ORIGINAL PAPER

Bias Contagion Across Racial Group Boundaries

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Abstract

We examined whether exposure to nonverbal race bias would influence Asian and Pacific Islander perceivers' implicit attitudes and nonverbal behavior during subsequent interracial interactions. Ninety-one Asian and Pacific Islander participants (64 women, 27 men; M_{age} = 20.25 years, SD = 2.09) were randomly assigned to view television clips depicting a pattern of biased or not biased nonverbal behavior between White and Black individuals and completed an interaction with a White or Black experimenter. Participants exhibited more negative implicit attitudes toward Black persons after seeing television clips which did (vs. did not) include nonverbal race bias, replicating prior work with White participants. Additionally, participants exposed to nonverbal race bias smiled less and exhibited less friendly nonverbal behavior toward both Black *and* White interaction partners, when discussing race-salient topics. Results suggest that bias contagion can occur across racial group boundaries to influence implicit attitudes and nonverbal behavior during interracial interactions.

Keywords Nonverbal behavior · Prejudice · Bias contagion

Introduction

Group-based biases can be communicated through nonverbal behavior. There is evidence that biased nonverbal behavior (e.g., displaying more favorable nonverbal responses to White people than Black people) can shape the racial attitudes of those who perceive it, contributing to the perpetuation of racial discrimination (Weisbuch & Pauker, 2011). However, research has not yet examined whether such *bias contagion* would occur in racial minority

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perceivers. Moreover, it is yet unclear if bias contagion extends to perceivers' own nonverbal behavior in interracial interactions. These questions of generalizability are critical to theories of bias contagion and for understanding the causes of, and solutions for, widespread discrimination. We extend prior research to examine if exposure to biased nonverbal behavior involving White and Black persons influences Asian and Pacific Islander[1] participants' racial attitudes and nonverbal behavior in an interracial interaction.

Bias Contagion and Racial Identity

Racial biases can be frequently observed in and socially-transmitted through others' nonverbal behavior. Research demonstrates White participants with stronger implicit pro-White/anti-Black bias demonstrate less friendly nonverbal behavior, such as reduced smiling, eye contact, and interest (Dovidio et al., 1997, 2002; McConnell & Leibold, 2001), when interacting with Black compared to White partners. It is likely that people frequently observe racially-biased nonverbal behavior in social interactions in everyday contexts, including depictions in mass media. Past research has found that exposure to this subtle nonverbal race bias can "infect" perceivers, causing White persons to strengthen their implicit biases against Black people (Castelli et al., 2012; Weisbuch & Pauker, 2011; Weisbuch et al., 2009; Willard et al., 2015).

To date, research on bias contagion has relied primarily on majority White samples (Castelli et al., 2008, 2012; Weisbuch et al., 2009; cf. Willard et al., 2015, Experiment 4) observing the nonverbal bias of White "expressers" toward people with a Black racial identity. As such, little is known of the boundary conditions of bias contagion. In particular, processes related to bias contagion, such as mimicry and emotion contagion, are more strongly activated when perceivers share group membership with those being observed (van Schaik & Hunnius, 2016; Weisbuch & Ambady, 2008). Thus, bias contagion could be limited to perceivers who share a racial identity with the expressers of nonverbal race bias.

However, bias contagion may *not* be limited by shared group membership. It is possible that bias contagion is rooted in basic learning processes independent of perceivers' own racial or group identities (Weisbuch & Pauker, 2011). For example, acquisition and change of implicit bias is postulated to occur through evaluative conditioning—when perceivers develop negative (or positive) associations toward a neutral stimulus through repeated pairings of that stimulus with a negative (or positive) stimulus (Gawronski & Bodenhausen, 2006; Rydell & McConnell, 2006). Accordingly, perceivers who are *simultaneously* presented with pairings of emotionally-negative White persons with a Black person and emotionally-positive White persons with a White person may learn—through evaluative conditioning—more negative cognitive associations toward Black than White persons. If so, the environmental pattern introduced by nonverbal race bias could be encoded by and influence perceivers of any race, so that they adopt implicit attitudes that reflect these contingencies (more positive attitudes toward White compared to Black people). Here, we test prior theorizing about the role of learning in bias contagion (Weisbuch & Pauker, 2011) and focus on an Asian and Pacific Islander sample to examine if bias contagion operates across group boundaries. Specifically, in the current work, participants did *not* share a racial ingroup with either expressers (White persons) or targets (Black persons) of the nonverbal race bias they observed.

