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Measuring Nonverbal Bias Through Body Language Responses to Stereotypes

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Abstract Although research has demonstrated the manifestation of racial bias by measuring overt attitudes and behaviors, there has been little examination of the subtle nonverbal cues that may also characterize such bias. The present study investigates implicit racial bias by analyzing nonverbal behaviors of individuals shown video of a criminal suspect whose ethnic identity is manipulated to be Black or White. Participants appeared significantly more uncertain about what they were saying when describing the White suspect than when describing the Black suspect. Participants were also more likely to display "open" posture when describing the Black suspect but "closed" posture (e.g., crossed arms) when describing the White suspect. The results indicate that biases in attitudes and beliefs might be reliably detected and measured through body language. The findings are discussed in terms of how nonverbal behaviors may reveal more subtle forms of prejudice and miscommunication. Contextual correlations between specific nonverbal behaviors and affective states are also discussed.

Keywords Nonverbal behavior · Implicit attitudes · Gender differences · Stereotypes · Body language

Introduction

Although the United States has a history marked by prejudice and discrimination, people in our society commonly speak out against racism and deny having a racial preference when asked directly (Dovidio and Gaertner 2000; von Hippel et al. 1997). The belief that we live in an era completely free of such group biases is appealing, but theorists such as Allport (1954) have long argued that prejudices, stereotypes and ingroup favoritism are resistant to

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change and likely to persist across generations. Therefore, it is plausible these group biases still exist on an implicit level that is not necessarily indicated in the average person's self-report. Because the open expression of racial and/or ethnic bias has gradually become taboo, the explicit "old-fashioned" expressions of bias have declined; however, people still engage in the more subtle methods of discrimination (see Dovidio and Gaertner 2000).

Several research methods have been employed to examine implicit racial biases (e.g., Greenwald et al. 1998), but the present study focuses on nonverbal behavior as a medium for such biases. Psychology research has provided plenty of evidence regarding nonverbal racial bias, but these studies usually assess nonverbal racial bias through ratings of overt behaviors such as racial profiling (e.g., Schreer et al. 2009; see Crosby et al. 1980 for a review of earlier studies). Previous studies also tend to measure a specific behavior or category of behaviors (e.g., Parsons and Liden 1984), relationships between affects, cognitions, and behaviors (e.g., Dovidio et al. 1997), or ratings based on participants' overall nonverbal behavior (e.g., Bargh et al. 1996; Dovidio et al. 2002; Weisbuch and Ambady 2009; Weisbuch et al. 2009). Implicit racial bias appears to be more strongly related to less controllable behaviors (Dovidio et al. 2002), but this distinction is often made between verbal and nonverbal behaviors as opposed to the present study's investigation of both intentional and unintentional nonverbal behaviors.

In accordance with the goals of this special issue of *Journal of Nonverbal Behavior*, the present study is designed to illustrate an innovative approach to understanding contemporary issues of nonverbal behavior. Specifically, this study aims to build on previous research by assessing implicit racial bias through affective ratings based on participants' overall body language as well as by employing a taxonomy of nonverbal behavioral cues that have an established theoretical basis for their expression. Previous studies (e.g., Gross and Levenson 1993) have used taxonomies of nonverbal behavior to assess general psychological constructs; however, the present study focuses on subtle behaviors that reflect implicit attitudes in an applied context of prejudice and stereotyping. The study also provides a contextual but thorough exploration of gender differences in nonverbal behavior. In doing so, this study provides a contemporary approach to examining preferential treatment on the basis of race. This approach potentially demonstrates the degree to which nonverbal behavior can be related to implicit attitudes by measuring behavioral differences via annotation software and comparing this data to more subjective ratings of affect.

The systematic variation in nonverbal behaviors which occurs as a function of the target's social category is defined as *nonverbal bias* (Weisbuch and Ambady 2009). Particularly, *nonverbal race bias* refers to the expression or communication of racial bias through nonverbal behavior (see Weisbuch et al. 2009). It can also be understood as the tendency for a person's nonverbal behaviors to manifest differently when the situation allows for preferential expressions of race or ethnicity. Weisbuch et al. (2009) found that participants were able to reliably detect nonverbal bias, but what are the particular nonverbal cues that people perceive as indicators of bias? Although more overt behaviors and acts of discrimination may readily come to mind, unconscious and subtle displays of racial bias are also considered primary sources of interracial animosity (e.g., racial microaggressions; see Sue et al. 2007 for review).

Researchers as early as Darwin (1872/1965) have suggested nonverbal communication exists as a mechanism for the implicit transfer of information. Likewise, contemporary scientists propose that nonverbal communication is influential in establishing the thoughts and behaviors that are considered to be consistent with cultural beliefs (Weisbuch and Ambady 2009). Such implicit attitudes are often formed or influenced by the feedback

individuals receive from friends, family, and other acquaintances (Stangor et al. 2001; Wittenbrink and Henly, 1996). This process is similar to the concept of "affiliative social tuning" (Lowery et al. 2001; Sinclair et al. 2005), in which social bonds are established and maintained by unconsciously adjusting one's social beliefs to some agreeable level with others'. Affiliative social tuning has recently been examined in terms of racial bias (Castelli et al. 2008; Castelli and Tomelleri 2008; Castelli et al. 2009), but this research has largely focused on the circumstances of transmitting bias rather than the specific mechanisms of transmission. However, the Castelli and Tomelleri (2008) study does indicate that implicit interracial attitudes are shaped and influenced by nonverbal behavior more so than verbal behavior.

Verbal communication tends to play a cognitive role in interpersonal interactions, whereas nonverbal communication is believed to play a more affective, relational, or emotional role (Richmond and McCroskey 2004). Accordingly, nonverbal behaviors have been theorized to convey a wealth of information about an individual's emotions, attitudes, motivations, and personality (Ekman and Friesen 1969; Knapp and Hall 2009; Mehrabian 1972; Rosenthal et al. 1979). Between the verbal and nonverbal content of a message, most individuals believe the nonverbal content more accurately reflects the true feelings of the communicator and the intent of the message (Richmond and McCroskey 2004). Across contexts and time, nonverbal behavior appears to be a more consistent representation of personality than verbal behavior is (Weisbuch et al. 2010).

Several unobtrusive measures of racial attitudes have demonstrated White Americans generally display a bias in favor of Whites over Blacks (e.g., Dovidio et al. 2002; Dovidio et al. 1997; Fazio et al. 1995; Greenwald et al. 1998; Weisbuch et al. 2009). More specifically, White Americans have been found to generally hold non-prejudiced explicit attitudes but negative implicit attitudes toward Black Americans, and this inconsistency between explicit and implicit attitudes directly contributes to miscommunications between Black and White Americans (Shelton et al. 2009). In studies of mixed interactions, White Americans tended to rely on the most accessible aspects of the interaction (i.e., their own explicit attitudes), but Black Americans still perceived the negative implicit cues, with both parties remaining unaware of this difference in interpretation (Dovidio et al. 2002).

