. For example, it is not clear whether the pro-Chinese implicit bias would also transfer to other Asian populations.

In summary, we used a longitudinal design to examine the effects of immersive contact with a racial out-group and documented relatively long-term effects of immersive contact on implicit bias, but not explicit bias. Individuals developed positive implicit out-group bias within 3 months of initial contact, and this bias remained stable for at least a year with continued contact. In contrast, explicit racial bias did not change across time. We also found that high levels of intergroup contact quantity and friendship were predictive of implicit racial bias, but not explicit racial bias. The findings suggest that immersive experiences with racial out-groups can have lasting effects on implicit racial bias.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by grants from the Natural Science and Engineering Research Council of Canada, National Institutes of Health (R01 HD046526), and National Science Foundation of China (31371041 and 31470993).

References

Aberson, C. L., & Haag, S. C. (2007). Contact, perspective taking, and anxiety as predictors of stereotype endorsement, explicit attitudes, and implicit attitudes. *Group Processes & Intergroup Relations*, *10*, 179-201. doi:10.1177/1368430207074726

Aberson, C. L., Shoemaker, C., & Tomolillo, C. (2004). Implicit bias and contact: The role of interethnic friendships. *The Journal of Social Psychology*, *144*, 335-347. doi:10.3200/SOCP.144.3.335-347

Aboud, F. E., Tredoux, C., Tropp, L. R., Brown, C. S., Niens, U., & Noor, N. M. (2012). Interventions to reduce prejudice and enhance inclusion and respect for ethnic differences in early childhood: A systematic review. *Developmental Review*, *32*, 307-336. doi:10.1016/j.dr.2012.05.001

Allport, G. W. (1979). *The nature of prejudice*. New York, NY: Basic Books.

Anzures, G., Wheeler, A., Quinn, P. C., Pascalis, O., Slater, A. M., Heron-Delaney, M., . . . Lee, K. (2012). Brief daily exposures to Asian females reverses perceptual narrowing for Asian faces in Caucasian infants. *Journal of Experimental Child Psychology*, *112*, 484-495. doi:10.1016/j.jecp.2012.04.005

Augoustinos, M., & Rosewarne, D. L. (2001). Stereotype knowledge and prejudice in children. *British Journal of Developmental Psychology*, *19*, 143-156. doi:10.1348/026151001165912

Axt, J. R., Ebersole, C. R., & Nosek, B. A. (2014). The rules of implicit evaluation by race, religion, and age. *Psychological Science*, *25*, 1804-1815. doi:10.1177/0956797614543801

Baron, A. S., & Banaji, M. R. (2006). The development of implicit attitudes evidence of race evaluations from ages 6 and 10 and adulthood. *Psychological Science*, *17*, 53-58. doi:10.1111/j.1467-9280.2005.01664.x

Binder, J., Zagefkam, H., Brown, R., Funke, F., Kessler, T., Mummendey, A., . . . Leyens, J. P. (2009). Does contact reduce prejudice or does prejudice reduce contact? A longitudinal test of the contact hypothesis among majority and minority groups in three European countries. *Journal of Personality and Social Psychology*, *96*, 843-856. doi:10.1037/a0013470

Brown, R., Eller, A., Leeds, S., & Stace, K. (2007). Intergroup contact and intergroup attitudes: A longitudinal study. *European Journal of Social Psychology*, *37*, 692-703. doi:10.1002/ejsp.384

Brown, R., & Hewstone, M. (2005). An integrative theory of intergroup contact. *Advances in Experimental Social Psychology*, *37*, 255-343. doi:10.1016/S0065-2601(05)37005-5

Cvencek, D., Greenwald, A. G., & Meltzoff, A. N. (2011). Measuring implicit attitudes of 4-year-olds: The preschool implicit association test. *Journal of Experimental Child Psychology*, *109*, 187-200. doi:10.1016/j.jecp.2010.11.002

Danziger, S., & Ward, R. (2010). Language changes implicit associations between ethnic groups and evaluation in bilinguals. *Psychological Science*, *21*, 799-800. doi:10.1177/0956797610371344

Dasgupta, N., & Greenwald, A. G. (2001). On the malleability of automatic attitudes: Combating automatic prejudice with images of admired and disliked individuals. *Journal of Personality and Social Psychology*, *81*, 800-814. doi:10.1037/0022-3514.81.5.800

Dunham, Y., Baron, A. S., & Banaji, M. R. (2006). From American city to Japanese village: A cross-cultural investigation of implicit race attitudes. *Child Development*, *77*, 1268-1281. doi:10.1111/j.1467-8624.2006.00933.x

Dunham, Y., Chen, E. E., & Banaji, M. R. (2013). Two signatures of implicit intergroup attitudes developmental invariance and early enculturation. *Psychological Science*, *24*, 860-868. doi:10.1177/0956797612463081

Eller, A. L., & Abrams, D. (2003). "Gringos" in Mexico: Cross-sectional and longitudinal effects of language school-promoted contact on intergroup bias. *Group Processes & Intergroup Relations*, *6*, 55-75. doi:10.1177/1368430203006001012