Bias Contagion and Interracial Behavior

Another limitation of past research on bias contagion is that the majority of studies focus on attitudes as the outcome of interest. However, if exposure to biased patterns of nonverbal behavior strengthen biased attitudes, this could perpetuate bias through perceivers' own biased behavior in future interracial interactions. The link between exposure to biased patterns of nonverbal behavior and adult perceivers' racially-biased nonverbal *behavior* has not been explicitly tested in prior research. One study (using artificial groups) did observe that children were less likely to imitate the actions of a person if they had observed that person's group being the target of nonverbal bias (Skinner, Olson, et al., 2020). Yet it is not clear that such findings would apply to *adults* exposed to nonverbal race bias: adults have elaborated beliefs about race which may interfere with their mimicry and research increasingly suggests that intergroup biases are not isomorphic but rather depend on the specific domains (race, gender, etc.). Thus, in the current work, we examined if adult perceivers who viewed White-Black nonverbal bias would themselves produce nonverbal race bias in their own interactions.

We examined the influence of exposure to White-Black nonverbal race bias (compared to no nonverbal race bias) on Asian and Pacific Islander participants' implicit attitudes *and* interracial behavior. There are at least two plausible learning mechanisms that could lead to behavioral contagion (i.e., perceivers' own nonverbal bias as a result of *seeing* nonverbal bias). Although we do not directly test those mechanisms here, their presumed operation motivates our primary and alternative hypotheses. First, exposure to nonverbal bias could influence participants' behavior through learning mechanisms similar to those described above (e.g., evaluative conditioning). It is possible that nonverbal behaviors in interracial interactions directly reflect implicit attitudes, which themselves reflect the study manipulation. By this account, exposure to nonverbal bias should *indirectly* influence participant behavior via implicit race attitudes.

A second, complementary possibility is that people learn social norms or scripts for interracial interactions from the patterns of nonverbal bias they've seen that prepare them for future interactions. This possibility is consistent with research that shows prior interracial contact, including vicarious (i.e., observed) contact, shapes norms and expectations about future interracial interactions and subsequently behavior (Doerr et al., 2011; Mazziotta et al., 2011; Plant, 2004). Indeed, in several recent studies, children who observed nonverbal gender bias were more likely than those in a control condition to believe that people (in general) devalued masculine girls. This normative effect emerged in the absence of effects on children's gender attitudes (Lamer et al., 2022). Normative effects of this type are likely to directly translate to behavior, given the influence of social norms on intergroup behavior (Chiu et al., 2010; Paluck, 2011; Paluck et al., 2016; Tropp et al., 2016; Yoshida et al., 2012; Zou et al., 2009). For example, learned norms for "loyalty" may explain ingroup-biased resource allocation in the minimal groups paradigm (Hertel & Kerr, 2001). Similarly, learned social norms for interracial interaction may cause people to be unfriendly in those interactions if they've repeatedly seen nonverbal bias. That is, nonverbal bias is depicted by positive nonverbal displays in intra-racial interactions (e.g., a White person responding positively to a White person) and negative nonverbal displays in inter-racial interactions (e.g., a White person responding negatively to a Black person). If the proximal effect regards interracial norms, exposure to nonverbal bias should alter perceivers' behavior in

any interracial interaction—whether or not their implicit attitudes toward a particular race is associated with that behavior.

We do not directly test these two accounts in the current study but rather use the foregoing logic to anticipate participants' interracial behavior. The "evaluative conditioning account" suggests that seeing nonverbal race bias will cause participants to associate Black racial identity with "bad", causing them to behave "badly" (unfriendly) toward Black persons in particular. This account thus suggests that implicit attitudes will mediate any behavioral effects and that such effects will be specific to participants (Asian and Pacific Islander individuals) interacting with Black individuals.

The "interracial norm" account suggests that seeing nonverbal race bias will cause Asian and Pacific Islander participants to anticipate that their upcoming interracial interaction will be unfriendly, and thus behave in an unfriendly manner toward Black persons and White persons. Moreover, effects of exposure to nonverbal bias on implicit attitudes should be separable from effects on interracial behavior. That is, an effect of nonverbal bias on interracial behavior should hold even when variance in implicit attitudes is controlled.