Weisbuch and Pauker (2011) argue that many interventions designed to reduce racial bias and discrimination fail largely because this intergroup bias is contagious and implicitly transmitted (e.g., nonverbally or via microaggressions). They further suggest that exposure to nonverbal bias can "infect" the observer with the associated intergroup bias, analogous to the concept of affiliative social tuning. This contagion of nonverbal bias has been demonstrated experimentally by manipulating the nonverbal cues displayed by White actors toward Black actors in an interracial interaction observed by participants (Castelli et al. 2011). Participants who saw unfriendly nonverbal behaviors expressed towards the Black actor displayed more negative implicit attitudes towards Blacks than participants who saw friendly nonverbal behaviors. Similarly, participants who read a passage containing negative stereotypes about Blacks exhibited more negative implicit attitudes when a confederate displayed approving nonverbal behaviors (i.e., nodding) rather than remaining neutral while participants read the article (Castelli et al. 2011).

Not to be confused with implicit attitudes, stereotypes are thought of as mechanisms that free cognitive resources by relying on expectancies or "rules of thumb" (Sherman et al. 1998). Stereotypes are resistant to being challenged (see Plaks et al. 2001), and counter-stereotypical information may have a greater effect on the people most likely to believe the stereotypical version of the information (Covert and Dixon 2008). Richeson and Pollydore (2002) found that participants reported higher anxiety levels when exposed

to racially counter-stereotypical rather than racially stereotypical behavior. On the other hand, priming people with racial stereotypes has been shown to automatically activate stereotypic associations on the basis of race or ethnicity (Dovidio et al. 1997; Fazio et al. 1995). For example, priming participants with the "Black criminal" stereotype has led to reduced support for humanitarian aid and increased endorsements for harmful treatment toward innocent Black Americans without influencing participants' attitudes toward innocent White Americans (Johnson et al. 2008; Johnson et al. 2009). Likewise, a study by Bargh et al. (1996) indicates participants were significantly more likely to behave in a hostile manner toward the experimenter when primed with a picture of an African American male than when primed with a picture of a Caucasian male. Presumably, activating stereotype associations should uncover implicit biases that can be measured via a taxonomy of nonverbal behaviors.

The portrayal of Black American characters in mass media is often based on negative stereotypes such as dispositional violence and hostility (Dixon et al. 2003; see Rome 2004 for a review). According to the concepts of nonverbal bias (Weisbuch and Ambady 2009) and affiliative social tuning (Lowery et al. 2001), these stereotypes might be perpetuated implicitly throughout culture. Considering this, the present study aims to answer the following research questions: how will people nonverbally respond to the "Black criminal suspect" stereotype, and in what way will these behavioral responses differ in relation to a "White criminal suspect" counter-stereotype?

The nonverbal cues examined in the present study are operationalized according to the categories originally developed by Ekman and Friesen (see Ekman and Friesen 1969; Ekman 2003 for a review). The present study incorporates this classification research by analyzing the body language of participants acting as *encoders* (i.e., people displaying the nonverbal behaviors to be examined) according to their use of illustrators, emotional expressions, and manipulators.

Illustrators (including nods, headshakes, and other gestures that serve illustrative purposes) serve to augment or enhance an individual's speech (Ekman 2003; Ekman and Friesen 1969), and they are believed to convey how effectively the verbal content of a person's speech is being produced (Beattie and Shovelton 1999; Gregersen et al. 2009). People are more likely to use illustrators to emphasize their speech to the extent their speaking ability is effective or their desired intent warrants emphasis.

Emotional expressions (i.e., typically facial displays of emotion) are presumed to be a direct reflection of their associated affective states (Ekman 2003; Ekman and Friesen 1969). They are often considered in terms of some universally recognized emotion; however, there has been debate regarding the universality and display rules for more complex expressions, such as contempt being related to smirking (Matsumoto 1992; Matsumoto and Ekman 2004).

Manipulators are behaviors in which part of the face or body manipulates (e.g., by touching) some other part of the face or body (Ekman 2003). Manipulators were originally described as *alter-directed adaptors* (i.e., overt but typically unintentional behaviors directed towards another person) and *self-adaptors* (i.e., self-touches that convey emotional or attitudinal information) depending on the purpose or target of these expressive behaviors (Ekman and Friesen 1969). Although manipulators typically involve touching of the self, they are also viewed as indications of the individual's desire to be involved in the interpersonal interaction (Darwin 1872/1965; Ekman and Friesen 1969). Crossed arms and/or legs represent a "closing" or protection of the body from the interaction, whereas repetitive movements tend to indicate a desire to flee from the interaction or at least divert attention towards a different activity (Ekman and Friesen 1969). Postural shifts such as

seating adjustments are presumed to indicate restlessness or some other state of activity (Ekman and Friesen 1969).

Although manipulators directed at the self (i.e., self-adaptors) are generally related to anxiety (Knapp and Hall 2009), some of these behaviors are theorized to represent specific attitudes and emotions. Morris (1971) indicated that certain behaviors were "shielding actions" designed to reduce input to or output from some organ. Face touches (i.e., touches to the eye, ear, nose, and mouth) are presumed to be shielding actions that reduce the input or output of sensory information for that respective organ (Ekman and Friesen 1969; Knapp and Hall 2009). Morris (1971s) also suggested that "cleaning actions" such as hair grooming and clothing adjustments are used simply to improve one's physical appearance, but more recent research suggests these behaviors often occur in processes such as initiating or building relationships (Knapp and Hall 2009). Morris (1971) specifically referred to comforting behaviors which involve touching or rubbing the body as "self-intimacies." Ekman and Friesen (1969) also suggest that such behaviors which involve rubbing or holding the body are often unconscious reproductions of being consoled or comforted by another person. Additionally, some manipulators such as head scratching are believed to indicate ongoing thought or possibly frustration (Ekman and Friesen 1969). Similarly, chin rubbing is perceived as engaging in considerable thought or decision-making processes (Kolaric and Golambos 1995).

The present study assesses nonverbal race bias by examining the behavioral differences that occur when encoders of various ethnicities believe they are describing either a Black criminal suspect or a White criminal suspect. Ratings of encoders' affective states (based on a holistic assessment of their behavior and appearance) are examined and correlated with objective measures of specific nonverbal behaviors expressed by the encoders. While we may never know the true cause or meaning behind an individual's particular nonverbal cues, the correlations between affect and behavior are meant to provide an understanding of the common perceptions of these cues. Relationships between specific nonverbal behaviors and affective states are expected, but these relationships are examined in an exploratory manner, and the relevant correlations will be reported but not explicitly predicted.

Research indicates that stereotype-inconsistent information (e.g., the counter-stereotype of a violent White criminal) should induce anxiety (Richeson and Pollydore 2002), and stereotypes' inherent resistance to challenge as well as the effort required to process counter-stereotypes should elicit more uncertainty in the White condition. Priming the "Black criminal" stereotype should provoke more hostility (see Bargh et al. 1996; Johnson et al. 2008, 2009) and less caring behavior (Johnson et al. 2009) in the Black condition.

