

REDUCING CHILDREN'S RACIAL BIAS: THE EFFICACY OF INDIVIDUATED INTERPERSONAL SYNCHRONY

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Abstract

Despite the development of numerous interventions to reduce racial bias, only a handful have received empirical validation and are viable for large-scale implementation. This study combined two evidence-based approaches, synchronous movement with out-group members (to reduce explicit bias) and individuation training (to reduce implicit bias), into an integrated intervention called *Individuated Interpersonal Synchrony* (IIS). We examined whether a brief (~15-minute), video-based IIS could reduce both explicit and implicit racial bias in young children and compared the effectiveness of one-on-one versus small-group intervention formats. A sample of 136 children (53 girls) aged 5–6 years was assigned to one of three conditions based on their pretest D-scores to ensure baseline equivalence: (a) own-race one-on-one IIS (control), (b) other-race one-on-one IIS, or (c) other-race small-group IIS. The intervention involved synchronized movements with racially distinct partners, who were individually identified by learning their names via video. Results revealed no significant changes in implicit racial bias across conditions, suggesting that implicit bias may be less sensitive to brief, single-session interventions. In contrast, explicit racial bias decreased significantly in both other-race conditions (Cohen's $d = 0.70$ – 0.83), with no change in the control condition. This study indicates that a brief, video-based IIS intervention can successfully reduce explicit racial bias in early childhood, a critical period for attitude formation. The comparable effectiveness of the small-group intervention format demonstrates its potential for practical, large-scale implementation in school settings.

Keywords: *Racial bias, individuation, interpersonal synchrony, early childhood, school-based intervention.*

1. Introduction

Racial bias remains a persistent concern in child development and is associated with a range of adverse psychological and educational outcomes. Research has shown that experiences of racial bias are linked to higher levels of loneliness (Benner & Wang, 2017) and lower self-esteem (Metzner et al., 2022), as well as reduced classroom engagement and weaker school belonging (Benner & Wang, 2017; Del Toro et al., 2024). Developmental studies further indicate that both explicit and implicit racial biases emerge early in childhood, often before the age of six (Qian et al., 2016), and frequently before extensive direct contact with members of other racial groups. Early childhood, therefore, represents a critical period for intervention, during which social attitudes are still forming and may be particularly amenable to change. Nevertheless, despite growing interest in prejudice-reduction interventions, relatively few approaches have demonstrated both empirical support and practical feasibility for large-scale implementation in educational settings (Gravin et al., 2019; Paluck et al., 2020; Hsieh et al., 2021).

Intergroup contact has been one of the most extensively examined strategies for reducing racial bias (Pettigrew & Tropp, 2008; Lemmer & Wagner, 2015). However, effective implementation of direct intergroup contact typically requires sustained interaction and institutional support, which can be difficult to ensure in many school contexts, particularly in communities with limited racial diversity (Dixon et al., 2020; White et al., 2020). Consequently, more flexible and scalable forms of indirect contact have received increasing attention (Brown & Paterson, 2016). In parallel, cross-racial synchronous movement has emerged as a promising intervention, with evidence showing that moving in synchrony with others enhances social bonding, interpersonal closeness, and positive attitude toward out-group members (Tunçgenç & Cohen, 2016a; Atherton et al., 2019). However, existing findings suggest that the effects of synchronous movement are primarily observed at the level of explicit attitudes, with relatively limited impact on implicit racial bias (Qian et al., 2020).

In contrast, perceptual individuation training has been consistently shown to reduce implicit racial bias in young children. By encouraging attention to individual-level differences among out-group members, perceptual individuation reduces category-based processing and limits the generalization of negative associations to the out-group as a whole (Qian et al., 2017; Qian et al., 2019). Despite its effectiveness at the implicit level, perceptual individuation typically involves minimal social interaction and has shown weaker or less consistent effects on explicit attitudes. Taken together, these findings suggest that different intervention approaches may operate through distinct psychological mechanisms and preferentially influence different components of racial bias.

Building on this complementary evidence, the present study integrates synchronous movement and perceptual individuation into a unified intervention we call *Individuated Interpersonal Synchrony* (IIS). Synchronous movement may promote social connection and positive affect toward out-group members, thereby influencing explicit bias. In contrast, perceptual individuation may operate at a perceptual-to-social level to reduce implicit bias. To enhance feasibility and scalability, IIS was implemented in a brief, video-based format suitable for classroom use and delivered within a single session. Children's racial bias was assessed before and after the intervention, and the effects of one-on-one versus small-group IIS formats were further compared.