In this Study, Asian and Pacific Islander participants either observed traditional nonverbal bias (favoring White people over Black people) or no nonverbal bias (equal favoring of White people and Black people). They then engaged in an interracial interaction with a person with a Black racial identity *or* a person with a White racial identity. In addition, we also manipulated the conversational topic discussed in the interaction, as making race salient can lead to changes in behavior aligned with social norms about race (Sommers & Ellsworth, 2001). The manipulation of conversational topic also helps to differentiate between a behavioral mimicry account, an evaluative conditioning account, and an interracial norms account. A behavioral mimicry or an evaluative conditioning account should result in participants displaying negative nonverbal behavior in *any* conversation with a Black individual and not a White individual (though in general, we do not expect behavioral mimicry to occur because of a lack of shared identity between Asian and Pacific Islander participants and those they observed and thus it is unclear who participants would mimic as they could mimic either partner in the many dyads observed). Conversely, an interracial norms account would argue that nonverbal race bias may cause concerns about negative *interracial* interaction*s* (not only interactions with Black individuals) and these concerns would be heightened during conversations about race. Thus, bias contagion effects on behavior may be especially strong in conversations *about race* and would occur in any interracial interaction (i.e., with a White *or* a Black partner).

In summary, we tested two hypotheses. First, we hypothesized that exposure to nonverbal race bias would influence Asian and Pacific Islander participants' implicit racial attitudes, replicating prior research with White participants (Weisbuch et al., 2009). Second, we hypothesized that exposure to nonverbal race bias would influence participants' nonverbal behavior in interracial interaction. This effect may be specific to interactions with Black partners (a nonverbal bias X partner race interaction) or may be observed in interracial interactions, regardless of partner race (a main effect of nonverbal bias).

Additional statistical tests were conducted for two purposes. First, to help adjudicate between *evaluative conditioning* and *interracial norm* accounts of the hypothesized effects, we examined the degree which effects of nonverbal bias on interracial behavior were (interracial norms) or were not (evaluative conditioning) independent of effects on implicit attitudes. Second, we examined whether effects of nonverbal bias on participant behavior are

moderated by the interracial *context* of the conversation. Stronger effects in contexts in which race was salient (via a conversation about race) than when it was not (via a conversation about the legal drinking age), revealed by a nonverbal bias X question context interaction, would be supportive of an interracial norms account.

Method

Participants and Design

Undergraduates ($N=101$) who identified as Asian[1], East Asian, Southeast Asian, Hawaiian and/or Pacific Islander participated in exchange for partial course credit or a $10 gift card. We recruited approximately 25 students per cell in the 2 (Nonverbal Bias) x 2 (Race of Experimenter) x Question Context mixed model ANOVA where the first two factors were between-subjects and the last was within-subjects. Seven participants did not complete the study and three were removed because of experimenter error (e.g., did not receive the manipulation); thus, the final sample was $N=91$ (64 women, 27 men; M_{age} = 20.25, $SD=2.09$). Sensitivity power analyses using G*Power (version 3.1.9.4) indicates that this sample is sufficient to detect between-subjects main effects and interactions as small as $\eta^2=0.08$ ($f=0.30$) and between-within interaction effects as small as $\eta^2=0.02$ ($f=0.15$) at 0.80 power. This study was approved by the University's IRB; informed consent was collected after participants read about the study procedures.

Procedure

Individuals were recruited to complete two "unrelated" studies in the lab. The first was about "Media Enjoyment" and participants were asked to view and rate 54 TV clips (these clips included our manipulation of nonverbal bias). Afterwards, participants were approached by a second experimenter who asked if they would complete a video-recorded interview on "Social Issues" (the interracial interaction). Participants then rated the interaction (see supplemental materials), completed a personalized-IAT, and were thanked and debriefed.

Tasks

Exposure to Nonverbal Bias

Participants were randomly assigned to view one of two sets of 54 TV clips (see Weisbuch et al., 2009). Each clip was silent, 10-15s long, and presented in random order. Both sets included 27 clips that depicted positive same-race interactions (i.e., White characters displaying positive nonverbal behavior toward other White characters). In the *nonverbal race bias* set, the 27 additional clips depicted White characters displaying negative nonverbal

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[1] This term is used as it reflects how our participants self-reported their racial identity. Combining different racial/ethnic groups is problematic due to differences in experiences. But it is also problematic to exclude diverse participants given that the goal of the study is to examine whether Black-White nonverbal bias influences perceivers from different racial groups.

behavior toward Black characters. In the *no nonverbal race bias* set the 27 additional clips depicted White characters displaying positive nonverbal behavior toward Black characters.

