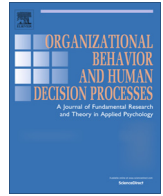




Contents lists available at ScienceDirect

## Organizational Behavior and Human Decision Processes

journal homepage: [www.elsevier.com/locate/obhdp](http://www.elsevier.com/locate/obhdp)

## Some evidence for the nonverbal contagion of racial bias

Greg Willard<sup>a</sup>, Kyonne-Joy Isaac<sup>b</sup>, Dana R. Carney<sup>c,\*</sup><sup>a</sup>Harvard University, United States<sup>b</sup>Princeton University, United States<sup>c</sup>University of California, Berkeley, United States

## ARTICLE INFO

## Article history:

Received 16 August 2013

Revised 18 March 2015

Accepted 12 April 2015

Available online 30 April 2015

## Keywords:

Attitudes

Contagion

Implicit bias

Nonverbal behavior

Prejudice

Race-bias

## ABSTRACT

Four experiments provide evidence for the hypothesis that we can “catch” racial bias from others by merely observing subtle nonverbal cues. Video recordings were made of white participants (with varying levels of racial bias) interacting with a neutral black confederate. Videos contained subtle expressions of positivity or negativity, corresponding to white participants’ levels of bias. Participants randomly assigned to observe the subtle anti-black bias videos (vs. pro-black) formed more negative impressions of the black person (Experiment 1), adopted more negative racial stereotypes (Experiment 2), and demonstrated greater anti-black bias themselves (Experiment 3). Participants only demonstrated increased bias when they knew that a black person was the target (vs. white; Experiment 4). Results suggest that nonverbal expressions of racial bias affect more than simply the actor and target—they affect passive, naïve observers. The good news, however, is that the same is true of pro-black bias. Implications for organizations are discussed.

© 2015 Elsevier Inc. All rights reserved.

## 1. Introduction

Racial bias is alive and well. Despite the fact that the United States has an African American president in office—well into his second term at the time this paper was published—racism continues to be a visible and prevalent issue. Current examples range from pop stars’ public use of the most derogatory word for African Americans; to police targeting of and violence against people of color; to experimental findings showing that racial minority groups are still less likely to be called for a job interview (Bertrand & Mullainathan, 2004; Mobasseri & Srivastava, 2015; Rooth, 2007) or receive promotions (Prewett-Livingston, Feild, Veres, & Lewis, 1996). Examples of the continuing prevalence of racial bias abound. While some forms of racial bias are audible, observable, or otherwise egregious, much of modern racial bias has “gone underground.” Today, most racial biases exist, are expressed, and impact social and organizational contexts in more subtle, insidious and less directly observable ways (Jost et al., 2009). These more subtle forms of racial bias are often called unconscious or implicit racial biases by science and practice.

Consciously we may want, and try, to hold egalitarian beliefs. However, despite the fact that many of us consciously will

ourselves to be egalitarian, the deeper recesses of our minds continue to be held hostage by the history of racism in our culture, the racist jokes we continue to hear, and the constant media portrayals of black Americans as more dangerous, dishonest, inactive, poor, and uneducated than their white American counterparts. These daily exposures—even if the stereotypes are untrue—leave a consequential residue on our minds that can be measured scientifically. These residues, or, implicit biases, are pervasive and costly, but malleable. As this research will demonstrate, these biases can also be contagious.

Although unconscious biases are subtle, they are automatically and sometimes uncontrollably expressed through negative nonverbal behaviors. For example, in both organizational and ordinary social situations, whites who have bias against blacks sit further away from, make less eye contact, smile less, and orient their bodies away from them (Dovidio, Kawakami, & Gaertner, 2002; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Fazio, Jackson, Dunton, & Williams, 1995; McConnell & Leibold, 2001; Word, Zanna, & Cooper, 1974). Sometimes—maybe even often—the person expressing racial bias has little conscious awareness that he or she is expressing that bias through behavior, or that he or she is biased in the first place.

What happens when we observe these subtle acts of racial bias? Are we mortified to see biased behavior, or does it subtly slip through the cracks of our conscious awareness? And, if we are unaware, can these subtly expressed biases influence us, without our

\* Corresponding author at: University of California, Berkeley, Faculty Building #573, Berkeley, CA 94720-1900, United States.

E-mail address: [dcarney@berkeley.edu](mailto:dcarney@berkeley.edu) (D.R. Carney).

will or consent? After all, we readily assimilate to emotions and behaviors around us—the human brain appears to be hard-wired to do so (Asch, 1955; Bandura, 1977; Cialdini, 1993; Sinclair, Lowery, Hardin, & Colangelo, 2005; Walden & Ogan, 1988; Zimbardo, 1971). Beginning with Becker (1931), there has been more than 80 years of research on the communicable transmission of emotions (Barsade, 2002; Hatfield, Cacioppo, & Rapson, 1994), beliefs (Aarts, Gollwitzer, & Hassin, 2004; Hatfield et al., 1994), morality (Gino, Ayal, & Ariely, 2009), and mental states (Hatfield et al., 1994) through nonverbal behavior. Are racial biases similarly contagious? This question is the focus of the current research.

### 1.1. *Is implicit racial bias contagious? A question of particular importance to the workplace*

For a culture that decidedly wants to be egalitarian and meritocratic, the existence of racial bias is broadly problematic. It has been convincingly argued that changes at a broad societal level must begin at the most local level—within our families, schools, and organizations (see Bobo, 2001). Indeed, subtle racial bias in our organizations is still pervasive and pernicious. Jost et al. (2009) highlighted 10 empirical articles that no manager should ignore, representing more than 35 years of research on implicit racial bias. The authors reviewed robust evidence for the observable impact of these biases on governmental policy and continued organizational problems with hiring, promotion, turnover, and job satisfaction. The empirical reports summarized by Jost et al. (2009) demonstrate a number of adverse organizational consequences likely due to implicit racial biases. For example, job applicants with “black names” (e.g., “Jamaal”) were 50% less likely to receive job interviews than applicants with “white names” (e.g., “Jordan”; Bertrand & Mullainathan, 2004). Similarly, Rooth (2007) found employment recruiters who favored their ingroup (native Swedes) over a stigmatized outgroup (arabs in Sweden) were significantly less likely to grant equally qualified outgroup members a job interview. Overall, ingroup members were three times more likely to receive callbacks than outgroup members. Rudman and Glick (2001) found that the most competent and confident female managerial applicants were also liked the least. Compared to whites, black managers and workers report lower overall job satisfaction (Greenhaus, Parasuraman, & Wormley, 1990). Black managers and workers report feeling less welcome in their organizations, less valued, and having less control; they also receive worse job performance evaluations, and—unless the decision-maker was black—are less likely to receive promotions (Prewett-Livingston et al., 1996).

What makes the prevalence of racial bias in the workplace even more problematic is that American adults spend a significant amount of their waking hours at work. Averaging 1700 h at work in 2012, the adult American worker was “at the office” for a greater amount of time than adults in several countries world-wide, including historically “workaholic” countries such as Germany and Korea (Feenstra, Inklaar, & Timmer, 2013). Given the demonstrated American work-ethic, one is highly likely to learn new things about the way of the world (and eradicate old lessons) while at work. Thus, a first step in mitigating broader racial bias must be to address it where adults spend the most time—at work.

Researchers over the last few decades have begun focusing on the firm to better understand the causes, mechanisms and deleterious individual- and group-level consequences of social biases generally, and racial bias specifically (e.g.: Bielby, 2000; Cortina, Magley, Williams, & Langhout, 2001; Lefkowitz, 1994; Newman & Lyon, 2009; Prewett-Livingston et al., 1996; Schneider, Hitlan, & Radhakrishnan, 2000; Ziegert & Hanges, 2005). With the high proliferation of diversity and inclusion trainings, policies and initiatives in recent years seeming to reduce the prevalence of overt

discriminatory behaviors, several scholars have theorized that racial bias in the workplace is now subtle—that is, manifested more through *less-obvious, everyday harassment* (Cortina, 2008; Deitch et al., 2003; Hays-Thomas & Bendick, 2013). In fact, Cortina, Lonsway, and Magley (2004) documented a significantly higher prevalence of *workplace incivility*, or subtly deviant, disrespectful behaviors, toward ethnic minority employees in two different organizational contexts. This vivid example of “incivility” is exactly what decades of research on subtle expressions of racial bias has been arguing exists.

### 1.2. *The nonverbal expression of modern (i.e., more subtle) racial bias*

Modern racial bias is expressed through observable nonverbal behaviors such as facial expressions, vocal attributes, and body movements. Sometimes the behaviors are very “micro” and just barely observable, and other times the behaviors are more “macro” and obvious. Beginning with seminal work by Word et al. (1974), which examined the nonverbal expression of bias toward blacks in job interviews, research has repeatedly shown that whites express racial bias toward blacks through interpersonal “coldness” including less eye contact, fewer smiles, more physical distance; and interpersonal threat including more frequent blinking (Dovidio et al., 2002; Fazio et al., 1995; McConnell & Leibold, 2001). And, from the literature on the meaning of these nonverbal cues, we know that more interpersonal distance, less smiling, less positivity, and more gaze aversion signal antipathy and avoidance (e.g., Andersen, 1985; Argyle, 1967).

The nonverbal expression of anti-black bias through negative nonverbal behavior does more than simply create an immediate uncomfortable social situation. Blacks on the receiving end of the behavioral expression of bias know they are being discriminated against (e.g., Richeson & Shelton, 2005), and this targeting undermines their ability to trust fellow co-workers, or believe they work in an office with integrity (Abbott, 2001). Moreover, chronic exposure to bias exerts a significant impact on negative workplace behavior (e.g., employee absenteeism; Avery, McKay, Wilson, & Tonidandel, 2007), as well as on health and well-being generally (Mays, Cochran, & Barnes, 2006; Paradies, 2006; Pascoe & Richman, 2009). But do nonverbal expression of bias affect another person, if he or she were merely watching the social interaction unfold?