Across the entire sample of encoders, it is hypothesized they would be rated as less hostile and more anxious, caring, friendly, and uncertain in the White condition than they would be rated in the Black condition. Among the nonverbal behavior categories, participants should display more anxiety-related self-adaptors (i.e., seating adjustments, head scratching, chin rubbing, and body rubbing) and alter-directed adaptors (i.e., closed posture and repetitive movements) in the White condition. Negative expressions (i.e., frowns and smirks) and negatively evaluative self-adaptors (i.e., face touches) should occur more frequently in the Black condition. Illustrators were examined in a more exploratory sense, as they require analyses of the associated verbal content in order for appropriate predictions to be made in this context.

Due to the gender differences often found in nonverbal encoding and decoding ability (e.g., Rosenthal and DePaulo 1979; Schmid et al. 2011; Zuckerman et al. 1982; see Hall 1990 for a review), it is important to also consider the gender differences that may occur in

the present study. However, although the literature indicates women are better encoders of nonverbal behavior than men are, it is difficult to predict exactly how these differences will manifest as they are measured in the present study. Nevertheless, women's superior encoding ability should be indicated by interaction effects between the suspect's race and the encoder's biological sex (i.e., women should exhibit significantly stronger attitudes in the hypothesized direction). Gender differences should also be revealed in analyses conducted separately for women and men.

In summary, we predict the following: (1) encoders will be rated as less hostile and more anxious, caring, friendly, and uncertain in the White criminal suspect condition than in the Black criminal suspect condition; (2) encoders will display more seating adjustments, head scratching, chin rubbing, body rubbing, closed posture, and repetitive movements and fewer frowns, smirks, and face touches in the White condition than in the Black condition. Gender differences and the correlations between attitudes and behaviors will be considered in an exploratory manner.

Methods

Participants

A group of *raters* (i.e., people who used the overall nonverbal behavior to rate the affective states in the interviews) was recruited using general applications to assist in the lab in exchange for course credit, and all raters were kept blind to the study's hypotheses. The group of raters consisted of fourteen undergraduate students of American nationality: two Latina women, three Black women, two Southeast Asian women, one White woman, one East Indian woman, one Middle Eastern woman, one Latino man, one White man, one Black man, and one Asian man. While an equal distribution of gender and ethnicity is desirable, research has consistently shown women are better at encoding and decoding nonverbal behavior (Buck et al. 1974; Hall 1978, 1984/1990; Hall et al. 2000; Rosenthal and DePaulo 1979, Rosenthal et al. 1979; Schmid et al. 2011; Wagner et al. 1993).

A group of *decoders* (i.e., people who recorded objective measurements from the taxonomy of nonverbal behaviors) was recruited using general applications to assist in the lab in exchange for course credit, and all decoders were kept blind to the study's hypotheses. The group of decoders consisted of four undergraduate students of American nationality: one Chinese woman, one Black woman, one Black man, and one man who identified himself as both White and Latino.

Materials

The present study used videotaped interviews from 160 young adult participants (hereafter referred to as *encoders*) recruited at a university in southern California. A dataset was created via random number generators in such a manner that 80 randomly selected men and 80 randomly-selected women were included with equal representation from four categories of American nationality: "Black," "White," "Latino," and "Asian." Each category of ethnicity consisted of twenty men and twenty women for a total of forty encoders included in each of the four categories of ethnicity.

The interviews were adapted from a larger study that dealt with perceptions of stereotypes portrayed by various forms of media. Encoders were asked to provide open-ended

descriptions of two topics: a newspaper article about flowers blooming in Death Valley (the *baseline* condition), and a video clip from the documentary television series *COPS* depicting a confrontation and fatal shoot-out with a suspect whose identity is kept ambiguous (in which the suspect's ethnicity is experimentally manipulated to be Black or White American; the *criminal* condition). Every encoder participated in the baseline condition to provide base rates for affective ratings and nonverbal behaviors; however, encoders were randomly assigned to the experimental conditions (i.e., they were informed that the suspect was either Black or White).

Encoders were seated individually in a room where they were told to direct their responses toward a video camera positioned to provide a frontal or three-quarters view of the encoder's face and body. An undergraduate research assistant was present in the same room—seated outside of the encoder's field of vision—in order to direct the procedure. After the encoder finished reading the article in the baseline condition, the research assistants were instructed to say the following: "What was the article about? Be as specific as possible." After the encoder finished watching the video in the criminal condition, the research assistants were instructed to say the following: "Imagine that you are an eye-witness to the crime scene you just watched. Tell the investigator everything you remember about the persons, places, and events that occurred." Once encoders completed giving this description, the research assistants were instructed to say the following: "Tell us what you can about the suspect. Who was he, what did he do, and why? Include detailed descriptions such as appearance, verbal behavior, and motor behavior. Be as specific as possible."

The present dataset is comprised of a total of 320 video clips (i.e., a baseline condition video and a criminal condition video from each of the 160 encoders). Each baseline condition video clip was created using video-editing software to select only the portion of the encoder's response which begins just after the research assistant completes the "What was the article about?" statement and ends just before the research assistant confirms the encoder has nothing more to say. Each criminal condition video clip was created using video-editing software to select only the portion of the encoder's video which begins just after the research assistant completes the "Tell us what you can about the suspect…" statement and ends just before the research assistant confirms the encoder has nothing more to say.

In order to provide the interviews to the raters and coders in a balanced manner, the 320 video clips were divided into ten sets of 32 videos. Each of the ten sets contained both the baseline and criminal video clips from 16 randomly-selected encoders: two women and two men from each of the four categories of ethnicity (i.e., Asian, Black, Latino, and White). In other words, each set contained both of the videos from four encoders from each of the four ethnicity groups for a total of 32 videos from 16 encoders.

Procedure

Raters were instructed to watch a video-only (i.e., no audio) version of each interview in its entirety, then to use an online survey to rate the encoder's affective state based on their holistic interpretation of the encoder's behavior and appearance. The terms used for the affective ratings were selected based on their relevance to the criminal suspect scenario and were defined using dictionary definitions and/or synonyms. Specifically, affective ratings of encoders were operationalized as *anxious*, *caring*, *uncertain*, *friendly*, *hostile*, and *positive*. Each rating was measured on a seven-point Likert scale (ranging from −3 as "*not*

at all characteristic" to +3 as "*very characteristic*"), and the order in which the affective ratings appeared on the scale was randomized per every online survey.

Decoders were instructed to use video-only (i.e., no audio) versions of the interviews in order to examine and record each encoder's body language as defined in the glossary provided for them. Decoders used language-archiving software (ELAN 4.0.1; Language Archiving Technology 2008) in order to identify behaviors—to the best of their ability—exactly as they occur in the video clip. ELAN uses video-editing software to allow frame-by-frame manipulation, annotation, and analysis of video clips, so decoders were instructed to record every instance of a behavior for the entire duration it appears. Some nonverbal behaviors (e.g., shrugs) were recorded on the basis of frequency counts rather than the duration of the behavior.