Interracial Interaction

Participants were randomly assigned to interact with a Black (one of three female experimenters) or White (one of three female experimenters) partner who was blind to media condition and study hypotheses. Participants were first asked to introduce themselves by describing where they were from and their college major. They then answered a *race-nonsalient* question regarding the legal drinking age and a *race-salient* question regarding reverse discrimination, which were presented in random order. The experimenter read each question out loud to the participant and did not read the next question until participants had finished responding. Experimenters were trained to respond in a neutral but friendly manner. Interactions were videotaped and coded for nonverbal friendliness (Dovidio et al., 2002; Todd et al., 2011), smiling behavior, and speech hesitation (see supplemental materials).

Nonverbal Behavior

Because impressions based on short periods of behavioral observations are consistent with those based on longer time periods (Ambady et al., 2000), we extracted three short segments (5 s from the beginning, middle, and end) from participants' responses to each question during the interaction. These segments were compiled into 15 s video clips (one 15 s clip each for the introduction, race-nonsalient question, and race-salient question). Video clips were edited to ensure only the participant was visible, thus concealing from judges the interracial nature of the interaction. In total, 270 video clips were coded.

Nonverbal Friendliness. Four judges (1 Multiracial, 1 White, and 2 Southeast Asian females) blind to experimental condition and hypotheses viewed the thin-sliced videos without sound and coded participants' nonverbal behavior for friendliness on a scale of -4 (*Extremely Unfriendly*) to +4 (*Extremely Friendly*). The four judges first independently coded a subset of 48 videos to evaluate interrater reliability. The remaining videos were independently coded by two judges ($\alpha s > 0.70$). Ratings were averaged into scores for nonverbal friendliness in the introduction, race-nonsalient, and race-salient questions. Higher scores indicate friendlier nonverbal behavior.

Smiling Behavior. Two judges (one Asian male, one Asian female) blind to the goals of the research independently coded the thin-sliced video clips for the duration of the participants' smiles in seconds ($\alpha = 0.97$). Since some of the thin-sliced clips were shorter than others (e.g., the participants' answer for that segment was less than 15s), the proportion of smile duration during the segment was calculated by dividing by the overall length of the relevant segment of the interaction (introduction, race-nonsalient question, race-salient question). Coder responses were averaged into a single score for each clip.

Personalized Implicit Association Test (IAT)

In the personalized-IAT (Olson & Fazio, 2004), *incongruent* critical blocks presented pictures of Black faces (Nosek et al., 2007) and pleasant words (Greenwald et al., 1998) that were categorized with one key, and pictures of White faces and unpleasant words were cat-

egorized with the other. In the *congruent* critical blocks pictures of White faces and pleasant words were categorized with one key, and Black faces and unpleasant words with the other. Critical block order was counterbalanced between participants. Category labels ("African American," "European American," "I Like," "I Don't Like") were presented as headers throughout the task and instructions preceded each block. Participants did not receive performance feedback. We computed IAT D scores (Greenwald et al., 2003) where incorrect responses were penalized. Higher D scores indicate greater pro-White/anti-Black bias.

Results

Nonverbal Behavior During Interracial Interactions

Separate 2 (Nonverbal Bias: exposure to bias vs. no bias) x 2 (Race of Experimenter: Black vs. White) x 3 (Question Context: introduction vs. race-nonsalient vs. race-salient) mixed model ANOVAs were conducted for nonverbal friendliness and smiling behavior.

Nonverbal Friendliness

One participant was not included as they only consented to being audio-recorded. There was no main effect of nonverbal bias, $F(1, 86)=0.36$, $p=.55$, $\eta_p^2=0.004$, but a significant nonverbal bias X question context interaction emerged, $F(2, 172)=3.47$, $p=.033$, $\eta_p^2=0.04$. To decompose this interaction, we conducted t-tests across condition for each question context. In the race-salient context participants exposed to nonverbal bias exhibited marginally less friendly behavior ($M=0.99$, $SD=1.17$) than those in the no bias condition ($M=1.43$, $SD=0.99$), $t(88)=1.93$, $p=.056$, $d=0.41$. Exposure to nonverbal race bias did not influence participants' friendliness in the introduction ($M_{No\ Bias} = 1.09$, $SD=1.15$ vs. $M_{Bias} = 1.27$, $SD=1.32$) or when answering the race-nonsalient question ($M_{No\ Bias} = 1.28$, $SD=1.22$ vs. $M_{Bias} = 1.11$, $SD=1.44$), ts<1.0, ps>0.45, ds<0.20. Thus, we only observed effects of the nonverbal race bias manipulation on behavior in a race-salient context.[2]

Importantly, and consistent with an interracial norm account, experimenter race did not moderate the effects of exposure to nonverbal race bias on participant friendliness, $F(1, 86)=0.006$, $p=.94$, $\eta_p^2=0.0001$, nor did it moderate the significant interaction of nonverbal bias and question context on participant friendliness, $F(2, 172)=1.56$, $p=.21$, $\eta_p^2=0.02$. That is, exposure to nonverbal race bias caused Asian and Pacific Islander participants to behave in a less friendly way during interracial interactions (specifically when the context was race-salient), regardless of whether their partner was Black or White; see Table 1 for the means within each question context.