### 1.3. *Dominant theories of social cognition support a bias contagion hypothesis*

Many theoretical positions and experimental results suggest that merely observing a nonverbal act of racial bias might shape one’s own racial bias. At the broadest level, dominant theories of automatic and controlled processes would suggest that passive observation of a subtle or ambiguous act of prejudice or discrimination should lead to uncorrected or uninhibited assimilative shifts in perception, cognition, and behavior (e.g., the QUAD Model by Conrey, Sherman, Gawronski, Hugenberg, & Groom, 2005; the APE Model by Gawronski & Bodenhausen, 2007; the MODE Model by Fazio, 1990). Equally as compelling, psychological principles such as associative learning suggest that one can learn to dislike novel categories of humans and objects by observing the pairing of particular individuals (e.g., black Americans) with evaluative attributes (e.g., “dislike”; Olson & Fazio, 2002; Rydell & McConnell, 2006), as might be widely seen in popular media.

#### 1.4. Dominant theories of contagion phenomena support a bias contagion hypothesis

Other psychological phenomena such as “social proof” suggest that humans have evolved to reference each other when making decisions about what is good and what is bad, as it is an efficient way to navigate a complex social world (Bandura, 1977; Walden & Ogan, 1988). Referencing others can have such powerful effects on us that others’ behavior can, without direct or aggressive lobbying, persuade us of the irrational (e.g., Asch, 1955), sell us things we do not need (e.g., Cialdini, 1993), and enlist us to act unreasonably, inappropriately, and much differently than we would otherwise (Zimbardo, 1971).

Recently Gino et al. (2009) demonstrated that observing others engage in unethical behaviors such as dishonesty and cheating can increase one’s own unethical behaviors. These authors suggested that such behaviors can be contagious and transmitted via social referencing. Additionally, research on the *social tuning* hypothesis suggests the same social referencing phenomenon. In social tuning, perceivers’ attitudes conform to the salient and explicitly stated attitudes of those around them (e.g., Sinclair et al., 2005). While this research does not point directly to the role of nonverbal behavior in transmitting these attitudes, it seems likely that they play a role. Finally, research shows that perceivers’ racial bias can shift after watching scripted television clips of actors pretending to have racial bias or engage in discriminatory acts (Weisbuch, Pauker, & Ambady, 2009)—this is the most direct evidence to date suggesting that naturally occurring racial bias may actually shape attitudes through observation.

Other compelling evidence for the existence of a racial bias contagion effect comes from research on general contagion processes. This evidence suggests that people automatically, effortlessly, and rapidly “catch” others’ feelings, thoughts, and goals (Aarts et al., 2004; Hatfield et al., 1994). Emotional contagion processes promote the rapid communication of risk and reward between people. Through this process, people are able to conform and respond appropriately to a richly complex social world without unnecessary expenditure of precious cognitive resource (Barsade, 2002; Hatfield et al., 1994). Emotional contagion processes appear to work rapidly by largely automatic, effortless, and unconscious processes in which an actor experiences a feeling and expresses it nonverbally; a perceiver sometimes mimics the expression, and through facial muscles feeding back to the brain or cognitive activation of related concepts, the perceiver “catches” the feeling-state of the actor (e.g., Hatfield et al., 1994). Recent evidence from neuroscience suggests the brain is readied to empathically process others’ experiences as one’s own, through a functional overlap when experiencing one’s own vs. observing others’ emotional states (referred to as the “mirror network”; e.g., Keysers & Gazzola, 2006; Wicker et al., 2003).

Following the lead of this general social contagion phenomenon observed in the lab, several researchers have likewise observed and theorized about mechanisms for emotional and social contagion phenomena in the workplace (e.g., Brett & Stroh, 2003; Burt, 1999; Williamson & Cable, 2003). Experimental and field studies within organizations demonstrate the significant looping transmission of positive mood states (such as hope) between managers and subordinates through observed emotional expression (Bono & Ilies, 2006). This transmission leads to higher psychological resiliency (Norman, Luthans, & Luthans, 2005), greater engagement at work (Hodges, 2010), and an overall self-sustaining atmosphere of positivity (Ilies, Morgeson, & Nahrgang, 2005). Following a merger of corporations—typically a psychologically taxing event in the workplace—Norman et al. (2005) theorize that “the level of hope of the leader is perceived and experienced, then followers form their own level of state hope.” Social contagion also works to promote

negative, anti-social, and otherwise illegal workplace practices as well—from minor theft and dishonesty by office workers (Ferguson, 2007) to on-the-job drug abuse by nurses (Dabney, 1995). Interestingly, however, a review of the evidence for top-down and bottom-up social contagion processes in an organizational hierarchy (Rajah, Song, & Arvey, 2011) notes an interesting “positivity bias”. The bulk of evidence so far has been from research on the proliferation of positive emotions in organizations. This is not meant to assume the social contagion of negative emotion as somehow less prevalent or potent in the workplace; but it does highlight the unique contribution of this research to the organizational literature. Here we seek to document equally the contagion of positive and negative racial attitudes in observers of social interactions.

Finally, research by Castelli and colleagues has shown that young children are likely to adopt the racial biases of their parents (Castelli, Carraro, Tomelleri, & Amari, 2007; Castelli, Zogmaister, & Tomelleri, 2009). In addition to explicit socialization of these attitudes, another mechanism may be through the expression of parents’ racial biases through subtle nonverbal behaviors. In fact, consistent with the current hypothesis, children have been shown to be particularly sensitive to adults’ nonverbal cues, and such cues have been shown to shape their social group preferences (Castelli, De Dea, & Nesdale, 2008).

#### 1.5. The current research: the nonverbal contagion of implicit racial bias

In the current research we hypothesized that viewing the natural nonverbal expression of anti-black (or pro-black) racial bias would nudge viewers’ own racial attitudes in the direction of what was observed. Specifically we tested the hypothesis that racial bias expressed through nonverbal behavior could be “caught” by observers. As the body of literatures on modern-day interracial interactions and social contagion suggests, we position subtle and naturally-occurring, yet markedly discernible, nonverbal behaviors toward blacks as the primary vehicle through which attitudes are absorbed by perceivers.

We predicted that “caught” social attitudes (both anti-black bias and pro-black bias) would manifest in perceivers’ (a) impression of the target of the observed bias, (b) utilization of racial stereotypes to understand another person’s ambiguous behavior, and (c) in their own degree of implicit racial bias. Finally, to rule out several alternative explanations, we predicted that (d) bias contagion effects result from observing the (positive or negative) nonverbal expressions directed toward the target of bias, and therefore not simply a result of the target’s potential (positive or negative) reactions.

In all experiments, participant perceivers watched a segment from pre-recorded videos of naturally-occurring, semi-structured social interactions between black and white people. White targets were either extremely high or extremely low on racial bias (i.e., either they had racial attitudes that were clearly anti-black or pro-black). Much like what you would expect when walking in on a discussion between colleagues in an office break room, our participant perceivers were not made privy to the specifics of the interactional context (e.g., the topic of conversation) beforehand, nor were they informed directly by the experimenter of the racial bias levels of either target they observed. Note, we predicted that any racial attitude—whether it be positive or negative—would be contagious.

#### 1.6. Method for collecting the stimuli common to all reported experiments

The target stimuli selected for use in this research were chosen from a larger set of video-recorded interactions collected

for the third author's dissertation, which examined the nonverbal display of racial bias (Carney, 2004). Target stimuli contained a white target person and a black target person interacting about a race-related topic. The broader set of stimuli also contained black–white and white–white interactions about a neutral control topic—these interactions were not the focus of the current research and were not used. Videos of different target individuals were selected for different experiments; and the selection process will be described in the context of each experiment's methods section. The broader set of stimuli video recordings—which includes all the video conditions and measures—is described next.

### 1.7. Video design and target participants

In the larger set of stimuli, sixty-two white (34 females and 28 males), English-speaking undergraduates participated in a 1-h experiment for partial course credit. Target participants interacted with one of five black (2 male, 3 female) and one of four white (2 female, 2 male) confederates. All target participants interacted with both a black and a white confederate (a within-participants variable). Only half of target participants were randomly assigned to the interracial discussion condition and the other half were in the control condition (a between-participants variable). Thus, the design was a 2 (Confederate race)  $\times$  2 (Interracial discussion) factorial design. The order in which target participants interacted with the black and white confederates was randomly determined.

### 1.8. Procedure

Target participants were told that they would be participating in two different experiments, that the focus of the first study was to understand college students' opinions and perceptions of current or popular movies, and that they would be interviewed by two different student interviewers (one black and one white) for 3 min each about a movie (student interviewers were confederates of the experimenter) while being videotaped.

The interracial discussion was manipulated by asking the participant to discuss a race-related aspect of a movie (interracial discussion) or to just discuss the movie (control). Interracial aspects of the movie were highlighted by the confederate asking the target participant: "Do you think this movie accurately depicts relations between Blacks and Whites? Why?" (interracial topic). Or, confederates asked target participants: "Do you think this movie is an accurate depiction of life? Why?" (control topic). Both the black and white confederate asked each participant a different version of the same question within condition. After the videotaped social interactions, target participants were ostensibly taken to a second experiment in which they completed measures of implicit and explicit racial bias, in counterbalanced order.