For most behaviors, decoders were instructed to apply their intuitive judgments of the behaviors in addition to the explicit definitions listed in the experimental protocol. These behaviors were selected based on their establishment in previous literature and their relevance to the selected affective ratings and the context of the criminal suspect scenario. The behaviors examined in the present study are as follows: *seating adjustments* (i.e., movements or adjustments of the encoder's entire sitting position), *illustrators*, *shrugs*, *smiles*, *frowns*, *nods* (i.e., up-down head movements), *headshakes* (i.e., side-to-side head movements), *smirks*, face touches (i.e., *eye touches*, *ear touches*, *nose touches*, and *mouth touches*), *hair grooming* (e.g., twirling, straightening, or any general adjustment of the hair or hairstyle), *clothing adjustments*, *body rubbing* (i.e., the use of one or both hands to continuously rub any body part, including but not limited to the arms, legs, torso, and neck), *head scratches*, *chin rubbing*, *closed posture* (i.e., any stable position that involved the covering or clasping of the body and/or the folding or crossing of limbs, such as the crossing of one arm, hand, leg, or foot to its opposite), and *repetitive movements* (i.e., continual, discrete behaviors that are repeated rapidly and/or consistently, such as foot-tapping).

Results

Because the inter-rater reliabilities based on Cronbach's α were relatively high for the affective ratings (i.e., the values range from 0.76 to 0.93 with an average of 0.84), each affective rating was analyzed as an average value of all fourteen raters. The decoders' average reliabilities based on Cronbach's α varied (i.e., the values range from 0.23 to 0.80, with an average of 0.59); however, research has established evidence of individual differences in sensitivity to particular cues in nonverbal behavior (see Rosenthal et al. 1979), so the decoders' annotations of nonverbal behaviors were combined into one superordinate measure (i.e., what decoders saw altogether rather than what they saw in common). In the event multiple decoders recorded different amounts of the same behavior, the highest recorded amount of the behavior was used.

The descriptions given in the baseline condition lasted for an average of 32.63 s, while the descriptions given in the criminal conditions lasted for an average of 36.63 s. Overall, encoders spent significantly more time describing the suspect than describing flowers, one-sample $t_{(159)} = 2.66$, $p = .009$, $r = 0.21$; however, there was no significant difference in the time spent describing a Black criminal suspect or a White criminal suspect, independent-samples $t_{(158)} = 0.74$, $p = .458$, $r = 0.06$. See Table 1 for a comparison of baseline and criminal conditions.

Table 1 One-sample *t* test of criminal versus baseline condition mean scores

Measure	*t* value	*p* value	D-score (*SD*)	Criminal	Baseline
Affect ratings					
Anxious	−1.62	0.107	−0.09 (0.74)	−0.83	−0.74
Caring	−0.84	0.405	−0.04 (0.55)	−0.97	−0.93
Uncertain	4.74***	<.001	0.25 (0.66)	−0.17	−0.42
Friendly	−6.47***	<.001	−0.44 (0.85)	−0.65	−0.21
Hostile	7.97***	<.001	0.36 (0.58)	−1.97	−2.33
Positive	−10.11***	<.001	−0.62 (0.77)	−0.51	0.11
Behaviors					
Shifts	−2.86**	.005	−0.40 (1.77)	0.91	1.31
Illustrators	−1.10	.274	−0.36 (4.11)	2.82	3.18
Shrugs	1.68$^{\times}$	.096	0.18 (1.42)	0.59	0.41
Smiles	−1.86$^{\times}$	.065	−0.17 (1.18)	0.53	0.70
Frowns	−0.07	.948	−0.01 (1.22)	0.70	0.71
Nods	1.08	.283	0.08 (0.88)	0.33	0.25
Headshakes	1.99*	.048	0.24 (1.56)	1.16	0.92
Smirks	−0.79	.433	−0.09 (1.41)	0.84	0.93
Eye touch	−0.73	.468	−0.03 (0.54)	0.13	0.16
Ear touch	−2.44*	.016	−0.09 (0.49)	0.07	0.16
Nose touch	0.17	.862	0.01 (0.91)	0.27	0.26
Mouth touch	0.12	.907	0.01 (0.68)	0.20	0.19
Hair grooming	−1.78$^{\times}$	.077	−0.80 (5.70)	0.40	1.20
Clothing	−0.10	.923	−0.06 (7.15)	1.72	1.78
Body rubbing	0.09	.925	0.07 (9.11)	3.63	3.56
Head scratches	−0.94	.350	−0.14 (1.92)	0.37	0.51
Closed posture	−2.21*	.029	−4.56 (26.1)	22.00	26.56
Repetitive	0.50	.619	0.96 (24.3)	16.26	15.30
Chin rubbing	−0.63	.531	−0.43 (8.58)	1.23	1.66

D-score difference score, *SD* = standard deviation. $N = 160$; *t* test $df = 159$. Affective ratings were measured on a scale ranging from −3 to +3. Seating adjustments (i.e., "shifts"), illustrators, shrugs, smiles, frowns, nods, headshakes, smirks, and face touches (eye, ear, nose, and mouth) were all measured by counts. Hair grooming, clothing adjustments, body rubbing, head scratching, closed posture, repetitive movements, and chin rubbing were all measured by the number of seconds these behaviors occurred. Positive t values represent a higher frequency occurring in the criminal condition. Negative t values represent a higher frequency occurring in the Baseline condition

$^{\times}$ $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

Based on an average between the baseline condition and criminal condition, women were rated as significantly more caring, independent samples $t_{(158)} = 2.42$, $p = .017$, $r = 0.19$, and more friendly, $t_{(158)} = 2.73$, $p = .007$, $r = 0.21$, than men were. Women displayed significantly more hair adjustments, $t_{(158)} = 2.56$, $p = .012$, $r = 0.20$, and more closed posture, $t_{(158)} = 2.26$, $p = .025$, $r = 0.18$, whereas men displayed significantly

more seating adjustments, $t_{(158)} = -2.85$, $p = .005$, $r = 0.22$, more illustrators, $t_{(158)} = -2.80$, $p = .006$, $r = 0.22$, and more headshakes, $t_{(158)} = -2.23$, $p = .028$, $r = 0.17$.

A 2 × 2 × 4 (Suspect Race × Encoder Sex × Encoder Ethnicity) ANOVA[1] was conducted in order to examine the main effects on affective ratings and nonverbal behaviors prior to more specific and/or conservative tests.

Suspect Race and Nonverbal Behaviors

When examining the experimental condition (i.e., "White suspect" versus "Black suspect"), results of the omnibus test of suspect race on the frequency of closed posture was statistically significant, $F(1, 144) = 5.25$, $p = .023$, $r = 0.19$.[2] Encoders closed their posture for an average time of 25.62 s in the White condition but 18.39 s in the Black condition.

