

**Stereotype Threat in Police Encounters:
Why African Americans are at Risk of Being Targeted as Suspects**

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SUMMARY

One of the most frequent complaints minorities have about the criminal justice system is bias-based policing—the use of race as a basis for law enforcement decisions. Although racial bias and cultural stereotypes depicting African Americans as criminals set the stage for biased policing, they also likely have effects on Black citizens that ultimately and ironically contribute to the unwarranted disparate treatment of racial groups. I examined whether social psychological theory on stereotype threat provides an explanation for why police officers are more likely to suspect Black than White individuals. I theorized that, unlike Whites, innocent Black individuals experience stereotype threat in police encounters, which in turn causes Blacks to experience greater arousal related to anxiety, self-regulatory efforts, and cognitive load, and consequently, to display more nonverbal behaviors associated with deception. These racial differences in nonverbal behaviors, in turn, contribute to police officers' decisions to target Blacks as suspects disproportionately more often than Whites. I tested the former mediational hypotheses in two studies. Study 1 revealed that, as predicted, Blacks were significantly more likely than Whites to agree that they experience stereotype threat in police encounters in general. Study 2 showed that this effect generalized to a staged encounter with a White security officer. As hypothesized, Blacks experienced more stereotype threat than Whites. Further, this effect was found only when the security officer was portrayed as investigating a crime, not when he was asking for directions to a diversity training meeting (i.e., only when the criminal stereotype was relevant to the situation). Although stereotype threat did not translate into racial differences in a variety of quantifiable nonverbal behaviors (e.g., frequency of smiles, gestures, etc.), it did lead Blacks to appear more nervous overall as compared to Whites. Further, all participants appeared more nervous when the security officer was investigating a crime than when he was asking for directions. This research extends stereotype threat theory to

SUMMARY (continued)

the new domain of police encounters, and suggests that it could influence behavior in ways that ironically increase the likelihood that Blacks in particular will be perceived by police suspicious.

OVERVIEW OF THE ISSUE

Bias-based policing refers to police officers' use of individuals' race or other group membership as the basis for decisions and actions, and it is one of the most frequent complaints African Americans have about the criminal justice system (Sidanius & Pratto, 1999; Tyler & Huo, 2002). For example, more than 100,000 African Americans and Latinos who believe they were illegally stopped, questioned, or frisked are expected to join a pending lawsuit against the New York Police Department (NYPD) (*Floyd v. City of New York*, 2012). Allegations that the NYPD's stop-and-frisk policy is discriminatory are supported by the fact that 88% of Blacks stopped by the NYPD in 2011 were innocent (New York Civil Liberties Union, 2012).

There are, of course, many factors that contribute to Blacks having disproportionately more investigatory contacts with the police than do Whites. To begin with, African Americans are actually disproportionately more likely to perpetrate crimes. Twenty-eight percent of arrests in 2011 were of Black individuals (U. S. Department of Justice, 2011), a proportion that is more than double the 13% of the population that Blacks represent (Rastogi, Johnson, Hoe, & Drewery, 2011). Above and beyond this actual disproportionality, however, racial biases in the criminal justice system at large (e.g., Coker, 2003), in police departments' policies (e.g., Gelman, Fagan, & Kiss, 2005), or on the part of individual officers (e.g., Wilson, Dunham, & Alpert, 2004) can lead to an overestimate of how much crime Blacks commit. Still, it is more complicated because police officers do not even have to be consciously biased to be affected by stereotypes that depict African Americans as criminals (Devine, 1989; Devine & Elliot, 1995; Sigelman & Tuch, 1997). Social psychologists have shown that this stereotype can have a subtle yet biasing influence on the ways that police officers perceive individuals, process information, and

form judgments (e.g., Devine, 1989; Eberhardt, Goff, Purdie, & Davies, 2004; for review, see Trope & Liberman, 1996)—including the decision of whether to shoot a suspect (Correll, Park, Judd, & Wittenbrink, 2007).

Although both racial bias and stereotypes might influence an officer's decision to target an individual as a suspect, that decision is determined ultimately by whether the officer perceives that the individual is behaving suspiciously. Yet research has not considered whether expectations about being treated unfairly due to negative stereotypes might actually cause Blacks and not Whites to behave differently—suspiciously—when they encounter the police. Thus, I conducted two studies to explore, for the first time, whether Black (but not White) individuals experience stereotype threat in police encounters. Drawing from theories on stereotype threat and deception detection, I also investigated whether, compared to non-threatened Whites, Blacks under stereotype threat engage in more nonverbal behaviors that are perceived by police officers as suspicious—deceptive and guilty.¹ Finally, I explored the mediating roles of arousal, self-regulatory efforts, and cognitive load within this framework.

STEREOTYPE THREAT IN POLICE ENCOUNTERS

Stereotype threat is the apprehension one experiences when at risk of being perceived in light of a negative stereotype that applies to one's group (Steele, 2010; Steele & Aronson, 1995; Steele, Spencer, & Aronson, 2002). This apprehension or concern then has ironic effects on performance and behavior by inadvertently increasing an individual's likelihood of confirming the stereotype. In their seminal research on this phenomenon, Steele and Aronson (1995) demonstrated that when the stereotype that Blacks are low in

¹Although I focus on the potential for stereotype threat to cause innocent Blacks to be misidentified as suspects, an anonymous reviewer of Najdowski, 2011 (in which I laid out the theory being tested here), pointed out that stereotype threat could also cause guilty Blacks to be targeted, which is arguably beneficial from a law enforcement standpoint.

intelligence is salient, Black students underperform relative to White students on standardized tests. This effect has been replicated in dozens of studies (e.g., Cadinu, Maass, Frigerio, Impagliazzo, & Latinotti, 2003; Marx & Goff, 2005) and verified through meta-analytic review (Nguyen & Ryan, 2008; Walton & Cohen, 2003). Making intelligence salient has been shown to elicit threat in Blacks in other situations as well, resulting, for example, in poorer performance on employment selection tests (e.g., Ployhart, Ziegert, & McFarland, 2003). Stone, Lynch, Sjomeling, and Darley (1999) extended this work by showing that, compared to control participants, Black participants require more strokes to complete a golf task when either intelligence or race is primed. Thus, stereotype threat can also have a detrimental impact on Blacks' physical performances and behavior.

The majority of research on Blacks' experiences of stereotype threat has focused on understanding the consequences of negative stereotypes related to intelligence. According to Steele and colleagues (2002), "All people have some group or social identity for which negative stereotypes exist... And when they are doing things in situations where those stereotypes might apply, they can experience this threat" (p. 390). I hypothesize police encounters might serve as possible settings for innocent Black individuals to experience stereotype threat, yet no one has discussed it. This hypothesis is supported by research showing that there is a negative stereotype that depicts Blacks as prone to crime (Devine, 1989; Devine & Elliot, 1995). Further, most Black individuals are aware of this stereotype. For example, Sigelman and Tuch (1997) found that 82% of Blacks think they are perceived as violent by Whites, and Cheryan and Monin (2005) found that 20% of Blacks reported being misperceived as a criminal by strangers. Also, it has been noted anecdotally that Blacks are concerned about being perceived through the lens of the criminal stereotype (Staples, 2007; Steele, 2010; Steele et al., 2002). Therefore, I propose that innocent Black (but not White) individuals experience stereotype threat in police encounters as concern

about being perceived as guilty for crimes not committed (see Figure 1, Path A).

HOW ARE BLACK INDIVIDUALS AFFECTED BY STEREOTYPE THREAT IN POLICE ENCOUNTERS?

Steele (2010) recently noted the “emerging generality of stereotype threat effects” (p. 97). As evidence, Shelton (2003) found that Blacks' concern about being the target of Whites' prejudice can manifest in behavior: Black participants who were told that their White interaction partners might be prejudiced fidgeted more than did Blacks who did not receive that information. Indeed, a growing body of research is proving that stereotype threat has adverse effects not only at the *intrapersonal* level but also at the *interpersonal* level (e.g., Apfelbaum, Sommers, & Norton, 2008; Goff, Steele, & Davies, 2008; von Hippel, Wiryakusuma, Bowden, & Shochet, 2011).

What, then, are the implications of facing stereotype threat in legal settings, in which the stereotype is directly relevant? In one of the first attempts to answer this question, Rand (2000) noted that Black witnesses might be aware of stereotypes related to criminality and dishonesty when facing a panel including White jurors. As such, Black witnesses might be motivated to control their demeanor to counter stereotypes and appear truthful. Rand suggested, however, that because Black witnesses try so hard to appear truthful, they might actually appear nervous and, ironically, less credible to White jurors. Similarly, I suggest that the motivation to appear innocent and truthful in police encounters is greater for Blacks than Whites. Even though both Black and White individuals are probably highly motivated to appear truthful when being evaluated as criminal suspects, Black individuals might feel extra pressure if they are concerned that police officers' evaluations and judgments will be biased by negative stereotypes about them.

Steele et al. (2002) explained that the specific content of a negative stereotype determines which behaviors are relevant and affected by threat. Given the nature of the

threat that Black individuals probably experience in police encounters, threat might cause Blacks to engage in specific nonverbal behaviors that are, ironically, the same as those displayed by individuals who are lying or guilty. To illustrate how this might occur, next I briefly describe existing models that have attempted to explain the effects of stereotype threat and deception on behavior. I point out that the same psychological mechanisms affect behavior in individuals who are either under stereotype threat or lying. Then, drawing from research showing that stereotype threat, deception, and the proposed mediating mechanisms produce similar behaviors, I explain why threatened Blacks who are under stereotype threat in police encounters might be more likely than Whites to behave as if they are lying or guilty.

Theoretical Models of Stereotype Threat

A host of potential mediators have been proposed to explain stereotype threat effects, including threatened individuals' lowered performance expectations (e.g., Cadinu et al., 2003), reduced effort (e.g., Stone, 2002), increased effort (e.g., Jamieson & Harkins, 2007), self-doubt (Steele & Aronson, 1995), stereotype activation (e.g., Cadinu et al., 2003), disruption of automatic processes (Beilock, Jellison, Rydell, McConnell, & Carr, 2006), heightened physiological arousal (e.g., Blascovich, Spencer, Quinn, & Steele, 2001) and anxiety (e.g., Goff et al., 2008; Johns, Inzlicht, & Schmader, 2008; Steele & Aronson, 1995), increased emotion regulation (e.g., Johns et al., 2008), and compromised working memory (e.g., Johns et al., 2008; Schmader & Johns, 2003). The exact process by which stereotype threat negatively influences behavior probably depends on the features of the relevant stereotype and situation, but researchers agree that threat probably has its effects through multiple mediators (Steele et al., 2002; Smith, 2004; Schmader, Johns, & Forbes, 2008).

Recent efforts have been made to clarify which mediators are essential for producing stereotype threat, and to delineate the sequence in which they occur. For example, Major

and O'Brien (2005) suggested that threat produces a variety of involuntary responses, including heightened physiological arousal, vigilance to threat-related stimuli, and reduced working memory capacity (i.e., the cognitive resources needed to store and process information), as well as voluntary responses, which involve active efforts to cope with threat. They further theorized that these involuntary and voluntary responses, in turn, affect performance and behavior. Schmader et al. (2008) modified this model by suggesting that arousal and vigilance increase demands on working memory capacity (i.e., cognitive load), and that it is through those effects on working memory that the other mechanisms negatively affect performance and behavior, at least on tasks that require cognitive resources. For less controlled tasks, however, Schmader et al. argued that threat negatively influences behavior by causing individuals to consciously monitor behaviors that are usually automatic. Richeson and Shelton (2007, 2011) proposed that stereotype threat in the context of interracial interactions (i.e., minority group members' concerns about being the target of prejudice and majority group members' concerns about being perceived as prejudiced) produces affective reactions (i.e., physiological arousal and anxiety), and that both threat and affective reactions lead individuals to engage in self-regulatory efforts, including both the "vigilant detection of possible threats to one's goals" and the "eager pursuit of goals" (2007, p. 318). Further, self-regulation, via either cognitive vigilance to threat-related cues or active efforts to cope with threat by managing one's behavior, depletes working memory resources, and both self-regulation and cognitive load, in turn, affect relevant outcomes.

Thus, despite disagreement about their exact configuration, there is consensus that physiological arousal related to anxiety, self-regulatory efforts (including vigilance to threat-related cues and active monitoring efforts), and cognitive load are each integral components

of the psychological process by which stereotype threat negatively affects performance and behavior.

Theoretical Models of Behaviors Associated with Deception

Zuckerman, DePaulo, and Rosenthal (1981) suggested a multi-factor model to explain how deception influences the behavior of a person who is lying. They proposed that liars experience arousal and negative emotions as a consequence of lying; engage in cognitive effort to fabricate plausible lies, be consistent in their telling of them, and monitor their behavior and whether they are being believed; and actively attempt to control their behavior so as to appear credible. Zuckerman and colleagues proposed that the more liars experience arousal, engage in cognitive effort, and attempt to control their behavior, the more likely they are to engage in nonverbal behaviors that give them away. Subsequent theorists have emphasized different components of the multi-factor model. For example, DePaulo (1992) suggested that both liars and truth-tellers might experience arousal/emotions and expend cognitive effort when they want to appear sincere, but, because liars are more concerned than truth-tellers about whether they are being believed, they are more likely to suppress expressive behaviors. Buller and Burgoon (1996) also relied on arousal, cognitive effort, and attempted behavior control to explain differences in the nonverbal behavior of liars and truth-tellers, but further proposed that liars and truth-tellers monitor targets' behavior for indications of whether they are being believed and, based on feedback from that monitoring, adjust their behavior to appear more credible.

Thus, similar to theoretical models of stereotype threat effects, models explaining the effects of deception on nonverbal behavior differ in the proposed order in which the underlying psychological mechanisms occur, but the models rely on common mechanisms: arousal and emotion, efforts to monitor and regulate behavior, and cognitive effort (for reviews, see Sporer & Schwandt, 2007; Vrij, 2008).

Three Overlapping Pathways

Because stereotype threat and deception are each hypothesized to influence nonverbal behavior through their effects on arousal, self-regulatory efforts, and cognitive load, these variables might act in concert to increase the likelihood that innocent Black individuals, who theoretically experience threat because they are concerned about being perceived in light of the criminal stereotype, engage in more deceptive-looking or suspicious nonverbal behaviors as compared to non-threatened White individuals (see Figure 1). Next, I describe empirical research that supports my theory that (a) stereotype threat increases arousal, self-regulatory efforts, and cognitive load and (b) each of these mechanisms increases the likelihood that, compared to Whites, Blacks will engage in more suspicious behaviors which, as I review later, are perceived by others as indicative of lying.

Anxiety/arousal. Compared to non-threatened individuals, those under stereotype threat experience more anxiety and more physiological arousal, including, for example, increased blood pressure (Blascovich et al., 2001; Lehman & Conley, 2010) and cardiovascular reactivity (Mendes, Blascovich, Lickel, & Hunter, 2002; Mendes, Major, McCoy, & Blascovich, 2008). Thus, consistent with past theory (Major & O'Brien, 2005; Schmader et al., 2008; Richeson & Shelton, 2007; Steele & Aronson, 1995) and research (Blascovich et al., 2001; Mendes et al., 2002, 2008), the risk of being perceived in light of the criminal stereotype might cause Blacks to experience greater anxiety and related arousal as compared to non-threatened Whites (see Figure 1, Path B).

Recent efforts to explain stereotype threat suggest that anxiety and arousal influence behavior only through their effects on other mechanisms (e.g., self-regulation, Richeson & Shelton, 2007; working memory capacity, Schmader et al., 2008), but, consistent with other past work (e.g., Major & O'Brien, 2005; Steele & Aronson, 1995), I suggest that these correlates directly affect nonverbal behavior in the context of police encounters, such that

as anxiety/arousal increases, individuals are more likely to behave in ways that are associated with deception or guilt (see Figure 1, Path C). In support, Harrigan and O'Connell (1996) asked participants to describe the most anxious event they had ever experienced. The more uncomfortable, nervous, and apprehensive (i.e., aroused) participants reported feeling while describing the event, the more they blinked their eyes, displayed fearful facial expressions, and had movements across their entire faces. (See Table 1 for a summary of all effects on nonverbal behavior. For example, eye blinking actually increases in frequency in anxious/aroused participants, decreases in participants under high cognitive load, and may either increase or decrease in participants who are lying.) Also, Waxer (1977) found that, compared to low-anxious psychiatric patients, high-anxious patients engaged in more eye blinking, gaze aversion, mouth movements, hand movements (e.g., stroking, twitching), heavy breathing, and rigid posture and appeared more anxious overall. Other studies have also found a link between increased anxiety and increased use of self-adaptors (i.e., touching and manipulations of one's own body; e.g., Ekman & Friesen 1972; Gregerson, 2005). Of importance, research on deception detection also shows that liars report feeling more nervous than truth-tellers (see, e.g., Vrij, Ennis, Farman, & Mann, 2010; for review, see Vrij, 2008) and, when motivated, liars engage in less eye contact, touch themselves less often, have higher voice frequency or pitch, and appear more nervous and tense overall (DePaulo et al., 2003).²

Stereotype threat has been shown to cause some of these same behaviors. Vorauer and Turpie (2004) found that White Canadians who were concerned about how they would be appraised by First Nations Canadian interaction partners engaged in less eye contact

²I review only deception detection studies in which target liars were either highly motivated, under high cognitive load, or actual suspects in police investigations because the psychological experiences of these liars are probably more similar to those of individuals in actual police encounters than are the experiences of participants who are not very motivated or cognitively burdened while lying.

than White Canadians who were not concerned. Also, Bosson, Haymovitz, and Pinel (2004) found that, compared to non-threatened gay men, gay men who were primed to think of the stereotype that depicts gay men as child molesters were perceived by observers as more anxious during interactions with children. Thus, although arousal, deception, and stereotype threat do not have identical behavioral consequences, there are commonalities (see Table 1). Perhaps most notably, more aroused, lying, and threatened individuals are each perceived as more anxious than their less aroused, truth-telling, and non-threatened counterparts. These results are in line with my hypothesis that, in police encounters, Blacks experience stereotype threat and are more aroused and, in turn, more likely to appear as though they are lying than are non-threatened Whites (see Figure 1). It has been noted that heightened arousal related to stereotype threat can reduce the reliability of physiological methods of lie detection (i.e., polygraph; National Research Council, 2003), but, to my knowledge, this is the first time that this limitation has been noted with regard to behavioral methods of lie detection.

Self-regulatory efforts. Individuals who experience stereotype threat have been shown to self-regulate in two ways. First, they become vigilant to situational cues to determine whether they are at risk of being stereotyped (Steele et al., 2002). For instance, Murphy, Steele, and Gross (2007) found that women math, science, and engineering majors who were reminded of the gender stereotype in their field (i.e., that women underperform relative to men) were more cognitively vigilant to details about the setting in which threat was induced, and more physiologically vigilant in terms of cardiovascular and electrodermal activation as compared to non-threatened women. In the context of police encounters, threatened Blacks might be more vigilant to cues from police officers about whether they will be accused of a crime as compared to non-threatened Whites.

Second, threatened individuals become vigilant to cues about whether they are

behaving in ways that confirm the stereotype. As noted earlier, this form of vigilance might disrupt automatic behaviors by bringing them to the forefront of consciousness (Beilock et al., 2006; Schmader et al., 2008). For example, women who are faced with the stereotype that men are better at math devote more of their thoughts to worrying about and monitoring their performance on math problems compared to non-threatened women (Beilock, Rydell, & McConnell, 2007). This rumination leads threatened individuals to overcontrol behavior that would otherwise occur automatically. Also, research shows that when individuals think that others have negative beliefs or expectations about them, they take measures to try to disprove those negative expectations (e.g., Cook, Arrow, & Malle, 2011; Hilton & Darley, 1985; Smith, Neuberg, Judice, & Biesanz, 1997; for review, see Miller & Meyer, 1998). Staples (2007) described one such attempt. As a Black man walking through city streets at night, he recognized that others perceived him as a danger—"a mugger, rapist, or worse" (p. 186). To appear less threatening, Staples began whistling classical music during his walks. In police encounters, Black individuals who think they are at risk of being stereotyped as a criminal might try to reduce this risk by controlling their behaviors or engaging in counterstereotypical behaviors, and, thus, try harder than Whites to appear less suspicious.

Therefore, in line with Richeson and Shelton (2007), experiencing stereotype threat in police encounters might lead Blacks to engage in more self-regulatory efforts compared to Whites, including more cognitive vigilance to threat-related cues and more impression management strategies (see Figure 1, Path D). Consistent with Schmader et al. (2008) and Richeson and Shelton (2007), however, efforts to self-regulate might have the unintended consequence of producing nonverbal behavior that makes suspects appear more suspicious and guilty (see Figure 1, Path E). That is, self-regulation might backfire because it is the same strategy that liars use. Liars, more than truth-tellers (DePaulo & Kirkendol, 1989; Vrij, 2008; Vrij, Ennis, Farman, & Mann, 2010), attempt to suppress behaviors they

believe to be associated with lying and fake behaviors they think are associated with truth-telling (Krauss, 1981; DePaulo, 1992). For instance, liars who are engaging in such "countermeasures" might purposefully maintain eye contact, avoid making movements with their extremities and body, or speak more smoothly by controlling speech disturbances (e.g., errors, hesitations, pauses, stutters) in an effort to appear more truthful (see Vrij, 2008, and Vrij, Granhag, & Porter, 2010). In fact, Sporer and Schwandt's (2007) meta-analysis revealed that highly motivated liars move their hands less than do truth-tellers. DePaulo and Kirkendol (1989) showed that motivated liars avert their gaze and blink less often, fidget and move their heads and bodies less frequently, speak in a more polished manner, and give shorter and slower answers. DePaulo et al. (2003) suggested that self-presentational concerns explain why, compared to truth-tellers, motivated liars move their feet and legs less, have higher pitched voices, take longer to begin their responses, and seem more tense.

In support of my hypothesis, research on prejudice concerns in interracial interactions indicates that individuals under stereotype threat display some of the same behaviors as liars who actively try to appear truthful. For instance, when Shelton (2003) told White participants explicitly to try not to be prejudiced against their Black partners, they fidgeted less than did White participants who were not given this instruction. Shelton interpreted this lack of movement as a purposeful effort to avoid appearing prejudiced. Black participants in that study who were told that their White partners were prejudiced fidgeted more than other Black participants. In addition, Shelton, Richeson, and Salvatore (2005) showed that, compared to non-threatened Blacks, Blacks who thought their White interaction partners were prejudiced reported more negative affect, felt less authentic, and liked their partners less, but, even so, appeared to be more verbally (e.g., appeared more engaged in the conversation) and nonverbally (e.g., leaned toward their partners more,

smiled more) engaged. Thus, threatened Black participants controlled cues that might have given away their true feelings and simulated other cues as an effort to overcome the bias they thought existed.

Again, the nonverbal behavioral correlates of self-regulatory efforts, deception, and stereotype threat are not perfectly overlapping, but studies have revealed consistent effects of each on reducing movement and increasing rigidity (see Table 1). Taken together, these findings offer preliminary evidence that, in police encounters, threatened Blacks engage in more self-regulatory efforts and, in turn, engage in more deceptive-looking or suspicious types of behavior as compared to non-threatened Whites (see Figure 1).

Cognitive load. Arousal and self-regulatory efforts might have direct effects on nonverbal behavior, in line with Schmader et al. (2008) and Richeson and Shelton (2007), but arousal and self-regulatory efforts also might affect behavior indirectly because they create cognitive load. Stress-related arousal produces cognitive impairments, including less efficient working memory (Schmader et al., 2008). In addition, efforts to monitor a situation for evidence of threat and to control one's behavior to offset threat each require cognitive resources (e.g., Baumeister, 1998). Beilock et al. (2007) demonstrated that self-regulation is cognitively costly: Women under stereotype threat who worried about and monitored their performance on math problems were less accurate on problems that required significant working memory capacity to solve than on less-demanding problems. Also, Richeson and Shelton (2003) found that the more White participants controlled their behavior in an interaction with a Black experimenter, the worse they performed on a subsequent task that required cognitive capacity. Thus, threatened Blacks' increased arousal and self-regulatory efforts might lead them to have less working memory capacity compared to Whites (see Figure 1, Paths F and G, respectively).

Cognitive load can also manifest in nonverbal behavior. For example, Hrubes and

Feldman (2001) demonstrated that participants who were working on difficult word problems were perceived as having more difficulty compared to participants working on easy problems. Compared to individuals involved in less complex cognitive tasks, those who are engaged in more complex tasks have been shown to avert their gaze more (Doherty-Sneddon & Phelps, 2005; Ekman & Friesen, 1972; Ekman, 1997), blink less (Leal, Vrij, Fisher, & van Hooff, 2008; Wallbott & Scherer, 1991), have more facial activity (including brow lowering, smiling, chin raising, lip parting, and jaw dropping, Wallbott & Scherer, 1991), have fewer hand and arm movements (Ekman & Friesen, 1972; Ekman 1997), take longer to begin speaking (Goldman-Eisler, 1968; Greene, Lindsey, & Hawn, 1990), have more speech disturbances (Goldman-Eisler, 1968; Greene et al., 1990), and to speak more slowly (Goldman-Eisler, 1968) and for a longer period of time (Greene et al., 1990).

Lying is more cognitively demanding than truth-telling (e.g., Vrij, Ennis, et al., 2010; for reviews, see Vrij, 2008; Vrij, Fisher, Mann, & Leal, 2010). Thus, it is not surprising that liars engage in many more of the aforementioned behaviors than do truth-tellers. Meta-analyses have revealed that, compared to truth-tellers, liars who experience cognitive load (i.e., because they either were highly motivated to get away with their lies, had less time to prepare their lies, or had to tell protracted lies) engaged in less eye contact (DePaulo et al., 2003), nodded less (Sporer & Schwandt, 2007), moved their hands less (Sporer & Schwandt, 2007), moved their feet and legs less (DePaulo et al., 2003), took longer to begin their responses (DePaulo et al., 2003), had more speech disturbances (DePaulo et al., 2003), talked for shorter periods of time (DePaulo et al., 2003), spoke in a higher pitched voice (DePaulo et al., 2003), and appeared more nervous generally (DePaulo et al., 2003). Other studies that were not included in those reviews have shown similar effects. For instance, Leal et al. (2008) demonstrated that cognitive effort and lying each reduce eye blinking. Vrij, Mann, Leal, and Fisher (2010) found that liars who were instructed to maintain

eye contact, a cognitively demanding task, moved their hands and fingers less than did truth-tellers. Vrij et al. (2008) increased cognitive demands on their participants by instructing them to tell their stories in reverse-chronological order. Compared to truth-tellers, liars blinked more, moved their feet and legs more, made more speech disturbances, and spoke at a slower pace. Liars also appeared to be thinking harder and more nervous than the truth-tellers. Research has also examined indicators of deception in actual suspects during police interviews, who are presumably highly motivated and experience high cognitive load. Mann, Vrij, and Bull (2002) found that suspects who lied blinked less but paused more than suspects who told the truth. In Vrij and Mann (2001a), suspects appeared to be thinking harder when lying compared to when telling the truth. These effects are so strong that researchers advocate that interviewers use methods that increase cognitive load to facilitate deception detection (Vrij, Granhag, Mann, & Leal, 2011).

Considering that cognitive depletion and deception have similar behavioral symptoms, threatened Blacks who have reduced working memory capacity might be more likely than non-threatened Whites to behave as though they are lying or guilty (see Figure 1, Path H). If cognitive load is a more proximal mediator of stereotype threat effects on behavior than arousal and self-regulatory efforts, then reduced working memory efficiency also might have contributed to all of the previously reviewed threat-related behaviors (see Table 1).

Evidence of Racial Differences in Nonverbal Behavior in Legal Settings

In light of all the research just reviewed, I theorize that Black individuals feel stereotype threat in police encounters due to the stereotype of Black criminality. As a consequence, compared to Whites, Blacks are more likely to experience arousal and engage in self-regulatory efforts and, in turn, experience cognitive load. Due to these physiological and psychological experiences, Blacks are more likely than Whites to behave,

nonverbally, as though they are lying or guilty.³ (See Figure 1.) The literature reviewed thus far provides indirect support for my hypotheses, but there is also compelling evidence that Black suspects actually do engage in more deceptive behaviors when interacting with the police than do White suspects. For example, by examining clips from a reality television show depicting interactions between police officers and citizens who were either innocent (i.e., crime witnesses or recipients of non-crime related services, e.g., as parents of a missing child) or suspected of committing a crime (i.e., based on witness statements, physical evidence, admissions of guilt, or being filmed committing the crime), Johnson (2007; see also Johnson, 2006) found that Blacks engaged in less eye contact and smiled more than did Whites, regardless of whether they were innocent or suspected of a crime. In addition, Black non-suspects moved their hands more than Black suspects or Whites in either condition, and Black suspects had fewer speech disturbances than Black non-suspects or Whites in either condition. In another study, Vrij and Winkel (1991) used mock police interviews with same- or different-race officers to investigate whether nonverbal behavior differed depending on whether participants were (a) White (Dutch) or Black (Surinamese) and (b) lying or telling the truth. They found no differences in Black participants' nonverbal behavior as a function of whether they were lying or telling the truth. Compared to White participants, however, Black participants were more likely to avoid eye

³Note that I have not accounted for potential reciprocal or feedback effects among the mediator variables (see Major & O'Brien 2005; Schmader et al., 2008; Steele, 2010). For example, Richeson and Shelton (2007) suggest that feeling aroused might lead threatened individuals to engage in self-regulatory efforts. Also, the fact that one is engaging in self-regulatory efforts might be interpreted as evidence of threat or that one is failing to present the intended impression, and this evidence might increase arousal. Increasing cognitive load might further increase arousal and anxiety (e.g., Leal et al., 2008; Vrij et al., 2008, Wallbott & Scherer, 1991). Schmader et al. (2008) also suggested that other thoughts and appraisals related to stereotype threat and efforts to suppress those thoughts play an important role in determining whether performance is impaired. These are important effects to consider, but I focus here on explaining the links between variables that are more directly relevant for explaining why Black suspects are more likely than White suspects to engage in nonverbal behaviors linked to deception.

contact, smile, laugh, move their hands and bodies, speak with long pauses, speak slower, and raise their voice pitch higher (see also Vrij, Dragt, & Koppelaar, 1992; Winkel & Vrij, 1990). Further, Black suspects smiled and laughed more, made more trunk movements, and made fewer speech disturbances with a White officer than a Black officer. These studies indicate that, even when they are innocent and telling the truth, Black individuals tend to engage in more deceptive-looking behaviors than White individuals (see Table 1), particularly when paired with a White police officer.

Johnson (2006, 2007) and Vrij and Winkel (1991) suggested that these kinds of effects are due to cultural differences between racial groups. For example, LaFrance and Mayo (1976) found that, during both intraracial and interracial conversations, Black listeners were more likely to avert their gaze than were White listeners (for review, see Halberstadt, 1985). But perhaps these racial differences in nonverbal behavior are at least exacerbated by stereotype threat. The Black individuals in Johnson's and Vrij and Winkel's studies could have been concerned about whether the police officers they were interacting with were going to be biased by the criminal stereotype. In addition, Shelton (2003) showed that, regardless of whether Black participants were under stereotype threat or not, they reported paying more attention to their thoughts, feelings, and behaviors during interracial interactions than did White participants. Despite noting that Black participants were "particularly sensitive to the ethnic origin of the officer conducting the interrogation" and "exhibited more 'black nonverbal behavior' in front of a white police officer" (p. 180), Vrij and Winkel dismissed the possibility that these differences might have been the product of interracial tension because the same effects did not emerge on a self-report measure of tension. Yet many studies showing typical stereotype threat effects have failed to find differences on self-report measures of anxiety (e.g., Bosson et al., 2004; Townsend, Major, Gangi, & Mendes, 2011), perhaps because threatened individuals respond in socially

desirable ways (e.g., as though they are not anxious) as an impression management strategy (see von Hippel et al., 2005). Thus, Black participants in Vrij and Winkel's study might have had the additional concern of being the target of a White officer's prejudice, which could explain the differences found in Black participants' behavior as a function of the interviewing officer's race. Thus, I propose that stereotype threat theory provides an important social psychological explanation for racial differences in nonverbal behavior in police encounters.

HOW STEREOTYPE THREAT MIGHT TRANSLATE INTO POLICE OFFICER BIAS

The potential for racial differences in nonverbal behaviors to increase erroneous judgments of deception or guilt in police encounters has been noted, but it has always been explained in terms of racial bias or cultural differences in behavior across racial groups (Cassata, 1978; Engel, 2008; Engel & Johnson, 2006; Johnson, 2006, 2007; Rand, 2000; Sporer, 2001; Taslitz, 2006; Vrij, 2008; Vrij & Winkel, 1991). Only Rand suggested an additional possibility—that stereotype threat might cause Black witnesses to engage in nonverbal behaviors that are perceived by White jurors as deceptive. Similarly, as a consequence of experiencing stereotype threat, Black citizens might be more likely than White citizens to engage in nonverbal behaviors that police officers believe are deceptive or suspicious (see Figure 1, Path I). Next, I draw from the literature on deception detection to explain why this could lead police officers to misclassify innocent individuals as guilty more often when they are Black than White.

Based on the erroneous belief that liars are betrayed by their nonverbal behavior (Depaulo & Kirkendol, 1989; Ekman & Friesen, 1969), most police investigators are trained to rely on Inbau, Reid, Buckley, and Jayne's (2001) behavioral analysis techniques to determine whether individuals are being deceptive (Colwell, Miller, Lyons & Miller 2006; Gudjonsson, 2003; Leo, 2004; but see Kassin et al., 2007). Specifically, Inbau and

colleagues train investigators that, compared to truthful suspects, deceptive suspects avoid eye contact; have more variation in their facial expressions; make fewer hand movements; fidget more; have more slouching, retreating, or barrier postures; respond before the investigator finishes the question or take longer to begin responding to questions; laugh, cough, or clear their throats more after significant denials; and speak for shorter periods of time, more slowly, with more disturbances, and in an unwavering voice pitch.

Research has revealed that, in general, police adhere to the Inbau et al. (2001) training protocol—they believe that nonverbal cues to deception include eye contact (Akehurst, Köhnken, Vrij, & Bull, 1996); gaze aversion (Akehurst et al., 1996; Mann, Vrij, & Bull, 2004; Stromwall & Granhag, 2003; Vrij, Akehurst, & Knight, 2006; Vrij & Mann, 2001b; Vrij & Taylor, 2003); tense, nervous, or unfriendly facial expressions (Akehurst et al., 1996; Vrij et al., 2006); smiles (Vrij & Semin, 1996); self-adaptors (Vrij & Semin, 1996); hand/finger movements (Akehurst et al., 1996; Mann et al., 2004; Vrij & Semin, 1996); foot/leg movements (Vrij & Semin, 1996); tense or nervous postures (Akehurst et al., 1996); speech disturbances (Akehurst et al., 1996; Mann et al., 2004; Vrij & Semin, 1996; Vrij & Taylor, 2003); unchanging voice pitch (Vrij & Semin, 1996); and social anxiety (Vrij & Winkel, 1992). Even so, police believe that longer rather than shorter responses and faster rather than slower speech rate are indicative of deception (Vrij & Semin, 1996). In addition, they report using head movements (Vrij & Semin, 1996), body movements (Akehurst et al., 1996; Mann et al., 2004; Stromwall & Granhag, 2003; Vrij & Semin, 1996), fake emotions (Vrij & Mann, 2001b), and longer speech onset latency (Vrij & Semin, 1996) as cues to deception. Also, police believe that liars experience emotions (Vrij et al., 2006), try to control their behavior and speech (Mann & Vrij, 2006; Vrij et al., 2006), and have to think hard (Mann & Vrij, 2006; Vrij & Taylor, 2003). (See Table 1 for summary.)

Given that police investigators' beliefs about the diagnosticity of nonverbal cues are

not entirely accurate, it is not surprising that they detect deception in actual and mock suspects at only slightly better than chance rates (Mann & Vrij, 2006; Mann et al., 2002; Mann et al., 2004; Vrij et al., 2008). Police officers' limited ability to discriminate truthful suspects from lying suspects can also be explained by their misguided reliance on cues that are actually associated with deception, but also related to other psychological processes. As can be seen in Table 1, there is considerable overlap between the nonverbal behaviors that the police associate with deception and those caused by arousal, self-regulatory efforts, and cognitive load. Thus, as noted previously in the literature (e.g., DePaulo, 1992; Gudjonsson, 2003; Inbau et al., 2001; Kassin & Fong, 1999; Johnson, 2006; Leo & Drizin, 2010; Memon, Vrij, & Bull, 2003; Ofshe & Leo, 1997), innocent individuals who are aroused, attempt to manage their impressions, or are cognitively taxed by virtue of being in a stressful situation are likely to behave in ways that are associated with lying, and possibly mistaken as guilty by police.