#### 1.8.1. The Implicit Association Test (IAT)

The Implicit Association Test (IAT; Greenwald, Nosek, & Banaji, 2003) is a commonly-used measure of implicit racial bias. A researcher interested in attitudes or preferences about different social groups can use the IAT to measure the strength of the mental association between a particular social group and an evaluative attribute, using a cognitive reaction time task that employs an interference paradigm. The IAT is used in many disciplines—primarily in social psychology, and increasingly in contexts relevant to organizational behavior (see Jost et al., 2009). The first paper outlining the conceptual underpinnings of the IAT can be found in Greenwald and Banaji (1995). The first empirical demonstration can be found in Greenwald, McGhee, and Schwartz (1998). A more

recent discussion of additional methodological constraints and procedures can be found in Greenwald et al. (2003).<sup>1</sup>

In the current research, the IAT was used to measure automatic, or implicitly activated, biases toward black Americans. A relatively more negative attitude toward blacks was defined as the extent to which black faces would have a stronger association (i.e., induce a faster reaction) with negative evaluative words, and white faces with positive evaluative words, relative to the reverse (referred to as the IAT *D*-score following Greenwald et al.). There was a range of IAT scores from  $-.66$  to  $1.21$  ( $M = .26$ ,  $SD = .36$ ), the distribution was normal, and the average score was statistically greater than zero (0 indicates no bias),  $t(61) = 5.67$ ,  $p < .001$ , effect size  $r = .59$ . This suggests that, overall, targets had a significant implicit anti-black bias. Target participants in the interracial discussion condition ( $M = .27$ ;  $SD = .32$ ) vs. neutral control ( $M = .24$ ;  $SD = .40$ ) did not significantly differ on the IAT,  $F(1,61) = .13$ ,  $p > .70$ , effect size  $r = .05$ .

#### 1.8.2. Attitudes Toward Blacks (ATB)

Brigham's (1993) ATB measures explicit, self-reported, negative attitudes toward blacks on 20 items anchored on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale. Cronbach's alpha for the current study was  $\alpha = .85$ . Across experimental conditions, there was a range of ATB scores from 1.00 to 3.90 ( $M = 2.19$ ,  $SD = .71$ ), the distribution was fairly normal, and the average score was statistically greater than 1 (the lowest possible score),  $t(61) = 13.21$ ,  $p < .001$ , effect size  $r = .86$ , suggesting, overall, that participant targets had at least some degree of explicit prejudice against blacks. Target participants in the interracial discussion condition ( $M = 2.25$ ;  $SD = .66$ ) vs. neutral control ( $M = 2.13$ ;  $SD = .77$ ) did not significantly differ on the ATB,  $F(1,61) = .43$ ,  $p > .50$ , effect size  $r = .08$ .

#### 1.8.3. Behavioral coding

Eight undergraduate students naïve to the experimental hypothesis were trained to code the presence of nonverbal and social behaviors. Training involved learning about the to-be-coded variable and what it looks like on different faces and in different contexts followed by passive viewing of many videotapes so that coders could develop a mental distribution of how much that behavior tends to be expressed in the to-be coded context. After training, inter-rater reliability was established by having two coders code the same nonverbal variable on a subset of the videotapes (between 2% and 8%). The full 1-min interaction was coded. After establishing inter-rater reliability, one of the two

<sup>1</sup> An analogy useful for understanding how the IAT works and what it measures was published in two encyclopedia entries and is adapted here (Carney & Banaji, 2009; Carney, Nosek, Greenwald, & Banaji, 2007). In plain language: "The IAT requires respondents to rapidly sort items from four different categories into groups. For example, imagine sorting a deck of playing cards—with red hearts, red diamonds, black clubs, and black spades—two times. For the first time, all the hearts and diamonds are sorted into one pile and all the clubs and spades are sorted into a second pile. This would be quite easy to do, because the suits are being sorted by a common perceptual feature—color. Now imagine doing the same task, but this time sorting clubs and hearts into one pile and diamonds and spades into the other. This would probably be harder and take longer to complete, because clubs and hearts are not as related to each other as are hearts and diamonds. The simple idea is that things that are associated by some feature are easier to put together than things that are not associated. Now translate the idea of sorting cards by their suit to sorting items by their social categories. A black–white race IAT, for example, would provide a measure of the relative strength with which black and white are associated with positive vs. negative concepts. Like sorting cards by their suit, a person with some degree of racial bias will have an easier time sorting black with negative and white with positive than sorting the reverse (black with positive and white with negative). The IAT measures the strength of association between category and attribute by using the time it takes to make the pairings, and the number of errors in classifying, while respondents are trying to respond rapidly. The strength of association between social categories and evaluative attributes, such as positive and negative words, provides a measure of implicit attitude."



coders was randomly selected to finish coding that single behavior on all targets. When relevant, additional details about specific behaviors, inter-rater reliabilities, and how they were coded will be provided in the appropriate section.

#### 1.8.4. Details about the process leading up to the interactions on video

Target participants were told that they were participating in a study of popular media and reactions to current events, in which their opinions and perceptions of current or popular movies were of interest. Target participants were first shown a list of 10 movies and asked to indicate which movies they had seen. The list contained five “target” and five “filler” movies. Target movies contained a fairly prominent black character (e.g., “The Matrix” in which Laurence Fishburne plays the prominent character “Morpheus”) were: *As Good as it Gets*, *Pulp Fiction*, *Shawshank Redemption*, *The Green Mile*, and *The Matrix*, and were pre-tested ( $N = 20$ ) to ensure that at least one of the five movies had close to a 100% chance of having been seen by the student population (a broader list of movies was generated and these 5 were selected through pilot-testing). Filler movies were chosen on the basis that they did not contain a prominent black character, but were tested as equally popular with the student population, included: *A Beautiful Mind*, *Meet the Parents*, *Memento*, *Moulin Rouge*, and *Scooby Doo*. All movies had recently come out (within 2 years of the experiment) and were also pilot-tested on how interesting and violent they were in order to ensure the two lists could be balanced on these dimensions. In all cases, at least one of the five target movies had been seen, and when more than one of the target movies had been seen, the to-be-discussed movie was randomly selected from the “seen” target movies.

Target participants were then told they would be interviewed by another student about one of the movies they had both seen. Target participants were brought to another room where in which the confederate was seated facing a video camera, and were asked to sit alongside the confederate. The experimenter attempted to introduce the two students to each other, but pretended to forget their names so the target and the confederate had to remind the experimenter of their names (this was done to subtly imply that the experimenter was equally a stranger to both parties). It was then explained that the confederate would be asking the target some questions about a movie they had both seen. The confederate was handed a sheet containing the to-be-asked questions, the first of which contained the interracial discussion question or the neutral control question. Until being handed the sheet of questions, both the experimenter and confederate were blind to the experimental condition. The target and confederate were instructed to begin only after the experimenter left the room.

#### 1.8.5. Black and white confederates

Confederates were five different black Americans (3 female and 2 male) and four different white Americans (2 female and 2 male), each trained to behave as naturally as possible while acting in an emotionally bland manner. This exact paradigm, as well as conceptually similar paradigms, has been used in previous research on interracial interaction (Dovidio et al., 1997, 2002; Fazio et al., 1995; McConnell & Leibold, 2001; Richeson & Shelton, 2005; Word et al., 1974). Carney (2004) employed the confederate paradigm that produced the videos used in this research. Confederates were trained to be seated facing the video camera when the participant walked in, and only after the participant sat down, the confederate turned approximately 30° toward the participant. To ensure that confederates behaved in a similar manner across experimental condition, two behaviors were coded and compared across experimental conditions that have been shown to be related to liking/positivity (Andersen, 1985; Dovidio et al., 2002): Confederates’ friendliness was reliably coded ( $r = .83$ ) on a –5

(*extremely unfriendly*) to +5 (*extremely friendly*) scale, as was confederates’ body orientation ( $r = .82$ ) on a scale from –5 (*turned away from participant*) to +5 (*facing participant*). For the black confederates, there was no difference in confederate friendliness between the interracial discussion ( $M = .36$ ;  $SD = .65$ ) and the neutral control discussion ( $M = .66$ ;  $SD = .78$ ),  $F(1,61) = 2.57$ ,  $p > .12$ , effect size  $r = .20$ . There was also no difference between interracial discussion ( $M = 2.15$ ;  $SD = 1.33$ ) and control discussion ( $M = 1.97$ ;  $SD = 1.12$ ) on body orientation,  $F(1,61) = .35$ ,  $p > .56$ , effect size  $r = .08$ .

A similar pattern was observed for the white confederates: there was no difference in confederate friendliness between the interracial discussion ( $M = .29$ ;  $SD = .33$ ) and the neutral control discussion ( $M = .34$ ;  $SD = .36$ ),  $F(1,61) = .43$ ,  $p > .52$ , effect size  $r = .08$ . There was also no significant difference between interracial discussion ( $M = 2.21$ ;  $SD = 1.11$ ) and control discussion ( $M = 2.07$ ;  $SD = 1.07$ ) on body orientation,  $F(1,61) = .27$ ,  $p > .61$ , effect size  $r = .07$ .

### 1.9. The nonverbal expression of racial bias

The interracial discussion featured a strong relation between anti-black racial bias and negative nonverbal behavior from white target participants ( $N = 31$  interactions; the neutral control condition was used as a comparison group in the original experiment, but here only the interactions featuring the interracial discussion are the focus). Findings were consistent with previous research (Dovidio et al., 2002; McConnell & Leibold, 2001) such that higher racial bias was generally correlated with more negative nonverbal behavior. Specifically, as white target participants’ bias increased (a composite of IAT and ATB scores), they were more likely to express negative verbal and nonverbal behaviors toward their black interaction partner, such as: speaking more abruptly ( $r = -.35$ ,  $p < .06$ ), and with more pauses and speech disturbances ( $r = .37$ ,  $p < .04$ ), smiling less ( $r = -.43$ ,  $p < .02$ ), making fewer affirmative head nods ( $r = -.42$ ,  $p < .02$ ), exhibiting more of a “distracted” demeanor ( $r = .34$ ,  $p < .07$ ), being less expressive overall ( $r = -.33$ ,  $p < .07$ ), behaving in a significantly more cold ( $r = .38$ ,  $p < .04$ ) and significantly less positive manner ( $r = -.47$ ,  $p < .01$ ).