In order to control for the encoders' individual variances in behavior, difference scores of the baseline condition subtracted from the criminal condition were used in a 2 × 2 × 4 ANOVA for nonverbal behaviors. This analysis compares the behaviors that were differentially elicited in the Black condition versus the White condition in relation to the baseline condition. A positive difference score indicates the behavior occurred more in the criminal suspect condition than the baseline condition. The omnibus test was marginally significant for the main effect of suspect race on the frequency of smiles, $F(1, 144) = 3.60, p = .060, r = 0.16$, closed posture, $F(1, 144) = 3.69, p = .057, r = 0.16$, and repetitive movements, $F(1, 144) = 2.85, p = .093$, $r = 0.14$. The White condition elicited more posture closing ($M_{\text{white}} = -0.64$ s; $M_{\text{black}} = -8.47$ s) and more repetitive movements ($M_{\text{white}} = 4.28$ s; $M_{\text{black}} = -2.36$ s), whereas the Black condition elicited fewer smiles ($M_{\text{white}} = 0.00$; $M_{\text{black}} = -0.35$).

Suspect Race and Affective Ratings

When examining the experimental condition (i.e., "White suspect" versus "Black suspect"), results from the omnibus test of suspect race on ratings of uncertainty are marginally significant, $F(1, 144) = 3.55$, $p = .062$, $r = 0.16$. Encoders were rated as more uncertain in the White criminal condition ($M = -0.06$) than the Black criminal condition ($M = -0.28$).

In order to control for the encoders' individual behavioral styles, difference scores of the baseline condition subtracted from the experimental condition were used in a 2 × 2 × 4 ANOVA. A positive difference score indicates the affective response was more present in the criminal suspect condition than the baseline condition; a negative difference score indicates the affective response was more present in the baseline condition than the

[1] Encoder ethnicity was included because it was expected to be a primary source of variance. The authors wanted to clearly indicate any main effects of ethnicity that may contextualize the results, although the present paper focuses on the effects of suspect race and encoder sex. Controlling for individual variances in behavior, there were few main effects of ethnicity: Asian Americans nodded, $F(3, 144) = 2.80$, $p = .042$, and scratched their heads, $F(3, 144) = 3.09$, $p = .029$, significantly more than Latino and Black Americans, and Asian Americans displayed more ear touches, $F(3, 144) = 2.61$, $p = .054$, than Latino, Black, and White Americans.

[2] In order to provide a practical representation of the effect sizes reported, standardized odds and relative risk ratios were calculated as an example. For this effect size $r = 0.19$, the standardized odds ratio is 2.16, the relative risk ratio is 1.47, and the standardized risk difference is 19 %. Therefore, the odds of an encoder displaying closed posture when describing a criminal suspect are 2.16 times higher if the suspect is a White American. Likewise, the "risk" of displaying open posture when describing a criminal suspect is 1.47 times higher if the suspect is a Black American.

criminal suspect condition. Under these conditions, the main effect of suspect race on ratings of uncertainty approaches marginal significance, $F(1, 144) = 2.47$, $p = .118$, $r = 0.13$. More uncertainty was elicited by the White condition ($M = 0.33$) than the Black condition ($M = 0.17$), although not significantly.

Gender Differences in Affective Ratings

According to the 2 × 2 × 4 ANOVA of difference scores, there were marginally significant interaction effects of suspect race by encoder sex on the ratings of anxiety, $F(1, 144) = 3.50$, $p = .064$, $r = 0.15$, and uncertainty, $F(1, 144) = 3.56$, $p = .061$, $r = 0.16$. The experimental condition elicited less anxiety from women than men when the suspect was Black ($M_{\text{women}} = -0.23$; $M_{\text{men}} = -0.03$), but more anxiety from women than men when the suspect was White ($M_{\text{women}} = 0.06$; $M_{\text{men}} = -0.17$). The experimental condition elicited less uncertainty from women than men when the suspect was Black ($M_{\text{women}} = 0.10$; $M_{\text{men}} = 0.23$), but more uncertainty from women than men when the suspect was White ($M_{\text{women}} = 0.46$; $M_{\text{men}} = 0.20$). In other words, women in the White condition appear more anxious and uncertain than women in the Black condition, but men in the White condition appear less anxious and uncertain than men in the Black condition.

Gender Differences in Nonverbal Behaviors

According to the 2 × 2 × 4 ANOVA of difference scores, there were general gender differences in the presence of nonverbal behaviors. Tests were statistically significant for the interaction effect of suspect race by encoder sex on eye touches, $F(1, 144) = 4.95$, $p = .028$, $r = 0.18$, and closed posture, $F(1, 144) = 8.09$, $p = .005$, $r = 0.23$. Among women, the Black condition elicited fewer eye touches ($M = -0.03$) and less closed posture ($M = -11.51$ s) than the White condition ($M_{\text{eye}} = 0.13$; $M_{\text{closed}} = 7.91$ s). Among men, the White condition elicited fewer eye touches than the Black condition ($M_{\text{White}} = -0.23$; $M_{\text{Black}} = 0.00$). Men closed their posture more in the Black condition than the White condition ($M_{\text{Black}} = -5.43$ s; $M_{\text{White}} = -9.20$ s).

Gendered "Black Criminal" Stereotype Subscription

Considering the gender differences reported in previous research and the significance level of the suspect-race by encoder-sex interaction effects in the present data, independent-samples t tests comparing the difference scores between the baseline condition and experimental conditions (i.e., either the Black condition or White condition) were run separately for men and women. While the behavior of men and women mostly yielded support for the research hypotheses, there were two relatively distinct patterns of behavior that emerged between the sexes. Virtually all of the significant differences in behaviors and affective ratings were exclusive to either men or women. For a list of the significant results of these t tests, see Table 2.

Correlations Between Affective Ratings and Nonverbal Behaviors

In an exploratory examination of how the nonverbal behavioral cues related to specific affective states, the encoders' behaviors and affective ratings were correlated with each other. Tests for Pearson product-moment correlation coefficients revealed several

Table 2 Independent-samples *t* test of black and white condition difference scores

Measure	*t* value	*p* value	White D-score (*SD*)	Black D-score (*SD*)
Women				
Anxious	1.78	.079	0.06 (0.82)	−0.23 (0.64)
Uncertain	2.28	.025	0.46 (0.64)	0.10 (0.75)
Shifts	2.17	.033	0.23 (1.37)	−0.48 (1.52)
Smiles	2.30	.024	0.03 (0.97)	−0.62 (1.47)
Head scratches	1.97	.052	0.44 (2.26)	−0.33 (1.03)
Closed posture	3.50	.001	7.91 (21.5)	−11.51 (27.7)
Repetitive	1.80	.075	7.00 (26.3)	−3.42 (25.4)
Men				
Caring	2.18	.032	0.12 (0.53)	−0.14 (0.54)
Friendly	1.83	.071	−0.23 (0.73)	−0.54 (0.79)
Eye touch	−1.94	.056	−0.23 (0.48)	0.00 (0.55)
Ear touch	−2.08	.041	−0.20 (0.52)	0.00 (0.32)
Clothing	−2.05	.044	−1.27 (6.13)	2.25 (8.99)
Body rubbing	−1.96	.054	−3.08 (9.52)	1.06 (9.34)