Beyond effects of exposure to nonverbal race bias, a significant race of experimenter x question context interaction emerged, $F(2, 172)=3.27$, $p=.04$, $\eta_p^2=0.037$. Participants

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[2] Participants exposed to the nonverbal bias condition did not differ in their behavior across the introduction ($M=1.27$, $SD=1.32$), non-race salient ($M=1.11$, $SD=1.44$), and race-salient ($M=0.99$, $SD=1.17$) questions, ts<1.70, ps>0.10, ds<0.25. Conversely, those in the no bias condition demonstrated marginally more friendly behavior when responding to the race question ($M=1.43$, $SD=0.99$) as compared to the introduction ($M=1.09$, $SD=1.15$), $t(45)=1.94$, $p=.058$, $d=0.29$. No other significant (or "marginal") comparisons between the introduction, race-nonsalient ($M=1.28$, $SD=1.22$), and race-saliect questions emerged, ts<1.10, ps>0.28, ds<0.16.

Table 1 Means (standard deviations) for ratings of nonverbal behavior during the introduction, race-non-salient, and race-salient questions and implicit racial bias as a function of exposure to nonverbal bias and experimenter race

		Pattern of Nonverbal Bias					
		Nonverbal Bias			No Nonverbal Bias		
		Race of Experimenter			Race of Experimenter		
	Question Context	White	Black	Overall	White	Black	Overall
Nonverbal Friendliness	Introduction	1.09 (1.31)	1.46 (1.34)	1.27 (1.32)	0.70 (1.15)	1.44 (1.07)	1.09 (1.15)
	Race-nonsalient	1.17 (1.26)	1.05 (1.65)	1.11 (1.44)	1.25 (1.26)	1.31 (1.20)	1.28 (1.22)
	Race-salient	0.68 (1.17)	1.32 (1.10)	0.99 (1.17)	1.33 (1.02)	1.52 (0.97)	1.43 (0.99)
Smiling Duration	Introduction	0.18 (0.26)	0.21 (0.32)	0.20 (0.28)	0.05 (0.15)	0.16 (0.31)	0.11 (0.25)
	Race-nonsalient	0.16 (0.24)	0.16 (0.17)	0.16 (0.21)	0.20 (0.24)	0.17 (0.19)	0.18 (0.21)
	Race-salient	0.08 (0.15)	0.13 (0.15)	0.10 (0.15)	0.12 (0.21)	0.16 (0.22)	0.14 (0.22)
Implicit Racial Bias		0.37 (0.34)	0.20 (0.32)	0.28 (0.34)	0.14 (0.31)	0.11 (0.39)	0.12 (0.35)

Note: For nonverbal friendliness, higher scores indicate more friendly behavior. For smiling duration, higher scores indicate greater proportion of time smiling. For implicit racial bias, higher scores indicate more pro-White/anti-Black implicit race bias.

exhibited less friendly behavior when interacting with the White versus Black experimenter during the introduction ($M_{\text{White}} = 0.90$, $SD=1.23$ vs. $M_{\text{Black}} = 1.45$, $SD=1.19$), $t(88)=2.15$, $p=.034$, $d=0.45$, and the race-salient question ($M_{\text{White}} = 1.00$, $SD=1.14$ vs. $M_{\text{Black}} = 1.43$, $SD=1.03$), $t(88)=1.88$, $p=.064$, $d=0.40$ (note the latter effect was only marginally significant). When responding to the race-nonsalient question, behavior did not differ by experimenter race ($M_{\text{White}} = 1.21$, $SD=1.25$ vs. $M_{\text{Black}}= 1.19$, $SD=1.41$), $t(88)=0.08$, $p=.94$, $d=0.02$, see Table 1. No other significant effects emerged on nonverbal friendliness, Fs<2.10, ps>0.15, η_p^2s< 0.03.