## 2. Experiment 1

Our first test of the bias contagion hypothesis was to ask whether observing a black person receiving racially biased behavior would cause more or less liking of that black person. On the one hand, observing someone subtly treated poorly might increase liking—as sort of a compensatory reaction. On the other hand, the contagion hypothesis, drawing on social proof, social tuning and contagion phenomena, suggests that observing someone getting subtly treated poorly will signal to us that that person is not to be liked or treated well. Thus we predicted that observing a person express either (a) anti-black or (b) pro-black bias would nudge observers’ impressions of the black target to match that of the white target with whom he or she was interacting.

### 2.1. Method

#### 2.1.1. Participant perceivers

Ninety undergraduates (28 male, 62 female; ages 18–26) participated as a psychology course option. This sample was comprised primarily of those who self-identified as “White/European-American” (84%), with the remainder identifying as “Asian/Pacific Islander” (10%), “Latino/a” (2%), “Black/African American” (1%), and “other” (3%).

### 2.1.2. Selection of target stimuli for Experiment 1

Selection of the target stimuli for this initial test was from the interracial discussions. One target was randomly selected from the upper quartile of anti-black bias (the composite measure of IAT and ATB) and one target was randomly selected from the upper quartile of pro-black bias. Coincidentally, the black confederate in both interactions was the same individual, which served as an even stricter control for holding confederate attributes and behaviors constant. The first 1-min of the video was extracted, as it maximized both validity and efficiency as compared to longer (or shorter) lengths of time (see Carney, Colvin, & Hall, 2007).

### 2.1.3. Procedure

Participant perceivers were randomly assigned to watch either the anti- or pro-black bias video. Perceivers watched the video and were instructed to focus on and make ratings about only the white target. Participant perceivers then watched the video again—this time focusing on and making ratings about only the black target confederate. Perceivers made three “liking” ratings about each target: “How much did you like this person?”, “How much did you dislike this person?”, “Would you want to be friends with this person?”, and 6 adjective ratings: “kind”, “considerate”, “thoughtful”, “hostile”, “unfriendly”, and “dislikeable”, from 1 (*not at all*) to 7 (*very much*). Positive items were reverse-scored and averaged with negative items to create a negative impression index for each target (Cronbach’s  $\alpha = .90$  for black and  $\alpha = .85$  for white targets). Target participants were carefully debriefed at the end of the study and none indicated suspicion.

## 2.2. Results and discussion

We predicted that perceivers’ impression of the black target would be influenced by the white targets’ attitude toward blacks as expressed through their nonverbal behavior. Consistent with our prediction, impressions of the black target were significantly more negative among perceivers who watched the anti-black bias video ( $M = 3.92$ ,  $SD = 1.19$ ) than among those who watched the pro-black bias video ( $M = 3.36$ ,  $SD = 0.91$ ),  $t(88) = 2.52$ ,  $p = .01$ , effect size  $r = .26$ . We also predicted that perceivers would not differ in their liking for the white target because their behavior is only subtly negative, and directed at someone else—namely, the black confederate. Furthermore, the black confederates were trained to remain stoic, and did not respond particularly positively or negatively to how they were treated. Consistent with our prediction, white targets were rated equivalently by perceivers (white target in the anti-black video:  $M = 3.06$ ,  $SD = 0.87$  and pro-black video:  $M = 3.07$ ,  $SD = 0.93$ ),  $t(88) = 0.08$ ,  $p = .94$ , effect size  $r = .01$ .

An examination of the full model: a 2 (Condition: anti-black bias vs. pro-black bias)  $\times$  2 (Rating order: black target first vs. white target first)  $\times$  2 (Target rating: black target vs. white target) mixed ANOVA (the order of rating the black and white targets was randomized as a within-participants factor) showed the predicted interaction between observed bias condition and target rating,  $F(1,88) = 4.99$ ,  $p = .03$ . The pattern of results is displayed in Fig. 1. The effect of rating order was not significant,  $F < 1$ . In other words, participants appear to have observed subtle expressions of racial bias and then formed a more positive or negative impression of the black target consistent with those expressions.

Similar to prior research showing the contagious nature of emotional states, goals, and ethics, the results of Experiment 1 suggest that racial bias can be caught by merely passively observing a brief interaction. Note that some past research might suggest a contrast effect in which perceivers would feel sorry for the black target (in the anti-black bias condition) and overcompensate for their maltreatment by rating them with excessive positivity (e.g., Herr, Sherman, & Fazio, 1983). However, these contrast effects are

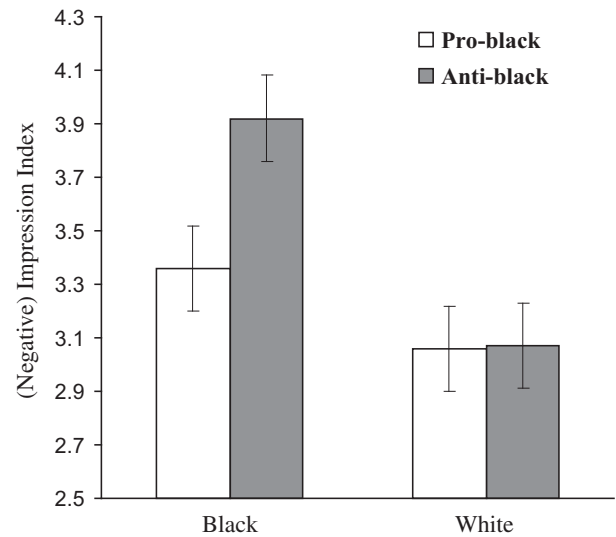


Fig. 1. Experiment 1: Ratings of black and white targets as a function of intergroup interaction condition (anti-black vs. pro-black;  $M$ s and  $SE$ s).

almost always observed when the percept is extreme, blatant, or explicit. Subtle nonverbal behaviors are by definition, subtle. Thus we expected, and found, an assimilation effect. Although limited in generalizability, the results suggest that something about the nonverbal behavior of the biased white target influenced perceivers’ impression of the target. This finding suggests that negative concepts were subtly activated in perceivers’ minds.

On one hand, the bias contagion hypothesis would suggest that only concepts related to anti-black bias (such as negative stereotypes about blacks) should have been activated. However, a viable—and perhaps simpler—alternative account might expect that seeing negative behavior simply activates generally negative concepts which are then attributed to the black target, perhaps because of pre-existing racial biases in the perceivers.

Experiment 2 was designed to test exactly which kinds of concepts are activated when observing nonverbal displays of racial bias. We employed a classic measure of concept activation capable of disambiguating whether negative concepts were activated overall (and then for some reason projected onto the black target but not the white target) or if the concepts activated would be more uniquely related to racial bias.

## 3. Experiment 2

In this experiment we investigated the mechanism likely at play in Experiment 1. Specifically, we used a stereotype activation paradigm able to disambiguate whether the effect observed in Experiment 1 was due to the nonverbal expression of racial bias causing a general increase in negative concept activation or whether the concepts activated were more uniquely related to anti-black bias (such as negative stereotypes about blacks). In Experiment 2, participant perceivers observed one of the intergroup interactions used in Experiment 1 and then, in an ostensibly related task, they were probed for concept activation (including concepts associated with African American stereotypes, as well as more general positive and negative concepts).

### 3.1. Method

#### 3.1.1. Participant perceivers

One hundred and four undergraduates (42 male, 62 female; ages 18–27) participated as a psychology course option. This

sample was comprised primarily of those who self-identified as “White/European-American” (85%), with the remainder identifying as “Latino/a” (5%), “Asian/Pacific Islander” (3%), “Black/African American” (3%), and “other” (4%).

### 3.1.2. Procedure

The session consisted of two brief, ostensibly unrelated studies. For the first, participant perceivers were randomly assigned to watch one of the intergroup interactions used in Experiment 1—only this time, the video was only viewed once and no ratings were made about the targets. After participant perceivers viewed one of the two intergroup interactions—either the anti-black or the pro-black interaction, they participated in the second task, which is a procedure commonly used to measure conceptual priming effects (Sruill & Wyer, 1979). Each participant read a fictitious third-person account of someone named Donald. Donald was described as engaging in ambiguous behaviors that could be seen as very assertive or very hostile (e.g., refusing a door-to-door salesman, pressuring a car mechanic to finish repairs). Following past research (for an extensive review of “Donald” experiments, see Mussweiler & Damisch, 2008), participant perceivers rated Donald on six hostility-related adjectives consistent with stereotypes about blacks (e.g., “hostile,” “mean;” Cronbach’s  $\alpha = .82$ ) and four additional adjectives which were also stereotype-relevant but not negative (e.g., “intelligent,” “dependable;” Cronbach’s  $\alpha = .71$ ). Negative and positive adjectives that were not stereotype-consistent were also assessed (e.g., “boring,” “interesting;” Cronbach’s  $\alpha = .76$ ). Donald was rated on each item from 1 (*not at all*) to 9 (*extremely*). Positive items were reverse-scored and averaged with negative items, such that higher values indicated more negative attributions of Donald after observing either the anti-black or pro-black intergroup interaction. Target participants were debriefed at the end of the study; none reported suspecting a connection between the first and second task.