D-score difference score; *SD* standard deviation. $N = 80$; *t* test $df = 78$. Affective ratings were measured on a scale ranging from −3 to +3. Seating adjustments (i.e., "shifts"), smiles, and face touches (eye, ear, nose, and mouth) were all measured by counts. Clothing adjustments, body rubbing, head scratching, closed posture, and repetitive movements were all measured by the number of seconds these behaviors occurred. Difference scores were calculated by subtracting the baseline condition from the criminal condition. Positive t values represent a higher difference score in the White condition (i.e., the White condition elicited more of this behavior or affect). Negative t values represent a higher difference score in the Black condition (i.e., the Black condition elicited more of this behavior or affect)

significant relationships between the affective ratings and measurements of nonverbal behavior. Table 3 displays a list of the encoders' correlations in the baseline condition, representing how behaviors relate to the given affective states under relatively general circumstances. Table 4 displays a list of the encoders' correlations in the experimental condition, representing how behaviors are related to the given affective states in the context of describing a violent criminal suspect.

In order to gain a better understanding of gender differences in encoding ability and how men and women's behaviors are differentially displayed and/or interpreted in this context, we analyzed the criminal condition correlations between measurements of behavior and affective ratings separately for women and men. Overall, women's behaviors appear to be more significantly correlated to their affective ratings (both in the number and size of these significant correlations), indicating women's behavior is better encoded. Men and women's affective states also appear to be related to different behaviors; for example, uncertainty was significantly related to closed posture for women but ear touches for men. Table 5 displays criminal condition correlations among women, and Table 6 displays criminal condition correlations among men.

Discussion

Did individuals display racial bias through nonverbal cues in body language? The hypotheses were partially supported by the data; the effect was predicted for females but

Table 3 Correlations between baseline condition affective and behavioral measures

Behavior	Anxious	Caring	Uncertain	Friendly	Hostile	Positive
Adjustments	0.09	0.09	−0.14×	0.11	−0.05	0.10
Illustrators	−0.10	0.16*	−0.17*	0.01	0.01	0.00
Shrugs	0.12	−0.05	0.06	−0.06	0.08	−0.07
Smiles	−0.06	0.18*	0.06	0.22**	−0.12	0.22**
Frowns	−0.04	−0.02	0.07	0.02	0.03	0.01
Nods	0.02	−0.03	0.02	−0.03	0.05	−0.06
Headshakes	0.03	−0.02	0.11	−0.01	0.05	−0.03
Smirks	−0.06	0.03	0.15×	0.08	−0.01	0.12
Eye touches	0.02	−0.09	0.08	−0.08	0.02	−0.10
Ear touches	0.11	−0.13	0.05	−0.04	0.04	−0.09
Nose touches	0.09	0.09	0.02	0.13×	−0.03	0.09
Mouth touches	0.13	0.02	0.05	−0.01	0.01	−0.04
Hair grooming	0.15×	−0.06	0.08	−0.03	−0.05	−0.01
Clothing	0.13×	−0.08	0.04	−0.05	0.02	−0.03
Body rubbing	0.02	0.03	−0.07	−0.08	0.07	−0.09
Head Scratches	−0.01	0.04	0.09	0.08	−0.08	0.03
Closed posture	−0.03	−0.01	−0.05	−0.05	0.17*	−0.04
Repetitive	0.26**	0.13×	0.06	0.12	−0.06	0.09
Chin rubbing	−0.01	−0.11	−0.01	−0.11	0.07	−0.09

$N = 160$

× $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

only partially predicted for males. The strongest effects seen in the present study indicate individuals appear more uncertain and are more likely to "close" their posture (e.g., by crossing their arms or legs) when describing the White criminal suspect than when describing a Black criminal suspect.

The hypotheses regarding affective states were partially supported by the data. Encoders were rated as marginally more uncertain in the White condition than the Black condition, but there were no other main effects of suspect race on affective ratings. This difference in uncertainty is likely attributable to the White condition providing a counter-stereotype to the encoders. In contrast to the automaticity of stereotype activation (Dovidio et al. 1997; Fazio et al. 1995) and stereotypes' resistance to being challenged (Plaks et al. 2001), the presentation of a counter-stereotype would be relatively difficult to comprehend or readily accept.

The hypotheses regarding nonverbal behaviors were partially supported by the data. Encoders displayed significantly more closed posture when describing the White suspect than when describing the Black suspect. This closed posture may be a nonverbal response that acts in accordance with the uncertainty and anxiety induced by the presentation of a counter-stereotype. Darwin (1872/1965) as well as Ekman and Friesen (1969) indicate that closed posture may often be interpreted as a reduction in the immediacy between the communicator and the recipient. Further evidence suggests these behaviors are often

Table 4 Correlations between criminal condition affective and behavioral measures

Behavior	Anxious	Caring	Uncertain	Friendly	Hostile	Positive
Adjustments	0.00	0.11	0.07	0.08	−0.03	0.08
Illustrators	0.16*	0.09	0.08	0.01	−0.00	0.02
Shrugs	0.12	0.11	−0.06	0.01	0.08	−0.07
Smiles	0.09	0.11	0.11	0.17*	−0.15×	0.23**
Frowns	−0.08	−0.07	−0.13×	−0.06	0.04	−0.05
Nods	0.12	0.08	−0.03	−0.01	−0.04	0.01
Headshakes	−0.07	−0.03	−0.13	−0.10	0.14×	−0.08
Smirks	0.02	0.00	−0.01	0.05	−0.12	0.05
Eye touches	0.07	0.16*	−0.01	0.09	−0.07	0.09
Ear touches	0.11	0.03	0.14×	0.05	−0.07	0.02
Nose touches	−0.02	0.06	−0.04	−0.03	−0.03	−0.01
Mouth touches	−0.02	−0.00	−0.01	0.02	0.02	−0.00
Hair Grooming	−0.04	−0.09	0.10	0.03	−0.05	−0.02
Clothing	0.19*	−0.01	0.01	0.05	−0.05	0.09
Body rubbing	0.27***	0.06	0.11	−0.01	0.03	−0.09
Head scratches	0.12	0.12	0.09	0.04	−0.04	0.03
Closed posture	0.10	0.08	0.13×	0.03	0.01	−0.03
Repetitive	0.19*	0.02	0.07	−0.07	0.05	−0.03
Chin rubbing	0.01	0.09	−0.10	0.06	−0.09	0.05

$N = 160$

× $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

related to anxiety, stress, or discomfort (Carney et al. 2010; Knapp and Hall 2009; Reddy and Wasserman 1997).