For the same reason, stereotype threat might increase the likelihood that Blacks will be victims of the misclassification error more often than Whites. Indeed, the correspondence between cues of stereotype threat and deception alone is significant enough to justify concern that innocent Black suspects might be at greater risk than White suspects of being misclassified as guilty. The empirical evidence reviewed above showing that Blacks in legal settings engage in more behaviors that police associate with deception than do Whites (Johnson, 2007; Vrij & Winkel, 1991) provides further reason for concern. Moreover, there is evidence that police judgments are influenced by racial differences in nonverbal behavior. For example, Winkel and Vrij (1990) asked police officers to judge whether mock interrogation suspects were lying or telling the truth based on their nonverbal behavior. Black Surinam suspects who engaged in less eye contact were more likely to be perceived as lying than were White Dutch suspects who engaged in more eye contact.

Thus, nonverbal behavior could be even less diagnostic for Blacks who experience stereotype threat. As a result, police officers might be more likely to misclassify innocent Blacks as guilty than Whites.

SUMMARY AND OVERVIEW OF THE RESEARCH

Drawing from social psychological theory, I hypothesize that innocent Black individuals experience stereotype threat in police encounters because of the culture-wide stereotype that Blacks are criminals (e.g., Devine, 1989). Next, based on similarities in models explaining stereotype threat and behaviors associated with deception, I predict that, compared to Whites, innocent Blacks who experience stereotype threat feel more arousal related to anxiety, engage in more self-regulatory efforts, and experience higher cognitive load. Finally, I predict that, because of their different psychological experiences of police encounters, compared to Whites, Blacks engage in more nonverbal behaviors that prior work has shown are perceived by police officers as suspicious (see Table 1).

I tested these hypotheses in two studies. In Study 1, I administered a self-report survey to Black and White participants to determine whether Blacks but not Whites experience stereotype threat in police encounters, and whether that threat in turn leads Blacks to feel greater anxiety and self-consciousness than Whites. In Study 2, I tested for racial differences in stereotype threat, arousal related to anxiety, and self-regulatory efforts as well as cognitive load and nonverbal behavior during a staged encounter with a White security officer. I also varied the perceived relevance of the stereotype by having the security officer either investigating a theft (high perceived stereotype relevance) or asking for directions (low perceived stereotype relevance). This program of research allowed me to test a theoretically driven model which ultimately suggests that Blacks are more likely than Whites to be targeted by police officers as suspects (see Figure 1).

STUDY 1

The goal of Study 1 was to test the hypothesis that Black but not White individuals would report experiencing stereotype threat in police encounters and that threat would, in turn, cause Blacks to experience greater anxiety and self-consciousness as compared to Whites.

Method

Participants. Participants were 49 African American and 184 White undergraduate psychology students at the University of Illinois at Chicago (UIC) (49% men, M age = 19, SD = 3, ranging from 17 to 38 years old).

Measures and materials. A self-report survey assessed participants' experiences of stereotype threat, arousal, and self-presentational concerns in police encounters (see Appendix A).

Stereotype threat scale. Five items from a modified version of the Explicit Stereotype Threat Scale (Goff et al., 2008; Marx & Goff, 2005) assessed stereotype threat specific to police encounters (e.g., “I worry that police officers might stereotype me as a criminal because of my race”; see Appendix A, questions 1-5). Responses were given on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Responses were averaged to create a reliable stereotype threat scale (α = .77 overall).

Anxiety scale. Seven items were created to assess anxiety in police encounters (e.g., “When you first notice a police officer, do you feel . . . anxious?”; see Appendix A, questions 6a-6g). Responses were given on a 7-point scale ranging from 1 (*not at all*) to 7 (*extremely*) and averaged to create the anxiety scale (α = .85 overall).

Self-consciousness. One item was created to assess self-consciousness in police encounters: “How conscious are you of how you look to police officers?” (see Appendix A, question 7). Responses were given on the same 7-point scale ranging from *not at all* to

extremely.

Demographics. Participants reported their gender, age, and ethnicity (see Appendix A, questions 8-10).

Prior police encounters. Participants answered *no* or *yes* to 5 questions that were created to assess their prior encounters with the police: “Have you ever felt you were stopped by the police just because of your race or ethnic background?”, “Have you ever been questioned by the police because you were a suspect in a crime?”, “Have you ever been arrested or convicted of a crime?”, “Have any of your close family members or friends ever been questioned by the police because they were a suspect in a crime?”, and “Have any of your close friends or family members ever been arrested or convicted of a crime?” (see Appendix A, questions 11-15).

Procedure. In exchange for course credit, undergraduate *Introduction to Psychology* students completed the survey in class, along with various unrelated questionnaires submitted by other researchers during a mass-testing session. All participants were treated according to the guidelines of the UIC Institutional Review Board (IRB).

Results

A series of one-way analyses of variance (ANOVAs) confirmed that, as predicted, Blacks were significantly more likely to agree that they experience stereotype threat in police encounters than were Whites ($M = 4.32$, $SD = 1.49$ versus $M = 2.64$, $SD = 1.13$), $F(1, 231) = 74.22$, $p < .001$, partial $\eta^2 = .24$. There were no significant racial differences in anxiety (Blacks: $M = 3.23$, $SD = 1.18$ versus Whites: $M = 3.44$, $SD = 1.24$), $F(1, 231) = 1.21$, *ns*, nor self-consciousness (Blacks: $M = 3.89$, $SD = 1.95$ versus Whites: $M = 3.61$, $SD = 1.88$), $F(1, 220) = .82$, *ns*, however. Neither the direction nor significance of these effects was changed by controlling for participants' past encounters with the police in terms of feeling as though they had been racially profiled, ever having been questioned as suspects

or arrested for a crime, or having any close family members or friends who had been questioned as suspects or arrested for a crime.

Discussion

Results of Study 1 revealed that Blacks were significantly more likely than Whites to report that they experience stereotype threat in police encounters, but race did not have significant direct effects on either anxiety or self-consciousness. On the one hand, Black participants who feel threatened in police encounters might be more concerned than Whites about how they are perceived and more likely to engage in socially desirable responding as a form of impression management. That is, Blacks might not have wanted to admit the degree to which they are anxious or self-conscious in police encounters, leading them to appear no different from Whites. This would be in line with other stereotype threat research showing inconsistencies between self-report and physiological measures. For example, Townsend et al. (2011) found that women who were chronically sensitive to the threat of sexism did not differ in self-reported stress following interactions that were either identity threatening or safe, despite the fact that women had higher levels of the stress hormone cortisol after identity-threatening interactions. On the other hand, my theory might be incorrect—Blacks and Whites might experience similar levels of anxiety and self-consciousness when they encounter the police. Even so, my analyses showed that Blacks agreed that they feel stereotype threat in police encounters, providing some support for my hypotheses.

A limitation of this study is that the questions about police encounters were very abstract. Participants might have had difficulty thinking about how they would feel in police encounters (see, e.g., Ayton, Pott, & Elwakili, 2007), particularly if they had not had much previous experience interacting with the police. It is possible that they envisioned different kinds of police encounters, and therefore would have envisioned situations that varied in

terms of how likely it would have been for the officer to target them as suspects. To the degree that this method did not encourage participants to feel realistically proximal enough to the situation, then my hypotheses were not tested adequately.

STUDY 2

Study 2 addressed the limitation of Study 1 and extended the research in a variety of ways. To begin with, I tested my hypotheses under more realistic conditions by having participants encounter a White confederate dressed as a security officer. Specifically, in the middle of participating in a study that was ostensibly about beliefs and attitudes and anxiety, participants were instructed to read an article on a tablet computer and then left alone in the laboratory for a few minutes. During this time, a security officer approached the participant and inquired about either (a) the theft of a wallet and tablet computer (high perceived stereotype relevance) or (b) directions to a diversity training meeting (low perceived stereotype relevance). This design allowed me to assess variables as they actually occurred. For example, I videotaped participants during the staged encounter and coded their behavior for nonverbal cues that are commonly associated with deception. Also, by varying the extent to which the stereotype about Blacks and crime was relevant in the encounter, I was able to examine whether racial differences in stereotype threat, the proposed mediators, and nonverbal behavior are elicited by the specific threat of being perceived in light of the stereotype, and whether these differences do not manifest in an identity-safe condition.

As hypothesized earlier, threatened Blacks might be more likely than non-threatened Whites to have self-presentational concerns. To protect against the possibility of not finding differences between Blacks and Whites on self-report measures (e.g., stereotype threat, anxiety, etc.), I assessed stereotype threat implicitly by measuring the extent to which the stereotype of Black criminality was activated and cognitively accessible for participants.

That is, because stereotypes are activated more in threatened than non-threatened individuals (Goff et al., 2008; Steele & Aronson, 1995), evidence of stereotype activation is suggestive of stereotype threat. I also supplemented the self-report measures of anxiety with a physiological measure of arousal. Specifically, participants wore a heart rate monitor during the study, allowing me to assess changes in physiological arousal that occurred as a result of encountering the security officer. Such measures have been used in prior research and can bypass participants' reluctance to report accurately how they are affected by threat (e.g., Blascovich et al., 2001; Mendes et al., 2002, 2008; Townsend et al., 2011). To control for participants' efforts to impression manage, I assessed the degree to which participants engaged in socially desirable responding, too.

In addition, I assessed cognitive load so I could determine whether it also mediates the relations between stereotype threat and nonverbal behavior. Specifically, I measured participants' ability to complete a selective attention task after they encountered the security officer. Participants also reported how they were feeling after the staged encounter, and, retrospectively, how they felt during the encounter. Specifically, they reported the extent to which they were feeling anxious, angry, hostile, fearful, or defensive, as well as positive emotions, because different types of emotional responses can influence behavior differently (e.g., Weiner, 1986). Participants then reported whether they thought the security officer was going to accuse them of a crime and how anxious they felt, how much they monitored their behavior, how much stereotype threat they experienced, and how they thought they acted in the encounter.

To ensure that the effects under study were truly due to stereotype threat experienced in the staged situation and not just racial differences in generalized concerns about bias or the police, I also measured participants' perceptions of the risk of being stereotyped as a criminal in general, perceptions of the police in general, and more detailed

aspects of participants' prior police encounters. The inclusion of all of these additional measures facilitated a more thorough test of the within-suspect effects predicted in my model (see Figure 1), while also allowing me to control for other ways in which Blacks and Whites might differ.

Finally, the stereotype of criminality is associated more commonly with Black men than Black women (Navarrette, McDonald, Molina, & Sidanius, 2010; Plant, Goplen & Kuntsman, 2011; Quillian & Pager, 2001; Rome, 2004; Sidanius & Veniegas, 2000). In fact, when race and gender were entered into a two-way between-subjects ANOVA of Study 1 data, although the interaction term was not significant, $F(1, 231) = 1.85$, *ns*, the expected simple effect of gender on stereotype threat approached significance for Black participants, $F = 2.46$, $p = .11$, but not White participants, $F = .00$, *ns*. Specifically, Black men ($M = 4.67$, $SD = 1.39$) reported more stereotype threat in police encounters than did Black women ($M = 4.14$, $SD = 1.48$). I expected this difference to be magnified under more realistic circumstances. Thus, to enhance the ability to test my hypotheses and find effects in Study 2, I recruited only men participants.

I predicted significant main effects, qualified by significant interactions. First, participants were expected to experience more anxiety, arousal, self-regulation, cognitive load, and negative emotions and engage in more deceptive-looking nonverbal behavior in the high- versus low-perceived-stereotype-relevance condition. Second, compared to Whites, Blacks were expected to experience more stereotype activation, stereotype threat, anxiety, arousal, self-regulation, cognitive load, and negative emotions and engage in more deceptive-looking nonverbal behavior. Third, race effects were expected to be larger when perceived stereotype relevance was high versus low. Fourth, stereotype threat, anxiety/arousal, self-regulation, and cognitive load were expected to mediate the anticipated Race X Perceived Stereotype Relevance interaction effect on deceptive-looking nonverbal behavior.

Method

Participants. Participants were 39 European American⁴ and 40 African American men. All African American participants self-identified as African American, but 1 also self-identified as White/Caucasian, 1 as Asian American, and 1 as Other. There were 19 to 20 participants in each experimental cell.

Because it has been argued that the association of Blacks with crime is learned through socialization in our culture (Devine, 1989), all participants were U.S. citizens. Participants were 39 years old on average ($SD = 15$ years, ranging from 18 to 76 years) and diverse in terms of household income (37% made < \$20,000; 6% \$20,000-29,999; 12% \$30,000-39,999; 14% \$40,000-49,999; 5% \$50,000-59,999; 4% \$60,000-69,999; 5% \$70,000-79,999; 4% \$90,000-99,999; and 13% \geq \$100,000). Most participants reported having at least some college education (80% versus 17% who completed high school or received a GED and 4% who did not complete high school).

Participants were recruited either from the UIC Psychology Student Subject Pool, composed of Introduction to Psychology students, or from the community using a variety of methods. Community members received information about the study from either (a) members of the research team; (b) UIC Classifieds; (c) emails distributed to UIC organizations with African American men contacts (e.g., the African American Cultural Center, African American Academic Network); (d) fliers (see Appendix B) posted at UIC, other nearby colleges and universities (e.g., Harold Washington College, Malcolm X College, Roosevelt University, DePaul University), and in the community; (e) advertisements (see Appendix B) on craigslist.org and chicagoreader.com; or (f) their

⁴Only White men of European descent were allowed to participate, because White men of Hispanic or Middle Eastern descent might experience stereotype threat in police encounters due to cultural stereotypes depicting Hispanics and Middle Easterners as criminals (see Marin, 1984, and Huq et al., 2011, respectively).

friends or family members. Overall, 8 participants (10%) reported learning about the study from the UIC Psychology Student Subject Pool, 5 (6%) from UIC Classifieds, 13 (17%) from fliers, 20 (25%) from craigslist.org, 22 (28%) from a friend or family member, and 11 (14%) from other sources.⁵

I dropped an additional 19 participants: 1 in the high-perceived-stereotype-relevance condition due to experimenter error (the participant saw and spoke to the confederate security officer moments before participating) and 18 others who suspected that the staged encounter with the security officer was part of the study. Piloting suggested acceptable rates of suspicion overall ($n = 3$ of 21, or 14%) and within conditions ($n = 0$ of 2 Blacks in the low-perceived-stereotype-relevance condition, or 0%; $n = 0$ of 3 Whites in the low-perceived-stereotype-relevance condition, or 0%; $n = 1$ of 4 Blacks in the high-perceived-stereotype-relevance condition, or 25%; and $n = 2$ of 12 Whites suspected in the high-perceived-stereotype-relevance condition, or 17%). In the actual study, however, 19% of participants suspected overall: 4 African Americans in the low-perceived-stereotype-relevance condition (17%), 1 White in the low-perceived-stereotype-relevance condition (5%), 3 African Americans in the high-perceived-stereotype-relevance condition (13%), and 10 Whites in the high-perceived-stereotype-relevance condition (34%). A log-linear model

⁵Separate one-way ANOVAs revealed that participants recruited from different sources varied significantly in how likely they thought it was that the security officer had stereotyped them as criminals, $F(5, 73) = 4.06$, $p = .003$, and how frequently they used self-adaptors, $F(5, 61) = 3.63$, $p = .006$. Planned comparisons using the Scheffé procedure revealed that those who learned about the study from friends or family members ($M = 2.27$, $SD = 1.28$) thought it was marginally more likely that they had been stereotyped than did participants recruited from either craigslist.org ($M = 1.30$, $SD = .66$), $p = .06$, or the UIC Psychology Student Subject Pool ($M = 1.67$, $SD = 1.03$), $p = .07$. This was likely because participants in the former group were predominantly Black (82%) whereas participants in the latter two groups were predominantly White (95% and 88%, respectively). Also, participants recruited from craigslist.org ($M = 3.61$, $SD = 2.64$) used significantly more self-adaptors than did participants recruited from fliers ($M = .64$, $SD = .92$), $p = .03$. Again, this probably reflects the racial differences across recruitment sources as those recruited from fliers were mostly Black (92%). Other ANOVAs and an ANCOVA showed that recruitment source had no other significant effects on the stereotype threat nor nonverbal behavior measures, $F_s(5, 59-73) \leq 2.22$, $p_s \geq .06$.

testing the main and interactive effects of race and perceived stereotype relevance on suspicion revealed that, although perceived stereotype relevance did not significantly predict suspicion, parameter estimate = $-.25$, $z = -.32$, *ns*, $CI = -1.78-1.27$, race had a marginally significant effect, parameter estimate = -1.15 , $z = -1.66$, $p = .10$, $CI = -2.51-.21$, that was qualified by a marginally significant interaction with perceived stereotype relevance, parameter estimate = 2.25 , $z = 1.86$, $p = .06$, $CI = -.13 - 4.62$. Supplemental chi-square analyses showed that race had no significant effect in the low-perceived-stereotype-relevance condition, $\chi^2(n = 45) = 1.61$, *ns*, $\phi = .19$, but there was a marginally significant trend for more Whites than Blacks in the high-perceived-stereotype-relevance condition to suspect that the security officer was involved in the study, $\chi^2(n = 52) = 3.14$, $p = .08$, $\phi = .25$.

Measures. Measures are described in the order they were completed except as noted. Means, standard deviations, and ranges for all continuous measures can be seen in Table 2.

General anxiety scales. A 10-item modified version of the Anxious Arousal scale of the Mood and Affect Symptom Questionnaire (Watson & Clark, 1991) assessed the extent to which participants were bothered by a variety of anxiety symptoms (see Appendix C). Participants responded on a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely*). This measure was completed both prior to and after the encounter with the security officer, so that pre-encounter anxiety could be used as a control variable in analyses. Responses were averaged to form the general anxiety pre-encounter and post-encounter scales ($\alpha s = .79$ and $.83$, respectively).

Baseline cognitive load. To establish a baseline for cognitive load, participants completed a 2-back task. Following Beilock et al. (2007) and Kane, Conway, Miura, and Colflesh (2007), participants viewed a series of letters one at a time, and indicated whether the letter presented on the current trial matched the letter presented two trials previously by

pressing keys marked "Same" or "Different." For example, the participant should type "Same" when the letter series is *H / C / H*, and "Different" when the letter series is *H / C / K*). When letters trials were "different," there were no lures to foil participants (i.e., the current letter was not 1 trial or 3 trials back; see Kane et al., 2007). As in Kane et al. (2007), eight phonologically distinct letters were used as stimuli (i.e., *B, F, K, H, M, Q, R, X*). Each letter appeared 5 times, in a predetermined random order, and randomly in either upper- or lowercase. On each trial, the letter was presented for 500 milliseconds, followed by a 2,500-millisecond period during which the screen was blank, providing a total of 3 seconds for participants to indicate their responses before the next letter was presented. Failure to respond was scored as an error. The participant completed 38 critical response trials. Of all trials, 12 (32%) were "same" trials and 26 (68%) were "different" trials.

Demographics. Participants reported their citizenship status, age, gender, highest level of education attained, household income, and race (see Appendix D.)

Nonverbal behavior. Participants were videorecorded during the study so evidence that the participants engaged in nonverbal behaviors commonly perceived as deceptive could be coded. The video segment targeted for coding was the interaction between the security officer and the participant, starting at the first moment the officer began speaking to the participant and ending at the last moment the officer and the participant communicated with each other. The participant was shown in the center of the screen, sitting in a large chair at a desk, reading from a tablet computer, and talking to the officer. The participant was clearly visible from the waist up, but the officer was not shown in the video.

The full coding manual can be seen in Appendix E. Similar to Johnson (2006) and McClintock and Hunt (1975), the mean percentage of time that the participant maintained eye contact with the security officer was calculated by dividing time spent making eye contact by the duration of the interaction and multiplying by 100. Discrete instances of gaze

aversion (i.e., the participant broke eye contact with the officer), smiles (i.e., one or both corners of the participant's mouth turned up), head movements (i.e., the participant nodded, shook, tilted, or otherwise moved his head), gestures (i.e., the participant moved his hands or arms to communicate with the officer), self-adaptors (i.e., the participant touched his face, arms, legs, or body), and position shifts (i.e., the participant shifted the position of his body) were counted, consistent with coding schemes used in prior research (Mann et al., 2002; Vrij et al., 2008; Vrij & Winkel, 1991; Vrij et al., 2010). Using procedures modified from Vrij et al. (2008) and Waxer (1977), nervous appearance was coded on a 5-point scale ranging from 0 (*not at all nervous*) to 4 (*extremely nervous*). Also, the extent to which participants attempted to distance themselves from the tablet computer while interacting with the security officer was coded. Whether participants attempted to conceal the tablet computer was coded, too, but no participants ever did this so this code is not discussed further.

Two independent raters (either 2 White women or 1 White woman and 1 Asian woman) who were blind to the hypotheses, what happened in the staged encounter, and experimental condition coded a sample of 24% ($n = 16$) of valid videos for percent of eye contact, gaze aversion, smiles, head movements, gestures, self-adaptors, and position shifts. The sample was selected randomly except each cell of the experimental design was represented nearly equally. Krippendorff's α for these codes ranged from .88 to 1.00, exceeding the .80 threshold identified by Krippendorff (2004) as acceptable (α s for all individual codes are listed in Appendix E). Discrepancies for these codes were resolved by reviewing and discussing the videos. Each rater then coded half of the remaining videos.

The same procedure was followed for coding nervous appearance, except that initial agreement among raters was poor. Therefore, 46% ($n = 31$) of videos were coded as a group by discussion. Another random sample of 24% ($n = 15$) of videos were coded independently

by the 2 raters to achieve tentatively acceptable reliability for the nervous appearance code ($\alpha = .73$). Each rater then coded half of the remaining 31% ($n = 21$) of videos. Nervous appearance ratings did not differ significantly depending on whether videos were coded by group ($M = 1.90$, $SD = 1.14$) or independent raters ($M = 1.56$, $SD = .81$), $t(63) = -1.41$, ns .

Heart rate. Heart rate (i.e., beats per minute) was recorded continuously during the study, but the crucial data comprised only (a) the 5 min prior to the onset of the staged encounter (i.e., before the security officer began his script), which constituted the participant's baseline heart rate; and (b) the time that the participant was interacting with the security officer (i.e., from when the officer approached the participant until he excused himself). The exact timing of these events was determined by syncing a clock to the BioHarness heart rate monitor (described below) and displaying the clock on the wall behind the participant so it could be seen in the videos.

Stereotype activation. Following Vorauer, Hunter, Main, and Roy (2000), participants completed a lexical decision task to assess the degree to which the stereotype depicting Blacks as criminals was activated for them by the encounter with the security officer. Eight target words that are associated with the stereotype that Blacks are criminals, 16 filler words that were matched for length and valence, and 24 nonwords were flashed on the laptop screen in a predetermined, randomly selected order. (See Appendix F for details and a list of these stimuli.) Participants were instructed to indicate whether the string of letters that appeared on the screen formed a word or a nonword, by pressing the appropriately marked (i.e., "WORD" or "NONWORD") key on the keyboard. A fixation cross (+) in the center of the laptop screen appeared for 500 ms preceding each stimulus word and nonword, which then appeared and remained until participants responded. The task consisted of a total of 48 experimental trials. Quicker responses to stereotype-related words relative to filler words indicate that the stereotype-related words are more cognitively

accessible (i.e., the stereotype is activated).

Cognitive load. Participants completed the Stroop (1935) color task. On each trial, the word “RED,” “YELLOW,” “GREEN,” or “BLUE” or a row of four Xs appeared on the screen in either red, yellow, green, or blue font. On compatible trials, a color name appeared in the same color of its semantic meaning (e.g., “RED” appeared in red font). On incompatible trials, a color name appeared in a color other than its semantic meaning (e.g., “RED” appeared in blue font). On control trials, the string of Xs appeared in either red, yellow, green, or blue font. Participants were to report the color in which the stimulus word or string of Xs appeared, as quickly and accurately as they could, by pressing the appropriate color-coded key on the laptop keyboard. A fixation cross (+) in the center of the laptop screen appeared for 500 ms preceding each stimulus word and string of Xs, which then appeared and remained until participants responded. The task consisted of 84 experimental trials—28 control trials, 19 compatible trials, and 37 incompatible trials—that were presented in a predetermined, randomly selected order. Incompatible trials are challenging because participants must override the powerful inclination to report the semantic meaning of the color name rather than the font in which it is printed (MacLeod, 1991). Thus, longer latencies associated with incompatible trials as compared to control trials form an index of Stroop interference, and reflect more cognitive load.

Emotional reactions. Following Wyer, Calvini, Nash, and Miles (2010), participants were asked to rate the extent to which they were currently feeling positive emotions (i.e., happy, pleasant), anger (i.e., angry, mad), hostile, fear (i.e., afraid, scared), and defensive on a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely*) (see Appendix G). Responses to items assessing positive emotions were averaged to create a reliable scale ($\alpha = .75$), as were items assessing anger ($\alpha = .72$) and fear ($\alpha = .82$).

Concern about being accused. Participants were instructed to “think back really

carefully about what you were feeling when the security officer was here. Don't think about how you are feeling now. Instead think about how you were feeling then. Answer the next questions about how you felt with the security officer." They then responded on a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely*) to the item, "When the security officer was here, I was concerned he might accuse me of doing something wrong."

Specific anxiety scale. Participants were asked to indicate how much they felt each of 7 emotions assessed by the anxiety scale in Study 1 when they encountered the security officer (see Appendix H). Responses were given on a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely*) and averaged to create the specific anxiety scale ($\alpha = .78$).

Self-regulatory efforts scale. Self-regulatory efforts were assessed by having participants rate the extent to which they engaged in 5 different self-regulatory thoughts and behaviors in the encounter (see Appendix I). These items are similar to those used by Babbitt and Sommers (2011). Responses were given on a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely*), and averaged to create the self-regulatory efforts scale ($\alpha = .69$). Reliability was improved ($\alpha = .74$) by dropping 1 reverse-scored item (i.e., "When the security officer was here, I was behaving totally naturally"; see Appendix I, question 2).

Stereotype threat scale. The 5 items used in Study 1 were adapted to assess the extent to which participants experienced stereotype threat during the encounter with the security officer (see Appendix J). Responses were made on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), and averaged to create the stereotype threat scale ($\alpha = .95$).

Subjective perceptions of behavior. Participants reported on their perceptions of their behavior in the encounter with the security officer by indicating whether they thought they acted suspicious (suspicious behavior), looked nervous (nervous behavior), or tried to avoid looking nervous (controlled behavior) (see Appendix K). Responses were made on a

5-point scale ranging from 1 (*not at all*) to 5 (*extremely*). These items did not create a reliable scale when averaged together ($\alpha = .54$) so they were examined individually.

Perceived stereotype likelihood. Also as Steele et al. (2002) recommended, participants' belief about the likelihood of having been stereotyped in the staged encounter was assessed with the question, "How likely is it that the security officer stereotyped you as a criminal?" Responses were made on a 5-point scale ranging from 1 (*not at all likely*) to 5 (*extremely likely*).

Perceptions of police. Participants reported their concern about police victimization (1 item) and perceptions of police racism (4 items; $\alpha = .93$) (see Appendix L). All items were modeled on those used by Huq, Tyler, and Schulhofer (2011) and Tyler and Fagan (2008). Responses were given on 7-point scales ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Prior police encounters. As in Study 1, participants answered *yes* or *no* to questions about prior encounters with the police, including whether either they or a close family member or friend had ever been subjected to bias-based policing, questioned as a suspect, or arrested or convicted (see Appendix M). Forty-seven percent of participants responded affirmatively to questions about either personally or vicariously experiencing bias-based policing; 70% to being questioned as a suspect; and 76% to being arrested or convicted.

Social desirability scale. The 10-item short form of the Marlowe-Crowne Social Desirability Scale (M-C 1[10], Strahan & Gerbasi, 1972) measured participants' chronic propensity to respond in ways that are viewed favorably by others (see Appendix N). Responses to dichotomous *true* or *false* statements regarding personal attitudes and traits (e.g., "I'm always willing to admit it when I make a mistake") were summed to create a reliable social desirability score ($\alpha = .70$).

Source. Participants responded to the question, “How did you hear about this study?” by answering (a) “UIC Department of Psychology PEC Online Sign-Up System,” (b) “UIC Classifieds,” (c) “A flyer,” (d) “Craigslist.org,” (e) “A friend or family member,” or (f) “Other.”

Manipulation, prior knowledge, and believability checks.

To ensure participants were paying attention and that perceived stereotype relevance was manipulated effectively, participants answered the following question: “What did the security officer ask you about? Please think carefully before answering.” Response options were *a tablet computer that was stolen* and *where a room was for a diversity training meeting*. This question came after the subjective perceptions of behavior items but before the perceived stereotype likelihood item.

To determine whether participants had prior knowledge that the study would involve a staged encounter with a security officer, at the end of the study, participants were orally asked, “Before you came here today, did you know that this study would involve interacting with a security officer?” (yes or no). Also, to assess whether the encounter was believable and real for participants, they were engaged in a funneled oral debriefing at the end of the study (see Appendix O). Overall, participants were coded as being either *not suspicious* (i.e., participants who did not become suspicious during the staged encounter) or *suspicious* (i.e., participants who indicated that they suspected the encounter was staged while the officer was interacting with them).

Materials.

Zephyr™ Bioharness™ BT. The Zephyr™ Bioharness™ BT indexed physiological arousal continuously during the study. The BioHarness collects a variety of measures, including heart rate, which was of interest in this study. This compact electronics module is fitted to a contact strap which participants wear around their chests. The module captures

physiological data which can either be downloaded directly from the module or transmitted wirelessly via Bluetooth to devices using Zephyr's OmniSense software.

Resting period article. During an ostensible resting period, participants were asked to read an article describing career opportunities for individuals who have a Bachelor's degree in psychology (Carroll, Shmidt, & Sorenson, 1992). This article was selected on the basis of being unrelated to the issues under study and unlikely to excite participants emotionally or physiologically.

Kindle Fire. Participants completed measures and read the resting period article on a Kindle Fire tablet computer. The Fire's dimensions are 7.5" x 4.7" x 0.45", it weighs 14.6 ounces, and it has a 7" multi-touch display. A device of this size was selected so that it was large enough to be noticed but also small enough that it would be possible for participants to attempt to conceal the device when they encountered the security officer, as threatened individuals might react in this way. The Kindle Fire ran Qualtrics online survey software for the display of the general anxiety scale (Appendix C), demographics measures (Appendix D), emotional reactions measures (Appendix G), concern-about-being-accused item, specific anxiety scale (Appendix H), self-regulatory efforts scale (Appendix I), stereotype threat scale (Appendix J), subjective perceptions of behavior items (Appendix K), manipulation and prior knowledge checks, perceived-stereotype-likelihood item, concern-about-police-victimization item and perceived police racism scale (Appendix L), prior police encounters measures (Appendix M), social desirability scale (Appendix N), and source item.

Laptop. Participants completed reaction time measures on a Lenovo ThinkPad laptop computer. The ThinkPad has a 15" widescreen with 1280X800 resolution. The ThinkPad operated on the Windows Vista Business system. The laptop displayed the stereotype activation (i.e., lexical decision task) and cognitive load measures (i.e., 2-back and Stroop color task) using DirectRT software, which allows precision recording of

responses at the millisecond level.

Video equipment. Digital video of participants' study sessions was captured using a Canon Vixia HF R21 Full HD Camcorder. The camcorder was compact, at 2.4" x 2.4" x 4.8" and approximately 9.5 ounces. The camcorder was mounted discretely in a corner behind a plant.

Security officer details and script. The security officer was played by one confederate actor, a 28-year-old White man who was 6 feet tall and weighed approximately 195 pounds. The confederate was a graduate student research assistant from the UIC Department of Criminology, Law and Justice.

The officer adhered strictly to scripts during the staged encounter with participants—one script for the high-perceived-stereotype-relevance condition and another for the low-perceived-stereotype-relevance condition. The scripts directed the security officer as to exactly what he should do in each condition. The scripts were matched for both the number of opportunities the participant was given to respond and the length of the officer's speaking turns. They are shown in Appendix P and Appendix Q, and described in the procedures below.

Procedure.

All participants completed the study individually. The participant came alone to a classroom and met Experimenter 1. Because the results of this study depended on the believability of the encounter with the security officer, precautions were taken to ensure that the participant was not aware of the true purpose of the study. First, the participant was asked what study he was there to participate in. No participants mentioned anything related to security officers, profiling, or crime in response to this question, so all participants were allowed to complete the study. Second, the participant was told that he would be wearing a heart rate monitor and completing questions and tasks that would measure different beliefs

and attitudes as well as how anxious he was feeling. Then, the participant provided consent, randomly selected an identification number from a bag, and put on the BioHarness heart rate monitor. Then Experimenter 1 escorted the participant to the laboratory to complete the study with Experimenter 2. The participant was surreptitiously videotaped the entire time he was in the laboratory.

Upon arrival at the laboratory, the experimenter turned on the Bioharness to begin recording the participant's heart rate. Then the participant was engaged in a practice session in which he learned how to complete the baseline cognitive load, stereotype activation, and cognitive load measures (6 trials each of the 2-back, lexical decision, and Stroop color tasks, respectively) on the laptop. He was then given the Kindle Fire to complete the general anxiety scale (Appendix C). Next, he completed the baseline cognitive load measure (i.e., the 2-back task) on the laptop. Then the participant completed the demographics items (Appendix D) on the Kindle Fire. Demographics were completed prior to the encounter with the security officer because describing one's race was expected to prime participants' racial identity, which past research suggests facilitates the induction of stereotype threat in Black participants (Steele & Aronson, 1995).

Next, the participant was told he had reached a 5-minute resting period, the supposed purpose of which was to ensure that his heart was at its normal resting rate before completing the remainder of the study. The participant was instructed to read the resting period article on the Kindle Fire (Carroll et al., 1992) and, if he finished before the period was over, to relax and read the article again. At this time, Experimenter 2 made an excuse to leave the laboratory (e.g., to go to the restroom). In reality, she went to signal the waiting security officer.

After 1 minute, the security officer commenced with the appropriate script depending on the condition (see Appendix P and Appendix Q for the high- and low-perceived-

stereotype-relevance condition scripts, respectively). As shown in the Appendices, for all participants, the officer coughed loudly and walked toward a water fountain in the hall outside of the laboratory. (See Figure 2.) At the same time, he pretended to receive a call and began talking into his cell phone, loud enough so the participant could hear him clearly. In the high-perceived-stereotype-relevance condition, the officer stated that he was looking for someone who had stolen a "wallet and one of those little computer book things." In the low-perceived-stereotype-relevance condition, he stated that he could not "find that diversity training meeting." In each condition the officer then took a drink of water, turned to the laboratory, acted as though he was noticing the participant for the first time, and looked intently at the participant. The officer then said into the phone, "Hey, I gotta go. There's somebody right here that might know..." either "something" (high perceived stereotype relevance) or "where it is" (low perceived stereotype relevance). The officer then ended the pretend call by saying "All right, later," and closing his cell phone. As shown in Figure 2, the participant was positioned so that he could easily see the security officer during this portion of the staged encounter, which took an average of 37 seconds.

Next, the officer approached the participant, stopped in the laboratory doorway, looked around the laboratory and at the Kindle Fire, and adhered to the script as closely as possible, regardless of what the participant said or did. In the high-perceived-stereotype-relevance condition, the officer noted that, "a lady down the hall just reported having her wallet stolen, and a little computer just like that." He then asked the participant, "Is that tablet computer yours?", "How long have you been here?", and "You seen anything unusual since you got here? Anybody roaming around that looked like they didn't belong here? Anything like that?" In the low-perceived-stereotype-relevance condition, the officer asked, "do you know where Room 3318 is?" He then noted that he was trying to find a "diversity training meeting" that was "supposed to be a part of some race relations class." The officer

then asked the participant, "Do you know anything about it?" To ensure that the officer's attention was directed toward the Kindle Fire in both conditions, the officer next asked the participant, "Oh, hey, is that a Kindle you've got there? I've been thinking about getting one for my girlfriend—how do you like it?"

In both conditions, when the participant finished responding to the officer, the officer pretended to receive another phone call. He then said into the phone, "I think I'm just around the corner from there so I'll go check it out." In the high-perceived-stereotype-relevance condition, the officer stated that he would "be back in a minute." In the low-perceived-stereotype-relevance condition, he stated, "I think I know where this meeting is now. Hope so, or you might see me wandering around again." These statements were included to lead the participant to believe that he might encounter the security officer again, and extend the participant's feelings of threat and concerns about interacting with the officer long enough to be measured. This interactive segment of the staged encounter took an average of 61 seconds. The length of the interaction did not differ significantly as a function of participant race (Black: $M = 61$ s, $SD = 14$ s, and White: $M = 60$ s, $SD = 10$ s), $t(69) = -.14$, ns , but it was marginally longer in the low-perceived-stereotype-relevance condition ($M = 63$ s, $SD = 13$ s) than in the high-perceived-stereotype-relevance condition ($M = 58$ s, $SD = 12$ s), $t(69) = 1.81$, $p = .07$.