### 3.2. Results and discussion

The critical prediction was that the nonverbal expression of racial bias by the white target would activate negative stereotypes in perceivers, leading to differential impressions of an ambiguous, unrelated person. Specifically, however, we expected only African-American stereotypes would be nudged by the two interaction conditions, not negative concepts in general. Such a finding would support the hypothesis that one of the mechanisms accounting for the contagion effect observed in Experiment 1 is the activation of negative concepts associated with blacks (but not other negative concepts) when observing a prejudiced white target in an interaction with a black person. Consistent with our theorizing and Experiment 1, participant perceivers who watched the anti-black interaction subsequently rated Donald higher in the negative African-American stereotype most relevant to the ambiguous description of Donald—hostility ( $M = 7.20$ ,  $SD = 1.06$ ) than those who watched the pro-black video ( $M = 6.73$ ,  $SD = 1.23$ ),  $t(102) = 2.11$ ,  $p = .04$ , effect size  $r = .20$ .

Ratings of Donald on the other stereotype-relevant dimensions (e.g., “intelligent,” “dependable”) also suggested that benign stereotype-relevant concepts were activated. Donald was attributed with more African-American stereotype-consistent attributes after observing the anti-black interaction ( $M = 6.22$ ,  $SD = 1.21$ ) vs. the pro-black interaction ( $M = 5.67$ ,  $SD = 1.57$ ),  $t(102) = 1.96$ ,  $p = .05$ , effect size  $r = .19$ .

In contrast, the intergroup interaction condition (anti- vs. pro-black bias) did not affect attributions about Donald when making judgments about ordinary negative attributes (e.g., “boring”) which were not stereotype-consistent. General negative ratings of Donald after observing the anti-black interaction ( $M = 5.84$ ,

$SD = 1.60$ ) were not significantly different from those ratings made after observing the pro-black interaction ( $M = 5.89$ ,  $SD = 1.36$ ),  $t(102) = -0.06$ ,  $p = .95$ , effect size  $r = .02$ .

Taking Experiments 1 and 2 together, preliminary support for the bias contagion hypothesis is found: watching a negatively biased white interact with a black person affects the mind of the observer such that he or she is more likely to have a negative impression of the black person (Experiment 1) and is likely to have African-American relevant stereotypic concepts activated in their minds—ready to be projected onto unsuspecting targets. Furthermore, Experiment 2 offered insight into one of the mechanisms through which the nonverbal expression of racial bias is exerting its influence—by activating negative African-American stereotypes of “hostile,” “mean,” “unintelligent,” and “undependable.” However, while consistent with the idea that racial bias is actually contagious, Experiments 1 and 2 did not directly test whether implicit racial bias, itself, will be “caught” by an observer. This was the goal of Experiment 3.

## 4. Experiment 3

Experiment 3 directly tested the hypothesis that racial bias (anti-black and pro-black) is contagious. We chose to examine implicit bias as the dependent measure of racial bias because implicit measures, like the IAT, tend to be very sensitive to shifts in the environment or recent learning history—stretching and contracting with relevant shifts in everyday experience (Blair, 2002; Dasgupta & Greenwald, 2001). Further, implicitly measured racial bias has more nonverbal and observable behavioral correlates than self-reported racial bias (Dovidio et al., 2002; Fazio et al., 1995; Greenwald, Poehlman, Uhlmann, & Banaji, 2009; McConnell & Leibold, 2001), and thus may be more sensitive to being shaped by observing shifts in racially biased nonverbal behavior. In contrast, self-reported, or explicit, racial bias is stable across measurement moments within the same person and generally does not change across experimental conditions—thus, we only measured participant perceivers’ implicit racial bias. In Experiment 3, we predicted that observing the natural nonverbal expression of racial bias from various white targets, high in either anti- or pro-black bias, would nudge perceivers’ implicit racial bias to be in line with that of the observed white targets’ bias. Further, it was important in Experiment 3 to test the generalizability of the effect observed in Experiments 1 and 2, and so in Experiment 3, we used eight target stimuli (instead of 2).

### 4.1. Method

#### 4.1.1. Participant perceivers

Fifty-nine undergraduates (24 male, 35 female; ages 18–23) participated as a psychology course option. This sample was comprised primarily of those who self-identified as “White/European-American” (80%), with the remainder identifying as “Asian/Pacific Islander” (7%), “Latino/a” (5%), “Black/African American” (5%), and “other” (3%).

#### 4.1.2. Selection of target stimuli for Experiment 3

Just as in Experiments 1 and 2, video-clips depicting an interaction between a white and a black person engaged in a discussion about race were selected from a larger set of videotaped interactions. There were eight videos selected in all. Half of the clips depicted white targets with moderate to strong anti-black bias, as measured by both their IAT and ATB scores, and the other half held moderate to strong pro-black bias. The four anti-black bias videos were randomly selected from the target individuals in the top quartile of anti-black bias and the four pro-black bias videos were



randomly selected from the target individuals in the top quartile of pro-black bias. We confirmed that white targets' anti-black IAT *D*-scores in the anti-black condition were moderately high to very high, ranging from .20 to .65 with a *Mean D* = .42 and those in the pro-black condition had IAT *D*-scores that were low to extremely low ranging from  $-.66$  to .01 with a *Mean D* =  $-.23$ ,  $t(7) = -3.44$ ,  $p < .02$ , effect size  $r = .79$ . Likewise, the white targets' anti-black ATB scores in the anti-black condition were moderately high to high ranging from 2.25 to 3.0 with a *Mean* = 2.60 and those in the pro-black condition had ATB scores that were low ranging from 1 to 2.10 with a *Mean* = 1.51,  $t(7) = 3.54$ ,  $p < .02$ , effect size  $r = .80$ .

Although trained to behave exactly the same way across interactions, it was important to empirically determine whether all the trained black confederates behaved in an equivalent manner across interactions and conditions used in Experiment 3. As was discussed in the "Methods Common to all Experiments" section, trained coders watched and rated the video recordings. To verify what the participant perceivers saw in Experiment 3, only the first minute of the video clips were coded (the same exact 1-min clips the participant perceivers observed). The black confederates' behavior was coded for on two variables which have been shown to be related to liking/positivity (Andersen, 1985; Dovidio et al., 2002): (a) overall non-verbal "friendliness" (0–9 scale; inter-rater  $r = .83$ ) and (b) body orientation ( $-3$  to  $+3$  scale; inter-rater  $r = .82$ ). Critically, the black confederates did not behave differently across conditions on non-verbal friendliness,  $t(7) = -0.59$ ,  $p = .57$ , effect size  $r = .22$ , or body orientation,  $t(7) = -0.58$ ,  $p = .58$ , effect size  $r = .21$ .

Also critical to the predicted contagion result is whether white targets in the anti-black interactions were, indeed, expressing more negative nonverbal behavior than those in the pro-black interactions. To test this, trained coders (different coders from the ones who viewed and rated the black targets) watched and rated white targets' nonverbal behavior. Coded behaviors were: *laughs*, *interactional enjoyment*, and *overall warmth* (average inter-rater reliability  $r = .99$ ; Dovidio et al., 2002; Fazio et al., 1995; McConnell & Leibold, 2001). Behaviors were combined to form a composite index of nonverbal positivity, which was then correlated with white targets' implicitly measured racial bias. Consistent with past research on nonverbal expressions of racial bias, white targets expressed their bias by acting significantly less positive toward their black interaction partners across video condition. A simple correlation demonstrated that as whites' bias increased (regardless of video condition), so did their negative non-verbal behavior,  $r(7) = -.72$ ,  $p = .03$ . Looking at the two conditions separately (anti- vs. pro-black), there was a statistically significant difference between the anti-black and pro-black conditions, such that white targets with anti-black attitudes expressed more negative behavior ( $M = -.38$ ) than targets with pro-black bias ( $M = .63$ ),  $t(7) = 2.57$ ,  $p = .04$ ; effect size  $r = .70$ .

#### 4.1.3. Procedure

The first part of this experiment followed a similar procedure as Experiment 1, in which participant perceivers watched the video only once and made ratings about the black target (in Experiment 3, however, there were eight—rather than two—possible videos available for random assignment to condition). Following the video observation, participant perceivers completed an evaluative race IAT using a two-button serial response box with high temporal resolution. Participant perceivers completed the same exact IAT as the one completed by the white targets observed in the intergroup social interactions.

#### 4.2. Results and discussion

Consistent with Experiment 1, viewing the subtle nonverbal behaviors expressed by a negatively biased white target led

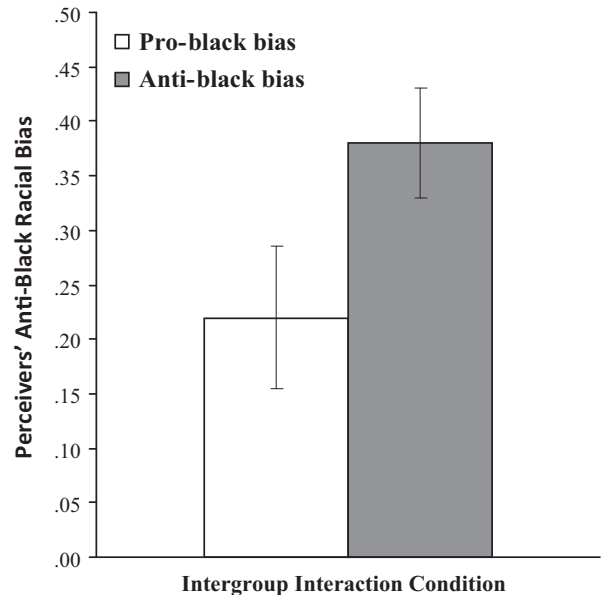


Fig. 2. Experiment 3: Participant perceivers' implicit racial bias as a function of intergroup interaction condition (anti-black vs. pro-black; *Ms* and *SEs*).

participant perceivers to form a more negative impression of that target's black interaction partner. Impressions of the black targets (Cronbach's  $\alpha = .87$ ) were significantly more negative among participant perceivers who watched the anti-black interactions ( $M = 3.27$ ,  $SD = 0.92$ ) than among those who watched the pro-black interactions videos ( $M = 2.77$ ,  $SD = 0.89$ ),  $t(57) = 2.03$ ,  $p < .05$ , effect size  $r = .26$ .