Gender differences, such as the interaction between the experimental manipulation (i.e., ethnicity of the suspect) and the biological sex of the encoder, were supported by the data—specifically the ratings of anxiety and uncertainty and the nonverbal behavior of closed posture. Women were rated as more anxious and uncertain than men when the suspect was White, but less anxious and uncertain than men when the suspect was Black. Women also closed their posture more than men when the suspect was White, but less than men when the suspect was Black. There appear to be fewer and weaker correlations between affect and behaviors for men than there are for women, although this is not a direct statistical test of men and women's encoding ability. The strongest claim for women's greater encoding ability in the present study would be that the main effects of closed posture and uncertainty across all encoders were the same effects that specifically occurred among women but not among men in the more focused gender analyses.

In the relatively normal context of the baseline condition, illustrators seem to reflect effortful and intentional communication that at least indicates some degree of care and certainty. Smiles' relation to generally positive affect is to be expected, and the relation of body rubbing to anxiety is consistent with previous research (Ekman and Friesen 1969; Knapp and Hall 2009). If closed posture is at least an indicator of reduced immediacy, then

Table 5 Correlations between women's criminal condition affective and behavioral measures

Behavior	Anxious	Caring	Uncertain	Friendly	Hostile	Positive
Adjustments	0.15	0.04	0.19$^{\times}$	0.06	−0.03	0.11
Illustrators	0.21$^{\times}$	0.04	0.10	−0.06	−0.03	0.05
Shrugs	0.21$^{\times}$	0.14	−0.01	0.03	0.11	−0.12
Smiles	0.11	0.35**	0.17	0.36**	−0.26*	0.35**
Frowns	−0.14	−0.27*	−0.11	−0.22$^{\times}$	0.14	−0.14
Nods	0.02	0.14	−0.02	−0.02	−0.05	0.01
Headshakes	−0.10	0.08	−0.07	0.04	0.07	0.06
Smirks	0.05	−0.09	0.22*	−0.02	−0.01	−0.03
Eye touches	0.10	0.29*	−0.05	0.20$^{\times}$	−0.12	0.21$^{\times}$
Ear touches	0.15	0.08	0.07	0.07	−0.07	0.05
Nose touches	0.00	−0.03	−0.01	−0.14	0.02	−0.05
Mouth touches	0.09	−0.15	0.00	−0.10	0.04	0.01
Hair grooming	−0.04	−0.15	0.13	−0.00	−0.05	−0.04
Clothing	0.18	−0.02	−0.02	−0.01	−0.05	0.04
Body rubbing	0.30**	0.04	0.13	−0.00	0.04	−0.05
Head Scratches	0.19$^{\times}$	0.13	0.17	−0.02	−0.03	0.02
Closed posture	0.13	−0.03	0.32**	−0.02	−0.06	−0.04
Repetitive	0.11	0.01	0.01	−0.08	0.05	−0.01
Chin rubbing	0.02	−0.12	−0.03	−0.05	−0.09	0.03

$N = 80$

$^{\times}$ $p < .10$

* $p < .05$

** $p < .01$

this could likely be interpreted as hostility in the context of the baseline condition. However, behaviors theorized to relate to a particular affect might manifest under a variety of circumstances and motivations. During the criminal condition, anxiety was positively correlated with illustrators in addition to the more expected nonverbal representations of discomfort (e.g., clothing adjustments, body rubbing, and repetitive movements). On the other hand, while ear touches may have been interpreted as shielding actions indicating an encoder's uncertainty with their accompanying speech, they may also have simply indicated that the encoder had an itchy ear, for example.

"Black Criminal" Stereotype Subscription

It is important to note there was no significant difference in the durations of descriptions given during the Black suspect or White suspect conditions. While the absence of a significant difference is noteworthy itself, it also implies that any significant difference between the encoders in the Black criminal condition and those in the White criminal condition is due to the experimental condition rather than an underlying difference in the possible amount of time behaviors were allowed to occur.

Encoders were rated as more uncertain when discussing both criminal suspects than when describing flowers, but this effect was significantly more pronounced when describing the White suspect. Behaviors that occurred differentially in the White criminal

Table 6 Correlations between men's criminal condition affective and behavioral measures

Behavior	Anxious	Caring	Uncertain	Friendly	Hostile	Positive
Adjustments	−0.12	0.21×	−0.03	0.15	−0.04	0.06
Illustrators	0.11	0.16	0.07	0.10	0.03	−0.01
Shrugs	0.04	0.10	−0.10	−0.01	0.04	−0.01
Smiles	0.08	−0.09	0.07	0.01	−0.04	0.13
Frowns	−0.05	0.09	−0.15	0.07	−0.05	0.03
Nods	0.19×	0.04	−0.03	0.02	−0.03	0.01
Headshakes	−0.08	−0.06	−0.13	−0.16	0.24*	−0.22*
Smirks	−0.04	0.16	−0.18	0.19×	−0.25*	0.14
Eye touches	0.06	−0.10	0.01	−0.16	0.02	−0.13
Ear touches	0.10	−0.10	0.23*	−0.01	−0.07	−0.05
Nose touches	−0.04	0.16	−0.05	0.08	−0.08	0.02
Mouth touches	−0.13	0.19×	−0.03	0.17	−0.02	−0.02
Hair grooming	−0.07	−0.07	−0.10	0.16	−0.20×	0.11
Clothing	0.19×	0.02	0.05	0.12	−0.05	0.15
Body rubbing	0.27*	0.06	0.06	−0.07	0.02	−0.15
Head Scratches	0.08	0.08	−0.10	0.13	−0.08	0.08
Closed posture	0.11	0.13	−0.13	0.00	0.10	−0.04
Repetitive	0.25*	0.02	0.14	−0.07	0.05	−0.05
Chin rubbing	−0.01	0.21×	−0.14	0.15	−0.11	0.07

$N = 80$

× $p < .10$

* $p < .05$

condition may be due to the additional effort required to process and respond to counter-stereotypical information or perhaps due to the unexpected and atypical nature of this scenario of a violent White criminal. Thought-related behaviors did not occur significantly more in the White criminal condition, although nonverbal cues related to thought processes might be more reliably examined through other channels (e.g., hesitations in speech) that were not documented in the present study.

The most significant difference in the nonverbal behavior between the two criminal conditions is that encoders displayed less closed posture when describing the Black suspect. Participants tended to close their posture when describing the White suspect but displayed open posture when describing the Black suspect. Considering the concept of immediacy (i.e., involvement in the interaction) as well as the correlations between closed posture and ratings of uncertainty, this closed nature of the body implies that the encoder's communication may not be as readily perceived as trustworthy or certain if it is not presented in an open, cooperative manner. Open posture may be an indicator of the confidence, openness, and/or trustworthiness the communicator intends to convey, but it may just as well reflect a more basic desire to be involved in the interaction.