Experimenter 2 waited 1 minute after the security officer exited before she returned to the laboratory. After the ostensible resting period ended, the participant completed another series of measures. Specifically, he completed the (a) stereotype activation measure (i.e., lexical decision task; Appendix F), (b) cognitive load measure (i.e., Stroop color task), (c) general anxiety scale (Appendix C), (d) emotional reactions measures (Appendix G), (e) concern-about-being-accused item, (f) specific anxiety scale (Appendix H), (g) self-regulatory efforts scale (Appendix I), (h) stereotype threat scale

(Appendix J), (i) measures of subjective perceptions of nonverbal behavior measures (Appendix K), (j) manipulation check item, (k) perceived-stereotype-likelihood item, (l) perceptions of the police measures (Appendix L), (m) prior police encounters measures (Appendix M), (n) short form of the Marlowe-Crowne Social Desirability Scale (Appendix N), (o) prior knowledge check, and (p) source measure.

The participant then removed the BioHarness heart rate monitor and was debriefed. A funneled process was used to assess whether the participant believed the interaction he had had with the security officer was real (see Appendix O). He was also told the true purpose of the research and that he had been videotaped during the study. The participant was then given the option of having his data and/or video deleted or limited in use, and signed a consent form indicating his preference. Two participants opted to have their videos deleted entirely, and 1 other participant requested that his video not be used as data in this research.

The participant was then thanked and compensated. Participants from the UIC Psychology Student Subject Pool received credit toward their final course grade. All other participants were compensated with \$25 for participation and \$10 for travel expenses. The participant was provided with a brief description of the research and reference list and invited to contact me if he wanted more information or had questions. Finally, although piloting revealed that no participants perceived the encounter to be more distressing than an interaction with a police officer in their daily lives would have been, the participant was offered information for the UIC Counseling Center.

Results

To preview, I discuss the results in six sections. First, I discuss results from checks of manipulation, prior knowledge, and believability that determined which participants were eligible to remain in the final sample. Second, I present results from preliminary analyses

which identified data that were missing, excluded, or violated the assumption of normality (i.e., skew or kurtosis was more than +2 or less than -2, Garson, 2012), as well as how those data were handled. Third, I review results identifying the most parsimonious set of covariates from among those proposed (i.e., general anxiety prior to the staged encounter, perceptions of police, prior police encounters, and social desirability). Fourth, I present bivariate and partial correlation analyses examining associations among subjective and objective measures of stereotype threat, anxiety/arousal, self-regulatory efforts, cognitive load, emotional reactions, and nonverbal behavior.

Fifth, I present results from the Main Analyses, which tested the focal hypotheses regarding the effects of race and perceived stereotype relevance on (a) stereotype threat and (b) nonverbal behavior in the staged encounter with the security officer. These analyses include 2 (race: African American, White) X 2 (perceived stereotype relevance: high, low) between-subject ANOVAs, analyses of covariance (ANCOVAs), and multivariate analyses of variance (MANOVAs) on the continuous dependent variables, as appropriate. Results are organized by (a) main effects of race, (b) main effects of perceived stereotype relevance, and (c) interactive effects of race and perceived stereotype relevance. Within each of these sections, I present effects on (a) stereotype threat (i.e., the stereotype threat scale, concern-about-being-accused item, perceived-stereotype-likelihood item, stereotype activation measure [i.e., lexical decision task]), (b) nonverbal behavior (i.e., subjective perceptions of suspicious, nervous, and controlled behavior and objectively coded nervous appearance, eye contact, gaze aversion, smiles, head movements, position shifts, gestures, self-adaptors, and distancing behavior), and (c) potential mediators of anxiety/arousal (i.e., the general anxiety post-encounter scale, the specific anxiety scale, heart rate), the self-regulatory efforts scale, the cognitive load measure (i.e., Stroop color task), and emotional reactions (the positive emotions scale, anger scale, hostility item, fear scale, and

defensiveness item). This presentation allows the reader to consider the effects of race and perceived stereotype relevance across all related variables at once.

Finally, in the sixth section, I review results from Mediation Analyses, which are multiple linear regression analyses exploring the ability of proposed mediators to explain the significant effects revealed in the Main Analyses.

To preview, all participants passed the manipulation, prior knowledge, and believability checks. Preliminary analyses revealed that transforming nonnormally distributed data did not alter results so nontransformed data were used in the correlational, main, and mediational analyses. The only covariate to change the pattern of findings was perceptions of police racism.

Results of the main analyses revealed support for my hypotheses in several domains. Race had predicted main effects on the stereotype threat scale, perceived-stereotype-likelihood item, objectively coded nervous appearance, and hostility. Race also had main effects on the specific anxiety scale and the frequency of use of self-adaptors, although not in the expected direction. Race did not, however, significantly influence responses on the other measures of stereotype threat (i.e., concern-about-being-accused item, stereotype activation measure), psychological correlates (i.e., heart rate, general anxiety post-encounter scale, self-regulatory efforts scale, cognitive load measure, positive emotions scale, anger scale, fear scale, defensiveness item), nor nonverbal behavior (i.e., self-ratings of suspicious, nervous, and controlled behavior; percentage of the interaction during which participants made eye contact with the security officer; extent to which participants distanced themselves from the Kindle Fire, nor the frequency of gaze aversion, smiles, gestures, head movements, nor position shifts).

Perceived stereotype relevance had predicted main effects on the stereotype threat scale; concern-about-being-accused item; perceived-stereotype-likelihood item; specific

anxiety scale; heart rate; self-regulatory efforts scale; defensiveness item; self-rated suspicious, nervous, and controlled behavior; and objectively coded nervous appearance and percentage of eye contact. Perceived stereotype relevance also had a main effect on the frequency with which participants smiled, but not in the predicted direction. Perceived stereotype relevance did not, however, significantly affect stereotype activation; other measures of psychological correlates (i.e., general anxiety post-encounter scale, cognitive load measure, positive emotions scale, anger scale, fear scale, hostility item); nor nonverbal behavior (i.e., frequency of gaze aversion, gestures, use of self-adaptors, head movements, position shifts nor distancing from the Kindle fire).

Race and perceived stereotype relevance unexpectedly interacted to influence the specific anxiety scale and self-rated suspicious, nervous, and controlled behavior such that Blacks reported less anxiety and less suspicious, nervous, and controlled behavior than Whites when the officer was investigating a theft but not when he was asking for directions. Also, when perceptions of police racism were controlled, race and perceived stereotype relevance had an interactive effect on the stereotype threat scale such that, as predicted, Blacks reported more stereotype threat than Whites when the officer was investigating a theft but not when he was asking for directions.

Mediation analyses revealed that, as predicted, the main effects of both race and perceived stereotype relevance on nervous appearance were mediated by stereotype threat (but not when perceptions of police racism were controlled in analyses). The interaction effect on self-rated controlled behavior was partially suppressed by stereotype threat and partially mediated by perceived stereotype likelihood. Finally, the main effect of perceived stereotype relevance on percentage of eye contact was partially mediated by heart rate.

Manipulation, prior knowledge, and believability checks. All participants correctly answered the perceived-stereotype-relevance manipulation check, and none had prior

knowledge that the study would involve a staged encounter with a security officer. As previously discussed, however, 18 participants were suspicious that the staged encounter was part of the study and therefore were excluded.

Missing, excluded, and nonnormal data. It became clear near the beginning of data collection that many participants did not understand how to complete the baseline cognitive load measure (i.e., the 2-back task). Although the experimenter instructed participants to respond to every letter trial, told participants the correct answer to every letter trial in the practice session, and repeated the practice session with participants who did not seem to understand, many participants still responded to only every third letter trial, which likely inflated the proportion of correct responses artificially and reduced reaction time on the letter trials to which participants did respond (i.e., because these participants were not as cognitively busy as those who responded to every letter trial). Thus, I decided not to include these data in analyses, but still required all participants to complete the task to ensure that they were all equally cognitively depleted by the time they encountered the security officer.

Coded nonverbal behavior and heart rate data were missing for 6 participants (4 African Americans in the low-perceived-stereotype-relevance condition, 1 White in the high-perceived-stereotype-relevance condition, and 1 White in the low-perceived-stereotype-relevance condition) because the experimenter failed to properly program the videocamera memory settings, resulting in video not being recorded during their sessions. Coded nonverbal behavior data were excluded entirely for 2 additional participants (2 African Americans in the high-perceived-stereotype-relevance condition) who asked that their videos not be used as data, 3 others who stood up and were out of camera view during the staged encounter with the security officer (2 African Americans in the low-perceived-stereotype-relevance condition and 1 White in the high-perceived-stereotype-relevance

condition). Also, eye contact, gaze aversion, smiles, head movements, and nervous appearance were not able to be coded for 3 participants (3 Whites in the low-perceived-stereotype-relevance condition) whose faces were not in complete view due to the camera being tilted at an angle. Inspection of the remaining data revealed that only head movements (skew = 2.60 and kurtosis = 12.15) and position shifts (skew = 1.85 and kurtosis = 4.40) had questionable levels of skew and kurtosis, but their distributions were approximately normal: 99% of head movements data and 96% of position shifts data were within 2 SDs of their respective means. Further, results of log-linear models based on the negative binomial distribution, appropriate for testing overdispersed data such as these, mirrored those from the ANOVAs presented here.

In addition to the 6 participants for whom video was not recorded, heart rate data were excluded for 4 participants (1 from each of the 4 cells of the experimental design) for whom extreme values (i.e., 0 or 240 beats per minute) were recorded by the BioHarness. These extremes indicate that the sensor pads on the BioHarness strap were not properly moistened for these participants. For the remaining participants, the distribution for heart rate during the encounter was slightly kurtotic (skew = .90 and kurtosis = 2.27), but still normal with 97% of data falling within 2 SDs of the mean. Excluding 1 White participant in the low-perceived-stereotype-relevance condition whose baseline and encounter heart rate was more than 3 SDs above the mean reduced kurtosis (skew = .17 and kurtosis = -.56), but did not alter the results. Thus, the outlier was included in the analyses presented here.

Stereotype activation (i.e., from the lexical decision task) and cognitive load (i.e., from the Stroop color task) data were missing for two African Americans participants in the high-perceived-stereotype-relevance condition because of software malfunctions. For both sets of data, the first trial of each trial type was excluded from analyses. With regard to the stereotype activation data, of the 1694 remaining responses given by all participants in the

7 target and 15 filler trials of the lexical decision task, 64 (4%) were inaccurate (i.e., participants responded "nonword") and therefore excluded from analyses, following Kawakami, Young, and Dovidio (2002) and Vorauer et al. (2000). An additional 10 (1%) responses were more than 3 *SDs* above or below individual participants' own mean for target and filler trials. These responses were classified as outliers and also excluded, also following Kawakami et al. (2002). For each participant, the remaining data were used to compute mean lexical decision latencies separately for target and filler trials. The sample distributions for mean latencies for both target (skew = 2.00 and kurtosis = 4.59) and filler trials (skew = 2.43 and kurtosis = 7.61) were approximately normal, with 95% of data falling within 2 *SDs* of the mean for each variable. The residuals for latencies for target trials (controlling for latencies for filler trials) were distributed nearly normally, too (skew = 1.39 and kurtosis = 3.45). Log-transforming the variables further normalized the distributions (target trials: skew = 1.10 and kurtosis = 1.00, and filler trials: skew = 1.33 and kurtosis = 1.86), but did not change the results. Therefore, analyses presented here were conducted on the nontransformed data.

Similar procedures were followed for the Stroop color task data. Of the 4851 responses given by all participants in the 36 incompatible trials and 27 control trials of the Stroop color task used as data, 119 (2%) were inaccurate (i.e., participants responded with the incorrect color) and therefore excluded from analyses. A further 62 (1%) responses were more than 3 *SDs* above or below individual participants' own mean for incompatible or control trials and also excluded, following Holoien and Shelton (2012). For each remaining participant, the mean latency for each trial type was computed. The remaining data were nearly normally distributed for response times for both incompatible trials (skew = 1.21 and kurtosis = 2.15) and control trials (skew = 1.42 and kurtosis = 2.71), with 95% of incompatible trials data and 97% of control trials data falling within 2 *SDs* of their respective

means. The residuals for latencies for incompatible trials (controlling for latencies for control trials) were slightly less normal (skew = 2.00 and kurtosis = 9.57), but 96% were still within 2 SDs of the residuals mean. Also, log-transforming the variables to normalize the distributions (incompatible trials: skew = 1.10 and kurtosis = 1.00, and control trials: skew = 1.33 and kurtosis = 1.86) did not change the results. Therefore, analyses presented here were performed on the nontransformed data.

Inspection of other data revealed that several variables violated assumptions of normality. In particular, there were apparent floor effects for subjective perceptions of suspicious (skew = 2.41 and kurtosis = 5.37; 84% of participants responded *not at all*) and nervous (skew = 1.46 and kurtosis = 2.51; 57% of participants responded *not at all*) behavior during the staged encounter; general anxiety post-encounter (skew = 2.30 and kurtosis = 7.12; 24% of participants responded *not at all* to all scale items); and emotional reactions following the encounter of anger (skew = 4.37 and kurtosis = 19.79; 87% of participants responded *not at all* to all scale items), fear (skew = 4.87 and kurtosis = 26.51; 86% of participants responded *not at all* to all scale items), and hostility (skew = 3.39 and kurtosis = 11.50; 90% of participants responded *not at all*). Also, analyses revealed that the variances on these measures were significantly different across groups, Levene's $F_s(3, 75) \geq 2.36$, $ps \leq .08$, indicating that these data violated the homogeneity of variance assumption. Results related to these variables should be interpreted with caution.

Evaluation of covariates. First, I examined correlations among proposed covariates (i.e., general anxiety pre-encounter, concern about police victimization, perceptions of police racism, personal and vicarious prior police encounters, and social desirability) and measures of the main dependent variable, stereotype threat (i.e., the stereotype threat scale, concern-about-being-accused item, perceived-stereotype-likelihood item, and stereotype activation measure) (see Table 3). Covariates were considered in further

analyses when they were at least marginally associated with the given stereotype threat measure being tested.

Preliminary tests revealed that the relations between concern about being accused and both (a) general anxiety measured before the staged encounter and (b) prior personal/vicarious experiences of being arrested/convicted varied at different levels of race and stereotype relevance, which violates the homogeneity-of-regression assumption of ANCOVA. Specifically, a multiple linear regression analysis revealed a main effect of perceived stereotype relevance, $\beta = .65$, $p < .001$, that was subsumed by a 3-way interaction effect of race, perceived stereotype relevance, and general pre-encounter anxiety, $\beta = .40$, $p = .03$. Simple effects analyses revealed that, when perceived stereotype relevance was low, Blacks were marginally more concerned about being accused than were Whites, $\beta = .27$, $p = .10$. Baseline anxiety did not significantly influence concern about being accused, $\beta = .13$, *ns*, nor did it significantly interact with race to affect concern, $\beta = .15$, *ns*. When perceived stereotype relevance was high, the nonsignificant main effects of race, $\beta = .01$, *ns*, and baseline anxiety, $\beta = -.13$, *ns*, on concern about being accused, were qualified by a significant simple interaction between race and baseline anxiety, $\beta = .62$, $p = .004$. Specifically, when the security officer was inquiring about a theft, greater baseline anxiety related to significantly more concern about being accused by the officer among Blacks, $\beta = .63$, $p = .003$, but not Whites, $\beta = -.16$, *ns*.

A 2 (Race: Black, White) X 2 (Perceived stereotype relevance: High, Low) X 2 (Arrested/convicted: Yes, No) ANOVA revealed a marginally significant Relevance X Arrested/Convicted interaction effect on concern about being accused, $F(1, 70) = 3.38$, $p = .07$, partial $\eta^2 = .05$. Simple effects analyses revealed that, when perceived stereotype relevance was low, neither race nor prior arrests/convictions nor their interaction significantly affected concern about being accused by the security officer, all $F_s(1, 70) \leq$

1.38, *ns*. When perceived stereotype relevance was high, neither the main effect of race nor the interactive effect of race and prior arrests/convictions reached significance, all $F(1, 70) \leq 1.35$, *ns*, but the main effect of prior arrests/convictions did, $F(1, 70) = 4.72$, $p = .03$, partial $\eta^2 = .07$. Specifically, participants who had been arrested or convicted or knew someone who had ($M = 2.94$, $SD = 1.29$) reported more concern about being accused by the officer who was investigating a theft than did participants who did not have prior personal or vicarious arrests or convictions ($M = 2.00$, $SD = 1.16$).

Analyses indicated that the homogeneity of regression assumption was met for relations between the other covariates and independent variables being tested. Thus, I examined the effects of race and perceived stereotype relevance on the stereotype threat scale and the perceived-stereotype-likelihood item while controlling for (a) concern about police victimization, (b) perceptions of police racism, and (c) prior personal/vicarious experiences of bias-based policing. Because these covariates were intercorrelated (see Table 4), a series of two-way ANCOVAs tested the main and interactive effects of race and perceived stereotype relevance on the stereotype threat measures separately for each covariate. Results did not differ from those reported next, except as noted.⁶

Bivariate and partial correlations. Bivariate and partial correlations examined associations among theoretically related variables. Results are presented in Table 5, Table 6, and Table 7.

Correlations among stereotype threat measures. As expected, as shown in Table 5, the stereotype threat scale, concern-about-being-accused item, and perceived-stereotype-likelihood item were all significantly and positively correlated with each other. Unexpectedly, stereotype activation (measured as reaction times to stereotype-related

⁶When the main analyses are supplemented with results from ANCOVAs that included the proposed covariates, estimated marginal means (i.e., predicted values based on the covariate being held constant at its mean) and standard errors are reported.

target words in the lexical decision task partialling for reaction times to filler words) was significantly related to only one other stereotype threat measure, and not in the direction predicted. Specifically, participants who were more concerned about being accused of doing something wrong by the security officer took longer to respond to stereotype-related words.

Correlations among anxiety/arousal measures. Table 5 shows that participants who reported feeling more anxiety during the encounter with the security officer also reported feeling significantly more anxiety after the encounter. Neither self-report measure of anxiety corresponded significantly with arousal assessed physiologically by heart rate, however.

Correlations among emotional reactions measures. Participants' feelings of anger, hostility, fear, and defensiveness were all significantly and positively intercorrelated. (See Table 5.) Anger and defensiveness (but not hostility nor fear) were also significantly and negatively related to positive emotions.

Correlations between stereotype threat measures and measures of proposed mediators. As can be seen in Table 5, as predicted, stereotype threat generally related to heightened anxiety and arousal. Participants who reported feeling more stereotype threat while interacting with the security officer had significantly higher heart rates during the encounter (controlling for baseline heart rate) and also reported feeling significantly more anxiety, both during and after the encounter. Relations between concern about being accused and perceived stereotype likelihood and the anxiety/arousal measures followed the same pattern although they were less consistently significant. As one might expect based on the weak correspondence between stereotype activation and other measures of stereotype threat, stereotype activation was not significantly associated with any of the anxiety/arousal measures.

As expected, stereotype threat, as measured by the stereotype threat scale and concern-about-being-accused item, was significantly associated with engaging in more self-regulatory efforts. (See Table 5.) Also, the more participants thought the security officer was stereotyping them as criminals, the more they tried to control their thoughts and behavior. Stereotype activation was not significantly related to engaging in self-regulatory efforts, however.

None of the stereotype threat measures significantly correlated with cognitive load (assessed as reaction times to incompatible trials on the Stroop color task with reaction times to control trials partialled out) (see Table 5).

In general, participants who experienced more stereotype threat reported feeling less positively and more negatively—more angry, more defensive, more hostile, and, to a lesser extent, more afraid (see Table 5).

Correlations among subjective and objective measures of nonverbal behavior.

As presented in Table 6, participants' self-ratings of whether they acted suspiciously, looked nervous, or tried to avoid looking nervous while interacting with the security officer were all significantly and positively interrelated. These self-perceptions mapped on to several (but not all) objectively observed behaviors. (See Table 6.) Participants who thought they acted more suspiciously made significantly more eye contact, smiled significantly less often, gestured marginally less often, and touched themselves significantly frequently more during the encounter. In addition, participants who rated themselves as appearing more nervous touched themselves significantly more often and shifted their position marginally less frequently. Of interest, participants who said they controlled their behavior more distanced themselves significantly more from the Kindle while interacting with the officer.

There were also several significant correlations among objectively observed behaviors. (See Table 6.) First, participants who gestured more often also averted their

gaze, smiled, and moved their heads significantly more frequently. Participants who made more eye contact with the security officer also averted their gaze significantly more often during the course of the encounter. Also, participants who made more eye contact, averted their gaze more often, and smiled less often were rated as appearing more nervous overall.

Correlations between stereotype threat and nonverbal behavior. As presented in Table 7, participants who felt more stereotype threat and more concern about being accused by the officer rated themselves as trying to control their behavior more. Ironically, concern about being accused was also significantly and positively related to participants' self-perceptions of how suspiciously they acted. There was an unexpected marginal trend for participants who exhibited less stereotype activation to think they behaved more suspiciously.

Table 7 shows that, in general, the stereotype threat measures were positively associated with participants making more eye contact with the security officer, smiling less often, and shifting positions more frequently during the encounter. Feeling more stereotype threat was related to marginally fewer head movements, whereas thinking that one was being stereotyped by the officer was related to creating marginally more distance between oneself and the Kindle. Of importance, participants who reported feeling more stereotype threat were rated as appearing significantly more nervous. There were no significant relations between the stereotype threat measures and the frequency with which participants averted their gaze, gestured, nor used self-adaptors.

Correlations between proposed mediators and nonverbal behavior. Participants who rated themselves as feeling more anxious during the encounter thought they acted significantly more suspiciously, looked significantly more nervous, and tried significantly harder to avoid looking nervous. (See Table 7). Participants who thought they acted more suspiciously also reported feeling more anxious after the encounter. Physiologically

measured arousal, however, did not relate significantly to participants' perceptions of how suspicious they acted, how nervous they looked, nor how much they controlled their behavior. Self-reported anxiety was related to significantly more eye contact, significantly fewer smiles, marginally fewer gestures, and significantly more distancing behavior. Participants who averted their gaze more often also reported feeling more anxious after the encounter. Heart rate was significantly and positively related to making eye contact and frequency of self-adaptors.

Ironically, participants who monitored their thoughts, their behavior, and the situation more thought they acted marginally more suspiciously, looked significantly more nervous, and tried significantly harder to avoid looking nervous. (See Table 7.) They also made significantly more eye contact and smiled significantly less frequently.

Participants who exhibited higher cognitive load on the Stroop color task reported controlling their behavior significantly more during the interaction with the officer. (See Table 7.) Cognitive load was not associated any other subjective nor objective measures of nonverbal behavior.

Feeling more angry, more afraid, and more defensive were associated with thinking one had acted more suspiciously during the encounter. (See Table 7.) Participants who felt more angry or more defensive also made significantly more eye contact, whereas those who felt more afraid averted their gaze significantly less often and smiled marginally less frequently. There were no other relations between emotional reactions and nonverbal behavior.

Main analyses.

Main effects of race. These analyses test for hypothesized racial differences in stereotype threat, nonverbal behavior, and psychological processes proposed to explain the link between threat and behavior. The findings presented in this section have implications

for understanding whether Blacks and Whites have different psychological experiences of police encounters and how the resulting consequences might put Blacks at greater risk than Whites of being perceived as suspicious.

Stereotype threat. I conducted a 2 (race) X 2 (perceived stereotype relevance) between-subjects ANOVA on participants' responses to the stereotype threat scale. The predicted main effect of race on the stereotype threat scale was significant, $F(1, 75) = 18.82, p < .001$, partial $\eta^2 = .20$. Specifically, as hypothesized and consistent with Study 1 results, African Americans ($M = 3.13, SD = 1.71$) agreed that they experienced stereotype threat in the staged encounter with the security officer significantly more than did Whites ($M = 1.83, SD = 1.17$). Of note, this effect was no longer significant when participants' perceptions of police racism were included as the covariate in a 2 X 2 ANCOVA on the stereotype threat scale (Blacks: $M = 2.68, SE = .25$ versus Whites: $M = 2.32, SE = .26$), $F(1, 73) = .69, ns$.

A 2 X 2 between-subjects MANOVA was used to test whether race and perceived stereotype relevance affected stereotype threat as measured by concern about being accused and perceived stereotype likelihood. The multivariate main effect of race was significant, $\Lambda = .81, F(2, 74) = 8.68, p < .001$, partial $\eta^2 = .19$. The univariate ANOVAs revealed that, although Blacks ($M = 2.10, SD = 1.39$) and Whites ($M = 1.85, SD = 1.11$) did not differ significantly in how concerned they were that the security officer might accuse them of doing something wrong, $F(1, 75) = 1.08, ns$, as predicted, Blacks ($M = 2.10, SD = 1.19$) were significantly more likely than Whites ($M = 1.23, SD = .58$) to think the security officer stereotyped them as criminals, $F(1, 75) = 17.58, p < .001$, partial $\eta^2 = .19$. The multivariate effect was no longer significant, however, when perceptions of police racism were controlled for in an ANCOVA, $F(2, 72) = .74, ns$.

The effects of race and perceived stereotype relevance on stereotype activation were tested using a two-way ANCOVA with participants' reaction times to stereotype-related target trials from the lexical decision task as the dependent measure and reaction times to filler trials as the covariate. Unexpectedly, Blacks ($M = 926$ ms, $SE = 18$ ms) and Whites ($M = 899$ ms, $SE = 18$ ms) did not differ significantly in the length of time it took to respond to stereotype-related words (controlling for reaction times to filler words), $F(1, 72) = 1.05$, *ns*.

Subjective perceptions of nonverbal behavior. A 2 X 2 MANOVA revealed no significant multivariate main effect of race on participants' subjective perceptions of whether they acted suspicious, looked nervous, or tried to avoid looking nervous, $\Lambda = .93$, $F(3, 73) = 1.75$, *ns*. (See Table 8 for means and standard deviations.)

Objectively coded nonverbal behavior. A series of 2 X 2 ANOVAs tested effects of race and perceived stereotype relevance on objectively coded nonverbal behavior. As predicted, Blacks ($M = 2.13$, $SD = 1.01$) appeared to be significantly more nervous than did Whites ($M = 1.30$, $SD = .77$), $F(1, 61) = 13.14$, $p = .001$, partial $\eta^2 = .18$. Also, Blacks ($M = 1.16$, $SD = 1.35$) used significantly fewer self-adaptors than did Whites ($M = 3.06$, $SD = 2.72$), $F(1, 63) = 13.76$, $p < .001$, partial $\eta^2 = .19$. Contrary to expectations, however, race did not have significant effects on gaze aversion (Blacks: $M = 10.09$, $SD = 3.34$ versus Whites: $M = 9.52$, $SD = 3.09$), $F(1, 61) = .45$, *ns*; smiles (Blacks: $M = 2.00$, $SD = 2.63$ versus Whites: $M = 2.94$, $SD = 2.88$), $F(1, 61) = 2.23$, *ns*; gesturing (Blacks: $M = 7.06$, $SD = 6.11$ versus Whites: $M = 8.00$, $SD = 6.42$), $F(1, 64) = .26$, *ns*; head movements (Blacks: $M = 19.66$, $SD = 13.39$ versus Whites: $M = 19.70$, $SD = 7.69$), $F(1, 61) < .01$, *ns*; or position shifts (Blacks: $M = 8.30$, $SD = 8.87$ versus Whites: $M = 6.06$, $SD = 4.84$), $F(1, 65) = 1.65$, *ns*. There was also no significant racial difference in the percent of time participants maintained eye contact with the security officer (Blacks: $M = 58\%$, $SD = 15\%$ versus

Whites: $M = 56\%$, $SD = 15\%$), $F(1, 61) = .45$, *ns*, nor the degree to which participants distanced themselves from the Kindle during the interaction (Blacks: $M = .91$, $SD = 1.42$ versus Whites: $M = .78$, $SD = 1.42$), $F(1, 64) = .09$, *ns*.

Anxiety/arousal. An ANOVA revealed that, surprisingly, Blacks ($M = 2.30$, $SD = .68$) reported feeling marginally less anxious while interacting with the security officer than did Whites ($M = 2.53$, $SD = .77$), $F(1, 75) = 3.37$, $p = .07$, partial $\eta^2 = .04$. Two separate ANCOVAs revealed no significant effects of race on heart rate during the encounter (controlling for baseline heart rate, Blacks: $M = 82.26$, $SE = 1.09$ versus Whites $M = 82.28$, $SE = 1.06$), $F(1, 64) = .00$, *ns*, or general anxiety after the staged encounter (controlling for general anxiety prior to the encounter, Blacks: $M = 1.29$, $SE = .05$ versus Whites: $M = 1.34$, $SE = .05$), $F(1, 74) = .31$, *ns*.

Self-regulatory efforts. Contrary to predictions, results from an ANOVA showed that Blacks ($M = 1.87$, $SD = .81$) reported engaging in self-regulatory efforts to the same extent as did Whites ($M = 2.01$, $SD = .90$), $F(1, 75) = .96$, *ns*.

Cognitive load. The effects of race and perceived stereotype relevance on the cognitive load measure (i.e., Stroop color naming task) were tested using a two-way ANCOVA with participants' reaction times to incompatible trials as the dependent measure and reaction times to control trials as the covariate. Unexpectedly, Blacks ($M = 1062$ ms, $SE = 19$ ms) took approximately the same amount of time to respond to incompatible trials (controlling for reaction times to control trials) as did Whites ($M = 1055$ ms, $SE = 19$ ms), $F(1, 72) = .07$, *ns*.

Emotional reactions. Race did not have a significant main effect on participants' positive emotions (Blacks: $M = 2.93$, $SD = 1.03$ versus Whites: $M = 3.09$, $SD = .99$), $F(1, 75) = .51$, *ns*; anger (Blacks: $M = 1.20$, $SD = .63$ versus Whites: $M = 1.09$, $SD = .34$), $F(1, 75) = .96$, *ns*; fear (Blacks: $M = 1.14$, $SD = .44$ versus Whites: $M = 1.17$, $SD = .60$), $F(1, 75) = .06$,

ns; nor defensiveness (Blacks: $M = 1.48$, $SD = .75$ versus Whites: $M = 1.38$, $SD = .67$), $F(1, 75) = .30$, *ns*. However, Blacks ($M = 1.20$, $SD = .46$) felt marginally more hostile after the interaction with the security officer than did Whites ($M = 1.05$, $SD = .32$), $F(1, 75) = 2.75$, $p = .10$, partial $\eta^2 = .04$.

Main effects of perceived stereotype relevance. These analyses test for predicted effects of perceived stereotype relevance on stereotype threat, nonverbal behavior, and the psychological correlates thought to link threat and behavior. These results support the validity of the perceived stereotype relevance manipulation. More importantly, they reveal that encounters with police figures are experienced differently based on the characteristics of the interaction. Further, because context alone was enough to induce changes in innocent participants' behavior, the findings indicate that nonverbal behavior is an unreliable indicator of deception or guilt.

Stereotype threat. As predicted, participants agreed that they experienced stereotype threat significantly more when perceived stereotype relevance was high ($M = 3.16$, $SD = 1.71$) than low ($M = 1.83$, $SD = 1.16$), $F(1, 75) = 19.92$, $p < .001$, partial $\eta^2 = .21$.

Perceived stereotype relevance also had a significant multivariate main effect on stereotype threat as measured by concern about being accused and perceived stereotype likelihood, $\Lambda = .60$, $F(2, 74) = 24.46$, $p < .001$, partial $\eta^2 = .40$. As expected and confirming the effectiveness of the manipulation, participants reported significantly more concern about being accused of doing something wrong and thought they were significantly more likely to have been stereotyped as a criminal when the security officer was inquiring about a theft ($M = 2.77$, $SD = 1.31$ and $M = 1.95$, $SD = 1.15$, respectively) as compared to directions ($M = 1.20$, $SD = .52$ and $M = 1.40$, $SD = .84$, respectively), univariate $F(1, 75) = 49.03$, $p < .001$, partial $\eta^2 = .40$, and $F(1, 75) = 6.80$, $p = .01$, partial $\eta^2 = .08$, respectively.

Perceived stereotype relevance did not have a significant influence on stereotype activation, $F(1, 72) = .36$, ns . Response latencies for stereotype-related target trials on the lexical decision task (controlling for latencies for filler trials) did not differ significantly depending on whether perceived stereotype relevance was high ($M = 920$ ms, $SE = 18$ ms) or low ($M = 905$ ms, $SE = 18$ ms).

Subjective perceptions of nonverbal behavior. A MANOVA revealed a significant multivariate main effect of perceived stereotype relevance on nonverbal behavior as assessed by subjective measures, $\Lambda = .87$, $F(3, 73) = 3.56$, $p = .02$, partial $\eta^2 = .13$. Compared to when the security officer was asking for directions (suspicious behavior: $M = 1.08$, $SD = .27$; nervous behavior: $M = 1.38$, $SD = .67$; and controlled behavior: $M = 1.48$, $SD = .96$), when the officer was asking about a theft, participants rated themselves as acting significantly more suspiciously ($M = 1.31$, $SD = .57$), univariate $F(1, 75) = 5.92$, $p = .02$, partial $\eta^2 = .07$; looking significantly more nervous ($M = 1.67$, $SD = .70$), $F(1, 75) = 4.18$, $p = .04$, partial $\eta^2 = .05$; and controlling their behavior significantly more ($M = 1.68$, $SD = 1.07$), $F(1, 75) = 6.31$, $p = .01$, partial $\eta^2 = .08$.

Objectively coded nonverbal behavior. As expected, perceived stereotype relevance had significant main effects on how nervous participants appeared to be, $F(1, 64) = 4.74$, $p = .03$, partial $\eta^2 = .07$, the percentage of the encounter they spent making eye contact with the security officer, $F(1, 61) = 14.90$, $p < .001$, partial $\eta^2 = .20$, and how often they smiled, $F(1, 61) = 49.77$, $p = .09$, partial $\eta^2 = .45$. Specifically, participants were rated as appearing significantly more nervous ($M = 1.94$, $SD = 1.06$) and were observed as making significantly more eye contact ($M = 63\%$, $SD = 12\%$), and smiling significantly less often ($M = .77$, $SD = 1.37$) in the high-perceived-stereotype-relevance condition than in the low-perceived-stereotype-relevance condition ($M = 1.43$, $SD = .82$; $M = 50\%$, $SD = 16\%$; and $M = 4.47$, $SD = 2.69$, respectively). Even so, results showed that perceived stereotype relevance did not

have significant main effects on the frequency with which participants averted their gaze (High: $M = 9.97$, $SD = 3.31$ versus Low: $M = 9.60$, $SD = 3.13$), $F(1, 61) = .18$, *ns*; gestured (High: $M = 6.51$, $SD = 6.34$ versus Low: $M = 8.67$, $SD = 6.05$), $F(1, 64) = 1.77$, *ns*; used self-adaptors (High: $M = 2.41$, $SD = 2.70$ versus Low: $M = 1.88$, $SD = 1.97$), $F(1, 63) = 1.79$, *ns*; moved their heads (High: $M = 19.89$, $SD = 12.83$ versus Low: $M = 19.43$, $SD = 7.99$), $F(1, 61) = .03$, *ns*; or shifted their position (High: $M = 7.26$, $SD = 9.17$ versus Low: $M = 7.00$, $SD = 4.13$), $F(1, 65) = .01$, *ns*, nor the extent to which participants distanced themselves from the Kindle (High: $M = .97$, $SD = 1.64$ versus Low: $M = .70$, $SD = 1.13$), $F(1, 64) = .56$, *ns*.

Anxiety/arousal. As predicted, when stereotype relevance was perceived as high versus low during the encounter with the security officer, participants reported feeling more anxious ($M = 2.77$, $SD = .72$ versus $M = 2.07$, $SD = .57$), $F(1, 74) = 26.45$, $p < .001$, partial $\eta^2 = .26$, and had higher heart rates (controlling for baseline heart rate) ($M = 83.97$, $SE = 1.04$ versus $M = 80.57$, $SE = 1.09$), $F(1, 64) = 5.03$, $p = .03$, partial $\eta^2 = .07$. In contrast, however, participants had similar scores on the general anxiety scale after the encounter (controlling for general anxiety prior to the encounter) regardless of whether the officer asked about a theft ($M = 1.35$, $SE = .05$) or directions ($M = 1.28$, $SE = .05$), $F(1, 74) = .65$, *ns*.