To directly test the hypothesis that racial bias is contagious, we examined the effect of target bias (anti-black vs. pro-black) on participant perceivers' IAT scores. As predicted, participants observing the anti-black bias interactions showed significantly stronger anti-black bias on the evaluative race IAT ( $M = .38$ ,  $SD = 0.27$ ) than did those observing the pro-black bias interactions ( $M = .22$ ,  $SD = 0.32$ ),  $t(57) = 2.01$ ,  $p < .05$ , effect size  $r = .26$ . Fig. 2 illustrates the effect.

While Experiments 1–3 suggest the nonverbal expression of racial bias is contagious, the possibility remains that observers' bias shifted because of the black targets' reactions to the whites' behavior, rather than the whites' expressions. Although the black confederates were trained to behave consistently in response to each target participant, and their coded behavior was not significantly different across conditions, these features do not entirely preclude the possibility that the black targets could have responded in subtly different ways to the white targets, which participant perceivers may have picked up on, thus accounting for the observed result. The primary purpose of Experiment 4 was to rule out this alternative explanation.

#### 5. Experiment 4

Experiment 4 sought to replicate the result observed in Experiment 3, while ruling out the alternative explanation that the black confederates' reactions to the white participants' behavior may account for the previously observed effects. Therefore, in Experiment 4 we replicated the basic paradigm used in Experiment 3 except that participant perceivers viewed *only* the white target in the videotaped interaction—the black confederates were digitally removed (from both audio and visual). Given that participant perceivers viewed only one of the two interaction partners, we were also able to manipulate the perceived context of the



interaction; although all the omitted interaction partners were black, participant perceivers in Experiment 4 were lead to believe the omitted interaction partner were either black or white. We had two hypotheses in Experiment 4: (1) We predicted that the nonverbal contagion of racial bias would emerge despite not seeing the black interaction partners' reactions—thereby ruling out an alternative explanation for the effects observed in Experiments 1–3. (2) We predicted—consistent with the specificity of effects observed in Experiment 2—that bias contagion effects would only emerge when participant perceivers thought the target was black.

## 5.1. Method

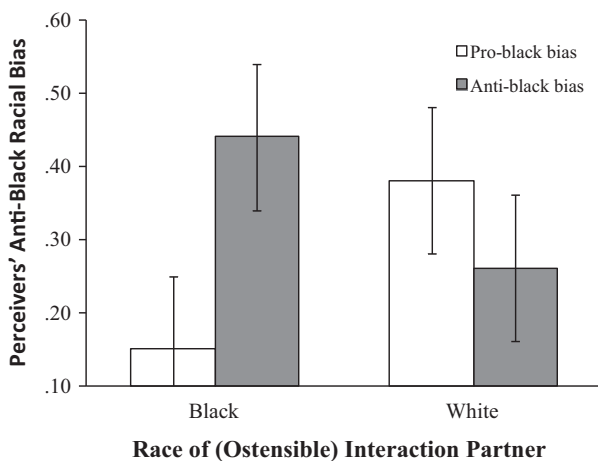
### 5.1.1. Participant perceivers

Seventy-one undergraduates (27 male, 44 female) were paid for their time. This sample self-identified as “White/European-American” (27%), “Asian/Pacific Islander” (49%), “Black/African American” (7%), “Latino/a” (4%) and “other” (13%).

### 5.1.2. Procedure

**5.1.2.1. Editing of the intergroup interaction videos.** Participant perceivers were randomly assigned to observe one of the eight anti-black bias or pro-black bias interactions used in Experiment 3. Different from all other previous experiments, in Experiment 4, all the black confederates' video content was removed (the videos were cropped to remove the black confederates from sight, and silent pauses were inserted in place of the black confederates' voices on the audio tracks). In other words, participant perceivers only saw and heard the white targets.

**5.1.2.2. Interaction context manipulation.** Prior to observing one of the videos, each participant was shown a still photograph of the white target's ostensible interaction partner. Half of the participant perceivers saw a picture of an ostensible white interaction partner; the other half saw a picture of the actual black interaction partner. Thus, the experimental design was a 2 (White target bias level: anti-black vs. pro-black)  $\times$  2 (Race of ostensible interaction partner: black vs. white) between-participants design. Participant perceivers watched the video once while being instructed to form a mental impression of the white target. The ostensible interaction partner was shown in a static photograph in the corner of the screen while the video was observed. Participant perceivers completed the same IAT procedure used in Experiment 3.



**Fig. 3.** Experiment 4: Participant perceivers' implicit racial bias as a function of intergroup interaction condition (anti-black vs. pro-black) when it was believed the target was black vs. white (*M*s and *SE*s).

## 5.2. Results and discussion

We hypothesized that even with the other partner occluded from the scene, perceivers would “catch” the racial bias expressed through the white targets' nonverbal behavior (a direct test of the hypothesis and a direct replication of Experiment 3), and that only when perceivers thought the behavior was directed at a black target would this effect emerge (consistent with Experiment 2). To test these predictions, a 2 (Target bias: anti-black vs. pro-black)  $\times$  2 (Race of ostensible interaction partner: black vs. white) ANOVA was conducted on participant perceivers' IAT scores. As predicted, there was a significant interaction between bias video condition and ostensible race of partner,  $F(1,70) = 4.09$ ,  $p < .05$ , effect size  $r = .23$ . This interaction pattern is displayed in Fig. 3. Replicating the basic result of Experiment 3, there was a significant difference between the anti-black and pro-black conditions when participant perceivers believed the white targets' interaction partner was black,  $t(35) = -2.03$ ,  $p < .05$ , effect size  $r = .32$ . However, when participant perceivers believed the interaction partner was white, there was no significant effect of condition,  $t(35) = .92$ ,  $p = .36$ , effect size  $r = .15$ .<sup>2</sup>

Experiment 4 replicated the basic result found in Experiment 3 and ruled out the alternative explanation that the effects observed in Experiments 1–3 were due to differences in confederates' behavior. Connected to this—and perhaps more important and interesting—these results suggest that observing pro-black bias expressed in an intergroup social interaction significantly reduces racial bias (below levels expected in the general population). Experiment 4 also suggests that the bias contagion effect is constrained, such that to catch racial bias a perceiver must either see an intergroup interaction, or at least be aware that negative social behavior is directed toward a black person.

## 6. General discussion

The results of this research suggest that racial bias can be toxic—not just for the owner and target of the bias, but for passive observers. It may indeed be the case that during everyday interactions—at work, at home, or even at the local bar's happy hour—merely observing a biased person express subtle negativity toward a black person may be enough to shift our own racial bias. Even despite our best intentions, others' biases may be able to creep into our minds and infect our behaviors.

That simply viewing another person engaged in a discriminatory act can, without your awareness or consent, shape your own racial bias is problematic. While many organizations are clearly intolerant of racial bias and discrimination, even the subtlest amount of racial bias is likely polluting the very organizational and societal cultures that explicitly and proactively act to eradicate it. The flip-side of these results, however, is that individuals who possess and act with genuine egalitarianism and pro-black regard can actually help to shape social structure to be more equal. Authentic pro-black regard among employees in an office, for example, is therefore more than simply a “good thing to have” or the “right way to be.” It is in fact a communicable attribute; through which its mere existence has the ability to nudge others,

<sup>2</sup> In order to further rule out any possible influence from the black confederate (in those paradigms where she/he was able to be viewed), an additional experiment was run where participants viewed an interaction between one of the biased white targets from Experiment 3 and a white (not black) confederate. Consistent with expectations, there was no difference between perceivers' impressions of the white confederates seen interacting with the anti-black targets ( $M = 3.63$ ,  $SD = 0.76$ ) vs. the pro-black targets ( $M = 3.58$ ,  $SD = 1.10$ ),  $t(56) = 0.18$ ,  $p = .86$ , effect size  $r = .02$ . Perceivers' implicit bias on the evaluative race IAT also did not differ between those viewing the anti-black interactions ( $M = .38$ ,  $SD = 0.33$ ) vs. the pro-black interactions ( $M = .41$ ,  $SD = 0.37$ ),  $t(57) = 0.37$ ,  $p = .72$ , effect size  $r = .05$ .

and in turn, the larger organizational culture, toward egalitarianism.

The results observed here should not be entirely surprising given what we know about the architecture of the human mind and its automatic tendency to process others' thoughts, feelings, and actions as its own (Wicker et al., 2003). These results are also consistent with research on children and their readiness to pay disproportionate attention to adults' nonverbal expressions of all kinds of things, including expressions toward members of different social groups (e.g., Castelli et al., 2008). The current results are also very close conceptually to research on contagion effects in organizations and elsewhere (Barsade, 2002; Brett & Stroh, 2003; Burt, 1999; Hatfield et al., 1994; Williamson & Cable, 2003). Finally, the current results are in line with evidence that perceivers' racial bias can shift after watching television clips of scripted and staged expressions of discrimination (Weisbuch et al., 2009).

We believe this result has implications for the extent individual employees, employers, and organizations consider and respond to racially biased behavior; however seemingly innocuous (e.g., a racist joke in the break room), these actions should not go without individual sanction. Likewise, perhaps individual-level egalitarian practices, particularly when observed by others, should be more vigilantly rewarded.