Interestingly, anxiety was not significantly correlated with closed posture even though it was related to several behaviors that individually closed off the body when enacted (e.g., clothing adjustments and body rubbing self-adaptors). At the most basic level of interpretation, manipulators that "protect" the body from interaction can be considered reflections of anxiety, distress, or discomfort (Darwin 1872/1965; Ekman and Friesen

1969; Knapp and Hall 2009); however, the receiver's interpretation of body language is often independent of the sender's intent or motivation. The "closing off" behavior of clasping one's hands over the body has previously been found to be a significant predictor of anxiety (Reddy and Wasserman 1997), but the open and expanded versus closed and contracted nature of a person's posture has also been equated to displays of power rather than anxiety (Carney et al. 2010). Nonetheless, the mere visibility of closing one's posture may lead to a superficial interpretation that the behavior is a desire to close off interaction, even if the behavior was originally intended to be intrapersonal (e.g., self-comforting). This surface level of interpretation—that the closed nature of one's posture represents a lack of desire to interact—is presumably the level of communication that is most readily comprehended by the perceiver prior to any further interpretations.

The inability to use mental shortcuts to process challenging information may manifest as closed posture of some sort; likewise, confirming stereotypes may cause a comforting, relieving, or anxiety-reducing response that is indicated by open posture. Particularly in anxiety-provoking situations, being provided stereotype-confirming information may be freeing cognitive resources, as suggested by Sherman et al. (1998), which results in some form of visible relief.

Gender Differences

Even when controlling for individual variance in the display of behaviors, there were interaction effects such that women, compared to men, were marginally more anxious and uncertain when describing a White suspect and significantly closed their posture more when describing a White suspect. When analyzing only female encoders, there are significant differences in the behaviors elicited as a function of the suspect's race (e.g., head scratching, repetitive motions, seating adjustments, and posture closing), and perceivers were likely to interpret these behaviors as significant indicators of anxiety or uncertainty. Considering the significant interaction effects, the main effects of the present study are likely being driven by the behavior of women rather than both sexes. Women's affect and nonverbal expressions are generally encoded better, meaning their anxiety and uncertainty may have been detected more easily or reliably; however, the fact that the group of raters consisted of a majority of women should also be considered since women also tend to be better decoders. In either case, this is consistent with previous literature demonstrating females exhibit more expressiveness and better encoding skills than males (Buck et al. 1974; Friedman et al. 1980; Hall 1978, 1984/1990; Hall et al. 2000; Rosenthal and DePaulo 1979; Rosenthal et al. 1979; Schmid et al. 2011; Wagner et al. 1993), but it may also be indicative of a more nuanced role gender plays in nonverbal research. Given these differences in encoding ability, under what circumstances should we expect generalizations of nonverbal behavior across the sexes? In the case of the present study, there appears to be a clear difference in the elements of the nonverbal behavior repertoire being used by either sex.

Men and women may be responding differently to the suspect according to how they were socialized to respond to this type of situation (e.g., men tend to face social pressure when displaying physical or emotional weakness). Furthermore, violent criminal stereotypes and counter-stereotypes may provoke a qualitatively different anxiety in men and women. Although there were no significant differences in ratings of anxiety or uncertainty among male encoders, men did display significantly more anxiety-related behaviors (i.e., clothing adjustments and body rubbing) in the White condition and more negative appraisals (i.e., face touches) in the Black condition. Not only could men and women be

drawing from different repertoires of nonverbal behaviors, the given stereotype may be activating entirely different sets of behaviors.

Women tended to behave in the manner originally predicted by the hypotheses (i.e., displaying expected behavioral responses to the violent criminal stereotype and counter-stereotype), but men tended to adopt one of two dispositions toward the criminal: caring and friendly in the White condition, or displaying anxious behaviors in the Black condition. It is possible these responses are due to differential attributions (i.e., the Black criminal is seen as dispositional and the White criminal is seen as circumstantial), but this claim warrants further examination of the verbal content in the responses to the criminal behavior.

Limitations and Future Directions

A primary limitation to consider is the order effect that may have occurred due to the baseline condition always preceding the criminal condition in the original experimental procedure from which the present study is adapted. This potentially confounds encoders' anxiety in adjusting to the experimental setting (e.g., addressing answers to the camera) with baseline levels of anxiety. It also means that anxious behaviors may be relatively underrepresented in the criminal condition. As indicated in Knapp and Hall (2009), behaviors such as hair grooming tend to occur at the beginning of an interaction in order to better control the relationship-building process, and we are presently unaware if these behaviors would have occurred differentially on the basis of suspect race. In any event, the baseline condition is designed to provide a sample of base-rates for nonverbal behaviors rather than a control condition to be compared to the criminal condition.

The results of the present study nevertheless imply that more implicit attitudes and beliefs (e.g., stereotypes) can be reliably detected via nonverbal communication and objectively measured in specific nonverbal behaviors (e.g., body language). However, although several behaviors were examined, relatively few appeared as significant main effects. There are significant differences among many of the behaviors when comparing specific samples (e.g., among men, women, and/or ethnicities), but it may be that certain behavioral cues such as closed posture and smiling are more "universally" indicative of affect (therefore, implicit bias) than other behavioral cues. This also illustrates caution should be taken when theorizing the meaning of particular nonverbal cues without specified, contextual examination. Likewise, there may be relationships between specific behaviors and affective states that simply were not examined in the context of the present study. Individual and situational differences in many other complex and specific implicit attitudes could still be captured through nonverbal measures, especially as more sophisticated technology and software becomes available.

Future studies may elect to analyze time series representations (as seen in Schmidt et al. 2012) in addition to objective frequencies of specific nonverbal behaviors and perceived or self-reported attitudes and affective states. Additionally, there have been recent advances in technology that measures vocal tone (e.g., Liberman 2012) and body language (e.g., Marcos-Ramiro et al. 2013) without human subjectivity. An alternative suggestion is to approach research similarly to Gross et al. (2010), who examined how one behavior (i.e., knocking on a vertical surface) could be exhibited multiple ways (e.g., angrily, joyfully, anxiously, or sadly). A complementary procedure was employed by Shikanai et al. (2013) to determine specific dancing behaviors that indicated joy, sadness, or anger. Presumably, the detection of more subtle and complex implicit attitudes (e.g., nonverbal bias) can be reduced to specific behaviors or mannerisms. Procedures such as the Body Action and

Posture coding system (BAP; Dael et al. 2012) could provide a more extensive taxonomy of body language and positioning, but emotional expression is still required for these behaviors to signify meaning. Ideally, the BAP system could be combined with Gross et al. (2010) methodology to determine the unique aspects of behavior that may change as a function of attitudes, situations, and emotional states.

The present study only examines the relationship between a specific number of nonverbal behaviors and affective states, but there are potentially countless relationships between such variables. Nevertheless, video rendering technology and software that allows for time-sensitive coding is becoming a popular methodological tool that can be used to examine and quantify the relationship between implicit attitudes and their physical manifestations as behavioral outcomes. Although the present study specifically considers evidence of nonverbal prejudice and discrimination, the underlying mechanisms of communication, cultural differences, and related phenomena will all greatly benefit from continued research.

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