Self-regulatory efforts. As expected, participants reported regulating their thoughts and behaviors significantly more in the high-perceived-stereotype-relevance condition ($M = 2.44$, $SD = .82$) than in the low-perceived-stereotype-relevance condition ($M = 1.45$, $SD = .60$), $F(1, 75) = 40.09$, $p < .001$, partial $\eta^2 = .35$.

Cognitive load. Surprisingly, participants responded with similar speed to incompatible trials in the Stroop color task (controlling for reaction times to control trials) when the security officer was asking about either a theft ($M = 1039$ ms, $SE = 19$ ms) or directions ($M = 1079$ ms, $SE = 19$ ms), $F(1, 72) = 2.26$, *ns*, partial $\eta^2 = .05$.

Emotional reactions. Perceived stereotype relevance had no significant main effect on participants' positive emotions (High: $M = 2.92$, $SD = 1.00$ versus Low: $M = 3.09$, $SD = 1.01$), $F(1, 75) = .50$, *ns*; anger (High: $M = 1.19$, $SD = .62$ versus Low: $M = 1.10$, $SD = .36$), $F(1, 75) = .61$, *ns*; hostility (High: $M = 1.13$, $SD = .34$ versus Low: $M = 1.13$, $SD = .46$), $F(1, 75) = .00$, *ns*; nor fear (High: $M = 1.17$, $SD = .46$ versus Low: $M = 1.14$, $SD = .58$), $F(1, 75) = .06$, *ns*. Participants did feel more defensive after the security officer asked them about a theft ($M = 1.62$, $SD = .82$) than when the officer asked about directions ($M = 1.25$, $SD = .54$), however, $F(1, 75) = 5.38$, $p = .02$, partial $\eta^2 = .07$.

Interactive effects of race and perceived stereotype relevance. Results presented in this section shed light on whether effects of race on stereotype threat, nonverbal behavior, and psychological mediators manifest in any interaction with police figures or whether they are dependent on the specific context of the encounter and whether there is a perceived risk of being stereotyped as a criminal.

Individual cell means and standard deviations/standard errors can be seen in Table 9. To help the reader see the pattern of results, all interactions, even those that were nonsignificant, are also shown in figures.

Stereotype threat. A 2 X 2 ANOVA showed that race and perceived stereotype relevance did not significantly interact to influence the stereotype threat scale, $F(1, 75) = 1.26$, *ns*. (See Figure 3a.) Of importance, the interaction term became marginally significant when participants' perceptions of police racism⁷ were included as a covariate in an ANCOVA, $F(1, 73) = 3.68$, $p = .06$, partial $\eta^2 = .05$. (See Figure 3b.) Specifically, as predicted, when perceived stereotype relevance was low, Blacks and Whites did not differ

⁷One might argue that, because the staged encounter occurred before participants completed the perceptions-of-police-racism scale, participants' responses might have been influenced by whether the security officer asked about a theft or directions to a diversity training meeting. T-tests confirmed that this was not the case: The perceived-stereotype-relevance manipulation did not influence perceptions of police racism when considering either the overall sample or Blacks only, all $t(38-76) < |1.36|$, *ns*.

significantly in how much they agreed they experienced stereotype threat, $F(1, 73) = .06$, *ns*. When perceived stereotype relevance was high, however, Blacks agreed that they experienced stereotype threat in the encounter with the security officer marginally more than did Whites, $F(1, 73) = 3.00$, $p = .09$, partial $\eta^2 = .06$.

A 2 X 2 MANOVA revealed no significant multivariate interaction of race and perceived stereotype relevance on stereotype threat as measured by concern about being accused and perceived stereotype likelihood, $\Lambda > .99$, $F(2, 74) = .12$, *ns*. (See Figure 4.)

The 2 X 2 ANCOVA predicting response latencies to target trials while controlling for response latencies to filler trials revealed no significant interaction effect on stereotype activation, $F(1, 72) = .09$, *ns*. (See Figure 5.)

Subjective perceptions of nonverbal behavior. MANOVAs revealed significant interaction effects of race and perceived stereotype relevance on participants' nonverbal behavior as assessed subjectively, $\Lambda = .90$, $F(3, 73) = 2.75$, $p = .05$, partial $\eta^2 = .10$. (See Figure 6.) Simple effects analyses revealed that race did not have a significant multivariate effect on participants' subjective perceptions of nonverbal behavior when perceived stereotype relevance was low, $\Lambda = .98$, $F(3, 74) = .50$, *ns*, but it did when perceived stereotype relevance was high, $\Lambda = .88$, $F(3, 74) = 3.48$, $p = .02$. Univariate simple effects revealed that, when the security officer was asking about a theft, compared to Whites, Blacks thought they acted significantly less suspiciously, $F(1, 76) = 4.93$, $p = .03$, partial $\eta^2 = .03$; looked significantly less nervous, $F(1, 76) = 9.07$, $p = .004$, partial $\eta^2 = .06$; and controlled their behavior significantly less, $F(1, 76) = 3.98$, $p = .05$, partial $\eta^2 = .03$.

Objectively coded nonverbal behavior. ANOVAs revealed that the Race X Perceived Stereotype Relevance interaction effect did not reach significance for nervous appearance, $F(1, 61) = .35$, *ns* (see Figure 7); percentage of eye contact, $F(1, 61) = 1.40$, *ns* (see Figure 8); distancing from the Kindle, $F(1, 64) = .02$, *ns* (see Figure 9); nor for frequency of gaze

aversion, $F(1, 61) = .06$, *ns*; smiles, $F(1, 61) = .04$, *ns*; self-adaptors, $F(1, 63) = 1.67$, *ns*; gestures, $F(1, 64) = .24$, *ns*; head movements, $F(1, 61) = .28$, *ns*; nor position shifts, $F(1, 65) = .64$, *ns* (see Figure 10).

Anxiety/arousal. Although ANCOVAs controlling for baseline measures revealed no significant Race X Perceived Stereotype Relevance interactions on heart rate, $F(1, 64) = .16$, *ns* (see Figure 11), nor the general anxiety scale (see Figure 12b), $F(1, 74) = .42$, *ns*, an ANOVA yielded a significant interaction on the specific anxiety scale (see Figure 12a), $F(1, 75) = 9.86$, $p = .002$, partial $\eta^2 = .12$. Simple effects analyses revealed that in the low-perceived-stereotype-relevance condition, Blacks and Whites did not differ significantly in how anxious they reported feeling during the encounter, $F(1, 75) = .86$, *ns*. In the high-perceived-stereotype-relevance condition, however, Blacks unexpectedly rated themselves as feeling less anxious than Whites, $F(1, 75) = 12.08$, $p < .001$, partial $\eta^2 = .23$.

Self-regulatory efforts. Race and perceived stereotype relevance did not significantly interact to affect participants' self-regulatory efforts, $F(1, 75) = 2.63$, *ns*. (See Figure 13.)

Cognitive load. The interaction effect did not reach significance for cognitive load, $F(1, 72) = .35$, *ns*. (See Figure 14.)

Emotional reactions. The Race X Perceived Stereotype Relevance interaction did not significantly affect participants' positive emotions, $F(1, 75) = .03$, *ns*; anger, $F(1, 75) = 2.01$, *ns*; hostility, $F(1, 75) = 1.22$, *ns*; fear, $F(1, 75) = 1.55$, *ns*; nor defensiveness, $F(1, 75) = .01$, *ns*. (See Figure 15.)

Mediational analyses. Next, I conducted a series of analyses to test whether the hypothesized mediators explained the effects of participants' race on their nonverbal behavior during the staged encounter with the security officer. These analyses were based on the significant effects revealed in the Main Analyses. Note that these analyses are underpowered due to the limited sample, and should be considered exploratory.

The Main Analyses revealed that race had significant effects on the number of times participants used self-adaptors and how nervous they appeared during the encounter with the security officer. Also, perceived stereotype relevance significantly affected the amount of eye contact participants made with the security officer, how frequently participants smiled, and how nervous they appeared overall. Further, when perceived stereotype relevance was high (but not low), race significantly influenced participants' subjective perceptions of whether they acted suspiciously, looked nervous, or tried to avoid looking nervous. I tested whether stereotype threat and the proposed mediators would explain these main and moderated effects. Specifically, I included the stereotype threat scale, perceived-stereotype-likelihood item, and specific anxiety scale simultaneously in all mediational analyses because both of the independent variables had predicted effects on these measures. Analyses testing mediation of race effects also included the hostility item, whereas analyses testing mediation of perceived relevance effects included the concern-about-being-accused item, heart rate, the self-regulatory efforts scale, and the defensiveness item. Analyses of interaction effects included all potential mediators significantly affected by race, perceived relevance, or their interaction. Thus, variables that were not considered as mediators were stereotype activation, general anxiety after the encounter, cognitive load, positive emotions, anger, and fear.

Potential mediators were examined in three steps. First, the independent variable was entered into a regression equation as the predictor separately for each nonverbal behavior measure. Second, the independent variable and mediators were entered into the equations simultaneously as predictors of the nonverbal behavior. This strategy allowed me to identify which mediators had effects independent of the other mediators (Kenny, 2008). Third, I used the Sobel test to determine whether the independent variables had significant indirect effects on nonverbal behavior through the predictors that emerged in the prior step.

Mediated main effects of race.

Frequency of self-adaptors. As reported earlier, Blacks used self-adaptors significantly less often than did Whites during the interaction with the security officer. (See Table 10 for all model statistics.) When the potential mediators were entered simultaneously with race into a regression equation predicting frequency of self-adaptors, the race effect remained significant and neither stereotype threat, perceived stereotype likelihood, self-rated anxiety during the encounter, nor hostility significantly affected the outcome. Thus, there was no evidence of mediation.

Objectively coded nervous appearance. As previously discussed, Black participants were rated as appearing significantly more nervous than were Whites. (See Table 11.) When the potential mediators were entered simultaneously with race into a regression equation predicting nervous appearance, the strength of the race effect was reduced slightly but it remained significant. Of importance, stereotype threat (but not perceived stereotype likelihood, self-reported anxiety, nor hostility) emerged as a marginally significant predictor of the outcome. A Sobel test indicated that, as predicted, the effect of race on objective nervous appearance was marginally mediated, in part, by its effect on stereotype threat, $z = 1.63$, $p = .10$. Even so, this effect was not significant when perceptions of police racism were entered into the model as a covariate, $z = 1.61$, *ns*.⁸

Mediated main effects of perceived stereotype relevance.

Eye contact. Consistent with prior results, participants made significantly more eye contact with the security officer when perceived stereotype relevance was high rather than

⁸Perceived police racism was used as a covariate in the mediational analyses but I also examined how it affected results when it was included in the analyses as a moderator. I used Hayes' (2012) PROCESS macro for testing multiple mediators in parallel. Analysis based on 5000 bootstrap samples and all proposed mediators except for hostility (because variance was too low on this item) revealed that the indirect effect of race on nervous appearance through stereotype threat was larger when perceptions of police racism were low ($z = .19$) as compared to high ($z = .07$), but it did not reach significance at either level (95% confidence intervals = $-.08-.75$ and $-.13-.44$, respectively).

low. (See Table 12 for all model statistics.) This effect was no longer significant when potential mediators were taken into account, and stereotype threat, perceived stereotype likelihood, concern about being accused, self-reported anxiety during the encounter, self-regulatory efforts, and defensiveness also had nonsignificant effects. Higher heart rate, however, related to marginally more eye contact and significantly partially mediated the link between perceived stereotype relevance and eye contact, $z = 2.28$, $p = .02$.

Frequency of smiles. As shown earlier, participants smiled significantly less often when the security officer was asking about a theft as opposed to directions. (See Table 13.) This effect became stronger when the potential mediators were added to the equation, indicating that none of the variables significantly mediated the effect.

Objectively coded nervous appearance. As previous results revealed, participants were rated as appearing significantly more nervous when perceived stereotype relevance was high as compared to low. (See Table 14.) When the proposed mediators were entered simultaneously with perceived stereotype relevance, however, the main effect was no longer significant. The only proposed mediator that emerged as significant in the results was stereotype threat, which significantly explained the effect of perceived stereotype relevance on objectively coded nervous appearance, $z = 2.16$, $p = .03$. When perceptions of police racism were added as a covariate, however, the direct effect of perceived stereotype relevance on nervous appearance was no longer significantly mediated by stereotype threat, $z = 1.41$, *ns*.⁹

Mediated interaction effects. The Main Analyses showed that the pattern of all significant interactions was the same: Race had significant effects when perceived

⁹I used the same procedure described previously to test whether perceptions of police racism moderated the indirect effect of perceived stereotype relevance on nervous appearance. Results indicated that, although the mediating effect of stereotype threat was smaller when perceptions of police racism were low ($z = .24$) as compared to high ($z = .39$), it was significant at both levels (95% confidence intervals = .01–.68 and .03–.99, respectively).

stereotype relevance was high but not low. Therefore, a subgroup analysis approach was adopted, and all mediated interaction effects were tested as mediated simple main effects of race at the level of high perceived stereotype relevance.

Self-rated suspicious behavior. Consistent with previous results, when participants perceived the criminal stereotype to be highly relevant to the encounter with the security officer, Blacks thought their behavior was marginally less suspicious than did Whites. (See Table 15 for all model statistics.) When perceived stereotype relevance and the potential mediators were entered simultaneously into a regression equation predicting self-ratings of suspicious behavior, the effect of race was no longer significant, but none of the other variables had significant effects either. Thus, there was no evidence of mediation.

Self-rated nervous behavior. As discussed earlier, in the high-perceived-stereotype-relevance condition, Blacks thought they looked significantly less nervous while interacting with the officer than did Whites. (See Table 16.) When the proposed mediators were taken into account, the race effect was reduced to marginal significance. Stereotype threat emerged as a marginal predictor of self-ratings of nervous behavior in the model, but a Sobel test showed it did not significantly explain racial differences in self-rated nervousness, $z = 1.51$, *ns*.

Self-rated controlled behavior. As shown earlier, compared to Whites, Blacks rated themselves as controlling their behavior significantly less when the security officer was asking them about a theft. (See Table 17.) When the proposed mediators were added to the model with race, the race effect was reduced to marginal significance. Both the stereotype threat scale and perceived-stereotype-likelihood item were significantly related to self-ratings of avoiding looking nervous. Stereotype threat had a significant partial suppressing effect, $z = 1.97$, $p = .05$, and perceived stereotype likelihood had a marginal partial mediating effect, $z = -1.63$, $p = .10$.

Discussion

The primary purpose of this research was to test whether African Americans experience stereotype threat in police encounters. In Study 1, Blacks were significantly more likely than Whites to agree that they are concerned about being stereotyped as criminals by police officers. Study 2 showed that this effect generalized to a realistic situation in which participants came face-to-face with a White security officer. As predicted and consistent with Study 1, Blacks were significantly more likely than Whites to report that the simulated police encounter induced feelings of stereotype threat. That is, African Americans reported being concerned that the security officer would stereotype them as criminals simply because they were Black.

Blacks reported higher levels of stereotype threat than Whites both when the security officer was investigating a crime and when he was looking for a diversity training meeting. This suggests that Blacks are concerned about being stereotyped by police officers regardless of the specific context of their interactions. Yet this conclusion is tempered after accounting for perceptions of the police as racist. Specifically, when perceptions of police racism were controlled in analyses, Blacks reported experiencing more stereotype threat than Whites only when the officer was asking questions about a theft, not when he was asking for directions. Thus, Blacks' feelings of stereotype threat are related to, but also distinct from general beliefs that the police are racist. This is significant because it indicates that Blacks experience stereotype threat in police encounters because they personally believe that the police will be prejudiced against them (consistent with work equating stereotype threat with prejudice concerns in interracial interactions, Richeson & Shelton, 2011), and Blacks also experience threat when other contextual cues increase the perceived risk of being stereotyped unfairly as a criminal. Shapiro and Neuberg's (2007) multi-threat framework of stereotype threats could be useful for interpreting these results. The main effect of race on

stereotype threat, which was driven by perceptions of the police as racist, might reflect group-reputation threat, or fear of one's group being stereotyped. In contrast, the interaction effect of race and perceived stereotype relevance, which was situationally induced, might reflect own-reputation threat, or fear that one is personally being stereotyped. Future studies might test this further by manipulating perceived stereotype relevance and risk in interactions between Blacks and other non-police individuals.

The second aim of this research was to test whether racial differences in stereotype threat translate into differences in nonverbal behavior, which might ultimately be misconstrued by police officers as evidence of guilt. Videos taken of participants during the interaction with the security officer were coded for how much eye contact the participants made with the officer and how often they broke eye contact, smiled, gestured, used self-adaptors (e.g., scratched, groomed themselves, etc.), moved their heads (e.g., nodded, tilted, etc.), and shifted position (e.g., leaned forward or backward, swiveled in chair, etc.). Participants were also rated for the degree to which they distanced themselves from the tablet computer they could have been accused of stealing and how nervous they appeared overall. Surprisingly, only 2 significant race effects emerged: Blacks used self-adaptors significantly less often and appeared significantly more nervous than did Whites.

Prior work has suggested that self-adaptors are the product of anxiety (Gregerson, 2005; Waxer, 1977), which suggests that the relatively lower frequency of self-adaptors among Blacks could be due to their being less anxious when interacting with the security officer than Whites. My results do not support this conclusion, however. To begin with, physiologically assessed anxiety/arousal (i.e., heart rate) did not differ significantly between Blacks and Whites, even though Blacks reported feeling significantly less anxious during the encounter than Whites; further, self-rated anxiety did not significantly mediate the relation between race and frequency of self-adaptors. Blacks who experience stereotype threat in

police encounters might be concerned about and attempt to manage their behavior to avoid being perceived as suspicious, but neither stereotype threat nor self-regulatory efforts accounted for Blacks' less frequent use of self-adaptors as compared to Whites. Further, Blacks reported trying significantly less than Whites to avoid looking nervous. The present data might be explained by other researchers' assertion that racial differences in nonverbal behavior in police encounters might merely reflect cross-cultural differences in communication styles (e.g., Johnson, 2006; Vrij & Winkel, 1991). That is, Blacks and Whites might behave differently when they interact with the police just because they are guided by different cultural norms for social behavior.

Race also significantly affected objectively coded nervous appearance, as did perceived stereotype relevance, and these effects were both mediated by stereotype threat. Specifically, as expected, Blacks were more concerned than Whites about being stereotyped as criminals by the security officer because of their race, and this stereotype threat, in turn, led Blacks to appear to be more nervous than Whites. And both Blacks and Whites worried more that the officer would presume they were guilty based on race when he was investigating a theft than when he was asking for directions, which led participants to be perceived as more nervous. The mediating effects of stereotype threat were no longer significant when perceptions of police racism were controlled in the analyses, however. These results suggest that, although both beliefs and situational factors appear to play a role in determining how much stereotype threat Blacks experience in police encounters, situational factors that signal risk of being stereotyped might not influence behavior above and beyond general beliefs about the extent to which the police are biased.

It is surprising that the main effects of race and perceived stereotype on participants' nervous appearance were not subsumed by an interaction effect. That is, both Blacks and Whites appeared more nervous in the high-perceived-stereotype-relevance condition than

in the low-perceived-stereotype-relevance condition. To some extent this finding is simply evidence that the perceived-stereotype-relevance manipulation was effective. In the same vein, other objectively measured behaviors were influenced by perceived stereotype relevance but not race. Specifically, participants smiled significantly less and made significantly more eye contact with the security officer when he was investigating a theft as compared to when he was asking for directions to a diversity training meeting. These differences make sense based on the qualitatively different nature of the two types of encounters, in which participants were put into the role of either "suspect" or "helpful citizen." That is, it is logical that participants—both Blacks and Whites—smiled less frequently when they were confronted with the possibility of being accused of theft than when they were engaged in a casual conversation. Participants might have engaged in more eye contact in the former condition for several reasons, including for the purposes of gathering information, asserting themselves, or communicating submissiveness (for a review of eye contact and gaze functions, see Kleinke, 1986). The fact that heart rate partially mediated the effect of perceived stereotype relevance on smiling and eye contact behavior is consistent with any of these interpretations. Although the main effects of perceived stereotype relevance on nervous appearance, smiling, and eye contact are not relevant to understanding racial differences in behavior or effects of stereotype threat, they are important because they show that the potential for being accused of crime induces change in the same types of behaviors that police look at when they assess whether suspects are lying or guilty (see Table 1).

Although race and perceived stereotype relevance did not interact to influence participants' objectively measured behaviors, they did have an interactive effect on participants' subjective perceptions of their own behavior during the encounter with the security officer, but not as predicted. When the security officer was investigating a theft (not

when asking directions), Blacks rated themselves as significantly less suspicious acting, less nervous looking, and trying less hard to avoid looking nervous as compared to Whites. This is very interesting in light of the fact that Blacks actually appeared to coders as being more nervous than Whites. A similar pattern emerged in participants' self-reported anxiety: Blacks reported feeling less anxious than Whites when perceived stereotype relevance was high, but not when it was low. In fact, however, there were no racial differences in physiologically assessed anxiety/arousal.

One explanation for the disconnect between subjective and objective measures of nonverbal behavior and anxiety could be that Blacks in the high-perceived-stereotype-relevance condition engaged in more socially desirable responding than any other participants. The data tell a different story, however: Social desirability scores were similar for Blacks in the high-perceived-stereotype-relevance condition ($M = 5.05$, $SD = 2.19$) and for Blacks ($M = 5.10$, $SD = 2.22$) and Whites ($M = 4.70$, $SD = 3.37$) in the low-perceived-stereotype-relevance condition. Whites in the high-perceived-stereotype-relevance condition had the lowest social desirability scores ($M = 3.37$, $SD = 2.67$). An ANOVA indicated that this interaction effect was not significant, $F(1, 75) = 1.52$, ns , but the response pattern is consistent with participants' responses to the measures of subjective perceptions of nonverbal behavior and anxiety during the interaction (see Figures 6 and 12a, respectively). This suggests that, instead of Black participants in the high-perceived-stereotype-relevance condition biasing their responses to appear more favorably than other participants, White participants in the same condition responded more truthfully about how suspiciously they thought they had acted, how nervous they thought they had looked, and how hard they had tried to avoid looking nervous. I administered the social desirability scale so I could control for trait-level differences in participants' desire to portray themselves in a favorable light, but it appears that the measure captured state-level differences in

impression management that resulted from the perceived-stereotype-relevance manipulation. This is consistent with Schmitt and Steyer's (1993) latent state-trait model of social desirability.

Why were Whites but not Blacks less likely to have a positive response bias after the high-perceived-stereotype-relevance encounter? Whites might have perceived the situation to be more serious than Blacks did. This is inconsistent, however, with the finding that Blacks and Whites were similarly concerned that the officer was going to accuse them of having stolen the tablet computer. Alternatively, Whites in the high-perceived-stereotype-relevance condition might have been particularly motivated to communicate openly and honestly with the security officer to ensure that they would not be accused of theft. In contrast, Blacks might have been more guarded and maintained a positive response bias in an effort to be seen more favorably due to their concern about being stereotyped as criminals. Thus, Blacks and Whites might have adopted different strategies for responding to the officer, which could have carried over and influenced responses to the study measures. This is an important hypothesis to test because, to the extent that Blacks are not as open as Whites are with police, Blacks might be perceived as less compliant or even more resistant or disrespectful—demeanors that have been shown to increase police use of force and arrests (Engel, Sobol, & Worden, 2006). Future studies on this issue should also consider the role of legal socialization and how different cultural norms might produce racial differences in attitudes toward the police and behavior during police encounters (see, e.g., Jones-Brown, 1997).

It is also possible that Blacks consciously distort their self-reports of behavior, or that unconscious processes led them to perceive their behavior inaccurately. Although the former explanation would be consistent with research showing that stereotype threat induces people to try to manage the impression they make on others (see Richeson &

Shelton, 2007), self-regulatory efforts did not explain racial differences in participants' subjective perceptions of suspicious, nervous, or controlled behavior. The latter unconscious explanation is in line with prior research showing inconsistencies between the impressions people think they convey and the ways they are actually perceived (e.g., DePaulo, Kenny, Hoover, Webb, & Oliver, 1987). Thus, Blacks might not be aware that stereotype threat is influencing their behavior in police encounters in ways that make them appear more nervous than Whites.

Of interest, mediational analyses revealed that Blacks tried less than Whites to avoid looking nervous when asked about a theft partially because of stereotype threat and perceived stereotype likelihood. On the one hand, whereas the overall direct effect of race on controlling behavior was negative, the indirect effect through stereotype threat was positive: Blacks reported more stereotype threat than Whites, and stereotype threat, in turn, predicted higher reports of trying to avoid looking nervous. These results were expected. On the other hand, the indirect effect through perceived stereotype likelihood was negative: Blacks were more likely than Whites to think that they had been stereotyped as a criminal by the security officer, and this led Blacks to try less than Whites to avoid looking nervous. This finding was surprising, but fits with the literature on mental contrasting and expectancy effects on behavior. Specifically, mental contrasting refers to occasions when people simultaneously think about their desired goals and factors that impede their ability to attain those goals. When this type of contrasting produces low expectations of success, people become less committed to their goals and less willing to exert effort in their pursuit (Oettingen, 2000). Thus, when Blacks encountered the officer who was investigating a crime, they might have felt torn between not wanting to be stereotyped and believing that they already had been. This could explain why Blacks tried less than Whites to avoid looking nervous—Blacks might have seen it as a futile pursuit or, thinking they had already

been stereotyped, given up on trying to disconfirm the stereotype. Further, if Blacks put less effort into avoiding looking nervous than Whites did, it would explain why Blacks were actually observed as more nervous than Whites.

Neither stereotype activation, anxiety/arousal, self-regulatory efforts, cognitive load, nor emotional reactions mediated the main or interactive effects of race or perceived stereotype relevance on nonverbal behavior. The self-reported measure of anxiety was subject to the same biases that affected participants' reports on subjective perceptions of behavior discussed earlier. It was disappointing, however, that the physiological measure of anxiety/arousal (i.e., heart rate) did not aid in the interpretation of the stereotype threat effects. After all, other work by Mendes and colleagues (2002, 2008) has shown evidence of stereotype threat in cardiovascular reactivity. They assessed physiological responses (i.e., cardiac output, blood pressure) using relatively elaborate equipment, however, which involved having participants connected to a cardiograph and other equipment via leads and cords. In contrast, I opted to use a wireless heart rate monitor that participants could wear unobtrusively under their shirts. Although the heart rate monitor is less sophisticated than other equipment, it would not have been plausible for the officer to suspect the participant of theft if the participant was hooked up to various monitors. In fact, it was somewhat surprising that only 2 participants lifted their shirts to show the heart rate monitor and prove that they belonged in the laboratory. Given that other research has revealed physiological correlates of threat (Mendes et al., 2002, 2008; see also, e.g., Murphy et al., 2007, who showed effects on cardiac interbeat interval, skin conductance, and sympathetic cardiovascular activation, and Townsend et al., 2011, who showed effects on cortisol), it is possible that heart rate is simply not sensitive enough. Heart rate variability may be more responsive to stereotype threat, so I plan to analyze effects on participants' cardiac interbeat interval in the future. Also, although both Blacks and Whites had higher heart rates

when perceived stereotype relevance was high as compared to low, stereotype threat might have produced racial differences in the amount of time it took for participants' heart rates to either accelerate at the beginning of the encounter (sympathetic activation) or decelerate afterward (parasympathetic withdrawal), another possibility I plan to explore in future analyses. Future research might test whether other biomarkers (e.g., salivary alpha amylase) are useful in detecting whether threat has a differential influence on sympathetic activation versus parasympathetic withdrawal (J. Quas, personal communication, September 15, 2011).

My attempt to bypass the limitations of self-report by assessing stereotype threat with stereotype activation was also not successful. Neither race nor perceived stereotype relevance had significant effects on this measure. As discussed earlier, Blacks in the high-perceived-stereotype-relevance condition were agreed more than any other participants that they were thinking about being racially stereotyped by the security officer, but they took slightly (but not significantly) longer than any other participants to respond to stereotype-related words. This is exactly the opposite of what I expected based on theory and prior research (e.g., Vorauer et al. 2000). It is possible that interacting with the security officer primed all participants to think about crime, regardless of whether he asked about a theft or directions. If so, all participants would have responded more quickly to words related to the concept of crime (e.g., criminal, violent) relative to filler words. Because the concepts of crime and race are associated (see, e.g., Eberhardt et al., 2004), the staged encounter might have even primed words related to the stereotype of Black criminality (e.g., ghetto, thugs). These priming effects would have reduced the diagnosticity of the lexical decision task as a measure of stereotype activation.

The predicted race or perceived stereotype relevance effects did not manifest on cognitive load either. Participants might have experienced more cognitive load when the

officer was investigating a crime than when he was asking for directions, but they were also more stressed (as evinced by effects on both self-reported and physiologically assessed anxiety/arousal). Stress can actually improve performance on the Stroop color task by narrowing attention and facilitating focus (Chajut & Algom, 2003), so the confounding of stereotype threat and stress could have masked group differences on the selective-attention-based cognitive load measure. In fact, the past studies that found threat effects on the Stroop task used arguably less stressful manipulations (e.g., Black participants took a test that was either diagnostic of intellectual ability or not, Inzlicht, McKay, & Aronson, 2006). Future research should both manipulate stereotype threat using ecologically valid methods (i.e., events that could have implications for participants outside of the experimental context) and incorporate cognitive load measures that tap into a broader array of executive functions.

Finally, although I found that Blacks reported feeling more hostile than Whites after both types of staged encounters, and both Blacks and Whites reported feeling more defensive after the officer asked about a theft compared to when he asked about directions, there were floor effects on the negative emotional reactions measures. Thus, these findings need replication. A measure with better variance might allow for more accurate testing of any potential mediation of the race or perceived-stereotype-relevance effects.

METHODOLOGICAL STRENGTHS AND LIMITATIONS

A strength of this research is its demonstration that Blacks, more than Whites, report that they experience stereotype threat in police encounters in general (Study 1) and in a simulated police-citizen interaction (Study 2). Even though Blacks' average stereotype threat score hovered around the neutral midpoint of the stereotype threat scale in both studies, the differences were significant and the effect sizes were moderate (partial $\eta^2 = .24$ in Study 1 and .19 in Study 2). In contrast to research showing that people are not very

good at predicting how they might feel in a given situation (Ayton et al., 2007), Blacks and Whites were fairly accurate in their estimations, as suggested by the similarity of the size of the race difference in reported stereotype threat across studies.

Although this work went beyond relying on participants' self-reports to uninvolved situations, even more realistic field testing is the obvious next step. Mitchell's (2012) recent meta-analysis showed that that over a quarter of social psychological effects found in the laboratory were reversed when studied in the field under more realistic circumstances. The staging of the encounter in the present research was tightly controlled. Participants were purposefully backed into the corner of the laboratory to induce feelings of being trapped and concern about being stereotyped, but this might have had unintended consequences that undermined the study goals by inhibiting participants' movement. This could explain, for example, why stereotype threat did not translate into racial differences in the amount of eye contact participants engaged in with the officer—given that the officer was standing just a few feet from participants and speaking directly to them, participants might have thought it would seem suspicious if they did not maintain eye contact. The confederate officer was also directed to stay strictly on script, regardless of how participants responded to his queries. One of the participants who was excluded from analyses noted this as a factor that influenced him to become suspicious that the interaction was a setup. Thus, although this encounter was realistic, it was not real.

Even so, there is reason to think the effects revealed by this research might be even stronger in the field. Although unexcluded participants did not think the security officer was part of the study, many were conscious of being in an experiment during the staged interaction. For example, several participants reported being cognizant of the fact that they were wearing a heart rate monitor during the interaction, and noted that they were concerned about how the interaction might have influenced their results. Also, participants

knew that even if they were wrongfully accused, the experimenter would be back momentarily to vouch for them. Several participants volunteered during debriefing that they thought they would have reacted differently if the confederate had been a real police officer and not only a security officer. It is illegal, however, to have a confederate impersonate a police officer (e.g., *People v. Thoennes*, 2002) so this limitation can only be addressed with field research. To the extent that participants felt safer in the simulated encounter than they do in actual police encounters in the real world, my results might understate the significance of stereotype threat effects.

In considering the limitations of this research, it is important to note the surprising number of participants who had to be dropped for being suspicious of the authenticity of the interaction. In fact, the pattern of suspicion is an intriguing finding all on its own. That is, whereas Whites (5%) and Blacks (17%) suspected at statistically equivalent rates when the security officer was asking for directions, marginally more Whites (34%) than Blacks (13%) were suspicious that the encounter was staged when the officer was investigating a crime. Future efforts to replicate the findings from this research should attempt to clarify the basis of this disparity. Perhaps the possibility of being wrongfully accused was so aschematic for Whites that they were more likely than Blacks to search for alternative explanations. In contrast, Blacks might not have thought anything was unusual because they are accustomed to being pre-judged as suspects by police figures. This would be consistent with the fact that past personal or vicarious experiences of bias-based policing were reported by only 13% of Whites but 79% of Blacks.

Although some participants had to be excluded from the analyses, there were still 19 to 20 participants per cell in the experimental design. This provided sufficient power for testing main effects, but power for testing interactions and mediation was low. Future studies using larger samples are needed to better elucidate the psychological processes

that underlie race and perceived-stereotype-relevance effects on nonverbal behavior.

Another limitation concerns the coding of nervous appearance: Only 55% of the data were coded independently by different coders without discussion to resolve differences. Even so, as reported in the method section, participants were not rated differently depending on whether they were coded by independent observers or through group discussion. Also, analyses not reported here that used only the subsample of participants who were coded by independent observers produced similar results. Also, the raters on this project were White and Asian, so it would be beneficial to ensure codes are reliable with a Black rater as well. The videos could also be coded for other nonverbal behaviors that stereotype threat might influence, including eye blinking, hand/finger movements, rigidity, nervous facial expressions, and appearing to be thinking hard. Such coding might reveal racial differences in quantifiable nonverbal behaviors (e.g., facial expressions) that explain exactly why Blacks were perceived as more nervous overall than were Whites. Further, a high-resolution coding system based on distinct segments of the interaction as units to be coded might enhance the ability to detect stereotype threat effects. For example, participants might have shown more behavioral evidence of stereotype threat when they were speaking to the officer versus when they were listening. Videos from the moments leading up to the security officer's approach and following his exit should also be coded. The former is important because police officers frequently decide to initiate contact in the first place based on a person's behavior (Stroshine, Alpert, & Dunham, 2008). The latter is also important because, although participants might have been able to control their behavior for the short duration of the interaction, they could have exhibited behavioral evidence of threat when they thought they were no longer being observed.

Other limitations relate to measurement timing. First, it is unclear whether the self-report measures adequately assessed stereotype threat and the other variables of interest

due to their being administered after the staged encounter. It is not known how long stereotype threat and its effects persist. Because the officer had exited and ended the encounter by the time participants completed the measures, participants might have perceived the threat as over by then. Also, participants' feelings of threat might have been alleviated by the experimenter's return, even though the officer intimated that he might come back. Second, threat and other proposed psychological correlates were measured after nonverbal behavior, so I cannot make definitive conclusions regarding causal order. The effects I found were consistent with prior theory and my hypotheses, however. Further, based on the incongruence between participants' actual behavior and their self-perceived behavior, it is unlikely that participants intuited that they felt threatened because they had behaved nervously. Future field research might shed more light on stereotype threat and its effects by measuring them in real time using the experience sampling method and innovative technologies such as webcams and tablet computers.

Another strength of this study is that I examined the effects of race on stereotype threat and nonverbal behavior both when the security officer was acting in an investigatory capacity and when he was merely asking for directions to a diversity training meeting. The latter condition is problematic, however. On the one hand, it could introduce a confound because it might not only reduce the likelihood of participants thinking they might be accused of theft, but it also might credential the security officer as non-racist. This design was chosen so that if Black participants felt stereotype threat in that encounter, I could conclude it stemmed from their subjective perceptions of the situation and not any kind of threatening behavior on the part of the officer. In fact, Townsend et al. (2011) recently found that situations that have identity-threatening cues and those that are ambiguous are just as likely to evoke threat-related reactions. Even so, my low-perceived-stereotype-relevance condition might not have been identity safe as intended because participants might have

thought that the officer's participation in the diversity training meeting was mandatory and not due to his own autonomous choice. To the extent that the officer was not qualified as non-biased, he might still have been perceived by Blacks as threatening. Thus, the next step is to find the line that divides situations that are perceived as threatening versus safe. In fact, I am now collecting data in a true control condition that makes stereotypes about both race and crime irrelevant to the situation (e.g., a civilian asks about directions to a non-diversity-focused training meeting), which should establish a clearer picture of baseline racial differences in stereotype threat and nonverbal behavior.