2. Objectives

The present study examines whether a brief, video-based IIS intervention influences racial bias in Chinese children toward Black people and whether a small-group delivery format is comparable to a one-on-one format. Specifically, we hypothesize that: (a) one-on-one IIS with other-race members will significantly reduce children's implicit and explicit racial biases; (b) one-on-one IIS with own-race members will not significantly reduce children's implicit and explicit racial biases; and (c) other-race small-group IIS will significantly reduce children's implicit and explicit racial biases, with changes that do not differ significantly from those observed in the other-race one-on-one condition.

3. Methods

3.1. Participants and design

A total of 136 Han Chinese children (53 girls; $M_{\text{age}} = 5.80$ years, $SD = 0.50$) from a racially homogeneous city in China participated. The study used a 3 (Condition: own-race one-on-one IIS, other-race one-on-one IIS, other-race small-group IIS) \times 2 (Time: pretest, posttest) mixed design, with Condition as a between-subjects factor and Time as a within-subjects factor. To minimize baseline differences in implicit racial bias, children were block-assigned to conditions based on pretest IRBT D-scores such that mean D-scores have no statistically significant difference across conditions.

3.2. Procedure and experimental conditions

Each child participated for two weeks. Pretest measures of explicit and implicit racial bias were measured in the first week. In the second week, children completed the IIS intervention, followed immediately by the posttest on the same day using identical instruments and instructions. Children were assigned to one of three experimental conditions. In the own-race one-on-one IIS (control) condition, children viewed videos featuring Chinese instructors (race-matched to participants) and completed the IIS intervention individually with an experimenter. In the other race, the one-on-one IIS (individual) condition, children viewed videos featuring Black female instructors (race-mismatched) and completed the intervention individually. In the other race small group IIS (group) condition, children viewed the same other race videos as in the individual condition but completed the intervention simultaneously with 3-5 peers, led by one experimenter.

3.3. IIS intervention

The IIS intervention lasted approximately 15 minutes and consisted of a brief practice phase followed by a formal training phase. During practice, children learned four target movements with the experimenter (tapping the head, shoulders, thumbs up, and little finger, each paired with clapping). During training, children synchronized their movements with four video clips (50 s each) presented in random order, each featuring a clearly identified instructor. After each clip, children were asked to recall the instructor's name and demonstrate the corresponding movement. Progression to the next clip required correct recall; incorrect responses received immediate corrective feedback. Task structure, timing, and prompts were identical across conditions, with only the racial identity of the instructors and the delivery format varying.

3.4. Measures

3.4.1. Implicit racial bias. Implicit anti-Black bias was assessed using the child-friendly Implicit Racial Bias Test (IRBT; Qian et al., 2016). Scores were computed as D-scores, with higher values indicating stronger implicit anti-Black bias. A score of zero represents no bias toward either group.

3.4.2 Explicit racial bias. Explicit anti-Black bias was measured with a forced-choice task (Qian et al., 2016). The values for each scenario were summed and then divided by 4 to produce an explicit bias score that ranged from 0 to 1. Higher scores reflect stronger explicit anti-Black bias.

4. Results

4.1. Training effects on implicit racial bias

To examine the effects of the IIS intervention on children's implicit anti-Black bias, we conducted a 3 (Condition: own-race one-on-one IIS, other-race one-on-one IIS, other-race small-group IIS) \times 2 (Time: pretest, posttest) mixed-design ANOVA, with Condition as a between-subjects factor and Time as a within-subject factor. The analysis revealed no significant Condition \times Time interaction, $F(2, 133) = 0.13$, $p = .877$, partial $\eta^2 = 0.002$, indicating that changes in implicit racial bias did not differ across conditions. In addition, there was no significant main effect of condition, $F(2, 133) = 0.05$, $p = .949$, partial $\eta^2 = 0.001$. The main effect of the time was also not significant, $F(1, 133) = 3.52$, $p = .063$, partial $\eta^2 = 0.026$. Because the interaction was not significant, follow-up simple-effects analyses were not conducted.

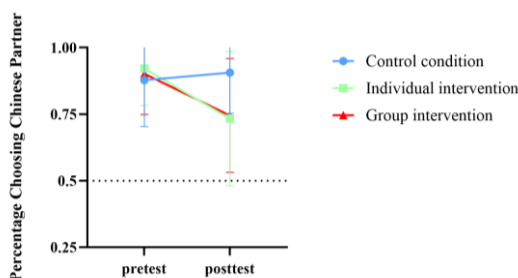
4.2. Training effects on explicit racial bias