Similarly, the results of very recent research investigating the downstream consequences for social tuning suggest that feedback in affirmation of one's desired attitudes at the individual level can mitigate one's tendency to "tune towards" the attitudes of similar others (Kenrick & Sinclair, 2014). This suggests another potential set of solutions implicating a higher level of mindfulness toward egalitarianism should be implemented by employers. Actions such as simply looking for explicitly egalitarian people to hold places of influence (e.g., policy and initiative-makers, managers and other leadership), publically endorsing and affirming company members who demonstrate pro-diversity practices, and providing self-regulatory training for management, can go a long way in creating an atmosphere that breeds egalitarianism. Griffith and Hebl (2002) provide compelling evidence for the power of larger organizational actors to influence the climate of diversity within a company setting. In their research, employees in companies with explicit egalitarian policies toward gay and lesbian lifestyles (i.e., those with endorsed activities, formal initiatives, and diversity trainings) reported less job discrimination and more favorable treatment by coworkers and supervisors.

Another action to consider—while perhaps a little Orwellian—is to adjust recruitment efforts to find more egalitarian employees in the first place. Diversity initiatives already often have the goal of selecting minority group members that will promote a positive representation of their group (Newman & Lyon, 2009). To that same end, it may also be valuable to select *majority* group members that can promote a positive representation of minority groups. Those who are low in prejudice are less likely to make racially biased nonverbal expressions—and thus bias contagion may be easier to contain or mitigate.

### 6.1. Future directions

An interesting possibility that was not addressed in the present research is the effect of bias contagion on perceivers who are socially or otherwise instrumentally connected to the person expressing the bias, such as is the case between close friends or family members (cf. Sinclair et al., 2005) or individuals brought together over time through a work group (e.g., Barsade, 2002). Prior research suggests too that work groups in particular can apply greater influence on individual behavior than more formal, widespread organizational policy (e.g.: Dabney, 1995). The effect of attitude contagion for racial bias has only been documented so

far in our lab studies here. It is critical, therefore, to examine the transmission of anti- and pro-black biases "in organizational vivo." Further research on the effects demonstrated here should document the precise magnitude of change in perceivers' attitudes pre- and post- exposure to the biased target. Another important question to answer is whether or not this pattern of results would replicate if the perceivers were themselves a member of the target minority group.

Importantly, our results highlight how the hiring of individuals who possess either anti- or pro-black biases could qualitatively shift the culture of an entire organization—one person at a time (e.g., Milgram, Bickman, & Berkowitz, 1969; O'Reilly, Chatman, & Calwell, 1991). In an effort to further quantify the impact of the individual, future research could experimentally manipulate the number of negatively biased individuals—adding one at a time—in a workgroup or team to identify the tipping point before the local culture shifts. A similar experiment could be conducted on social networks, examining the extent to which bias diffuses through a network (depending, perhaps, on the number of biased individuals in the network) and implications for the quality of black networkers' experiences and ability to acquire contacts.

### 6.2. Limitations

The present findings are limited in that we focused specifically on racial bias. We chose this focus because we believe it provides insight into an important social issue. However, based on our theoretical position, the present findings are likely to be more broadly applicable, and may have implications for additional situations in which an attitude is expressed behaviorally. Further research could examine bias contagion effects within domains beyond racial attitudes, such as observing other peoples' reactions to a specific person (e.g., a job candidate, a new CEO, or a political candidate) or toward specific consumer items.

Furthermore, the current research only examined individual-level processes, in a phenomena more broadly observed as co-occurring between individuals and collectives (e.g., organizations; cf. Bovasso, 1996; Rajah et al., 2011; Redl, 1949). Our approach was most parsimonious to clearly documenting the existence and nature of an attitude contagion effect; however, it does limit our ability to deduce a map of any individual's larger social landscape, and from it, infer the relative impact of specific interventions. Bovasso (1996) likewise noted the need for more field observations, as they can "illustrate the manner in which unofficial social networks can circumvent interventions aimed at changing personal attributes."

## 7. Conclusion

The bias contagion result presented here may provide an exciting new direction for research in a number of domains involving organizational culture, diffusion of racial attitudes through social networks, and other social judgment and decision making contexts. Theoretically, the results open up the door for investigation into additional mindsets which may be communicable. These results, along with those by Gino et al. (2009) and Aarts et al. (2004), remind us that direct nonverbal mimicry is not necessary to "catch" others' mental states or intentions. Many other processes, involving mirror network systems in the brain, basic social referencing, and simple concept activation also exert mechanistic influence on the mind.

The broader implications of the research presented here include the realization that hiring, befriending, or even just observing biased individuals is a choice we make—a choice that can have insidious and unintended consequences for more than just

individual targets of bias. Practically speaking, once we are able to harvest information from research investigating the influence of biased individuals on groups, teams, or social networks, we can then move to a more prescriptive stage in which we may be able to determine just how many “bad apples” a particular group, team, firm, or industry can handle before the culture takes a turn for the worse.

## Acknowledgements

We would like to thank Daniel Ames, Dave DeSteno, Judy Hall, Rich Gramzow, Malia Mason, Nicole Shelton, members of the SNOB lab, and colleagues from the 2009 Duck Conference on Social Cognition for valuable advice about this manuscript. Thanks also go to Brian Lucas and Joseph Ferrero for assistance with this research and with manuscript preparation. Thank you to APA for a dissertation research grant (to DRC).