Smiling Behavior

We removed an additional participant whose head was out of frame in the video clips, which prevented observation of smiling; thus, a total of two participants were not included in this analysis. Similar to the results for nonverbal friendliness, there was no main effect for nonverbal bias, $F(1, 85)=0.06$, $p=.80$, $\eta_p^2=0.001$, but a nonverbal bias X question context interaction emerged, $F(2, 170)=4.75$, $p=.010$, $\eta_p^2=0.05$. This interaction was similar in form to the same interaction for nonverbal friendliness but with different patterns of statistical significance. Unlike nonverbal friendliness, smiling duration in the race-salient context was not influenced by the nonverbal bias manipulation ($M_{\text{No Bias}}=0.14$, $SD=0.22$ vs. $M_{\text{Bias}}=0.10$, $SD=0.15$) nor was smiling duration during the introduction ($M_{\text{No Bias}} = 0.11$, $SD=0.25$ vs. $M_{\text{Bias}} = 0.20$, $SD=0.28$) or the race-nonsalient context ($M_{\text{No Bias}} = 0.18$, $SD=0.21$ vs. $M_{\text{Bias}} = 0.16$, $SD=0.21$), ts<1.55, ps>0.12, ds<0.33. Instead, interactive effects on smiling duration appear to be driven by effects of interracial context *within* nonverbal bias condition. Participants exposed to nonverbal bias smiled less in the race-salient context ($M=0.10$,

$SD=0.15$) as compared to the introductory context ($M=0.20$, $SD=0.28$), $t(44)=2.58$, $p=.013$, $d=0.39$, and the race-nonsalient context ($M=0.16$, $SD=0.21$), $t(44)=2.34$, $p=.02$, $d=0.35$. Among these participants, smiling duration did not differ between the introductory and race-nonsalient context, $t(44)=1.04$, $p=.30$, $d=0.16$. Participants in the no bias (control) condition smiled less in the introductory context ($M=0.11$, $SD=0.25$) as compared to the race-nonsalient context ($M=0.18$, $SD=0.21$, $t(44)=2.17$, $p=.04$, $d=0.32$). There were no differences in smiling duration in the race-salient context ($M=0.14$, $SD=0.22$) as compared to the introductory context, $t(44)=0.92$, $p=.35$, $d=0.14$, and the race-nonsalient context, $t(44)=1.69$, $p=.10$, $d=0.25$ (see Table 1).

Importantly, and consistent with an interracial norm account, experimenter race did not moderate the effects of exposure to nonverbal race bias on smiling duration, $F(1, 85)=0.01$, $p=.91$, $\eta_p^2=0.0001$, nor the interaction between nonverbal race bias and context on smiling duration, $F(2, 170)=0.74$, $p=.48$, $\eta_p^2=0.009$; see Table 1. No other significant effects emerged for smiling duration, $Fs<2.16$ $ps>0.11$, $\eta_p^2s<0.04$.

Personalized IAT

Two participants were not included in the IAT analyses due to missing data and an additional participant was removed as greater than 10% of responses fell below 300 ms (Greenwald et al., 2003). A 2 (Nonverbal bias) x 2 (Race of Experimenter) between-subjects ANOVA revealed a significant main effect of nonverbal bias, $F(1, 84)=4.83$, $p=.031$, $\eta_p^2=0.05$. Pro-White/anti-Black implicit race bias was larger among participants exposed to nonverbal bias ($D=0.28$, $SD=0.34$) than participants in the no bias condition ($D=0.12$, $SD=0.35$), replicating prior research (see Table 1). No other significant effects emerged, $Fs<2.00$, $ps>0.15$, $\eta_p^2s<0.03$.

Relation Between Nonverbal Behavior and Implicit Attitudes

To examine whether the effects of exposure to nonverbal bias on implicit attitudes were separable from the effects on interracial behavior, we first examined correlations between IAT scores and nonverbal friendliness. Pro-White/anti-Black implicit race bias was negatively correlated with nonverbal friendliness in the race-salient context, $r=-.29$, $p=.006$, but not in the introductory context, $r=-.03$, $p=.76$, or in the race-nonsalient context, $r=-.04$, $p=.75$. We therefore examined whether pro-White/anti-Black implicit race bias would account for the effects of the nonverbal bias manipulation on nonverbal friendliness (as predicted by the evaluative conditioning account). We conducted a 2 (Nonverbal Bias: exposure to bias vs. no bias) x 2 (Race of Experimenter: Black vs. White) x 3 (Question Context: introduction vs. race-nonsalient vs. race-salient) mixed model ANOVA on nonverbal friendliness with IAT scores as a covariate. No effects were significant, and importantly, the nonverbal bias X question context interaction previously observed was no longer significant when controlling for IAT scores, $F(2, 164)=2.28$, $p=.11$, $\eta_p^2=0.03$. This suggests that IAT scores account (at least in part) for the effect of nonverbal bias on nonverbal friendliness during the race-salient question (as would be predicted by an evaluative conditioning account); however, additional follow-up analyses suggest the results were inconsistent with an evaluative conditioning account.