We also conducted a 3 (Condition) \times 2 (Time) mixed-design ANOVA to examine changes in explicit anti-Black bias. This analysis revealed a significant Condition \times Time interaction, $F(2, 133) = 16.15$, $p < 0.001$, partial $\eta^2 = 0.195$, indicating that changes in explicit bias differed across intervention conditions. To decompose this interaction, simple effects analyses were conducted within each condition. In the other-race one-on-one IIS condition, explicit anti-Black bias decreased significantly from pretest ($M = 0.92$, $SD = 0.14$) to posttest ($M = 0.73$, $SD = 0.25$), $t(44) = 5.58$, $p < .001$, Cohen's $d = 0.83$, 95% $CI = [0.12, 0.26]$. Similarly, in the other-race small-group IIS condition, explicit anti-Black bias showed a significant reduction from pretest ($M = 0.90$, $SD = 0.15$) to posttest ($M = 0.76$, $SD = 0.21$), $t(45) = 4.73$, $p < .001$, Cohen's $d = 0.70$, 95% $CI = [0.09, 0.23]$. In contrast, in the own-race one-on-one IIS (control condition), explicit anti-Black bias did not change significantly from pretest to posttest, $t(44) = -1.70$, $p = .096$, Cohen's $d = -0.25$, 95% $CI = [-0.06, 0.01]$ (see Figure 1).

To compare the effectiveness of other-race one-on-one IIS versus other-race small-group IIS at the posttest, we conducted a one-way ANOVA on posttest explicit anti-Black bias among three groups (other-race one-on-one IIS, other-race small-group IIS, and control). This analysis showed a significant group effect, $F(2, 133) = 9.45$, $p < .001$ (partial $\eta^2 = 0.125$). Bonferroni-corrected post hoc comparisons indicated that both the other-race one-on-one IIS and other-race small-group IIS conditions had significantly lower explicit anti-Black bias than the control group in the posttest ($ps < .01$). However, the other-race one-on-one IIS and other-race small-group IIS did not differ significantly from each other ($p > .05$).

Taken together, these results indicate that IIS with other-race instructors effectively reduced children's explicit racial bias and that the small-group format yielded reductions comparable in magnitude to the one-on-one format.

Figure 1. Explicit bias scores at pretest and posttest.



Note: Scores above 0.5 indicate an own-race preference, and scores below 0.5 indicate an other-race preference. Individual intervention = other-race one-on-one IIS; group intervention = other-race small-group IIS; control condition = own-race one-on-one IIS.

5. Discussion & conclusions

The present study examined whether a brief, video-based *Individuated Interpersonal Synchrony* (IIS) intervention could reduce racial bias in young children and whether a small-group delivery format is as effective as a one-on-one format. The results showed that IIS with other-race instructors effectively reduced explicit anti-Black bias, whereas no changes were observed in implicit bias, and that small-group IIS was comparably effective to one-on-one delivery.

Consistent with prior research, children who engaged in synchronous movement with other-race instructors showed positive attitudes toward out-group members (Tunçgenç & Cohen, 2016b). Synchronous movement increases social affiliation, such as perceived similarity and interpersonal closeness in children, which may help explain reductions in explicit bias toward out-group members (Rabinowitch & Knafo-Noam, 2015). In addition, synchrony has been shown to increase attention to others' mental states (Basile et al., 2022), which may further foster positive social emotions, including closeness (Baimel et al., 2018) and compassion (Valdesolo & DeSteno, 2011).

In contrast, we did not find the reduction in implicit racial bias across conditions. A possible explanation for this is that, compared with the intervention used by Qian et al. (2022), the present IIS intervention required more fine-grained motor coordination. Therefore, it potentially increases cognitive demands and shifts attentional resources toward movement execution rather than social category processing. Another possible explanation for this is that implicit attitudes tend to be more stable and automatic compared to explicit racial bias and may therefore require more sustained interventions. Previous studies showing reductions in implicit bias through individuation typically rely on more intensive and repeated training with multiple other-race faces (Lebrecht et al., 2009; Xiao et al., 2015).

Importantly, the small-group IIS condition produced reductions in explicit bias comparable to those observed in the one-on-one condition, underscoring the feasibility of implementing IIS in classroom contexts. Several limitations for consideration. The intervention was brief and assessed only immediate posttest effects; future work should employ repeated or longitudinal designs to evaluate whether IIS can produce more durable changes, particularly in implicit bias. Participants were limited to 5-6-year-olds due to task demands requiring reliable execution of coordinated movements, and future studies should adapt IIS to developmentally appropriate synchronous activities to test its applicability in younger children within racially homogeneous contexts. Overall, these findings suggest that IIS represents a promising and feasible approach for reducing explicit racial bias in early childhood under brief, classroom-relevant conditions, while also highlighting important directions for further refinement and evaluation.

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