Eller, A. L., & Abrams, D. (2004). Come together: Longitudinal comparisons of Pettigrew's reformulated intergroup contact model and the common ingroup model in Anglo-French and Mexican-American contexts. *European Journal of Social Psychology*, *34*, 229-256. doi:10.1002/ejsp.194

Feddes, A. R., Noack, P., & Rutland, A. (2009). Direct and extended friendship effects on minority and majority children's interethnic attitudes: A longitudinal study. *Child Development*, *80*, 377-390. doi:10.1111/j.1467-8624.2009.01266.x

Ge, L., Zhang, H., Wang, Z., Quinn, P. C., Pascalis, O., Kelly, D., . . . Lee, K. (2009). Two faces of the other-race effect: Recognition and categorization of Caucasian and Chinese faces. *Perception*, *38*, 1199-1210. doi:10.1167/8.6.257

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, *74*, 1464-1480. doi:10.1037/0022-3514.74.6.1464

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the implicit association test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*, 197-216. doi:10.1037/0022-3514.85.2.197

Hardin, C. D., & Banaji, M. R. (2013). The nature of implicit prejudice: Implications for personal and public policy. In E. Shafir (Ed.), *The behavioral foundations of public policy* (pp. 13-31). Princeton, NJ: Princeton University Press.

Harmon-Jones, E., & Allen, J. J. (2001). The role of affect in the mere exposure effect: Evidence from psychophysiological and individual differences approaches. *Personality and Social Psychology Bulletin*, *27*, 889-898. doi:10.1177/0146167201277011

Henry, P. J., & Hardin, C. D. (2006). The contact hypothesis revisited: Status bias in the reduction of implicit prejudice in the United States and Lebanon. *Psychological Science*, *17*, 862-868. doi:10.1111/j.1467-9280.2006.01795.x

Hewstone, M. E., & Brown, R. E. (1986). *Contact and conflict in intergroup encounters*. Oxford, UK: Basil Blackwell.

Islam, M. R., & Hewstone, M. (1993). Dimensions of contact as predictors of intergroup anxiety, perceived out-group variability, and out-group attitude: An integrative model. *Personality and Social Psychology Bulletin*, *19*, 700-710. doi:10.1177/0146167293196005

Killen, M., Hitti, A., & Mulvey, K. L. (2015). Social development and intergroup relations. In M. Mikulincer, R. Shaver, F. Dovidio, & A. Simpson (Eds.), *APA handbook of personality and social psychology* (pp. 177-201). Washington, DC: American Psychological Association.

Lai, C. K., Marini, M., Lehr, S. A., Cerruti, C., Shin, J. E. L., Joy-Gaba, J. A., . . . Frazier, R. S. (2014). Reducing implicit racial preferences: I. A comparative investigation of 17 interventions. *Journal of Experimental Psychology: General*, *143*, 1765-1785. doi:10.1037/a0036260

Lai, C. K., Skinner, A. L., Cooley, E., Murrar, S., Brauer, M., Devos, T., . . . Simon, S. (2016). Reducing implicit racial preferences: II. Intervention effectiveness across time. *Journal of Experimental Psychology: General*, *145*, 1001-1016.

Lebrecht, S., Pierce, L. J., Tarr, M. J., & Tanaka, J. W. (2009). Perceptual other-race training reduces implicit racial bias. *PLoS ONE*, *4*(1), e4215. doi:10.1371/journal.pone.00004215

Levin, S., Van Laar, C., & Sidanius, J. (2003). The effects of ingroup and outgroup friendships on ethnic attitudes in college: A longitudinal study. *Group Processes & Intergroup Relations*, *6*, 76-92. doi:10.1177/1368430203006001013

Marini, M., Rubichi, S., & Sartori, G. (2012). The role of self-involvement in shifting IAT effects. *Experimental Psychology*, *59*, 348-354. doi:10.1027/1618-3169/a000163

McConnell, A. R., & Leibold, J. M. (2001). Relations among the implicit association test, discriminatory behavior, and explicit measures of racial attitudes. *Journal of Experimental Social Psychology*, *37*, 435-442. doi:10.1006/jesp.2000.1470

Monteith, M. J., & Spicer, C. V. (2000). Contents and correlates of Whites' and Blacks' racial attitudes. *Journal of Experimental Social Psychology*, *36*, 125-154. doi:10.1006/jesp.1999.1401

Olson, M. A., & Fazio, R. H. (2006). Reducing automatically activated racial prejudice through implicit evaluative conditioning. *Personality and Social Psychology Bulletin*, *32*, 421-433. doi:10.1016/j.jesp.2005.04.006

Pascoe, E. A., & Smart Richman, L. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin*, *135*, 531-554. doi:10.1037/a0016059

Pearson, A. R., Dovidio, J. F., & Gaertner, S. L. (2009). The nature of contemporary prejudice: Insights from aversive racism. *Social & Personality Psychology Compass*, *3*, 314-338. doi:10.1111/j.1751-9004.2009.00183.x

Pettigrew, T. F. (1997). Generalized intergroup contact effects on prejudice. *Personality and Social Psychology Bulletin*, *23*, 173-185. doi:10.1177/0146167297232006

Pettigrew, T. F., & Tropp, L. R. (2000). Does intergroup contact reduce prejudice? Recent meta-analytic findings. In S. Oskamp (Ed.), *Reducing prejudice and discrimination: The Claremont symposium on applied social psychology* (pp. 93-114). Mahwah, NJ: Lawrence Erlbaum.