## References

- Aarts, H., Gollwitzer, P. M., & Hassin, R. R. (2004). Goal contagion: Perceiving is for pursuing. *Journal of Personality and Social Psychology*, 87, 23–37.
- Abbott, W. A. (2001). *Negative nonverbal communication: Retaliation, sabotage, theft, and violence in the workplace*. Unpublished doctoral dissertation, Pennsylvania State University, State College, PA.
- Andersen, P. A. (1985). Nonverbal immediacy in interpersonal communication. In A. W. Siegman & S. Feldstein (Eds.), *Multichannel integration of nonverbal behavior* (pp. 1–36). Hillsdale, NJ: Erlbaum.
- Argyle, M. (1967). *The psychology of interpersonal behaviour*. Harmondsworth: Penguin.
- Asch, S. E. (1955). Opinions and social pressure. *Scientific American*, 193, 31–35.
- Avery, D. R., McKay, P. F., Wilson, D. C., & Tonidandel, S. (2007). Unequal attendance: The relationships between race, organizational diversity cues, and absenteeism. *Personnel Psychology*, 60, 875–902.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Barsade, S. G. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly*, 47, 644–675.
- Becker, H. (1931). Some forms of sympathy: A phenomenological analysis. *The Journal of Abnormal and Social Psychology*, 26, 58.
- Bertrand, M., & Mullainathan, S. (2004). Are Emily and Brendan more employable than Latoya and Tyrone? Evidence on racial discrimination in the labor market from a large randomized experiment. *American Economic Review*, 94, 991–1013.
- Bielby, W. T. (2000). Minimizing workplace gender and racial bias. *Contemporary Sociology*, 120–129.
- Blair, I. V. (2002). The malleability of automatic stereotypes and prejudice. *Personality and Social Psychology Review*, 6, 242–261.
- Bobo, L. (2001). Racial attitudes and relations at the close of the twentieth century. In N. J. Smelser, W. J. Wilson, & F. Mitchell (Eds.), *America becoming: Racial trends and their consequences*. DC: National Academy Press.
- Bono, J. E., & Ilies, R. (2006). Charisma, positive emotions and mood contagion. *The Leadership Quarterly*, 17, 317–334.
- Bovasso, G. (1996). A network analysis of social contagion processes in an organizational intervention. *Human Relations*, 49, 1419–1435.
- Brett, J. M., & Stroh, L. K. (2003). Working 61 plus hours a week: Why do managers do it? *Journal of Applied Psychology*, 88, 67.
- Brigham, J. C. (1993). College students' racial attitudes. *Journal of Applied Social Psychology*, 23, 1933–1967.
- Burt, R. S. (1999). The social capital of opinion leaders. *The Annals of the American Academy of Political and Social Science*, 566, 37–54.
- Carney, D. R. (2004). *The nonverbal expression and accurate detection of implicit and explicit racial bias*. Unpublished Doctoral Dissertation, Northeastern University.
- Carney, D. R., & Banaji, M. R. (2009). The implicit association test (IAT). In D. Matsumoto (Ed.), *The Cambridge dictionary of psychology*. NY: Cambridge.
- Carney, D. R., Colvin, C. R., & Hall, J. A. (2007). A thin slice perspective on the accuracy of first impressions. *Journal of Research in Personality*, 41, 1054–1072.
- Carney, D. R., Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2007). The implicit association test (IAT). In R. F. Baumeister & K. D. Vohs (Eds.), *Encyclopedia of social psychology* (pp. 463–464). Thousand Oaks, CA: Sage.
- Castelli, L., Carraro, L., Tomelleri, T., & Amari, A. (2007). White children's alignment to the perceived racial attitudes of the parents: Closer to the mother than the father. *British Journal of Developmental Psychology*, 25, 353–357.
- Castelli, L., De Dea, C., & Nesdale, D. (2008). Learning social attitudes: Children's sensitivity to the verbal and nonverbal behaviors of adult models during interracial interactions. *Personality and Social Psychology Bulletin*, 34, 223–237.
- Castelli, L., Zogmaister, C., & Tomelleri, S. (2009). The transmission of racial attitudes within the family. *Developmental Psychology*, 45, 586–591.
- Cialdini, R. (1993). *Influence: Science and practice* (3rd ed.). New York: Harper-Collins.
- Conrey, F. R., Sherman, J. W., Gawronski, B., Hugenberg, K., & Groom, C. J. (2005). Separating multiple processes in implicit social cognition: The Quad Model of implicit task performance. *Journal of Personality and Social Psychology*, 89, 469–487.
- Cortina, L. M. (2008). Unseen injustice: Incivility as modern discrimination in organizations. *Academy of Management Review*, 33, 55–75.
- Cortina, L. M., Lonsway, K. A., & Magley, V. J. (2004, April). Reconceptualizing workplace incivility through the lenses of gender and race. In *Annual meeting of the society for industrial-organizational psychology*, Chicago.
- Cortina, L. M., Magley, V. J., Williams, J. H., & Langhout, R. D. (2001). Incivility in the workplace: Incidence and impact. *Journal of Occupational Health Psychology*, 6, 64–80.
- Dabney, D. (1995). Workplace deviance among nurses: The influence of work group norms on drug diversion and/or use. *Journal of Nursing Administration*, 25, 48–55.
- 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.
- Deitch, E. A., Barsky, A., Butz, R. M., Chan, S., Brief, A. P., & Bradley, J. C. (2003). Subtle yet significant: The existence and impact of everyday racial discrimination in the workplace. *Human Relations*, 56, 1299–1324.
- Dovidio, J. F., Kawakami, K., & Gaertner, S. L. (2002). Implicit and explicit prejudice and interracial interaction. *Journal of Personality and Social Psychology*, 82, 62–68.
- Dovidio, J. F., Kawakami, K., Johnson, C., Johnson, B., & Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology*, 33, 510–540.
- Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75–109). New York: Academic Press.
- Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology*, 69, 1013–1027.
- Feenstra, R. C., Inklaar, R., & Timmer, M. (2013). *The next generation of the Penn world table* (No. w19255). National Bureau of Economic Research.
- Ferguson, M. J. (2007). *From bad to worse: A social contagion model of organizational misbehavior*. Unpublished doctoral dissertation, Vanderbilt University, Nashville, TN.
- Gawronski, B., & Bodenhausen, G. V. (2007). Unraveling the process underlying evaluation: Attitudes from the perspective of the APE model. *Social Cognition*, 25, 687–717.
- Gino, F., Ayal, S., & Ariely, D. (2009). Contagion and differentiation in unethical behavior. *Psychological Science*, 20, 393–398.
- Greenhaus, J. H., Parasuraman, S., & Wormley, W. M. (1990). Effects of race on organizational experiences, job performance evaluations, and career outcomes. *Academy of Management Journal*, 33, 64–85.
- Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, 102, 4–27.
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit social cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, 74, 1464–1480.
- 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.
- Greenwald, A. G., Poehlman, T. A., Uhlmann, E., & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology*, 97, 17–41.
- Griffith, K. H., & Hebl, M. R. (2002). The disclosure dilemma for gay men and lesbians: “Coming out” at work. *Journal of Applied Psychology*, 87, 1191.
- Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1994). *Emotional contagion*. New York: Cambridge.
- Hays-Thomas, R., & Bendick, M. (2013). Professionalizing diversity and inclusion practice: Should voluntary standards be the chicken or the egg? *Industrial and Organizational Psychology*, 6, 193–205.
- Herr, P. M., Sherman, S. J., & Fazio, R. H. (1983). On the consequences of priming: Assimilation and contrast effects. *Journal of Experimental Social Psychology*, 19, 323–340.
- Hodges, T. D. (2010). *An experimental study of the impact of psychological capital on performance, engagement, and the contagion effect*. Unpublished doctoral dissertation, University of Nebraska, Lincoln, NE.
- Ilies, R., Morgeson, F. P., & Nahrgang, J. D. (2005). Authentic leadership and eudaemonic well-being: Understanding leader–follower outcomes. *The Leadership Quarterly*, 16, 373–394.
- Jost, J. T., Rudman, L. A., Blair, I. V., Carney, D. R., Dasgupta, N., Glaser, J., et al. (2009). The existence of implicit bias is beyond scientific doubt: A refutation of ideological and methodological objections and executive summary of ten studies that no manager should ignore. *Research in Organizational Behavior*, 29, 39–69.
- Kenrick, A. C., & Sinclair, S. (2014, February). Downstream consequences of social tuning. Paper presented at the meeting of the society for personality and social psychology, Austin, TX.
- Keysers, C., & Gazzola, V. (2006). Towards a unifying neural theory of social cognition. *Progress in Brain Research*, 12, 379–401.
- Lefkowitz, J. (1994). Race as a factor in job placement: Serendipitous findings of “ethnic drift”. *Personnel Psychology*, 47, 497–513.
- Mays, V. M., Cochran, S. D., & Barnes, N. W. (2006). Race, Race-Based Discrimination, and Health Outcomes Among African Americans. *Annual Review of Psychology*, 58, 201–225.



- 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.
- Milgram, S., Bickman, L., & Berkowitz, L. (1969). Note on the drawing power of crowds of different size. *Journal of Personality and Social Psychology, 13*(2), 79.
- Mobasser, S., & Srivastava, S. (2015). *Fear or familiarity: Employers' perceptions of a criminal record*. Working paper.
- Mussweiler, T., & Damisch, L. (2008). Going back to Donald: How comparisons shape judgmental priming effects. *Journal of Personality and Social Psychology, 95*, 1295–1315.
- Newman, D. A., & Lyon, J. S. (2009). Recruitment efforts to reduce adverse impact: Targeted recruiting for personality, cognitive ability, and diversity. *Journal of Applied Psychology, 94*, 298–317.
- Norman, S., Luthans, B., & Luthans, K. (2005). The proposed contagion effect of hopeful leaders on the resiliency of employees and organizations. *Journal of Leadership & Organizational Studies, 12*, 55–64.
- Olson, M. A., & Fazio, R. H. (2002). Implicit acquisition and manifestation of classically conditioned attitudes. *Social Cognition, 20*, 89–104.
- O'Reilly, C., Chatman, J., & Calwell, D. F. (1991). People and organizational culture: A profile comparison approach to assessing person organizational fit. *The Academy of Management Journal, 34*, 487–516.
- Pascoe, E. A., & Richman, L. S. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin, 135*, 531–554.
- Prewett-Livingston, A. J., Feild, H. S., Veres, J. G., III, & Lewis, P. M. (1996). Effects of race on interview ratings in a situational panel interview. *Journal of Applied Psychology, 81*, 178–186.
- Rajah, R., Song, Z., & Arvey, R. D. (2011). Emotionality and leadership: Taking stock of the past decade of research. *The Leadership Quarterly, 22*, 1107–1119.
- Redl, F. (1949). The phenomenon of contagion and "shock effect" in group therapy. In K. R. Eissler (Ed.), *Searchlights on delinquency; new psychoanalytic studies* (pp. 315–328). Oxford, England: International Universities Press.
- Richeson, J. A., & Shelton, J. N. (2005). Thin slices of racial bias. *Journal of Nonverbal Behavior, 29*, 75–86.
- Rooth, D. O. (2007). *Implicit discrimination in hiring: Real world evidence*. Discussion paper series No. 05/07. Centre for Research and Analysis Migration, University College of London. <<http://eprints.ucl.ac.uk/14279/1/14279.pdf>>. Retrieved 24.06.14.
- Rudman, L. A., & Glick, P. (2001). Prescriptive gender stereotypes and backlash toward agentic women. *Journal of Social Issues, 57*, 743–762.
- Rydell, R. J., & McConnell, A. R. (2006). Understanding implicit and explicit attitude change: A systems of reasoning analysis. *Journal of Personality and Social Psychology, 91*, 955–1008.
- Schneider, K. T., Hitlan, R. T., & Radhakrishnan, P. (2000). An examination of the nature and correlates of ethnic harassment: Experiences in multiple contexts. *Journal of Applied Psychology, 85*, 3–12.
- Sinclair, S., Lowery, B. S., Hardin, C. D., & Colangelo, A. (2005). Social tuning of automatic racial attitudes: The role of affiliative motivation. *Journal of Personality and Social Psychology, 89*, 583–592.
- Srull, T. K., & Wyer, R. S. Jr., (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology, 37*, 1660–1672.
- Walden, T. A., & Ogan, T. A. (1988). The development of social referencing. *Child Development, 59*, 1230–1240.
- Weisbuch, M., Pauker, K., & Ambady, N. (2009). The subtle transmission of race bias via televised nonverbal behavior. *Science, 326*, 1711. <http://dx.doi.org/10.1126/science.1178358>.
- Wicker, B., Keysers, C., Plailly, J., Royet, J. P., Gallese, V., & Rizzolatti, G. (2003). Both of us disgusted in my insula: The common neural basis of seeing and feeling disgust. *Neuron, 40*, 655–664.
- Williamson, I. O., & Cable, D. M. (2003). Organizational hiring patterns, interfirm network ties, and interorganizational imitation. *Academy of Management Journal, 46*, 349–358.
- Word, C. O., Zanna, M. P., & Cooper, J. (1974). The nonverbal mediation of self-fulfilling prophecies in interracial interaction. *Journal of Experimental Social Psychology, 10*, 109–120.
- Ziegert, J. C., & Hanges, P. J. (2005). Employment discrimination: The role of implicit attitudes, motivation, and a climate for racial bias. *Journal of Applied Psychology, 90*, 553–562.
- Zimbardo, P. G. (1971). *The power and pathology of imprisonment*. Congressional record (Serial No. 15, 1971–10–25). Hearings before Subcommittee No. 3, of the Committee on the Judiciary, House of Representatives, Ninety-Second Congress, First Session on Corrections, Part II, Prisons, Prison Reform and Prisoner's Rights: California. Washington, DC: U.S. Government Printing Office.