Follow-up analyses revealed that the correlation between IAT scores and nonverbal friendliness during the race-salient question was driven by participants interacting with a White partner. Specifically, those with greater pro-White/anti-Black implicit bias displayed *less* friendly behavior toward the White partner during the race-salient question, $r = -.38$. $p = .013$. The same relation did not emerge for participants with greater pro-White/anti-Black bias interacting with a Black partner during the race-salient question, $r = -.16$, $p = .28$[3]. These results are contrary to an evaluative conditioning approach in which implicit biases favoring White persons over Black persons should lead to *more* friendly behavior toward White persons and *less* friendly behavior toward Black persons. Additionally, an evaluative conditioning approach would have expected effects of nonverbal bias to be similar across different question contexts, and not specific to the race-salient context.

The only other relation between nonverbal behavior and implicit attitudes was between smile duration and IAT scores when interacting with a White partner during the introduction, $r = .31$, $p = .045$. No other significant effects between nonverbal behavior (including smiling duration) and implicit attitudes emerged, $rs < |0.18|$, $ps > 0.22$. While smiling duration was not related to participants' implicit attitudes, except in one case, smiling duration was related to nonverbal friendliness for the introduction ($r = .50$, $p < .001$), race-salient question ($r = .45$, $p < .001$) and race-nonsalient question ($r = .60$, $p < .001$). Finally, to test whether pro-White/anti-Black implicit race bias would account for the effect of nonverbal race bias on smiling (as predicted by the evaluative conditioning account), we ran a 2 (Nonverbal Bias: exposure to bias vs. no bias) x 2 (Race of Experimenter: Black vs. White) x 3 (Question Context: introduction vs. race-nonsalient vs. race-salient) mixed model ANOVA on smiling behavior with IAT scores as a covariate. Consistent with the correlational results, the nonverbal bias X question context interaction remained significant when controlling for IAT scores, $F(2, 162) = 4.38$, $p = .01$, $\eta_p^2 = 0.05$, and no other effects were significant, suggesting that IAT scores did not account for the effects of exposure to nonverbal bias on smiling behavior.

Discussion

Replicating past work with White participants who viewed White expressors interacting with White or Black individuals, exposure to nonverbal bias (as compared to no nonverbal bias) influenced Asian and Pacific Islander participants' implicit racial attitudes. To our knowledge, this is the first study to provide initial evidence suggesting that bias contagion can occur across racial group boundaries (i.e., White expresser, Asian or Pacific Islander observer). Moreover, supporting an interracial norms account, exposure to nonverbal bias (as compared to no nonverbal bias) influenced Asian and Pacific Islander participants' nonverbal behavior in interracial interactions: they themselves displayed greater nonverbal behavioral bias (less friendly nonverbal behavior and smiling less) when discussing race-salient questions in an interracial interaction, regardless of the race of the experimenter.

We provide initial support for the impact of nonverbal bias on both attitudes *and* behavior across group boundaries (Asian and Pacific Islander participants viewing White and Black interactions). However, we found little support that bias contagion is operating through

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[3] There was no significant difference between these two correlations, $p = .09$, however it is unclear whether this is due to a lack of power.

evaluative conditioning. While exposure to biased patterns of nonverbal behavior (compared to no bias) led to more implicit negative attitudes toward Black compared to White people, we did not observe more negative nonverbal behavior towards *both* Black and White partners among those exposed to nonverbal bias. In fact, IAT biases favoring White over Black persons were predictive of more unfriendly behavior toward *White* persons during race-salient contexts, in direct opposition to the evaluative conditioning account. However, we acknowledge that we were unable to detect difference in these effects between interactions with White vs. Black partners, possibly due to a lack of power.