I was fortunate to have a very diverse group of students and community members (some of whom were also students) as participants in this research. Community member participants were, however, a unique sample of volunteers who responded to fliers and advertisements (see Appendix B), and, in retrospect, I would not have advertised the study as "investigating the links between beliefs and attitudes and anxiety." I did so because this cover story was used to explain why the study involved wearing a heart rate monitor, but it could have unintentionally drawn interest from a participant population who were more anxious than those in the general population. Although there may have been a few instances in which this was the case (e.g., one participant wrote to me, "I'll totally take your survey if I meet the criteria! I'm 36, white, and anxious!"), of all participants, the highest baseline score on the general anxiety scale was only 2.30, where 1 was *not at all* anxious and 5 was *extremely* anxious. Even after the staged encounter the highest score was only 3.10. Thus, data suggest that the recruitment materials probably did not bias the sample, but future research should be more careful to establish a sample that is representative in terms of trait anxiety. This is particularly important given that Blacks who were more anxious at baseline were more concerned than other Blacks that the security officer would accuse them when he was investigating a theft. This moderating effect was significant even though

the range of anxiety scores was not large, suggesting that even slight differences in baseline anxiety can influence the way Blacks experience police encounters.

There are surely many other variables that could moderate the racial differences in stereotype threat and nonverbal behavior found in this research, but perhaps the most obvious is the race of the officer. In this research, the security officer was always White. This does not present a problem in terms of ecological validity because 75% of local police officers are White, whereas only 12% are Black (Reaves, 2010), but it does present interesting issues for future research. Would Blacks feel less stereotype threat when confronted by a Black officer? On the one hand, Blacks paired with Black officers might feel “identity safety,” or the sense that they will not be perceived in light of the criminal stereotype (Steele et al., 2002). This would be consistent with Marx and Goff’s (2005) research showing that Blacks scored lower on intellectual tests than Whites when the experimenter was White, but Blacks performed just as well as Whites when the experimenter was Black. On the other hand, Blacks might experience just as much stereotype threat when interacting with a Black officer as a White officer. For example, Shapiro and Neuberg (2011) theorize that people are even concerned that ingroup members might stereotype them, judge and/or treat them unfairly, or reject them (Shapiro & Neuberg, 2011). Further, Blacks might experience threat in encounters with Black officers if the social categorization of Blacks as ingroup members is less salient than that of police as outgroup members and authorities representing the White establishment.

IMPLICATIONS FOR THEORY, PRACTICE, AND RESEARCH

This research contributes to our understanding of social psychological theory on stereotype threat. To begin with, it demonstrated the occurrence of stereotype threat in the novel context of police encounters. The findings also contribute to a new but growing literature that demonstrates that threat can manifest in behavior (e.g., Bosson et al., 2004;

Goff et al., 2008). Thus, this research extends the boundaries of stereotype threat theory in regard to both the domains in which the phenomenon occurs and the range of consequences it has for stereotyped groups.

The results also shed light on the applied problem of bias-biased policing. As predicted, stereotype threat translated into behavior that was objectively coded as appearing nervous. The significance of this finding cannot be understated because police rely on suspect behavior when determining what actions to take (Stroshine et al., 2008). Thus, stereotype threat could have implications for understanding why police officers target Blacks as suspects disproportionately more often than do Whites. This could be tested by having actual police officers view videos of participants from this study and rate them in terms of how suspicious they appear.

Although Blacks and Whites did not differ in the extent to which they engaged in nonverbal behaviors such as frequency of smiles, gestures, etc., it is still possible that the same behavior is perceived differently based on the race of the target. That is, police officers might think that a Black person who fidgets looks suspicious but that a White person who fidgets looks nervous. Future research could test this by having police officers view Black and White actors who have been trained to behave the same way while also measuring police prejudice and manipulating the extent to which cultural stereotypes linking race and crime are primed. Research such as this would help to rule out alternative explanations for bias-based policing (e.g., behavioral confirmation effects, see Meissner & Kassin, 2004; Narchet, Meissner, & Russano, 2011; response preparation priming effects, see Wyer et al., 2010).

Even if stereotype threat does not have pervasive effects on behavior in police encounters, it could have negative consequences for Blacks. Recent research shows that experiencing stereotype threat results in ego depletion and impaired self control (Inzlicht et

al., 2006). Thus, if threatened Blacks are more susceptible to giving in to negative emotions and impulses than are others, they might experience more negative encounters with police officers. Inzlicht, Tullett, Legault, and Kang (2011) hypothesized that stereotype-threat-related self-regulatory decline could even lead Blacks to give in to aggressive, violent, and criminal impulses more often than Whites. Davis and Leo (in press) suggest that threatened Blacks might not have the self-regulatory resources needed to withstand the pressure to confess in an interrogation and so threat might explain higher rates of false confessions among Blacks than Whites. Because threat also has psychophysiological consequences, Blacks who are frequently concerned about being subjected to bias-based policing could develop chronic health problems (e.g., hypertension, see Blascovich et al., 2001).

Considering the potential for stereotype threat to have such deleterious consequences, it is important for research to uncover interventions to attenuate Blacks' feelings of stereotype threat in police encounters. My results suggest that Blacks' personal beliefs that the police are prejudiced lead to stereotype threat. Future research might attempt to bring link the literatures on stereotype threat and procedural justice together to understand whether stereotype threat might be reduced by bolstering perceptions of police legitimacy (see Tyler & Wakslak, 2004). Yet stereotype threat is also somewhat context dependent. Thus, research should explore how police might interact with Blacks in ways that lead them to feel safe from bias and stereotyping. Once proven effective, such methods could be incorporated into police training protocols and community policing initiatives. Police training should also focus on teaching police that nonverbal behavior is an unreliable indicator of deception or guilt because it is affected not only by stereotype threat and other psychological processes, but behavior is also affected by whether police contact is perceived as investigatory. My results suggest that people are more likely to appear nervous when they are treated like suspects than when they are not.

Finally, the model presented here attempts to elucidate the theoretical underpinnings of racial differences in nonverbal behaviors in police encounters, but other studies should test whether the model generalizes to other groups who are stereotyped as criminals (e.g., Hispanics, Muslims, etc.) and other situations in which that stereotype is relevant (e.g., in court, airport security checkpoints, etc.). Bringing social psychological theories on stereotype threat and deception detection together might be useful for understanding and solving many real-world psycholegal problems.

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Table 1

Nonverbal Behaviors: Actual Psychological Correlates, Actual Racial Differences in Legal Situations, and Police Professionals' Perceptions about Behaviors Associated with Lying

Nonverbal Behavior	Actual Psychological Correlates					Blacks relative to Whites in legal situations	Police professionals' perceptions about liars compared to truth-tellers
	Increased anxiety/arousal	Increased self-regulatory efforts	Increased cognitive load	Feeling stereotype threat	Lying		
Eye contact					>		<
Eye blinking	>		<		> / <		
Gaze aversion	>	<	>	> / <	> / <	>	>
Nervous facial expressions	>						>
Total facial movements	>		>				
Smiles/mouth movements	>		>	>		>	> / <
Appears aroused/anxious	>		>	>	>		>
Appears to be thinking hard			>		>		>
Faked emotions							>
Nodding/head movements					<		>
Finger/hand/arm movements	>	<	<	> / <	<	>	>
Foot/leg movements		<			> / <		>
Self-adaptors	>				<		>
Rigidity	>	>		>	>	<	> / <
Irregular breathing	>						
Speech onset latency			>		>		>
Speech duration			>	>	<		>
Speech disturbances		<	>	>	> / <	> / <	>
Speech pace			<		<	<	>
Voice frequency/pitch					>	>	—

Note. < means that the cue occurs less often in this condition; > means that the cue occurs more often in this condition; empty cells mean that the cue was either not affected or not examined. For example, eye blinking actually increases in frequency in aroused participants, decreases in participants under high cognitive load, and may either increase or decrease in participants who are lying.

Table 2

Grand Means, Standard Deviations, and Ranges for Continuous Measures used in Study 2

	Grand M	SD	Range	
			Minimum	Maximum
Main Dependent Measures				
Stereotype threat measures				
Stereotype threat scale ^a	2.49	1.60	1.00	6.20
Concern-about-being-accused item ^b	1.97	1.26	1.00	5.00
Perceived-stereotype-likelihood item ^b	1.67	1.03	1.00	5.00
Stereotype activation (Lexical decision task: RT for target trials adjusted for filler trials) ^c	912	109	652	1310
Nonverbal behavior measures				
Suspicious behavior item ^b	1.19	.46	1.00	3.00
Nervous behavior item ^b	1.52	.70	1.00	4.00
Controlled behavior item ^b	1.75	1.04	1.00	5.00
Percentage of eye contact	57%	15%	3%	87%
# of times averted gaze	9.80	3.21	2	18
# of smiles	2.48	2.78	0	11
# of gestures	7.56	6.25	0	27
# of self-adaptors	2.15	2.36	0	9
# of head movements	19.68	10.79	6	78
# of position shifts	7.13	7.09	0	34
Nervous appearance rating ^d	1.71	.98	0	4
Distancing rating ^e	.84	1.41	0	4
Proposed Mediators				
General anxiety post-encounter scale ^b	1.31	.39	1.00	3.10
Specific anxiety scale ^b	2.42	.73	1.00	4.14
Heart rate (adjusted for baseline)	82.32	6.30	62.21	106.32
Self-regulatory efforts scale ^b	1.94	.86	1.00	4.25
Cognitive load (Stroop color task: RT for incompatible trials adjusted for control trials) ^c	1060	116	755	1695
Positive emotions scale ^b	3.01	1.00	1.00	5.00
Anger scale ^b	1.15	.51	1.00	4.00
Fear scale ^b	1.15	.52	1.00	4.50
Hostility item ^b	1.13	.40	1.00	3.00
Defensiveness item ^b	1.43	.71	1.00	4.00
Covariates				
General anxiety pre-encounter scale ^b	1.35	.31	1.00	2.30
Social desirability scale ^d	4.57	2.37	.00	10.00
Concern about police victimization item ^a	3.55	1.93	1.00	7.00
Perceived police racism ^a	3.54	1.79	1.00	7.00

Note. RT = Reaction time.

^a7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). ^b5-point scale ranging from 1 (*not at all*) to 5 (*extremely*). ^cMilliseconds. ^d5-point scale ranging from 0 (*not at all nervous*) to 4 (*extremely nervous*). ^e5-point scale ranging from 0 (*He did not distance himself from the Kindle at all*) to 4 (*He completely released the Kindle*). ^fSum of true responses to all scale items.

Table 3

Correlations among Proposed Covariates and Stereotype Threat Measures

	Stereotype threat scale	Concern-about-being-accused item	Perceived-stereotype-likelihood item	Stereotype activation (Target trials RT partialling for filler trials RT)
General anxiety pre-encounter scale	.03	.28**	.12	.22 [†]
Social desirability scale	-.01	-.11	-.07	.06
Perceived police racism scale	.45***	.14	.45***	.05
Concerned about police victimization item	.40***	.04	.30**	.13
Bias-based policing	.44***	.06	.35***	-.07
Questioned as suspect	.18	.14	.16	.09
Arrested/convicted	.18	.21 [†]	.27*	.15

Note. *ns* = 72–79.

[†] $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 4

Intercorrelations of Covariates

	1.	2.	3.
1. Perceived-police-racism scale	--		
2. Concerned about police victimization item	.57***	--	
3. Bias-based policing	.69***	.45***	--
4. Arrested/convicted	.20 [†]	.25*	.16

Note. *ns* = 77–79.

[†] $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 5

Correlations among Measures of Stereotype Threat and Proposed Mediators

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Stereotype threat scale	--												
2. Concern-about-being-accused item	.47***	--											
3. Perceived-stereotype-likelihood item	.60***	.39***	--										
4. Stereotype activation ^a	-.02	.33**	-.04	--									
5. Heart rate ^b	.30*	.10	.24 [†]	-.09	--								
6. Specific anxiety scale	.33**	.61***	.13	.16	.08	--							
7. General anxiety scale	.25*	.23 [†]	.32**	.15	.01	.25*	--						
8. Self-regulatory efforts scale	.45***	.56***	.19 [†]	.13	.11	.53***	.05	--					
9. Cognitive load ^c	.11	.13	.16	.16	-.01	.29*	-.01	.14	--				
10. Positive emotions scale	-.43***	-.19 [†]	-.23*	-.08	.03	-.29**	-.33**	-.06	-.11	--			
11. Anger scale	.29**	.31**	.32**	.28*	.07	.07	.66***	-.08	.04	-.35**	--		
12. Fear scale	.01	.08	.08	.26*	-.07	.09	.78***	-.05	.12	-.09	.39***	--	
13. Hostility item	.26*	.13	.38***	.08	-.03	.11	.36**	.07	.09	-.18	.32**	.58***	--
14. Defensiveness item	.23*	.37***	.33**	-.00	-.17	.20 [†]	.42***	.20 [†]	.15	-.19 [†]	.45***	.27*	.48***

Note. $ns = 67-79$. ^aStereotype activation was assessed as mean response latency to stereotype-related words in the lexical decision task, while partialling for response latency to filler words. ^bHeart rate was assessed during the encounter, with baseline heart rate partialled. ^cCognitive load was assessed as mean response latency to incompatible trials in the Stroop color task, while partialling for response latency for control trials.

[†] $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 6

Correlations among Subjective and Objective Measures of Nonverbal Behavior

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Subjectively perceived											
Suspicious behavior	--										
Nervous behavior	.54***	--									
Controlled behavior	.24*	.40***	--								
Objectively coded											
Nervous appearance	-.07	.02	-.01	--							
Eye contact	.28*	.06	.07	.21 [†]	--						
Distancing	.00	-.11	.24*	.05	.09	--					
Gaze aversion	-.17	-.07	.08	.24*	.31**	.13	--				
Smiles	-.26*	-.16	-.20	-.21 [†]	-.14	-.09	.10	--			
Head movements	-.09	.02	-.12	.00	-.13	.03	.21	.10	--		
Gestures	-.23 [†]	-.16	-.06	-.12	-.04	.17	.51***	.36**	.40***	--	
Self-adaptors	.27*	.27*	.04	-.07	.08	.05	-.13	.07	.07	.05	--
Position shifts	-.08	-.20 [†]	-.06	.12	.00	.06	.10	.04	.23 [†]	.08	-.10

Notes. *ns* = 64-79. Subjectively perceived ratings of suspicious, nervous, and controlled behavior were made on a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely*).

[†] $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 7

Correlations between Stereotype Threat and the Proposed Mediators and Nonverbal Behavior

	Stereotype threat scale	Concern-about-being-accused item	Perceived-stereotype-likelihood item	Stereotype activation ^a	Heart rate ^b	Specific anxiety scale	General anxiety scale	Self-regulatory efforts	Cognitive load ^c	Positive emotions scale	Anger scale	Fear scale	Hostility	Defensiveness
Subjectively perceived														
Suspicious behavior	.04	.32**	.03	.22 [†]	.07	.43***	.43***	.21 [†]	.03	-.03	.30**	.23*	.15	.26*
Nervous behavior	.14	.06	.01	-.06	.14	.37***	-.04	.24*	.07	.02	-.05	-.11	.08	.09
Controlled behavior	.28**	.36***	.03	-.03	.15	.34**	-.01	.39***	-.26*	-.11	-.04	-.09	.11	.18
Objectively coded														
Nervous appearance	.39***	.14	.21	.00	.11	.07	-.08	.10	.15	-.01	-.00	.04	.10	.16
Eye contact	.21 [†]	.41***	.25*	.17	.26*	.26*	.19	.27*	-.03	-.03	.26*	.11	.14	.31**
Distancing	.20	.17	.21 [†]	-.09	.20	.26*	.06	.08	.05	-.06	-.10	-.05	.04	-.05
Gaze aversion	.07	.02	.04	.10	.17	-.08	-.25*	-.03	.03	.00	-.05	-.26*	-.01	.01
Smiles	-.31**	-.50***	-.12	-.22 [†]	.06	-.35**	-.08	-.40***	-.11	.04	-.09	-.22 [†]	-.17	-.10
Head movements	-.21 [†]	-.12	-.01	.15	-.02	-.18	-.18	-.11	.21	.05	-.08	-.15	-.07	.04
Gestures	-.06	-.18	-.08	-.03	.11	-.21 [†]	-.16	-.14	.05	-.04	.13	-.13	-.04	.05
Self-adaptors	-.08	-.15	-.10	.02	.26*	.09	.00	-.01	.10	.06	-.04	.08	-.04	-.15
Position shifts	.28*	.18	.49***	-.05	.15	-.19	.21	.02	.01	.01	.17	-.01	.05	.19

Note. *ns* = 57-79. ^aStereotype activation was assessed as mean response latency to stereotype-related words in the lexical decision task, while partialling for response latency to filler words. ^bHeart rate was assessed during the encounter, with baseline heart rate partialled. ^cCognitive load was assessed as mean response latency to incompatible trials in the Stroop color task, while partialling for response latency for control trials.

[†] $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 8

Means and Standard Deviations for Participants' Subjective Perceptions of Behavior as a Function of Race

	Black		White	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Suspicious behavior item	1.10	.38	1.28	.51
Nervous behavior item	1.38	.63	1.67	.74
Controlled behavior item	1.68	1.07	1.82	1.02

Note. Responses were given on a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely*).

Table 9

Means and Standard Deviations/Standard Errors for Each Cell in the 2 (Race) X 2 (Perceived Stereotype Relevance)

Experimental Design

	Perceived stereotype relevance							
	Low				High			
	Black		White		Black		White	
	<i>M</i>	<i>SD</i> or (<i>SE</i>)	<i>M</i>	<i>SD</i> or (<i>SE</i>)	<i>M</i>	<i>SD</i> or (<i>SE</i>)	<i>M</i>	<i>SD</i> or (<i>SE</i>)
Main Dependent Measures								
Stereotype threat measures								
Stereotype threat scale ^a	2.30	1.32	1.35	.74	3.95	1.67	1.83	1.17
Stereotype threat scale (controlling for perceived police racism) ^a	1.75	(.34)	1.96	(.35)	3.60	(.31)	2.69	(.31)
Concern-about-being-accused item ^b	1.35	.67	1.05	.22	2.85	1.53	2.68	1.06
Perceived-stereotype-likelihood item ^b	1.80	1.06	1.00	.00	2.40	1.27	1.23	.58
Stereotype activation (Lexical decision task: RT for target trials controlling for filler trials) ^c	915	(25)	895	(25)	938	(26)	903	(25)
Nonverbal behavior measures								
Suspicious behavior item ^b	1.05	.22	1.10	.31	1.15	.49	1.47	.61
Nervous behavior item ^b	1.40	.75	1.35	.59	1.35	.49	2.00	.75
Controlled behavior item ^b	1.65	1.23	1.30	.57	1.70	.92	2.37	1.12
Percentage of eye contact	53%	15%	47%	16%	62%	14%	64%	9%
# of times averted gaze	9.79	3.24	9.44	3.12	1.33	3.50	9.59	3.16
# of smiles	4.00	2.80	4.88	2.60	.44	.86	1.12	1.73
# of gestures	7.79	5.40	9.32	6.55	6.50	6.71	6.53	6.14
# of self-adaptors	1.14	1.10	2.42	2.29	1.17	1.54	3.81	3.06
# of head movements	18.57	8.43	2.19	7.79	17.12	8.32	19.24	7.80
# of position shifts	7.47	4.26	6.63	4.10	5.94	7.71	5.41	5.61
Nervous appearance rating ^d	1.79	.89	1.13	.62	2.39	1.04	1.47	.87
Distancing rating ^e	.79	.97	.63	1.26	1.00	1.71	.94	1.60

Table 9 (continued)

	Perceived stereotype relevance							
	Low				High			
	Black		White		Black		White	
	<i>M</i>	<i>SD</i> or (<i>SE</i>)	<i>M</i>	<i>SD</i> or (<i>SE</i>)	<i>M</i>	<i>SD</i> or (<i>SE</i>)	<i>M</i>	<i>SD</i> or (<i>SE</i>)
Proposed Mediators								
General anxiety post-encounter scale ^b	1.24	(.07)	1.33	(.07)	1.35	(.07)	1.34	(.07)
Specific anxiety scale ^b	2.16	.64	1.99	.49	2.44	.72	3.11	.54
Heart rate (adjusted for baseline)	8.87	(1.62)	8.28	(1.49)	83.65	(1.44)	84.29	(1.51)
Self-regulatory efforts scale ^b								
Cognitive load (Stroop color task: RT for incompatible trials controlling for control trials) ^c	1091	(26)	1068	(26)	1034	(28)	1043	(27)
Positive emotions scale ^b	3.03	.92	3.15	1.11	2.83	1.14	3.03	.86
Anger scale ^b	1.08	.24	1.13	.46	1.33	.85	1.05	.16
Fear scale ^b	1.05	.15	1.23	.80	1.23	.60	1.11	.27
Hostility item ^b	1.15	.49	1.10	.45	1.25	.44	1.00	.00
Defensiveness item ^b	1.30	.66	1.20	.41	1.65	.81	1.58	.67

Note. When ANCOVA was used to derive estimated marginal means adjusted for covariates, standard errors of the mean are presented in parentheses instead of standard deviations.

^a7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). ^b5-point scale ranging from 1 (*not at all*) to 5 (*extremely*).

^cMilliseconds. ^d5-point scale ranging from 0 (*not at all nervous*) to 4 (*extremely nervous*). ^e5-point scale ranging from 0 (*He did not distance himself from the Kindle at all*) to 4 (*He attempted to cover or hide the Kindle*). ^fThe sum of true responses to all scale items.

Table 10

Mediated Effect of Race on Frequency of Self-Adaptors

Effects on Frequency of Self-adaptors	B	SE	β	<i>t</i>	<i>p</i>
Step 1: Independent variable effect					
$R = .41, R^2 = .16, F(1, 65) = 12.74, p = .001$					
Race	-1.90	.53	-.41	-3.57	.001
Step 2: With mediators entered into the model					
$R = .43, R^2 = .18, F(5, 61) = 2.71, p = .03$					
Race	-2.27	.66	-.48	-3.43	.001
Stereotype threat	.17	.24	.12	.73	.47
Perceived stereotype likelihood	.11	.35	.05	.32	.75
Self-reported anxiety during the encounter	.02	.40	.01	.04	.97
Hostility	.03	.78	.00	.04	.97

Note. There was no support for mediation because none of the variables emerged as significant predictors of frequency of self-adaptors.

Table 11

Mediated Effect of Race on Objectively Coded Nervous Appearance

Effects on Objectively Coded Nervous Appearance	B	SE	β	<i>t</i>	<i>p</i>
Step 1: Independent variable effect					
$R = .42, R^2 = .18, F(1, 63) = 13.70, p < .001$					
Race	.82	.22	.42	3.70	< .001
Step 2: With mediators entered into the model					
$R = .51, R^2 = .26, F(5, 59) = 4.19, p = .003$					
Race	.80	.28	.41	2.89	.005
Stereotype threat	.18	.10	.30	1.91	.06
Perceived stereotype likelihood	-.11	.14	-.11	-.76	.45
Self-reported anxiety during the encounter	.17	.18	.13	.96	.34
Hostility	-.48	.45	-.14	-1.07	.29

Note. The effect of race on objectively coded nervous appearance was partially explained by stereotype threat, $z = 2.28, p = .02$.

Table 12

Mediated Effect of Perceived Stereotype Relevance on Eye Contact

Effects on Percentage of Eye Contact with the Security Officer	B	SE	β	<i>t</i>	<i>p</i>
Step 1: Independent variable effect					
$R = .44$, $R^2 = .20$, $F(1, 63) = 15.43$, $p < .001$					
Perceived stereotype relevance	.13	.03	.44	3.93	<.001
Step 2: With mediators entered into the model					
$R = .56$, $R^2 = .31$, $F(9, 51) = 2.56$, $p = .02$					
Perceived stereotype relevance	.08	.05	.25	1.53	.13
Stereotype threat	-.01	.02	-.10	-.62	.54
Perceived stereotype likelihood	.01	.03	.03	.20	.84
Concern about being accused	.03	.02	.21	1.17	.25
Self-reported anxiety during the encounter	.00	.03	.01	.08	.94
Heart rate during the encounter (controlling for baseline heart rate)	.01	.00	.50	1.73	.09
Self-regulatory efforts	-.00	.03	-.02	-.10	.92
Defensiveness	.05	.03	.22	1.60	.12

Note. The effect of perceived stereotype relevance on eye contact with the security officer was partially explained by heart rate, $z = 2.28$, $p = .02$.

Table 13

Mediated Effect of Perceived Stereotype Relevance on Frequency of Smiles

Effects on Frequency of Smiles	B	SE	β	<i>t</i>	<i>p</i>
Step 1: Independent variable effect					
$R = .67, R^2 = .45, F(1, 63) = 5.78, p < .001$					
Perceived stereotype relevance	-3.70	.52	-.67	-7.13	<.001
Step 2: With mediators entered into the model					
$R = .77, R^2 = .60, F(9, 51) = 8.36, p < .001$					
Perceived stereotype relevance	-3.90	.69	-.69	-5.65	<.001
Stereotype threat	-.35	.22	-.20	-1.57	.12
Perceived stereotype likelihood	.47	.34	.18	1.39	.17
Concern about being accused	-.63	.31	-.28	-2.08	.04
Self-reported anxiety during the encounter	.14	.44	.04	.33	.75
Heart rate during the encounter (controlling for baseline heart rate)	.14	.04	.70	3.18	.003
Self-regulatory efforts	.30	.39	.09	.76	.45
Defensiveness	.80	.39	.21	2.03	.05

Note. There was no support for mediation because the effect of perceived stereotype relevance became stronger when the potential mediators were entered into the model.

Table 14

Mediated Effect of Perceived Stereotype Relevance on Objectively Coded Nervous Appearance

Effects on Objectively Coded Nervous Appearance	B	SE	β	<i>t</i>	<i>p</i>
Step 1: Independent variable effect					
$R = .26, R^2 = .07, F(1, 63) = 4.62, p = .04$					
Perceived stereotype relevance	.51	.24	.26	2.15	.04
Step 2: With mediators entered into the model					
$R = .44, R^2 = .20, F(9, 51) = 1.37, p = .22$					
Perceived stereotype relevance	.42	.34	.21	1.24	.22
Stereotype threat	.28	.11	.46	2.63	.01
Perceived stereotype likelihood	-.11	.17	-.12	-.66	.51
Concern about being accused	-.09	.15	-.11	.60	.55
Self-reported anxiety during the encounter	-.05	.22	-.04	-.24	.82
Heart rate during the encounter (controlling for baseline heart rate)	-.00	.02	-.04	-.13	.90
Self-regulatory efforts	-.15	.19	-.14	-.80	.43
Defensiveness	.14	.19	.10	.71	.48
With perceptions of police racism covaried					
$R = .44, R^2 = .20, F(3, 61) = 4.99, p = .004$					
Perceived stereotype relevance	.31	.25	.16	1.22	.23
Stereotype threat	.13	.09	.22	1.50	.14
Perceptions of police racism	.12	.07	.21	1.60	.12

Note. The effect of perceived stereotype relevance on objectively coded nervous appearance was fully explained by stereotype threat, $z = 2.16, p = .03$. When nonsignificant mediators were dropped and perceptions of police racism were covaried in the model, the mediating effect of stereotype threat was no longer significant, $z = 1.41, ns$.

Table 15

*Mediated Simple Effect of Race on Self-Rated Suspicious Behavior When Perceived
Stereotype Relevance Is High*

Simple Effects on Self-Rated Suspicious Behavior	B	SE	β	<i>t</i>	<i>p</i>
Step 1: Independent variable effect					
$R = .29, R^2 = .08, F(1, 37) = 3.35, p = .08$					
Race	-.32	.18	-.29	-1.83	.08
Step 2: With mediators entered into the model					
$R = .60, R^2 = .36, F(10, 25) = 1.40, p = .24$					
Race	-.26	.31	-.23	-.85	.40
Stereotype threat	.01	.09	.02	.09	.93
Perceived stereotype likelihood	-.14	.13	-.28	-1.08	.29
Concern about being accused	.13	.10	.29	1.30	.21
Self-reported anxiety during the encounter	.19	.22	.23	.89	.38
Heart rate during the encounter (controlling for baseline heart rate)	.01	.02	.24	.64	.53
Self-regulatory efforts	-.14	.13	-.19	-1.01	.32
Hostility	.31	.44	.17	.71	.48
Defensiveness	.07	.15	.10	.46	.65

Note. There was no support for mediation because none of the variables emerged as significant predictors of self-rated suspicious behavior.

Table 16

*Mediated Simple Effect of Race on Self-Rated Nervous Behavior When Perceived
Stereotype Relevance Is High*

Simple Effects on Self-Rated Nervous Behavior	B	SE	β	<i>t</i>	<i>p</i>
Step 1: Independent variable effect					
$R = .47, R^2 = .22, F(1, 37) = 1.47, p = .003$					
Race	-.65	.20	-.47	-3.24	.003
Step 2: With mediators entered into the model					
$R = .67, R^2 = .45, F(10, 25) = 2.08, p = .07$					
Race	-.64	.35	-.46	-1.87	.07
Stereotype threat	.17	.10	.38	1.73	.10
Perceived stereotype likelihood	-.23	.15	-.38	-1.58	.13
Concern about being accused	-.07	.11	-.13	-.65	.52
Self-reported anxiety during the encounter	.11	.25	.11	.45	.66
Heart rate during the encounter (controlling for baseline)	.02	.02	.39	1.11	.28
Self-regulatory efforts	-.07	.15	-.08	-.46	.65
Hostility	-.29	.50	-.13	-.58	.57
Defensiveness	.07	.17	.09	.45	.66

Note. There was no support for mediation because, although stereotype threat emerged as a marginally significant predictor of self-rated behavior, it did not significantly explain the simple effect of race, $z = 1.51, ns$.

Table 17

*Mediated Simple Effect of Race on Self-Rated Controlled Behavior When Perceived
Stereotype Relevance Is High*

Simple Effects on Self-Rated Avoiding Looking Nervous	B	SE	β	<i>t</i>	<i>p</i>
Step 1: Independent variable effect					
$R = .32, R^2 = .10, F(1, 37) = 4.17, p = .05$					
Race	-.67	.33	-.32	-2.04	.05
Step 2: With mediators entered into the model					
$R = .69, R^2 = .47, F(10, 25) = 2.22, p = .05$					
Race	-.45	.52	-.45	-1.86	.08
Stereotype threat	.37	.15	.56	2.56	.02
Perceived stereotype likelihood	-.45	.22	-.48	-2.02	.05
Concern about being accused	.24	.17	.28	1.39	.18
Self-reported anxiety during the encounter	.14	.37	.09	.39	.70
Heart rate during the encounter (controlling for baseline heart rate)	.03	.03	.40	1.16	.26
Self-regulatory efforts	-.09	.23	-.07	-.38	.71
Hostility	.10	.75	.03	.13	.90
Defensiveness	.14	.25	.10	.54	.59

Note. The simple effect of race on self-rated avoiding looking nervous was partially explained by stereotype threat, $z = 1.97, p = .05$, and partially perceived stereotype likelihood, $z = -1.63, p = .10$.

Figure 1. Theoretical model for understanding predicted racial differences in nonverbal behavior in police encounters and their effect on police officers' perceptions of guilt.

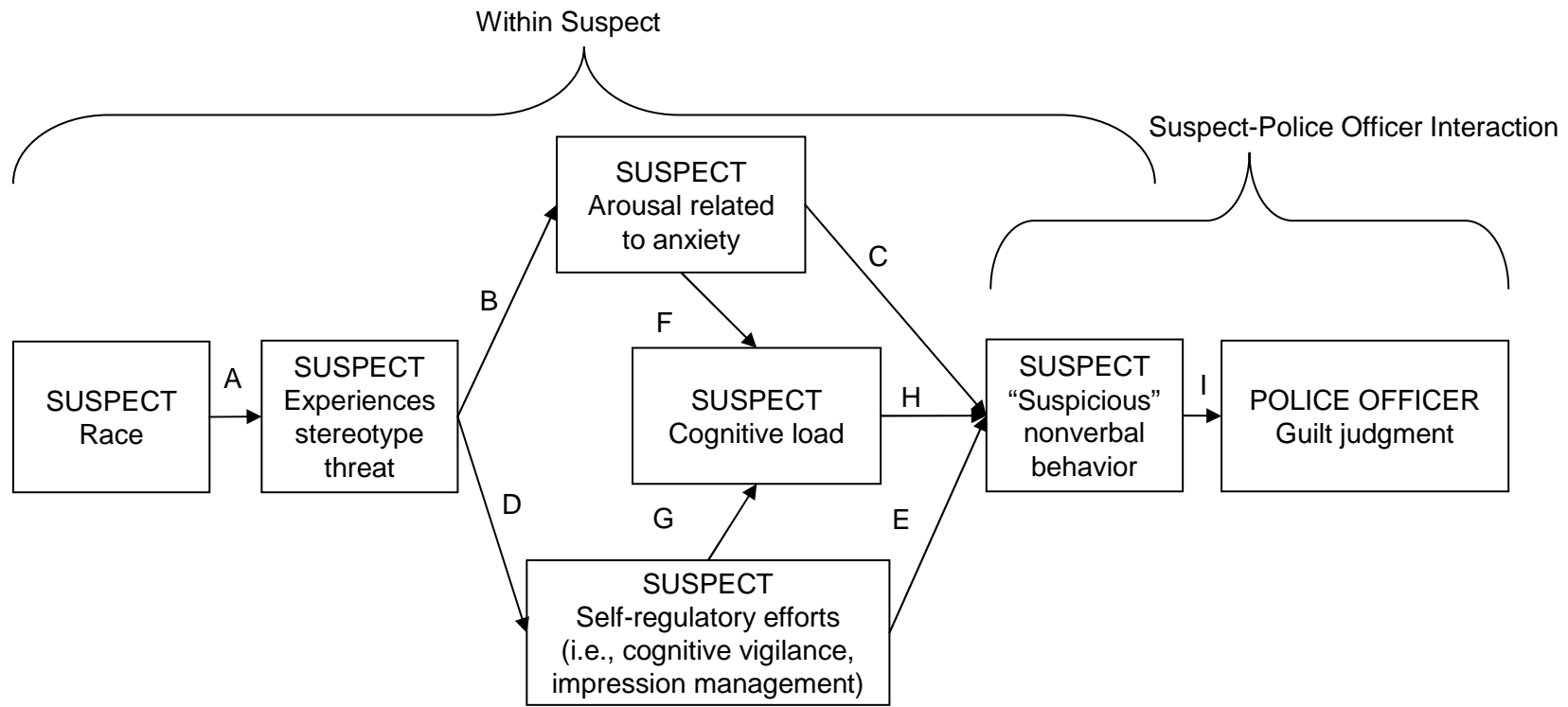


Figure 2. Staging for the participant's encounter with the security officer in Study 2. Solid lines represent the experimenter's route. Dashed lines represent the security officer's route. The experimenter excused herself during an ostensible "resting period." The participant remained seated at a desk in the laboratory while being videorecorded surreptitiously. The experimenter went around the corner to signal the security officer. The officer then approached the water fountain, noticed and approached the participant, spoke with the participant, and then exited.