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, *90*, 751-783. doi:10.1037/0022-3514.90.5.751

Pettigrew, T. F., Tropp, L. R., Wagner, U., & Christ, O. (2011). Recent advances in intergroup contact theory. *International Journal of Intercultural Relations*, *35*, 271-280. doi:10.1016/j.ijintrel.2011.03.001

Pinkston, K. (2015). The black-white malleability gap in implicit racial evaluations: A nationally representative study. *The Journal of Social Psychology*, *155*, 189-203. doi:10.1080/00224545.2014.987200

Prestwich, A., Kenworthy, J. B., Wilson, M., & Kwan-Tat, N. (2008). Differential relations between two types of contact and implicit and explicit racial attitudes. *British Journal of Social Psychology*, *47*, 575-588. doi:10.1348/014466607X267470

Qian, M. K., Heyman, G. D., Quinn, P. C., Messi, F. A., Fu, G., & Lee, K. (2016). Implicit racial biases in preschool children and adults from Asia and Africa. *Child Development*, *87*, 285-296. doi:10.1111/cdev.12442

Qian, M. K., Quinn, P. C., Heyman, G. D., Pascalis, O., Fu, G., & Lee, K. (2017). Perceptual individuation training (but not mere exposure) reduces implicit racial bias in preschool children. *Developmental Psychology*, *53*, 845-859.

Quinn, P. C., Anzures, G., Lee, K., Pascalis, O., Slater, A., & Tanaka, J. W. (2013). On the developmental origins of differential responding to social category information. In M. R. Banaji & S. A. Gelman (Eds.), *Navigating the social world: What infants, children, and other species can teach us* (pp. 286-291). New York, NY: Oxford University Press.

Rae, J. R., Newheiser, A.-K., & Olson, K. R. (2015). Exposure to racial out-groups and implicit race bias in the United States. *Social Psychological and Personality Science*, *6*, 535-543. doi:10.1177/1948550614567357

Riek, B. M., Mania, E. W., & Gaertner, S. L. (2006). Intergroup threat and outgroup attitudes: A meta-analytic review. *Personality and Social Psychology Review*, *10*, 336-353. doi:10.1207/s15327957pspr1004_4

Rutland, A., Cameron, L., Bennett, L., & Ferrell, J. (2005). Interracial contact and racial constancy: A multi-site study of racial intergroup bias in 3-5 year old Anglo-British children. *Journal of Applied Developmental Psychology*, *26*, 699-713. doi:10.1016/j.appdev.2005.08.005

Rutland, A., & Killen, M. (2015). A developmental science approach to reducing prejudice and social exclusion: Intergroup processes, social-cognitive development, and moral reasoning. *Social Issues and Policy Review*, *9*, 121-154. doi:10.1111/sipr.12012

Sangrigoli, S., & de Schonen, S. (2004). Recognition of own-race and other race faces by three-month-old infants. *Journal of Child Psychology and Psychiatry*, *45*, 1219-1227. doi:10.1111/j.1469-7610.2004.00319.x

Shutts, K., Brey, E. L., Dornbusch, L. A., Slywotzky, N., & Olson, K. R. (2016). Children use wealth cues to evaluate others. *PLoS ONE*, *11*, e0149360. doi:10.1371/journal.pone.0149360

Stephan, W. G., & Stephan, C. W. (2000). An integrated threat theory of prejudice. In S. Oskamp (Ed.), *Reducing prejudice and discrimination: The Claremont symposium on applied social psychology* (pp. 23-45). Mahwah, NJ: Lawrence Erlbaum.

Tropp, L. R., & Pettigrew, T. F. (2005). Relationships between intergroup contact and prejudice among minority and majority status groups. *Psychological Science*, *16*, 951-957. doi:10.1111/j.1467-9280.2005.01643.x

Turner, R. N., Hewstone, M., & Voci, A. (2007). Reducing explicit and implicit outgroup prejudice via direct and extended contact: The mediating role of self-disclosure and intergroup anxiety. *Journal of Personality and Social Psychology*, *93*, 369-388. doi:10.1037/0022-3514.93.3.369

Xiao, W. S., Fu, G., Quinn, P. C., Qin, J., Tanaka, J. W., Pascalis, O., & Lee, K. (2015). Individuation training with other-race faces reduces preschoolers' implicit racial bias: A link between perceptual and social representation of faces in children. *Developmental Science*, *18*, 655-663. doi:10.1111/desc.12241

Yu, B., Chen, X., Li, S., Liu, Y., Jacques-Tiura, A. J., & Yan, H. (2014). Acculturative stress and influential factors among international students in China: A structural dynamic perspective. *PLoS ONE*, *9*, e96322.