Instead, we found that exposure to patterns of nonverbal bias, led to more negative nonverbal behavior in interracial interactions more generally (whether the interaction partner was White or Black). Additionally, the effects of exposure to nonverbal bias on behavior emerged only when race was salient in the interaction. This could reflect racial discomfort that is more likely to be revealed during race-salient tasks (Trawalter et al., 2009) or that race-salient tasks more strongly activate race-relevant cognitions and race-related norms (Sommers & Ellsworth, 2001; Toosi et al., 2012).

Distinct mechanisms may drive effects of exposure to nonverbal bias on intergroup behavior versus intergroup attitudes. We have argued that nonverbal bias may activate interracial norms that direct behavior preparation processes and this explanation may help to account for these differential effects. For example, nonverbal behavior in interracial interactions may draw from action representations (e.g., Kilteni et al., 2018) or interpersonal scripts (e.g., Cesario et al., 2006). By this account, observing nonverbal bias may shape these representations or their activation level and directly cause unfriendly behavior specifically in interracial interactions. Implicit attitudes are not involved in this account and indeed, did not account for the effects of seeing nonverbal bias on participants' smiling behavior. Although analyses indicated that implicit attitudes may account for the effect of seeing nonverbal bias on nonverbal friendliness, follow-up analyses indicated that these effects were inconsistent with an evaluative conditioning account. Conversely, effects on implicit attitudes may reflect the operation of simple associative mechanisms in which perceivers develop cognitive associations that reflect environmental associations. Thus, it is possible that evaluative conditioning explains bias contagion effects on attitudes whereas interracial norms/behavioral preparation explains bias contagion effects on behavior. This framework is less parsimonious than a single-process explanation (e.g., evaluative conditioning) for the effects of nonverbal bias on attitudes *and* behavior but given the independence of effects on attitudes versus behaviors, it seems likely that those effects are driven by different processes. Nonetheless, we did not include process measures of interracial norms/behavioral preparation so our account at present is speculative and based on observations of behavioral *outcomes*.

Limitations

One alternative explanation for our results is that observing negative behavior in the exposure to bias condition caused participants to activate general concepts of negativity. However, if this were the case, we would expect less positive nonverbal behavior across the entire interaction (not just the race-salient question). For this reason, we believe that exposure to nonverbal bias activated associations specifically related to race (see Willard et al., 2015), which in turn influenced intergroup attitudes and behavior, instead of activating negative concepts in general.

Another limitation regards the distinction between bias contagion effects on attitudes versus behaviors. Correlational analyses suggested that attitude contagion and behavior contagion are only weakly related, and the effects of nonverbal bias on behavior did not draw from effects on implicit attitudes in a theoretically consistent manner. As noted above, a simple and parsimonious account of both accounts was *not* supported. Instead, a theoretical model which details the *different* processes underlying bias contagion of attitudes versus behavior is likely to find support in future studies. The absence of more process measures in the current study prevents us from drawing strong conclusions about the content of those different processes but one plausible distinction is between learning evaluative associations (attitudes) and associations of context (intergroup situations) with actions. It is possible both sorts of associations are learned during exposure to nonverbal bias but that the measurement context dictates which associations are *used* (Loersch & Payne, 2011). Future work should aim to more thoroughly establish the different processes underlying bias contagion of attitudes versus behavior.

Finally, there are two concerns regarding our sample. First, Asian and Pacific Islander participants observed nonverbal bias between White expressors and Black targets. An alternative approach would be to examine the impact of nonverbal bias in which Black persons are expressors and White persons are targets, or including Asian or Pacific Islander expressors and targets; we encourage these as avenues for future research. Secondly, there are limitations to the conclusions we can draw due to our small sample size. Patterns of statistical significance (or lack thereof) may reflect statistical power issues. Nonetheless, the evidence in this study supports a learning account regarding how bias contagion influences the attitudes and behavior of persons with non-White racial identities.

Conclusion

Our findings support that exposure to nonverbal race bias in everyday contexts may impact perceivers' subtle cognitions and behavior—even if they have not viewed bias for or against their own race. Due to the subtle nature of nonverbal bias contagion (Weisbuch et al., 2009), this may be less likely to be the focus of interventions, contributing to the perpetuation of racial discrimination.

Data Availability Not applicable.

Code Availability Not applicable.

Declarations

Conflicts of Interest Not Applicable.

Ethics Approval This project was approved by the University of Hawaii IRB.

Consent to Participate This research contains an element of deception. Participants were provided with information about the tasks they would complete and consented to this before completing the study. Retro-

spective consent was obtained at the completion of the study, after participants were informed of the actual purpose of the research.

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