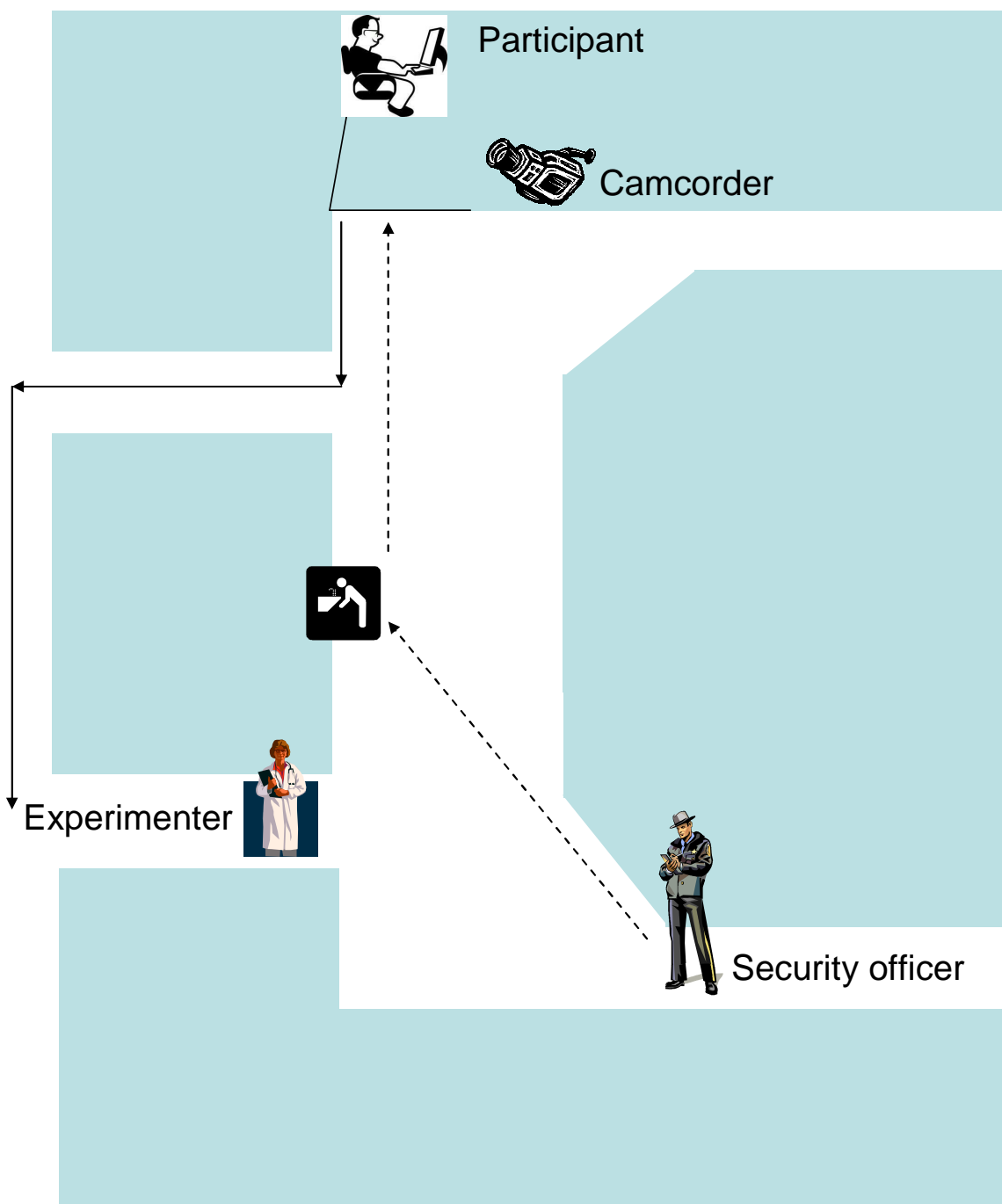


Figure 3. Race X Perceived Stereotype Relevance interaction effects on the stereotype threat scale as revealed by a 2 x 2 ANOVA (a) and 2 x 2 ANCOVA controlling for perceived police racism with estimated marginal means presented (b).

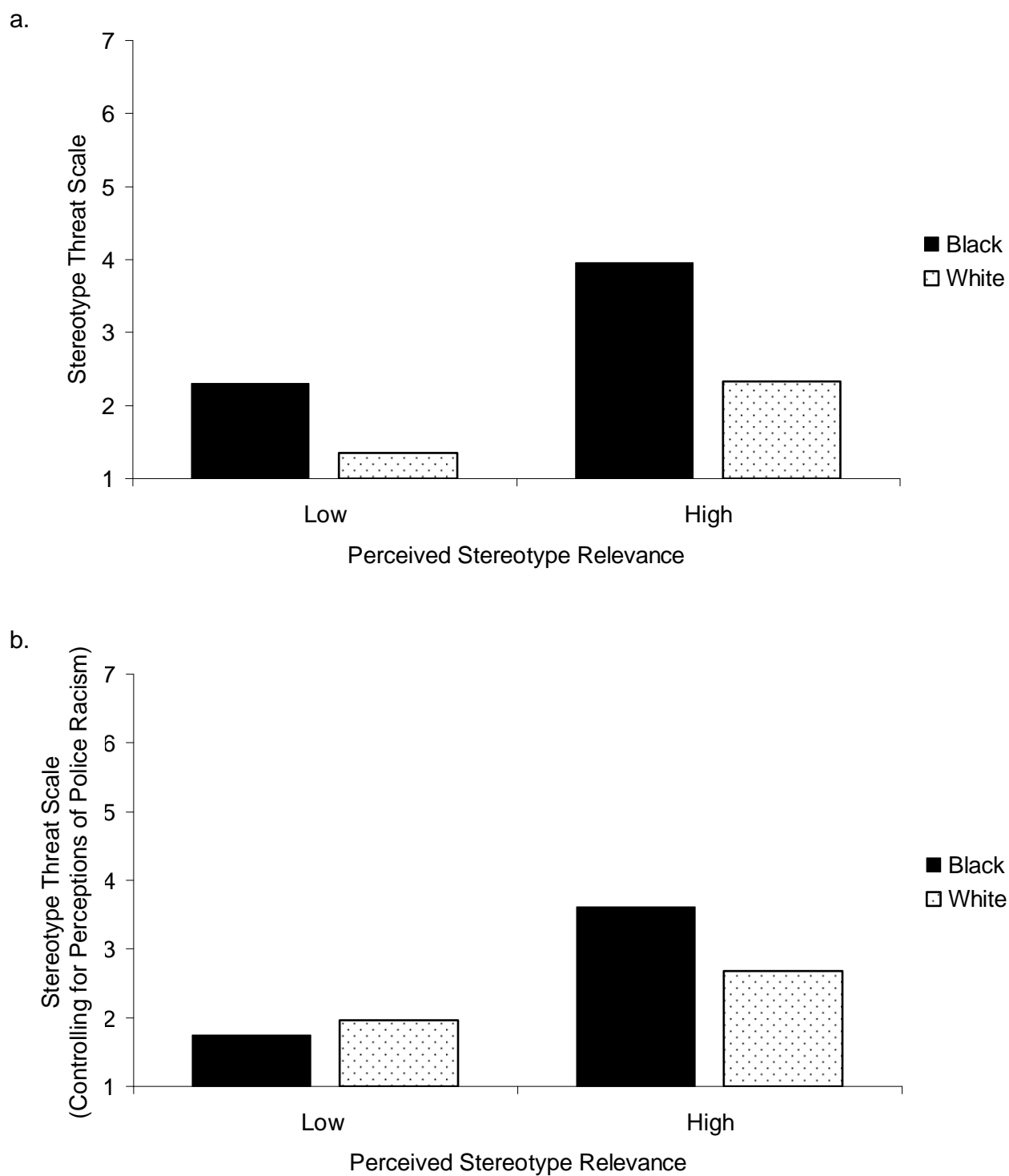


Figure 4. Race X Perceived Stereotype Relevance interaction effects on the concern-about-being-accused item (a) and perceived-stereotype-likelihood item (b), as revealed by a 2 x 2 MANOVA.

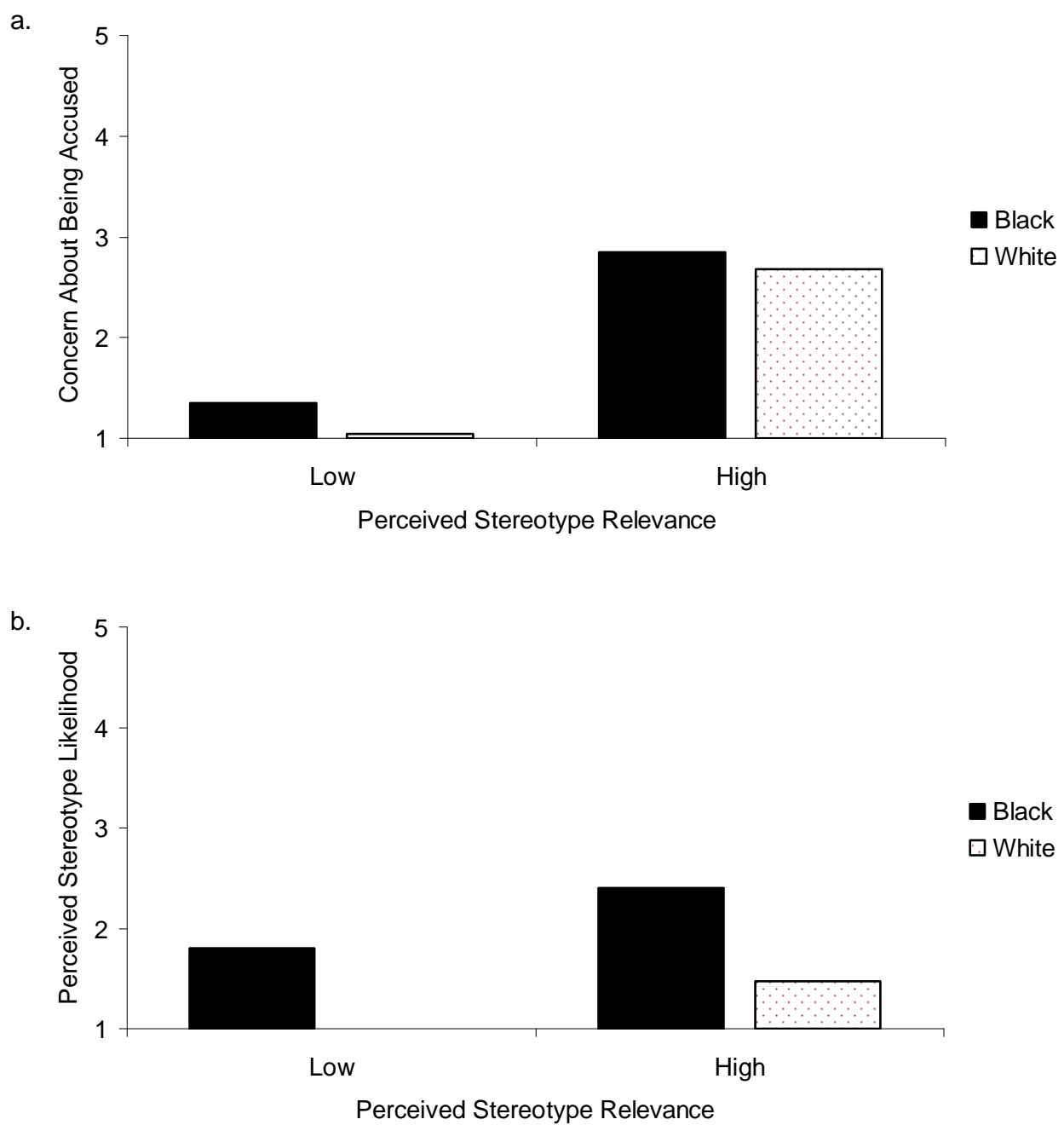


Figure 5. Race X Perceived Stereotype Relevance interaction effect on the stereotype activation measure (i.e., presented as estimated marginal means of response latencies in milliseconds for the lexical decision task target trials while controlling for filler trials) as revealed by a 2 X 2 ANCOVA. Shorter latencies reflect greater cognitive accessibility of stereotype-related words.

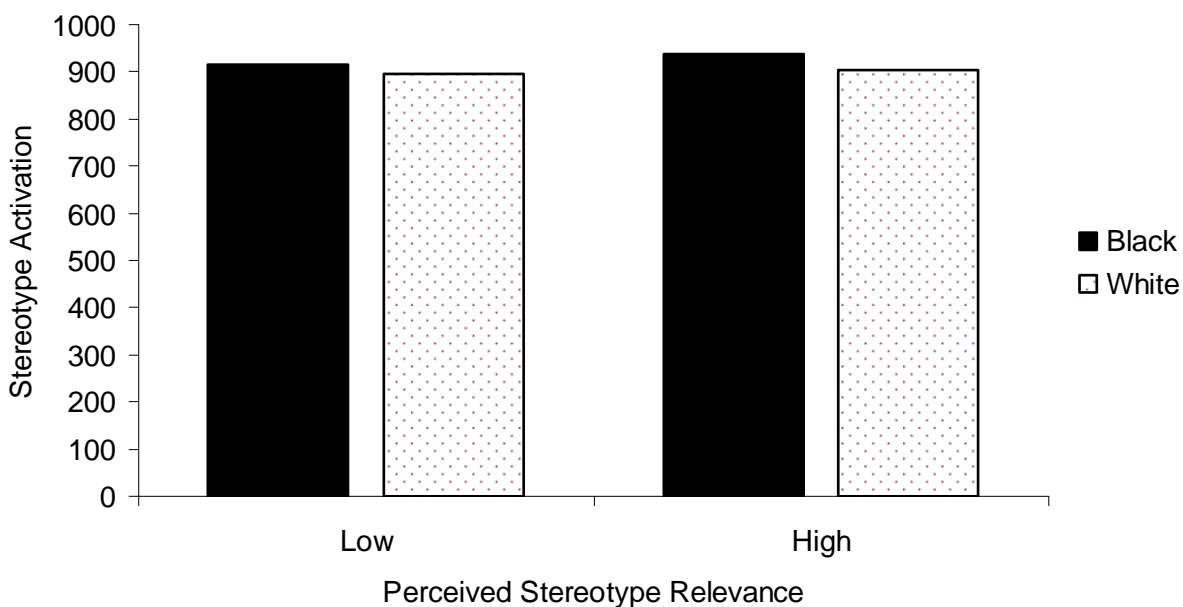


Figure 6. Race X Perceived Stereotype Relevance interaction effects on participants' subjective perceptions of suspicious behavior (a), nervous behavior (b), and controlled behavior (c), as revealed by a 2 X 2 MANOVA.

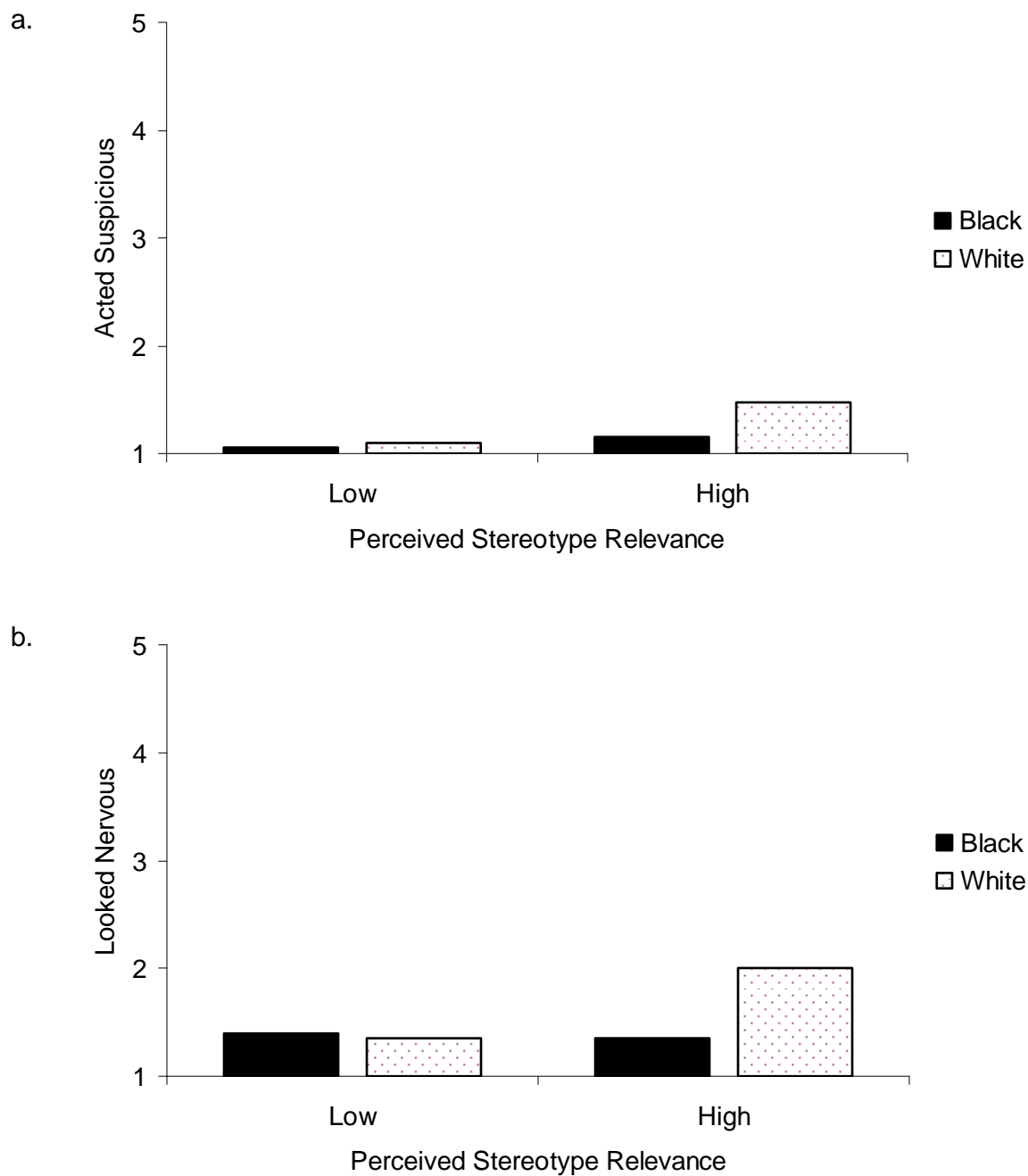


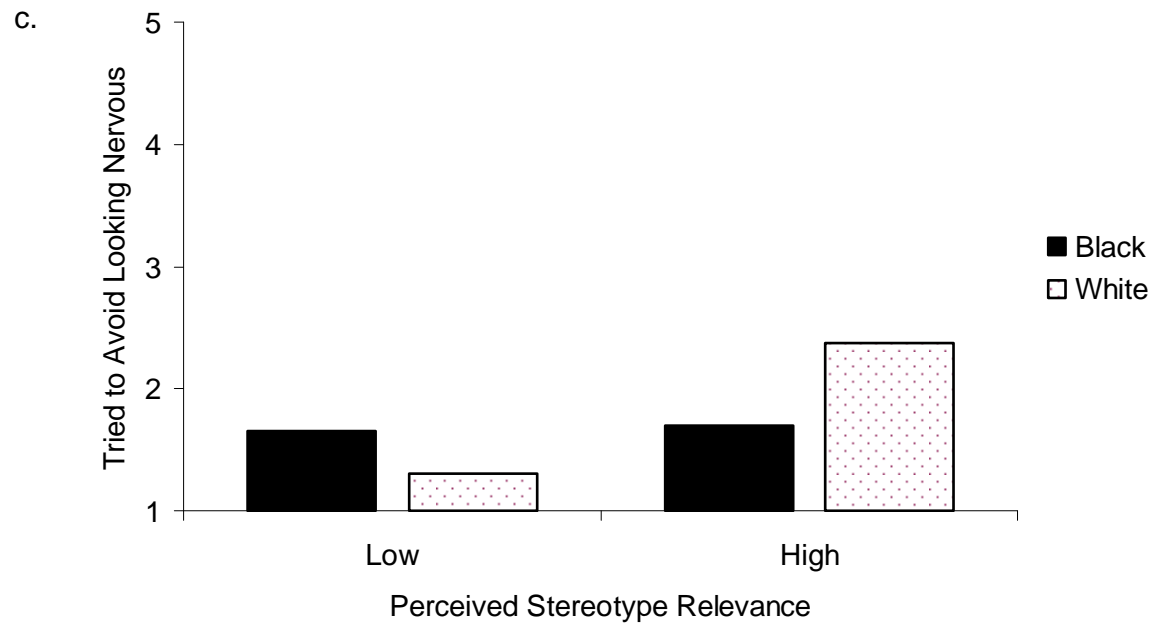
Figure 6 (continued)

Figure 7. Race X Perceived Stereotype Relevance interaction effect on ratings of participants' objectively coded nervous appearance as revealed by a 2 X 2 ANOVA.

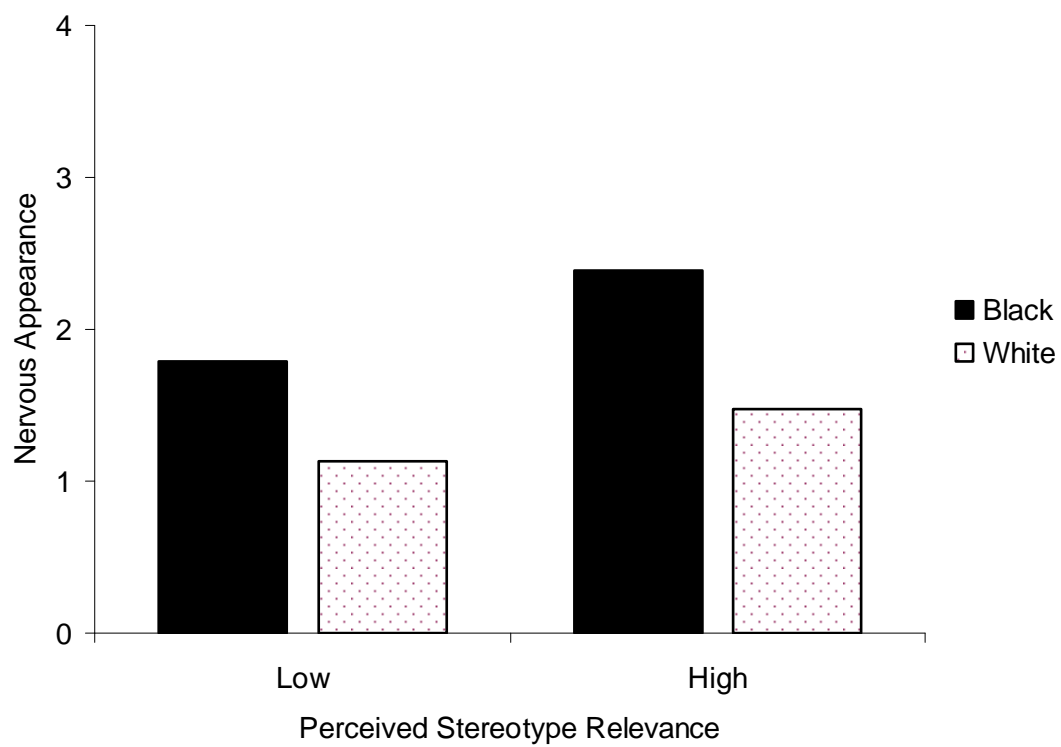


Figure 8. Race X Perceived Stereotype Relevance interaction effect on the percentage of the interaction during which participants maintained eye contact with the security officer as revealed by a 2 X 2 ANOVA.

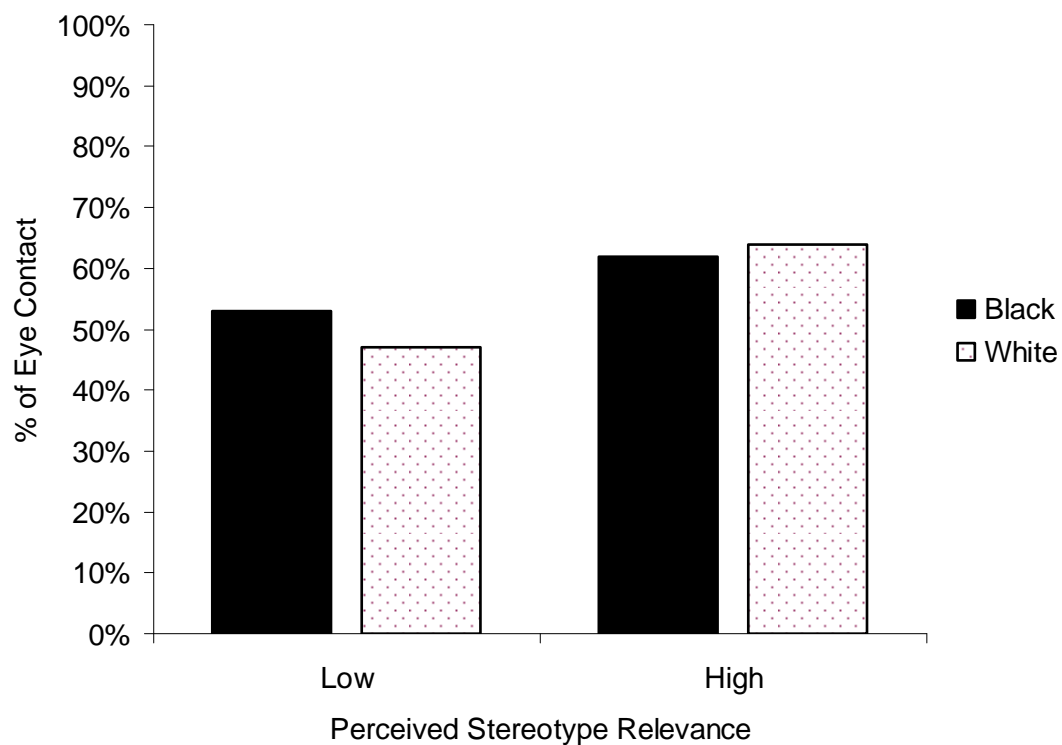


Figure 9. Race X Perceived Stereotype Relevance interaction effect on the degree to which participants were rated as distancing themselves from the tablet computer during the interaction with the security officer as revealed by a 2 X 2 ANOVA.

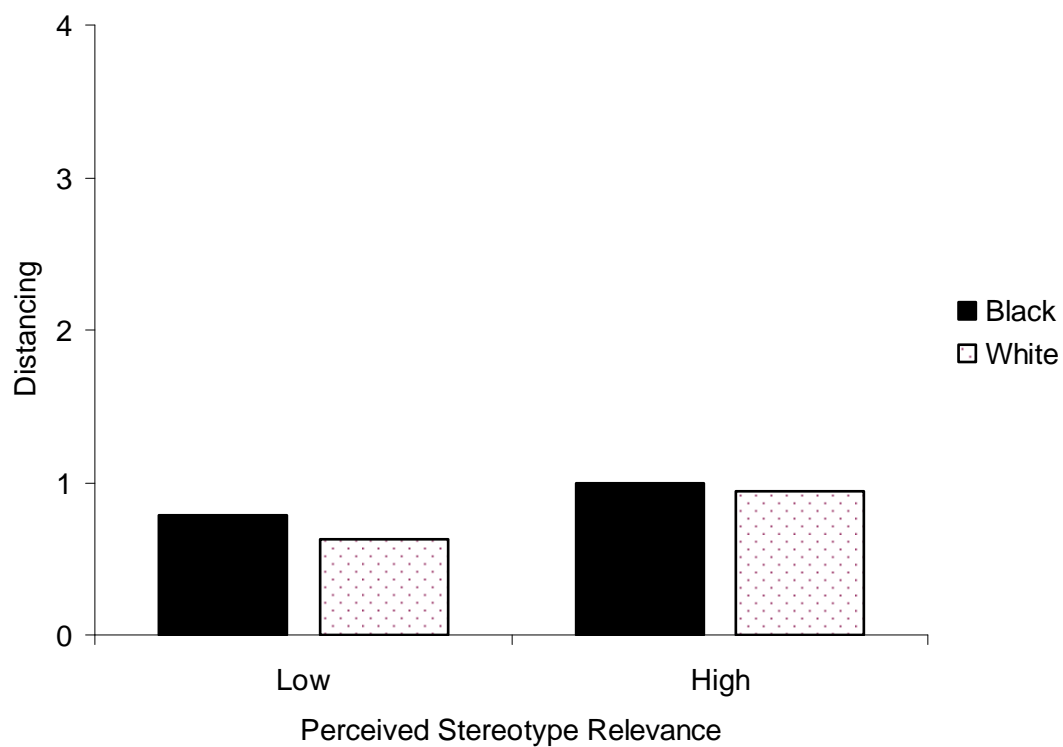
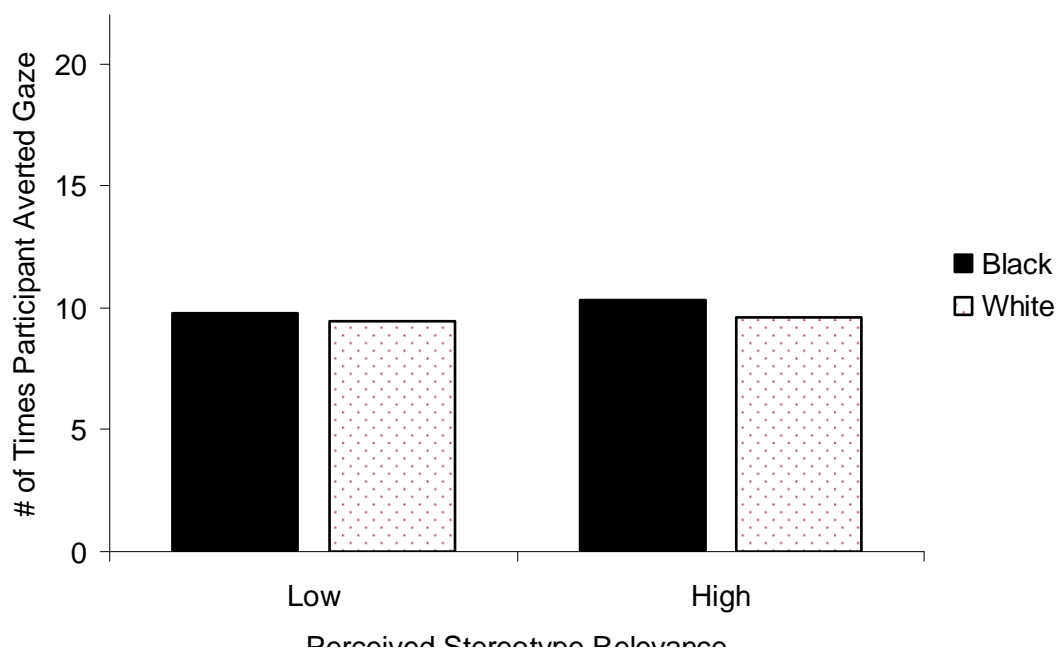


Figure 10. Race X Perceived Stereotype Relevance interaction effects on frequencies for objectively coded gaze aversion (a), smiles (b), gestures (c), self-adaptors (d), head movements (e), and position shifts (f) as revealed by a series of 2 X 2 ANOVAs.

a.



b.

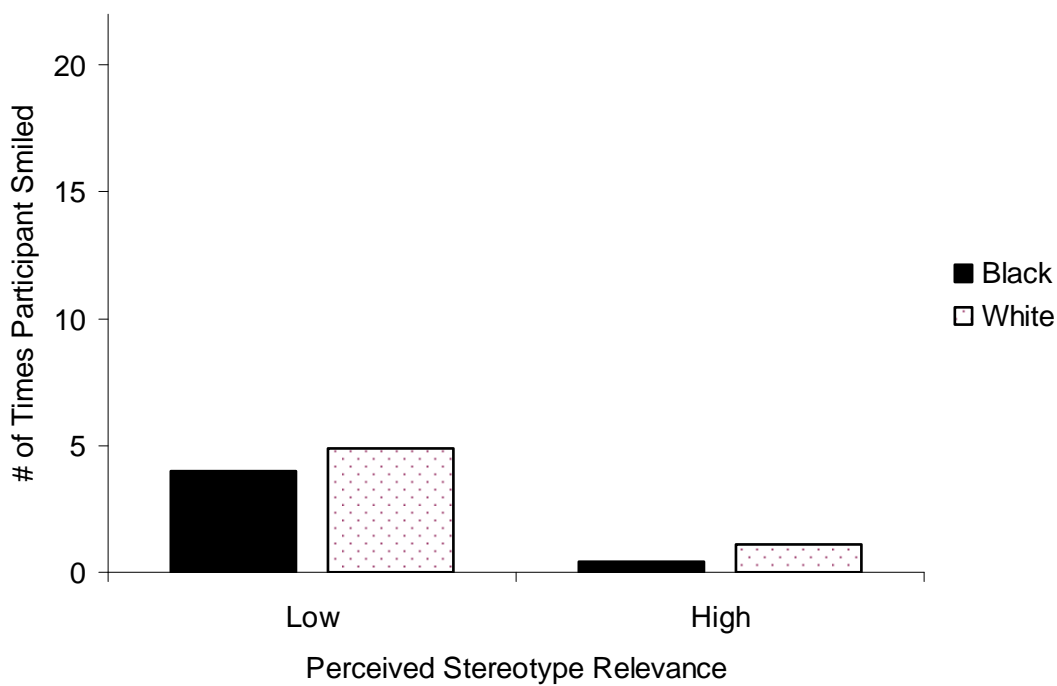


Figure 10 (continued)

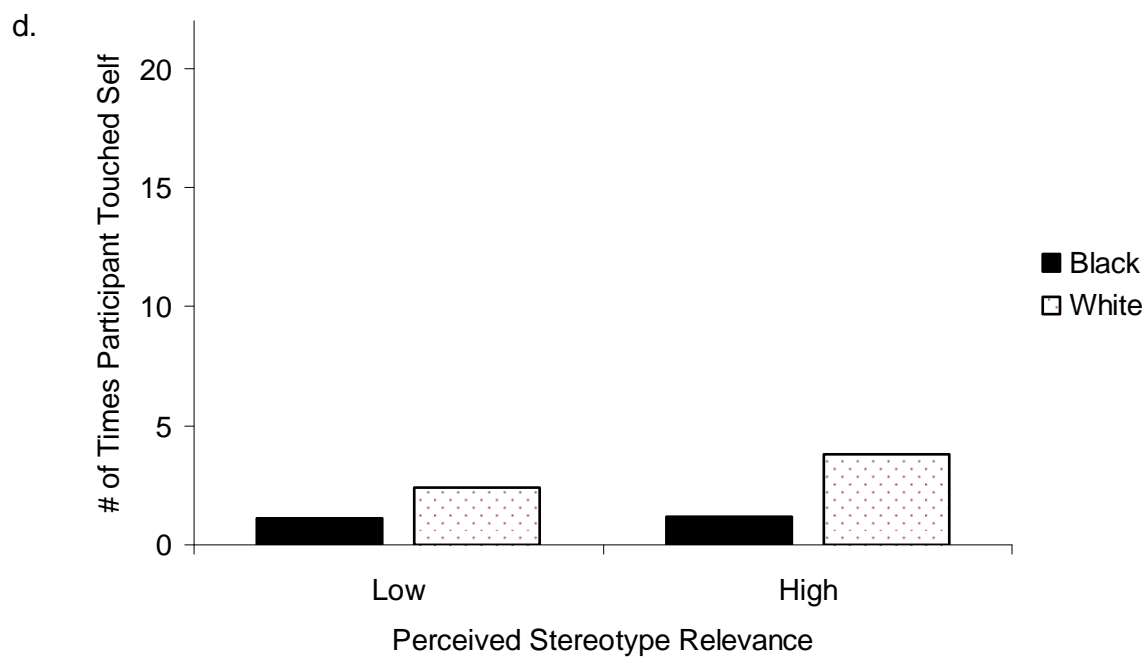
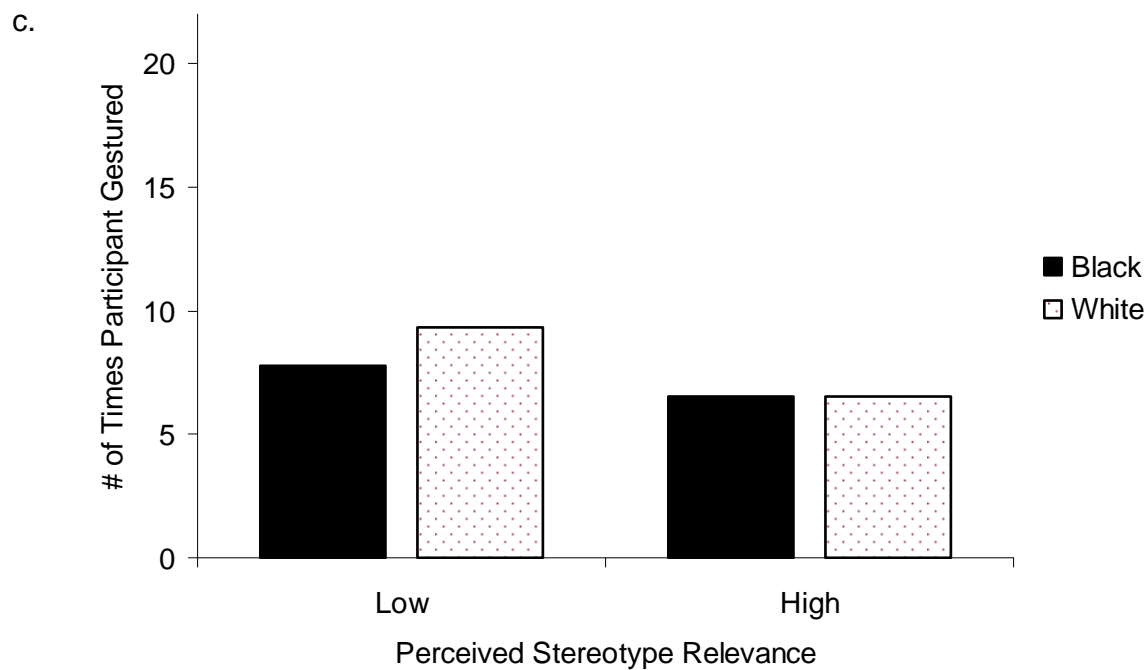
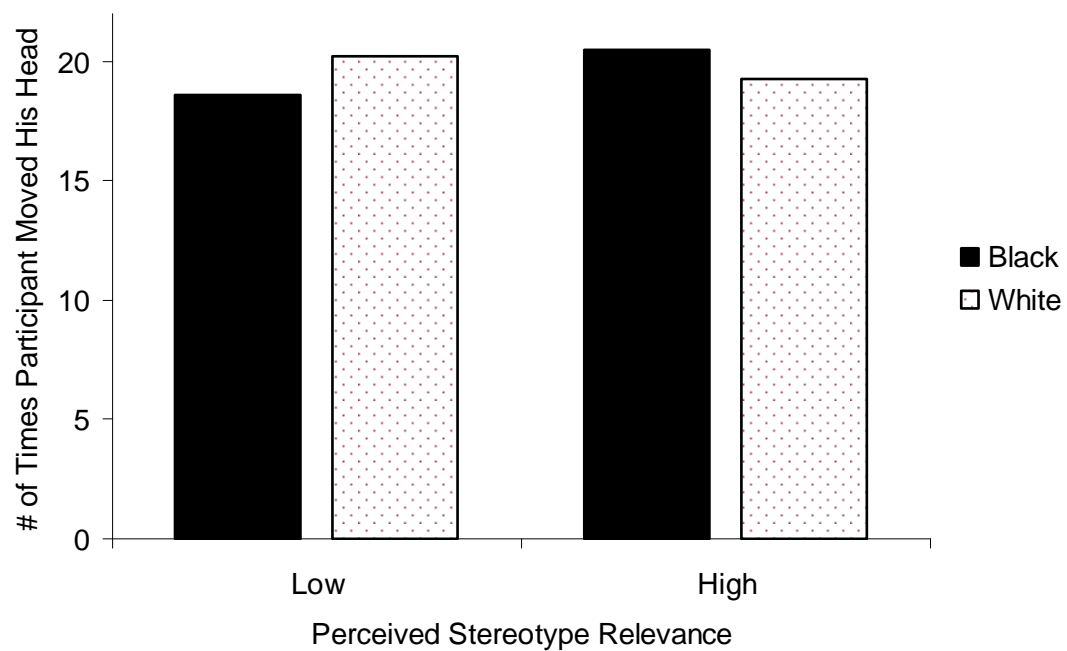


Figure 10 (continued)

e.



f.

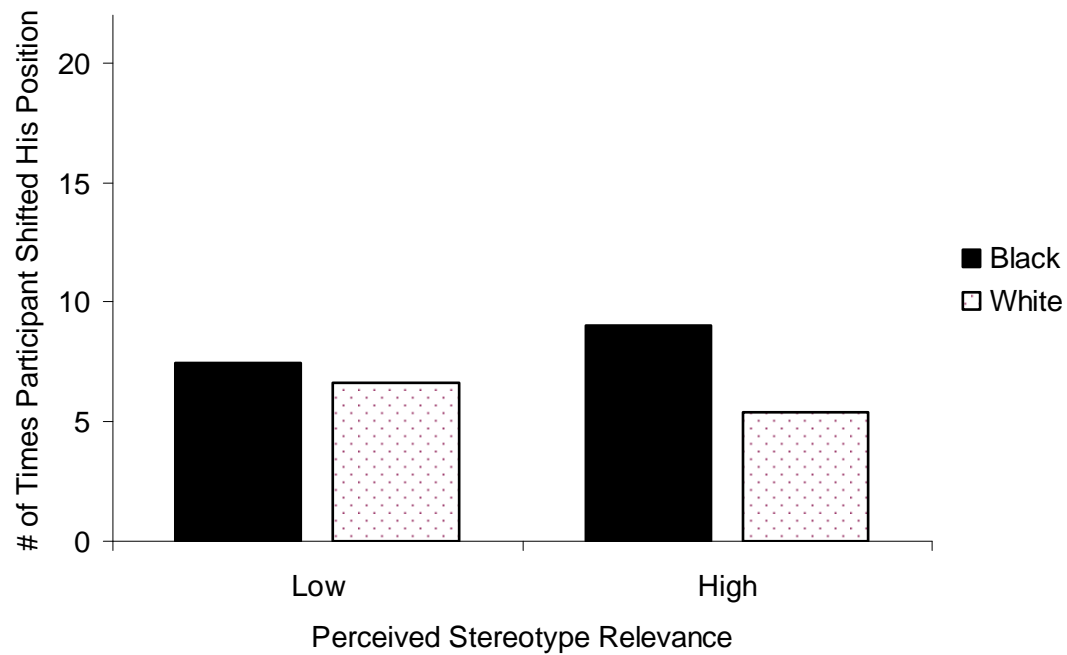


Figure 11. Race X Perceived Stereotype Relevance interaction effect on physiological arousal as measured by heart rate (i.e., number of beats per minute [BPM]) during the encounter as revealed by a 2 X 2 ANCOVA controlling for baseline heart rate

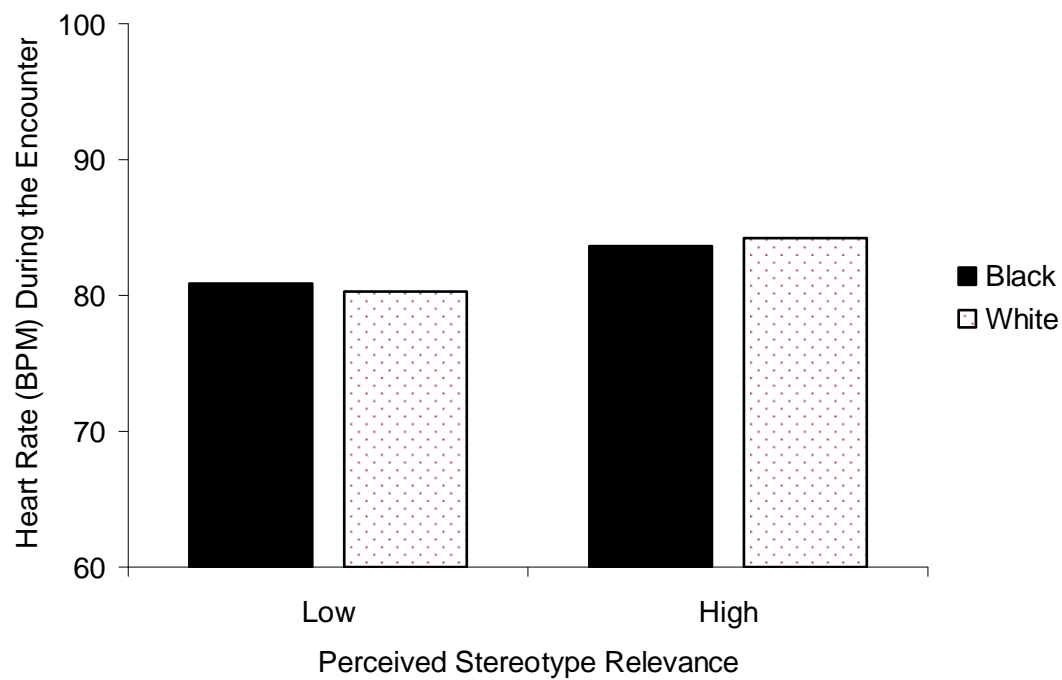
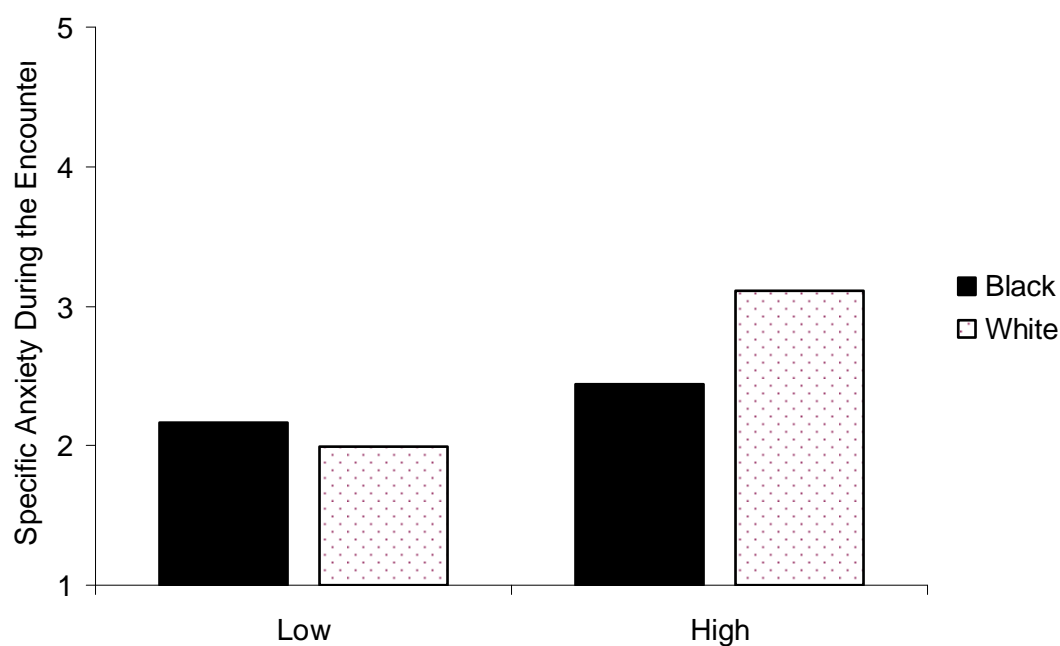


Figure 12. Race X Perceived Stereotype Relevance interaction effects on self-reported specific anxiety during the encounter as revealed by a 2 X 2 ANOVA (a) and general anxiety after the encounter as revealed by a 2 X 2 ANCOVA controlling for general anxiety prior to the encounter (b)

a.



b.

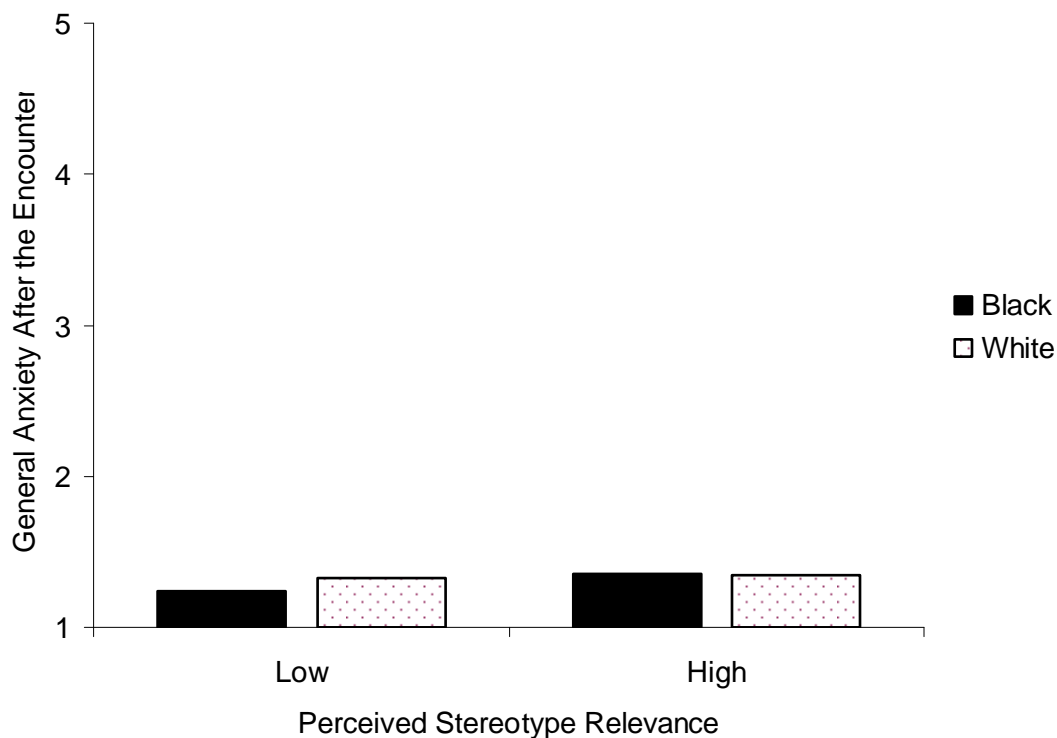


Figure 13. Race X Perceived Stereotype Relevance interaction effect on the self-regulatory efforts scale as revealed by a 2 X 2 ANOVA.

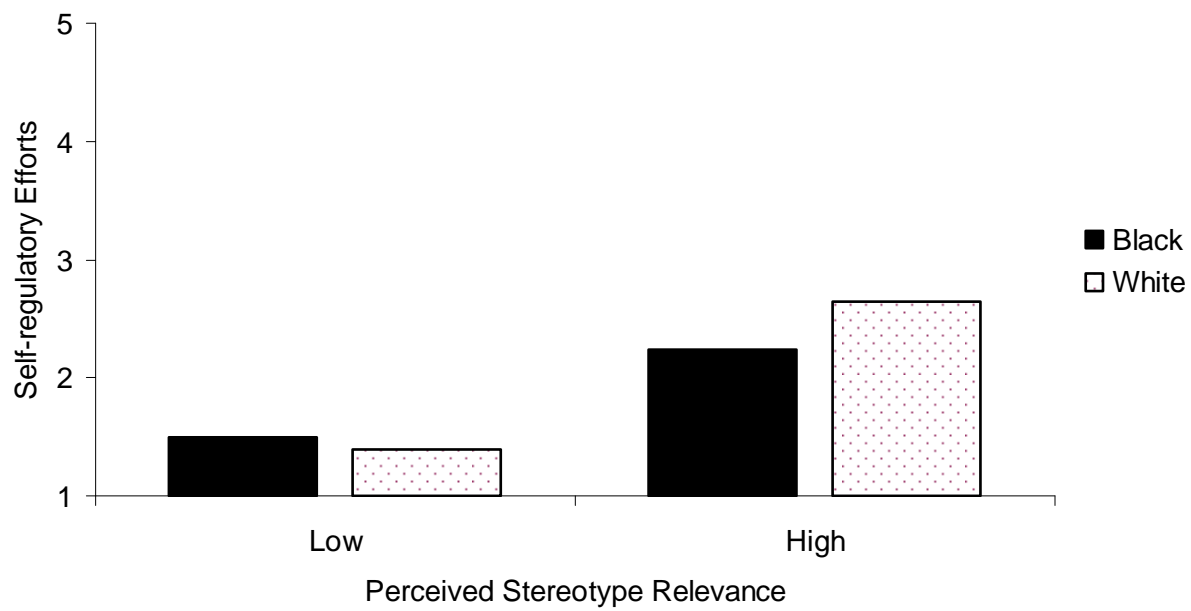


Figure 14. Race X Perceived Stereotype Relevance interaction effect on cognitive load (i.e., estimated marginal means of response latencies in milliseconds for the Stroop color task incompatible trials while controlling for control trials) as revealed by a 2 X 2 ANCOVA. Longer latencies reflect greater cognitive load.

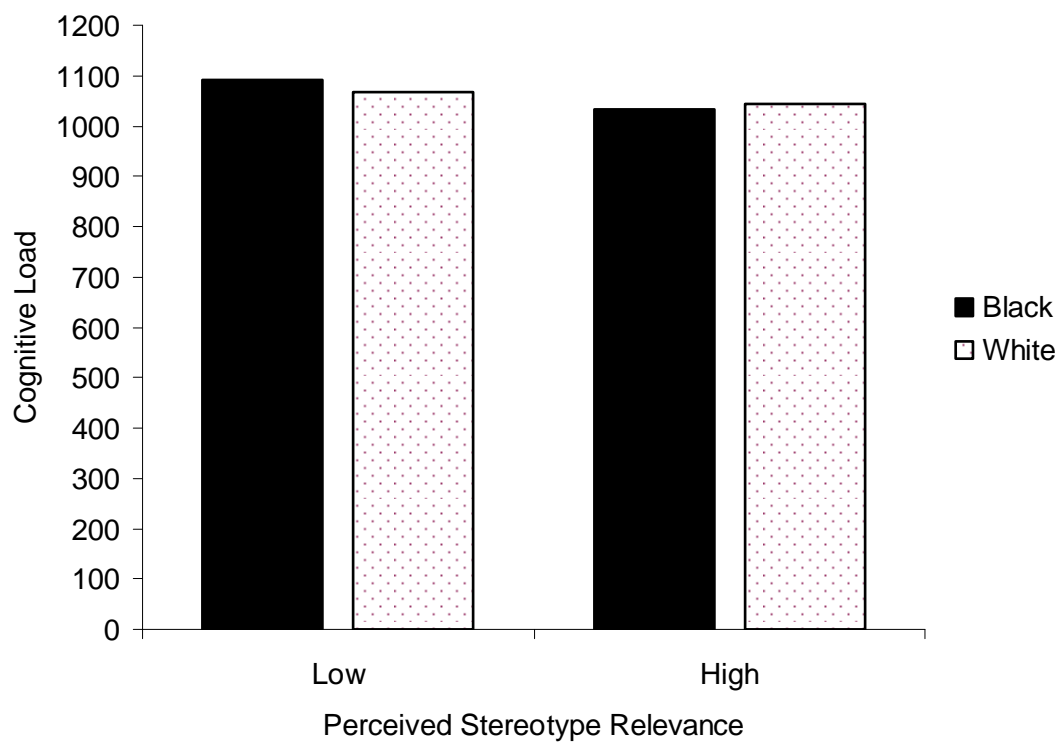


Figure 15. Race X Perceived Stereotype Relevance interaction effects on reactions of positive emotions (a), anger (b), hostility (c), fear (d), and defensiveness (e) as revealed by a series of 2 X 2 ANOVAs.

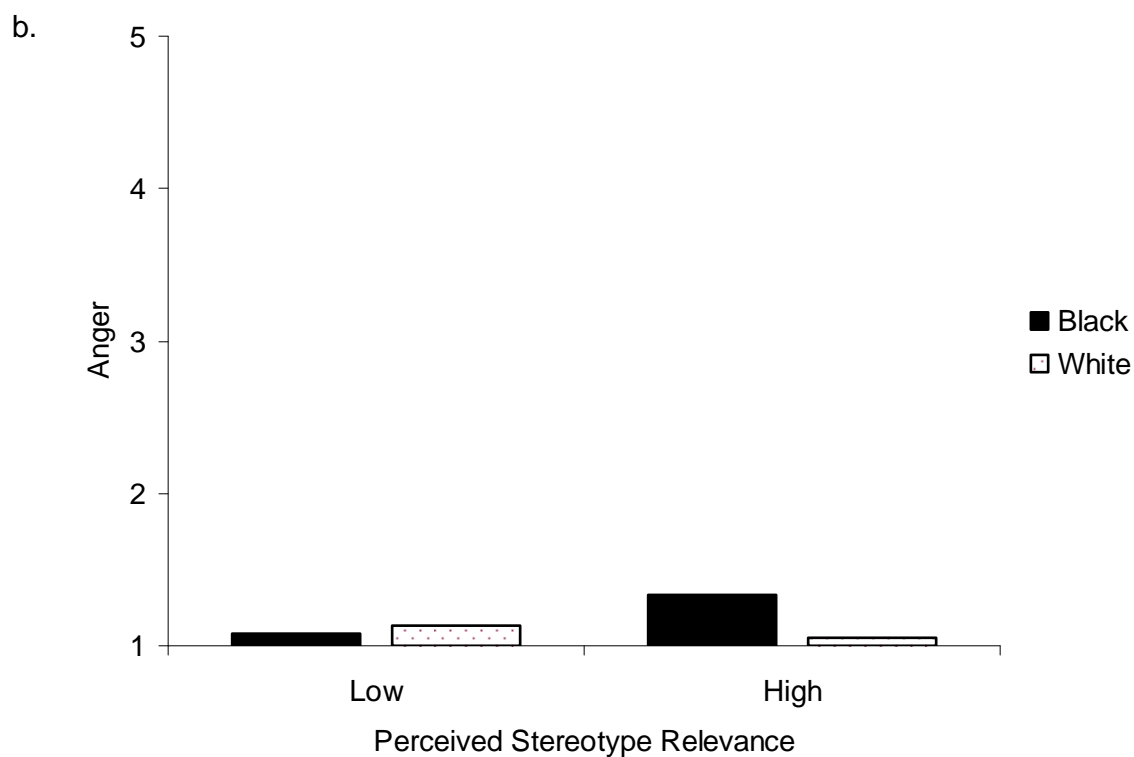
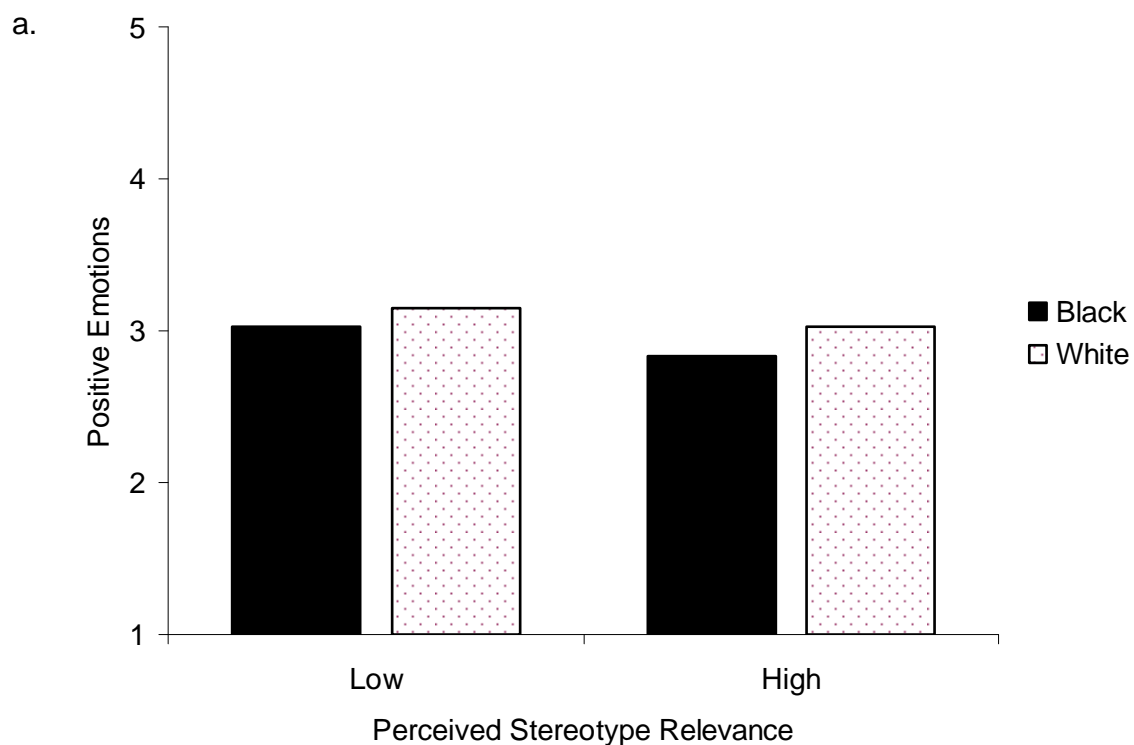


Figure 15 (continued)

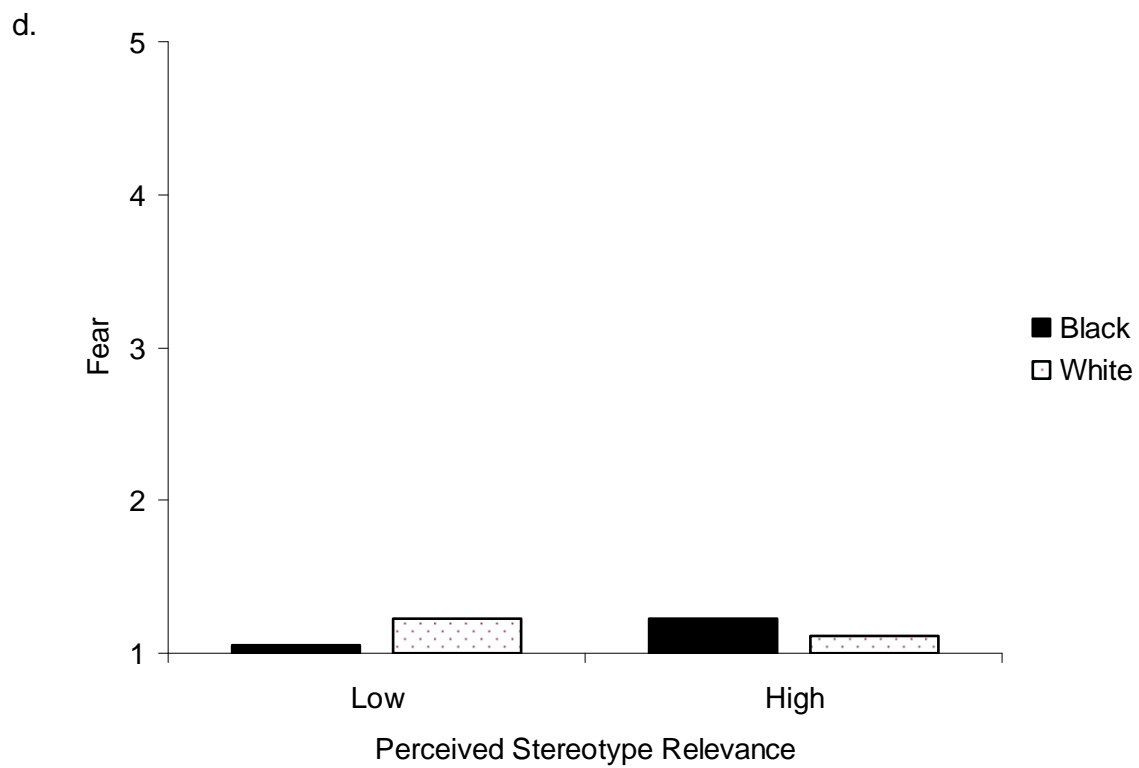
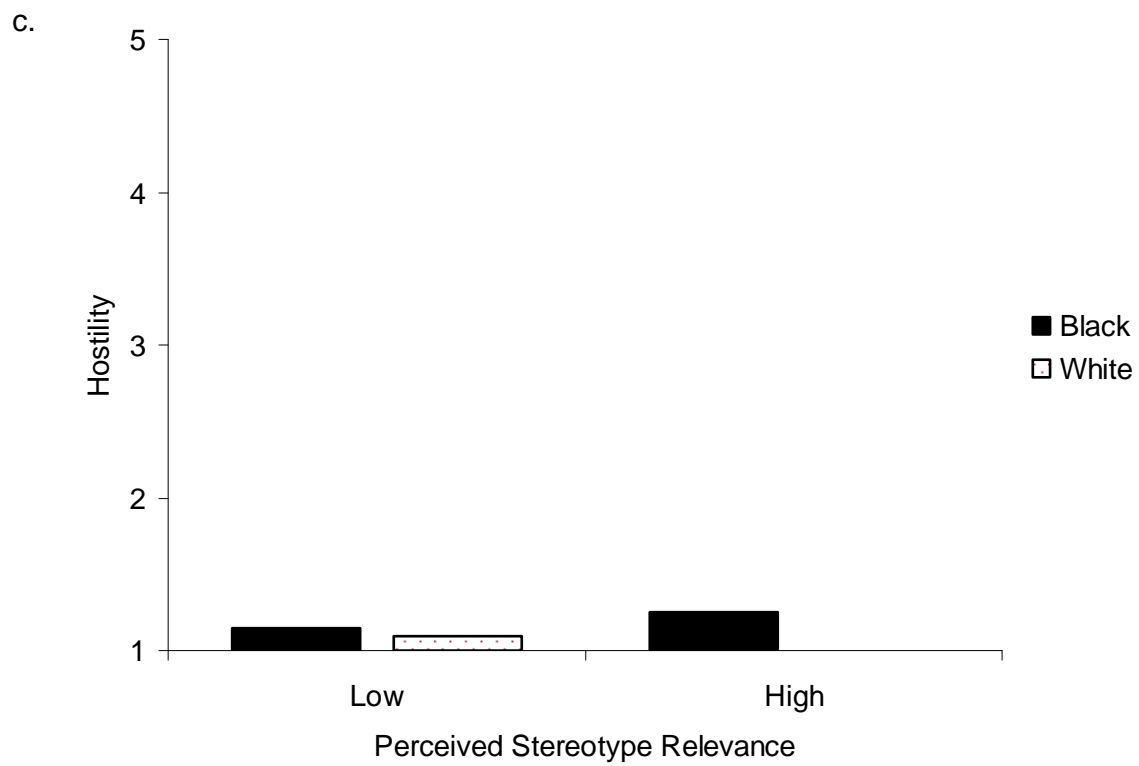
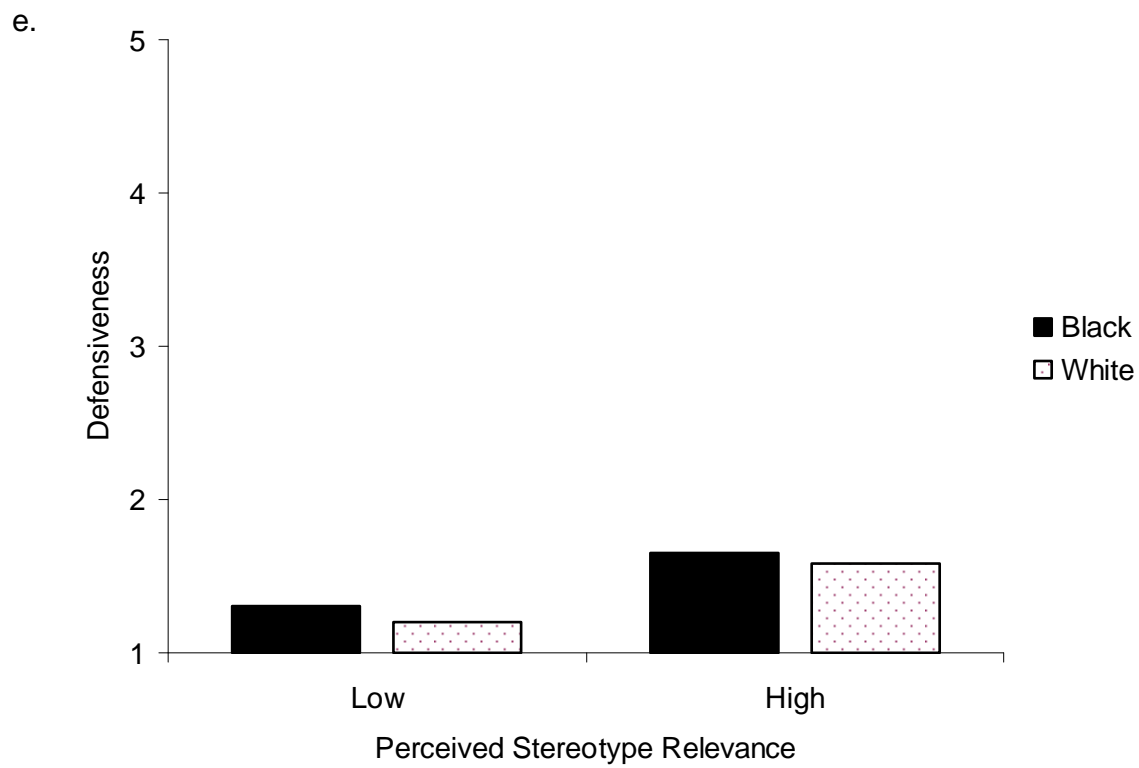


Figure 15 (continued)



APPENDICES

Appendix A

Study 1:

Stereotype Threat, Anxiety, Self-Consciousness, Demographics, and Prior Police Encounters Measures

Please circle one number to indicate how much you disagree or agree with the following statements.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
1. I worry that something I do might be misinterpreted as suspicious by a police officer.	1	2	3	4	5	6	7
2. I worry that police officers might stereotype me as a criminal because of my race.	1	2	3	4	5	6	7
3. I worry that police officers' perceptions of me might be affected by my race.	1	2	3	4	5	6	7
4. Because I know the stereotype about my race and crime, I worry that my anxiety about confirming that stereotype will negatively influence my interactions with police officers.	1	2	3	4	5	6	7
5. I never worry that a police officer will suspect me of having committed a crime just because of my race.	1	2	3	4	5	6	7

Please circle one number that best represents your answer for each of the following questions.

		Not at all					Extremely
6. When you first notice a police officer, do you feel...							
a. ...anxious?	1	2	3	4	5	6	7

Appendix A (continued)

	Not at all					Extremely	
6. When you first notice a police officer, do you feel...							
b. ...relaxed?	1	2	3	4	5	6	7
c. ...nervous?	1	2	3	4	5	6	7
d. ...secure? ¹⁰	1	2	3	4	5	6	7
e. ...stressed?	1	2	3	4	5	6	7
f. ...safe? ¹⁰	1	2	3	4	5	6	7
g. ...scared?	1	2	3	4	5	6	7
7. How conscious are you of how you look to police officers?	1	2	3	4	5	6	7

Please answer the following questions about your background. Your answers will be anonymous.

8. What is your gender? Check one: ☐ Female ☐ Male

9. How old are you today? _____ years

10. What race or ethnicity do you consider yourself to be? Check all that apply:

- ☐ African American / Black
☐ Asian American / Asian
☐ Hispanic American / Latino
☐ White American / Caucasian
☐ Other: _____

	No	Yes
11. Have you ever felt you were stopped by the police just because of your race or ethnic background?	<input type="checkbox"/>	<input type="checkbox"/>
12. Have you ever been questioned by the police because you were a suspect in a crime?	<input type="checkbox"/>	<input type="checkbox"/>
13. Have you ever been arrested or convicted of a crime?	<input type="checkbox"/>	<input type="checkbox"/>
14. Have any of your close family members or friends ever been questioned by the police because they were a suspect in a crime?	<input type="checkbox"/>	<input type="checkbox"/>
15. Have any of your close friends or family members ever been arrested or convicted of a crime?	<input type="checkbox"/>	<input type="checkbox"/>

¹⁰Item was reverse-scored.

Appendix B

Study 2:


Recruitment Flier and Advertisement

Beliefs and Attitudes Study

We are seeking
African American and White men
 to participate in a study about
 the links between beliefs and attitudes and anxiety.

Are you an *African American* or *White* man? 

Are you currently at least 18 years old? 

Are you a U.S. citizen? 

Men who answer yes to all questions
 are invited to participate in a 1-hour study.
 You will be paid for your participation.

For more information, please contact:

Cynthia Najdowski
beliefs@uic.edu
(312) 235-9992

University of Illinois at Chicago
 Department of Psychology
 1007 West Harrison Street, M/C 285
 Chicago, IL 60607



This research has been approved by the UIC Institutional Review Board (Protocol # 2010-1043).

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 beliefs@uic.edu
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Study 2010-1043, Version 4, 2/10/12

BELIEFS AND ATTITUDES STUDY: This study is about how people with different beliefs and attitudes experience anxiety. Are you an African American or White man? Are you currently at least 18 years old? Are you a U.S. citizen? Men who answer yes to all questions are invited to participate in a 1-hour study. Men will be paid for their participation. For more information, please contact Cynthia Najdowski by phone at (312) 235-9992, by email at beliefs@uic.edu, or by mail at the University of Illinois at Chicago, Department of Psychology, 1007 West Harrison Street, M/C 285, Chicago, IL 60607. Sponsored by National Science Foundation, Psi Chi, and Society for the Psychological Study of Social Issues (Protocol # 2010-1043).

Appendix C

Study 2:

General Anxiety Scale¹¹

Below is a list of feelings, sensations, problems, and experiences that people sometimes have. Read each item and then indicate how much you are feeling or experiencing these things this way RIGHT NOW.

	Not at all	A little bit	Somewhat	Quite a bit	Extremely
1. Right now, how much are you feeling AFRAID?	1	2	3	4	5
2. Right now, how much are you feeling NERVOUS?	1	2	3	4	5
3. Right now, how much are you feeling UNEASY?	1	2	3	4	5
4. Right now, how much are you feeling A LUMP IN YOUR THROAT?	1	2	3	4	5
5. Right now, how much are you feeling AN UPSET STOMACH?	1	2	3	4	5
6. Right now, how much are you feeling KEYED UP OR "ON EDGE"?	1	2	3	4	5
7. Right now, how much are you feeling UNABLE TO RELAX?	1	2	3	4	5
8. Right now, how much are you feeling NAUSEATED?	1	2	3	4	5
9. Right now, how much are you feeling TENSE OR "HIGH-STRUNG"?	1	2	3	4	5
10. Right now, how much are you feeling MUSCLE TENSION?	1	2	3	4	5

¹¹These 10 items were modified from the Anxious Arousal scale of the Mood and Anxiety Symptom Questionnaire (Watson & Clark, 1991).

Appendix D

Study 2:

Demographics Measures

Please answer the following questions about your personal background.

1. Are you a U.S. citizen?

☐ Yes ☐ No

2. How old are you today? _____

3. What is your gender?

☐ Male ☐ Female

4. What is the highest level of education you have completed?

- ☐ Less than High School
- ☐ High School / GED
- ☐ Some College
- ☐ 2-year College Degree
- ☐ 4-year College Degree
- ☐ Postgraduate Degree

5. What is your combined annual household income?

- ☐ under \$20,000
- ☐ \$20,000-29,999
- ☐ \$30,000-39,999
- ☐ \$40,000-49,999
- ☐ \$50,000-59,999
- ☐ \$60,000-69,999
- ☐ \$70,000-79,999
- ☐ \$80,000-89,999
- ☐ \$90,000-99,999
- ☐ \$100,000+

6. What race do you consider yourself to be? Check ALL that apply.

- ☐ African American / Black
- ☐ Asian American
- ☐ Hispanic / Latino
- ☐ White / Caucasian
- ☐ Other: _____

Appendix E

Study 2:

Nonverbal Behavior Coding Manual

CODING MANUAL FOR NONVERBAL BEHAVIOR

Use slow motion viewing as a technique to improve reliability. Some behaviors are particularly tricky to count and slow motion can be a valuable tool.

When in doubt, code and recode, and recode again if necessary. Ensuring that you are coding reliably with yourself will ensure that you will be reliable with other team members.

Do not discuss codes with other team members unless doing so in the context of modifying the coding manual as a group. That is, you should not ask others how they are coding a particular video or “what they got.” You should code completely independently.

Do not discuss your ideas about the study hypotheses with other team members. Don't even think about what the study might be about. Doing so could harm the integrity of the research. If you form an opinion about what you think the study is about, your coding may begin to be affected by your own beliefs and attitudes about that issue. If you start coding things a particular way because you think it would be consistent with what I'm positing in my hypotheses or what I'm looking for, you would be biasing the results. This is bad not only in the event that you are correct about the hypotheses, but also if you're incorrect.

1) Eye contact (Modified from Doherty-Sneddon & Phelps, 2005; Johnson, 2006)

Count the exact number of seconds the participant made eye contact with the confederate. Determine the length of the video in seconds. Calculate the proportion of time the participant made eye contact with the confederate by dividing the number of seconds of eye contact by the length of the video. Translate this into a % by multiplying the quotient by 10.

Krippendorff's $\alpha = .99$

2) Gaze aversion (Modified from Vrij et al., 2008)

Count the number of discrete instances that the participant purposely broke eye contact or looked away from the confederate.

Krippendorff's $\alpha = .91$

3) Smiles (Following Vrij & Winkel, 1991)

Count the number of discrete instances that the participant smiled or one or both corners of his mouth turned up (e.g., when smirking).

Krippendorff's $\alpha = .95$

Appendix E (continued)

4) Head movements: Nodding, shaking, tilting, or other movements (Following Mann et al., 2002)

Count the number of discrete instances that the participant nodded, shook, tilted, or moved his head.

Do not count the original look toward the confederate or the final look away from the confederate (i.e., when it appears that the conversation is over at the end).

Note that you should count the nod, shake, tilt, or movement but not the return to the original position.

If a movement is stilted or staccato, count each pause in the movement as an additional 1. For example, if a participant turns his head away from the confederate, then turns his head even further, and then returns to his original position, this would count as 2 movements.

Note also that the participant may nod several times in a row—you should count not only the initial nod, but rather each individual nod in the series (i.e., each nod = 1).

If a participant moves his head as a result of a body movement (e.g., if the participant is swiveling in the chair), but the participant maintains focus on whatever he was looking at before the body movement, do not count it as a head movement.

Krippendorff's $\alpha = .95$

5) Gestures (Following Mann et al., 2002; Vrij, Mann, et al., 2010; Vrij & Winkel, 1991)

Count the number of discrete gestures the participant makes while speaking. Gestures are hand and arm movements designed to modify and/or supplement what is being said verbally. They are purposeful and communicative movements (e.g., pointing).

If a participant does the same gesture multiple times all in a row without stopping and the gestures all have the same meaning, this should be counted as 1 gesture. For example, if a participant taps on the table 4 times in a row without stopping, that would be 1 gesture. Yet, if the participant pauses distinctly between doing the same gesture multiple times, it should be counted as 2 gestures.

If the participant does multiple different gestures at the same time, each gesture should be counted separately. For example, if a participant points with one hand but flips the palm of his other hand up in an “I don't know” gesture, that would count as 2 gestures.

Each movement that you code should be separately identifiable as a gesture. That is, if you saw the gesture in isolation, out of the context of other gestures the participant is making, would you still code it? If the gesture is similar to a prior gesture but is too subtle to code in isolation, don't code it.

Krippendorff's $\alpha = .97$

Appendix E (continued)

6) Self-adaptors (Modified from Mann et al., 2002; Vrij & Winkel, 1991)

Count the number of discrete instances that the participant touches himself (i.e., his face, arms, legs, body). This includes scratching, rubbing, touching, and resting a hand on any body part, as well as things like adjusting glasses, grooming hair, etc.

Each distinct touch should be counted. For example, if a participant rubs his nose and then rests his hand on his cheek, that would count as 2 self-adaptors (not 1 general face touch).

If a touch is continuous, it should only be counted as 1 touch. For example, if a participant scratches his shoulder for 10 seconds continuously, that would count as 1 touch (not several multiple scratches).

Also, if a participant puts his hand on his knee and then rubs along his knee several times, that would count as 1 touch.

Krippendorff's $\alpha = .91$

7) Position shifts (Modified from Vrij & Winkel, 1991)

Count the number of discrete instances that the participant shifted the position of his body. This should include changes in posture (i.e., leaning forward versus backward), changes in orientation (i.e., side to side), and subtle shifts (e.g., scooting around in chair).

Do not count the original shift toward the confederate at the beginning of the conversation or, if applicable, the final look away from the confederate at the end of the conversation.

Krippendorff's $\alpha = .88$

8) Nervous appearance (Modified from Vrij et al., 2008; Waxer 1977)

Rate the ***greatest*** extent to which the participant ***ever*** appeared nervous.

While making this judgment, think about how anxious, scared, uncomfortable, tense, or serious the participant looks, as well as whether he engages in particular behaviors that are associated with nervousness—smiling too much or not at all, avoiding eye contact, shifty eyes, fidgeting (hands/fingers, feet), shifting positions (e.g., leaning forward, swiveling), excessive gesturing, quick or rigid movements, excessive self-touching, breathing hard, facial expressions, appearing to be thinking hard, rigidity, closed body position, etc. You should take both *emotional* and *behavioral* factors into account when forming your judgment.

0 = Not at all nervous

1 = A little nervous

2 = Moderate nervous

3 = Very nervous

4 = Extremely nervous

Krippendorff's $\alpha = .73$

Appendix E (continued)

9) Distancing

Rate the ***greatest*** extent to which the participant ***ever*** attempted to distance himself from the Kindle Fire during the interaction.

0 = He did not distance himself from the Kindle at all

1 = He physically moved the Kindle away from his body while still holding it in his hands (the Kindle does not make contact with the table)

2 = He put the Kindle on the table while still holding it in his hands (any part of the Kindle makes contact with the table)

3 = He physically pushed the Kindle away from him while it was on the table (hands were on or off prior to pushing it but after pushing it his hands remained on the Kindle)

4 = He completely released the Kindle (took both hands completely off the Kindle)

Krippendorff's $\alpha = 1.00$

10) Concealing

Code *YES* or *NO* to indicate whether the participant ever attempted to conceal, cover, or hide the Kindle from the confederate during the interaction.

Appendix F

Study 2:

Stereotype Activation Measure

Eight stereotype-related words were derived from pretesting, following Goff et al. (2008) and Steele and Aronson (1995). Specifically, 49 students and community members (10% Black, 47% White, 16% Asian American, 18% Hispanic/Latino, 2% other, and 6% multiracial; 53% men; M age = 24 years, SD = 7, range = 18 to 50) listed words associated with the stereotype that Blacks are criminals. The 20 most common words were then selected and given to 25 other students and community members (28% Black, 68% White, and 4% Hispanic/Latino; 52% men; M age = 31 years, SD = 15, range = 18 to 66), who rated each word for how strongly related it is to the target stereotype. The 8 highest rated words were selected for use as stereotype-related words in the stereotype activation measure. (See Table 18 for all stimuli.) Sixteen filler words were matched to the stereotype-related words for frequency, length, and valence, based on word lists provided by Davies (2011) and Siegle (2011). Twenty-four pronounceable nonwords were created to match the stereotype-related and filler words for length.

Table 18

Stimuli for Stereotype Activation Measure

	Stereotype-related words	Filler words	Nonwords
1.	GUNS	URGE	SLEG
2.	DRUGS	PAIN	WIHL
3.	POOR	GROPE	QUAB
4.	GANGS	DRAIN	VOLON
5.	CRIMINAL	BOMB	PLEST
6.	GHETTO	FIRM	REWLS
7.	THUGS	SKATE	FILX
8.	VIOLENT	HEDGE	APUN
9.		ACCIDENT	TROB
10.		MEDICINE	ANGUM
11.		LOSING	DESLY
12.		HAMPER	DILKY
13.		STICK	OLIGINER
14.		CROWD	CHELLISP
15.		ALCOHOL	SPRIFFER
16.		WARNING	THAIRT
17.			POLAYN
18.			SNOPRE
19.			PORIS
20.			TULUT
21.			OGGIT
22.			TROULAS
23.			SMAFFEN
24.			BRELLIR

Appendix G

Study 2:

Emotional Reactions Measures

Below is a list of feelings, sensations, problems, and experiences that people sometimes have. Read each item and then indicate how much you are feeling or experiencing these things this way RIGHT NOW.

	Not at all	A little bit	Somewhat	Quite a bit	Extremely
1. Right now, how much are you feeling HAPPY?	1	2	3	4	5
2. Right now, how much are you feeling ANGRY?	1	2	3	4	5
3. Right now, how much are you feeling HOSTILE?	1	2	3	4	5
4. Right now, how much are you feeling DEFENSIVE?	1	2	3	4	5
5. Right now, how much are you feeling PLEASANT?	1	2	3	4	5
6. Right now, how much are you feeling SCARED?	1	2	3	4	5
7. Right now, how much are you feeling MAD?	1	2	3	4	5

Appendix H

Study 2:

Specific Anxiety Scale

	Not at all	A little bit	Somewhat	Quite a bit	Extremely
1. When the security officer was here, I FELT ANXIOUS.	1	2	3	4	5
2. When the security officer was here, I FELT RELAXED.	1	2	3	4	5
3. When the security officer was here, I FELT NERVOUS.	1	2	3	4	5
4. When the security officer was here, I FELT SECURE. ¹²	1	2	3	4	5
5. When the security officer was here, I FELT STRESSED.	1	2	3	4	5
6. When the security officer was here, I FELT SAFE. ¹²	1	2	3	4	5
7. When the security officer was here, I FELT SCARED.	1	2	3	4	5

¹²Item was reverse-scored.

Appendix I

Study 2:

Self-Regulatory Efforts Scale

	Not at all	A little bit	Somewhat	Quite a bit	Extremely
1. When the security officer was here, I FELT SELF-CONSCIOUS ABOUT HOW I LOOKED.	1	2	3	4	5
2. When the security officer was here, I WAS BEHAVING TOTALLY NATURALLY.	1	2	3	4	5
3. When the security officer was here, I WAS PAYING MORE ATTENTION THAN USUAL TO MY BEHAVIOR.	1	2	3	4	5
4. When the security officer was here, I WAS WONDERING WHAT HE WAS THINKING OF ME.	1	2	3	4	5
5. When the security officer was here, I WAS WATCHING HIS BEHAVIOR FOR SIGNS THAT HE THOUGHT I HAD DONE SOMETHING WRONG.	1	2	3	4	5

Appendix J

Study 2:

Stereotype Threat Scale

Please answer how much you **DISAGREE** or **AGREE** with each statement about how you felt when the security officer was here.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
1. I was worried that something I did might be misinterpreted as suspicious by the security officer because of my race.	1	2	3	4	5	6	7
2. I was worried that the security officer might stereotype me as a criminal because of my race.	1	2	3	4	5	6	7
3. I was worried that the security officer's perceptions of me might be affected by my race.	1	2	3	4	5	6	7
4. Because I know the stereotype about my race and crime, I was worried that my anxiety about confirming that stereotype would negatively influence my interaction with the security officer.	1	2	3	4	5	6	7
5. I was worried that the security officer would suspect me of having committed a crime just because of my race.	1	2	3	4	5	6	7

Appendix K

Study 2:

Measures of Subjective Perceptions of Nonverbal Behavior

How do you think you acted when you were with the security officer? Please think about your eyes, facial expressions, hands and arms, and your overall behavior.

	Not at all	A little bit	Somewhat	Quite a bit	Extremely
1. Did you act in a way that might have looked suspicious?	1	2	3	4	5
1. Did you look nervous?	1	2	3	4	5
2. Did you try to avoid looking nervous?	1	2	3	4	5

Appendix L

Study 2:

Perceptions of Police Measures

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
<u>CONCERN ABOUT POLICE VICTIMIZATION</u>							
1. I am concerned about being victimized by the police.	1	2	3	4	5	6	7
<u>POLICE RACISM</u>							
1. The police are prejudiced against people from my racial group.	1	2	3	4	5	6	7
2. People from my racial group are more likely than others to be unfairly stopped and questioned by the police.	1	2	3	4	5	6	7
3. The police are especially suspicious of people from my racial group.	1	2	3	4	5	6	7
4. The police treat people from my racial group disrespectfully or rudely.	1	2	3	4	5	6	7

Appendix M

Study 2:

Prior Police Encounters

If the participant responded yes to question 4 or 7, they were coded as having been personally or vicariously subjected to bias-based policing. If the participant responded yes to question 5 or 8, they were coded as having been personally or vicariously questioned as suspect. If the participant responded yes to question 6 or 9, they were coded as having been personally or vicariously arrested or convicted.

Please answer the following questions about your background. please remember that all of your answers are anonymous. We have no way of linking your answers to your identity, nor do we want to. Please feel free to be completely honest.

Have you ever had any of the following experiences?

- | | Yes | No |
|---------------------------------------------------------------------------------------|--------------------------|--------------------------|
| 4. Have you ever felt you were stopped by the police just because of your race? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Have you ever been questioned by the police because you were a suspect in a crime? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Have you ever been arrested or convicted of a crime? | <input type="checkbox"/> | <input type="checkbox"/> |

To your knowledge, have any of your close family members or friends ever had any of the following experiences?

- | | Yes | No |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|
| 7. Have any of your close family members or friends ever felt they were stopped by the police just because of their race? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Have any of your close family members or friends ever been questioned by the police because they were a suspect in a crime? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Have any of your close friends or family members ever been arrested or convicted of a crime? | <input type="checkbox"/> | <input type="checkbox"/> |

Appendix N

Study 2:

Short form of the Marlowe-Crowne Social Desirability Scale

Please check True or False for each item. Do not skip any items.

	True	False
1. At times I have really insisted on having things my own way.	<input type="checkbox"/>	<input type="checkbox"/>
2. There have been occasions when I felt like smashing things.	<input type="checkbox"/>	<input type="checkbox"/>
3. I'm always willing to admit it when I make a mistake.	<input type="checkbox"/>	<input type="checkbox"/>
4. I always try to practice what I preach.	<input type="checkbox"/>	<input type="checkbox"/>
5. I like to gossip at times.	<input type="checkbox"/>	<input type="checkbox"/>
6. I have never been irked when people expressed ideas very different from my own.	<input type="checkbox"/>	<input type="checkbox"/>
7. I have never deliberately said something that hurt someone's feelings.	<input type="checkbox"/>	<input type="checkbox"/>
8. I sometimes try to get even rather than forgive and forget.	<input type="checkbox"/>	<input type="checkbox"/>
9. I never resent being asked to return a favor.	<input type="checkbox"/>	<input type="checkbox"/>
10. There have been occasions when I took advantage of someone.	<input type="checkbox"/>	<input type="checkbox"/>

Note. Socially desirable responding is reflected by *True* responses to items 3, 4, 6, 7, and 9 and *False* responses to items 1, 2, 5, 8, and 10. Such responses were coded as 1 and summed to create the social desirability scale score.

Appendix O

Study 2:

Funneled Debriefing

1. I don't want you to think that you should have noticed something or that you missed something if you didn't—please just answer very honestly. First, at the very moment that you were interacting with the security officer, did you think he was a part of the study?”
 - a. IF YES: In retrospect you might have realized he was, but at the time he was here, what did you think? Did you believe that he was a real security officer?
2. At exactly what point did you realize what was happening? At what moment did you realize he was part of the study?
3. So did you figure out he was part of the study while he was still here talking with you?
4. Did you know he was part of the study before you got to the questions about him?
5. Did you believe he was really looking for [*a stolen computer / a diversity training meeting*]?
6. Do you think other participants will believe that he was a real security officer?
7. We're still in the beginning phases of research—do you have any suggestions about how to make the interaction with the security officer more realistic?

Appendix P

Study 2:

Security Officer Script—High Perceived Stereotype Relevance¹³

You will see the experimenter leave the lab. When 60 seconds have elapsed, she will signal you. At her signal, walk towards the water fountain while coughing loudly several times. Pretend to answer your cell phone. Say the following clearly and loudly enough that the participant can hear you easily:

“Hey John, how's it going on your end?”

PAUSE (count to 3)

“Yeah, I'm over here at UIC now. I'm still looking around—I haven't found anybody yet.”

PAUSE

“Yeah, the girl said she went out, and, uh, when she got back about, uh, 15 minutes ago, she realized someone stole her stuff.”

PAUSE

“Yeah, her wallet and one of those little computer book things.”

PAUSE—*Take a drink of water and turn to the lab. Act as though you're noticing the participant for the first time. Do a double-take and look intently at the participant and the computer.*

“Hey, I gotta go. There's somebody right here that might know something.”

PAUSE

“All right, later.”

HANGUP

End the pretend call. Approach the participant, stop in the lab doorway, and adhere to the following script as closely as possible, regardless of what the participant says or does. While talking with the participant, you should obviously be looking at the Kindle and looking around the lab.

¹³Text specific to the high-perceived-stereotype-relevance condition is highlighted.

Appendix P (continued)

“Hey, sorry to bother you, but a lady down the hall just reported having her wallet stolen, and a little computer just like that. Is that tablet computer yours?”

“How long have you been here?”

“You seen anything unusual since you got here? Anybody roaming around that looked like they didn't belong here? Anything like that?”

Pretend to get a phone call and say into the phone:

“Yeah, I'm talking to somebody now. You're kidding me. I think I'm just around the corner from there so I'll go check it out. I'll get back to you.”

HANGUP

“I'll be back in a minute.”

Appendix Q

Study 2:

Security Officer Script—Low Perceived Stereotype Relevance¹⁴

You will see the experimenter leave the lab. When 60 seconds have elapsed, she will signal you. At her signal, walk towards the water fountain while coughing loudly several times. Pretend to answer your cell phone. Say the following clearly and loudly enough that the participant can hear you easily:

“Hey John, how's it going on your end?”

PAUSE (count to 3)

“Yeah, I'm over here at UIC now. This place is like a maze—I can't find that diversity training meeting.”

PAUSE

“Yeah, I'm gonna talk to some students about our minority management program.”

PAUSE

“Yeah, we got a great program, but, uh, I've gotta find the meeting before I can tell the kids about it.”

PAUSE—*Take a drink of water and turn to the lab. Act as though you're noticing the participant for the first time. Do a double-take and look intently at the participant and the computer.*

“Hey, I gotta go. There's somebody right here that might know where it is.”

PAUSE

“All right, later.”

HANGUP

End the pretend call. Approach the participant, stop in the lab doorway, and adhere to the following script as closely as possible, regardless of what the participant says or does. While talking with the participant, you should obviously be looking at the Kindle and looking around the lab.

¹⁴Text specific to the low-perceived-stereotype-relevance condition is highlighted.

Appendix Q (continued)

“Hey, sorry to bother you, but do you know where Room 3318 is?”

“I’m trying to find this, uh, diversity training meeting. It’s supposed to be a part of some race relations class. Do you know anything about it?”

“All right. Oh, hey, is that a Kindle you’ve got there? I’ve been thinking about getting one for my girlfriend—how do you like it?”

Pretend to get a phone call and say into the phone:

“Yeah, okay. I think I’m just around the corner from there so I’ll go check it out. Thanks.”

HANGUP

“All right, I think I know where this meeting is now. Hope so, or you might see me wandering around again.”

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

UNIVERSITY OF ILLINOIS AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (VC 673)
100 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Approval Notice Amendment to Research Protocol and Consent Document – Expedited Review UIC Amendment # 3

May 10, 2011

Cynthia Najdowski, MA
Psychology
Psychology
1007 West Harrison Street, M/C 285
Chicago, IL 60612
Phone: (773) 720-1579 / Fax: (312) 413-4122

RE: Protocol # 2010-1043
"Stereotype Threat in Police Encounters"

Dear Ms. Najdowski:

Members of Institutional Review Board (IRB) #2 have reviewed this amendment to your research and consent form under expedited procedures for minor changes to previously approved research allowed by Federal regulations [45 CFR 46.110(b)(2)]. The amendment to your research was determined to be acceptable and may now be implemented.

Please note the following information about your approved amendment:

Please note that the grants/contracts supporting the funding from the American Academy of Forensic Psychology and the Society for the Psychological Study of Social Issues have not been reviewed by the UIC IRB. Kindly remember to submit these supporting documents so that the IRB can affirm that the research supported by this funding has been approved as part of this research protocol.

Amendment Approval Date: May 9, 2011

Amendment:

Summary: UIC Amendment #3 (response to modifications), dated 2 May 2011 and submitted to OPRS 6 May 2011, is an investigator-initiated amendment regarding the following: (1) revising research design to involve participants in a staged police encounter using a research confederate dressed as a police officer, this will introduce deception as participants will be told they are coming to the research site to test a new heart rate monitor, after completing some previously approved research tasks participants will encounter the "officer" during a "resting

2010-1043

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5/10/2011

period" and the "officer" will indicate to the participant that the "officer" will return to ask the participant if they have any information about either (a) a local crime or (b) some local training after which the participant will complete another set of research tasks, additional measures will be introduced to assess dependent variables and potential mediators of race effects and control for variables that might influence outcomes, adding video-recording of participants during encounter with the "officer," increasing total sample size from 1,090 to 1,140 subjects to account for sub-study (revised Initial Review application, version 3, 5/2/2011; revised Protocol, version 3, 3/28/2011; Study 2 Materials and Measures, o footer; Appendix J, version 1, 3/28/2011); (2) submission of Appendix M (version 1, 3/28/2011); (3) submission of notice of additional funding (Appendix Z, American Academy of Forensic Psychology; Appendix Z, Society for the Psychological Study of Social Issues); and (4) submission of revised consent document reflecting the above (PSCH 100, version 3, 3/28/2011; Debriefing Script, version 1, 5/10/2011).

Approved Subject Enrollment #: 1,140
Performance Sites: UIC
Sponsor: Department
PAF#: Not applicable
Grant/Contract No: Not applicable
Grant/Contract Title: Not applicable
Research Protocol:

a) Stereotype Threat in Police Encounters, Research Protocol; Version 3; 03/28/2011

Informed Consents:

- a) PSCH 100; Version 3; 03/28/2011
- b) Debriefing Script; Version 1; 05/10/2011

Please note the Review History of this submission:

Receipt Date	Submission Type	Review Process	Review Date	Review Action
03/28/2011	Amendment	Expedited	04/07/2011	Modifications Required
05/06/2011	Response To Modifications	Expedited	05/09/2011	Approved

Please be sure to:

- Use only the IRB-approved and stamped consent documents when enrolling subjects.
- Use your research protocol number (2010-1043) on any documents or correspondence with the IRB concerning your research protocol.
- Review and comply with all requirements on the enclosure, "UIC Investigator Responsibilities, Protection of Human Research Subjects"

Please note that the UIC IRB #2 has the right to ask further questions, seek additional information, or monitor the conduct of your research and the consent process.

Please be aware that if the scope of work in the grant/project changes, the protocol must be amended and approved by the UIC IRB before the initiation of the change.

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We wish you the best as you conduct your research. If you have any questions or need further help, please contact the OPRS at (312) 996-1711 or me at (312) 996-2014. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Sandra Costello
Assistant Director, IRB # 2
Office for the Protection of Research Subjects

Enclosures:

1. **UIC Investigator Responsibilities, Protection of Human Research Subjects**
2. **Informed Consent Documents:**
 - a) PSCH 100; Version 3; 03/28/2011
 - b) Debriefing Script; Version 1; 05/10/2011

cc: Bette Bottoms, Psychology, M/C 285
Gary E. Raney, Psychology, M/C 285

VITA

CYNTHIA J. NAJDOWSKI

University of Illinois at Chicago
 Department of Psychology
 1007 West Harrison Street (M/C 285)
 Chicago, Illinois 60607-7137
 (773) 720-1579
 cnajdo2@uic.edu
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EDUCATION

- 2012 Ph.D., University of Illinois at Chicago
 Major Area: Social and Personality Psychology; Minor Area: Psychology and Law
- 2009 M.A., University of Illinois at Chicago
 Major Area: Social and Personality Psychology; Minor Area: Psychology and Law
- 1998 B.A., with *University Honors* and *Honors in Psychology*, University of North Carolina at Wilmington
 Major Area: Psychology

TEACHING EXPERIENCE AND INTERESTS

TEACHING ASSISTANTSHIPS AT THE UNIVERSITY OF ILLINOIS AT CHICAGO

- 2006, Summer Psychology and Law (Psychology 417)
 2006, Spring Developmental Psychology (Psychology 320)
 2005, Fall Introduction to Psychology (Psychology 100) (included contact teaching)

INTERESTS

Introduction to Criminal Justice	Introduction to Criminology	Victimology
Juvenile Justice	Wrongful Convictions	Jury Decision Making
Introduction to Psychology	Social Psychology	Stereotyping & Prejudice
Psychology & Law	Children, Psychology, & Law	Race, Psychology, & Law
Research Methods	Statistics	

HONORS & AWARDS

- 2012 American Psychological Association-Psi Chi Edwin B. Newman Graduate Research Award
- 2012 UIC Liberal Arts & Sciences Ph.D. Student Travel Award, \$500
- 2012 American Psychology-Law Society Student Travel Award, \$500
- 2011 UIC Liberal Arts & Sciences Endowed Scholarship, \$500
- 2011 UIC Grace Holt Memorial Award, \$1,000
- 2011 American Psychological Foundation Ungerleider/Zimbardo Travel Scholarship, \$300
- 2011 UIC Leonard D. Eron Award for Outstanding Scholarly Accomplishment, \$500
- 2011 UIC President's Research in Diversity Travel Award, \$500
- 2011 UIC Dean's Scholar Award, \$31,600
- 2011 Honorable Mention, Midwestern Association of Graduate Schools Distinguished Master's Thesis Award
- 2010 Society for Personality and Social Psychology Graduate Student Committee Outstanding Research Award, \$500
- 2010 UIC Nominee for Midwestern Association of Graduate Schools Distinguished Master's Thesis Award
- 2010 The Society for General Psychology Anne Anastasi Graduate Student Recognition Award
- 2010 American Psychology-Law Society Student Section Outstanding Student Poster Award, \$150
- 2010 Consortium for Police Leadership in Equity Emerging Scholar
- 2009 American Psychological Association Student Travel Award, \$300
- 2009 UIC Christopher B. Keys Award for Early Outstanding Research Achievement, \$500
- 2009 American Psychology-Law Society Student Travel Award, \$250

2009 American Psychological Association Student Travel Award, \$300
 2009 UIC Christopher B. Keys Award for Early Outstanding Research Achievement, \$500
 2009 American Psychology-Law Society Student Travel Award, \$250
 2008 American Psychological Association Student Travel Award, \$300
 2007 American Psychological Association Student Travel Award, \$300
 2007 UIC Liberal Arts & Sciences Alumni Association Merit Award, \$500
 2006 The Society for Child and Family Policy and Practice Student Poster Award, \$50
 2006 UIC Liberal Arts & Sciences Endowed Scholarship, \$1,000
 2006 American Psychological Association Student Travel Award, \$300

RESEARCH FUNDING

2012 UIC Department of Psychology Thesis Enhancement Funds, \$500
 2011 National Science Foundation Doctoral Dissertation Research Improvement Grant, \$13,900
 2011 American Psychology-Law Society Diversity in Psychology and Law Research Award, \$874
 2011 Psi Chi Graduate Research Grant, \$985
 2011 American Psychology-Law Society Grant-in-Aid, \$750
 2011 American Academy of Forensic Psychology Dissertation Grant in Applied Law & Psychology, \$1,500
 2010 Society for the Psychological Study of Social Issues (APA Div. 9) Grant-in-Aid, \$1,000
 2009 UIC Department of Psychology Thesis Enhancement Funds, \$150
 2007 American Psychology-Law Society Grant-in-Aid, \$750
 2006 Psi Chi Graduate Research Grant, \$1,500

SERVICE IN THE DISCIPLINE

LEADERSHIP POSITIONS

2009–2011 American Psychology-Law Society (APA Div. 41) Student Section Campus Representative
 2007–2009 Society for Child and Family Policy and Practice (APA Div. 37) Graduate Student Representative

EDITORIAL ACTIVITIES

2011 Society for Personality and Social Psychology (APA Div. 8) Student Poster Award Reviewer
 2007–2009 Member, Student Editorial Board, *Law and Human Behavior*

Ad Hoc Reviewer for: *Basic and Applied Social Psychology*
Child Maltreatment
Journal of Applied Social Psychology
Violence and Victims

AFFILIATIONS/MEMBERSHIPS

American Psychological Association (APA)

APA Divisions:

Society for the Teaching of Psychology
 Division of Experimental Psychology
 Society for Personality and Social Psychology
 Society for the Psychological Study of Social Issues
 Society for Child and Family Policy and Practice
 & Section on Child Maltreatment
 American Psychology-Law Society
 Society for the Study of Peace, Conflict, and Violence

American Society of Criminology (ASC)

ASC Division of Experimental Criminology
 Association for Psychological Science
 Consortium of Police Leadership in Equity
 Midwestern Psychological Association
 Phi Eta Sigma National Honor Society
 Psi Chi International Honor Society in Psychology
 Social Psychology Network

RESEARCH INTERESTS

I conduct empirical research to make theoretical contributions to social science and improve public policy on issues affecting disadvantaged and victimized populations. Specifically, I study social psychological issues related to racial disparities in the criminal justice system, perceptions of juvenile offenders, and abuse and trauma victims' coping and recovery.

PUBLICATIONS

BOOK

Bottoms, B. L., **Najdowski, C. J.**, & Goodman, G. S. (Eds.). (2009). *Children as victims, witnesses, and offenders: Psychological science and the law*. New York: Guilford Press.

REFEREED JOURNAL ARTICLES

Stevenson, M. C., **Najdowski, C. J.**, & Wiley, T. R. A. (in press). Knowledge of juvenile sex offender registration laws as a predictor of adolescent sexual behavior. *Journal of Child Sexual Abuse*.

Thompson, R., Dancy, B. L., Wiley, T. R. A., **Najdowski, C. J.**, Perry, S. P., Wallis, J. R., Mekawi, Y.*, & Knafl, K. (in press). African American families' expectations and intentions for mental health services. *Administration and Policy in Mental Health and Mental Health Services Research*.

Ullman, S. E., **Najdowski, C. J.**, & Adams, E. (in press). Women, Alcoholics Anonymous, and related mutual aid groups: Review and recommendations for research. *Alcoholism Treatment Quarterly*.

Bottoms, B. L., **Najdowski, C. J.**, Epstein, M. A., & Badanek, M. J. (2012). Trauma severity and defensive emotion-regulation reactions as predictors of forgetting childhood trauma. *Journal of Trauma & Dissociation*, 13, 291-310.

Najdowski, C. J., & Bottoms, B. L. (2012). Understanding jurors' judgments in cases involving juvenile defendants: Effects of confession evidence and intellectual disability. *Psychology, Public Policy, and Law*, 18, 297-337.

Najdowski, C. J. (2011). Stereotype threat in criminal interrogations: Why innocent Black suspects are at risk for confessing falsely. *Psychology, Public Policy, and Law*, 17, 562-591.

Najdowski, C. J., & Ullman, S. E. (2011). The effects of revictimization on coping and depression in female sexual assault victims. *Journal of Traumatic Stress*, 24, 218-221.

Thompson, R., Dancy, B. L., Wiley, T. R. A., Perry, S. P., & **Najdowski, C. J.** (2011). The experience of mental health service use for African American mothers and youth. *Issues in Mental Health Nursing*, 32, 678-686.

Ullman, S. E., & **Najdowski, C. J.** (2011). Prospective changes in attributions of self-blame and social reactions to women's disclosures of adult sexual assault. *Journal of Interpersonal Violence*, 26, 1934-1962.

Najdowski, C. J. (2010). Jurors and social loafing: Factors that reduce participation during jury deliberations. *American Journal of Forensic Psychology*, 28 (2), 39-64. Reprinted in *American Journal of Forensic Psychiatry*, 31 (3), 49-76.

Salerno, J. M., **Najdowski, C. J.**, Stevenson, M. C., Wiley, T. R. A., Bottoms, B. L., Vaca, Jr., R. A.*, & Pimentel, P. S.* (2010). Psychological mechanisms underlying support for juvenile sex offender registry laws: Prototypes, moral outrage, and perceived threat. *Behavioral Sciences and the Law*, 28, 58-83.

Ullman, S. E., & **Najdowski, C. J.** (2010a). Alcohol-related help-seeking in problem drinking women sexual assault survivors. *Substance Use and Misuse*, 45, 341-353.

Ullman, S. E., & **Najdowski, C. J.** (2010b). Understanding alcohol-related sexual assaults: Characteristics and consequences. *Violence and Victims*, 25, 29-44.

Najdowski, C. J., & Winer, E. S. (2009). The neuroscientific study of the self: Methodological and theoretical challenges. *New School Psychology Bulletin*, 6, 7-12.

Najdowski, C. J., & Ullman, S. E. (2009a). Prospective effects of sexual victimization on PTSD and problem drinking. *Addictive Behaviors*, 34, 965-968.

*Undergraduate student co-author.

- Najdowski, C. J., & Ullman, S. E.** (2009b). PTSD and self-rated recovery among adult sexual assault survivors: The effects of traumatic life events and psychosocial variables. *Psychology of Women Quarterly*, 33, 43-53.
- Najdowski, C. J., Bottoms, B. L., & Vargas, M. C.*** (2009). Jurors' perceptions of juvenile defendants: The influence of intellectual disability, abuse history, and confession evidence. *Behavioral Sciences and the Law*, 27, 401-430.
- Ullman, S. E., & **Najdowski, C. J.** (2009a). Correlates of suicidal ideation and attempts in female sexual assault survivors. *Suicide and Life-Threatening Behavior*, 39, 47-57.
- Ullman, S. E., & **Najdowski, C. J.** (2009b). Revictimization as a moderator of psychosocial risk factors for problem drinking in female sexual assault survivors. *Journal of Studies on Alcohol and Drugs*, 70, 41-49.
- Ullman, S. E., **Najdowski, C. J.**, & Filipas, H. H. (2009). Child sexual abuse, post-traumatic stress disorder, and substance use: Predictors of revictimization in adult sexual assault survivors. *Journal of Child Sexual Abuse*, 18, 367-385.

BOOK CHAPTERS

- Stevenson, M. C., **Najdowski, C. J.**, Bottoms, B. L., Sorenson, K. M.*, & Perry, S. P. (2011). *Jurors' perceptions of juvenile offenders tried in adult criminal court*. In A. E. Hasselme (Ed.), *Crime: Causes, types, and victims* (pp. 141-153). Hauppauge, NY: Nova Science Publishers, Inc.
- Reynolds, C. E., **Najdowski, C. J.**, Salerno, J. M., Stevenson, M. C., Wiley, T. R. A., & Bottoms, B. L. (2011). *Public perceptions of registry laws for juvenile sex offenders*. In N. A. Ramsay & C. R. Morrison (Eds.), *Youth violence and juvenile justice: Causes, intervention and treatment programs* (pp. 331-334). Hauppauge, NY: Nova Science Publishers, Inc.
- Ullman, S. E., & **Najdowski, C. J.** (2011). Vulnerability and protective factors for sexual violence. In J. W. White, M. P. Koss, & A. E. Kazdin (Eds.), *Violence against women and children: Mapping the terrain* (pp. 151-172). Washington, DC: American Psychological Association.
- Salerno, J. M., Stevenson, M. C., Wiley, T. R. A., **Najdowski, C. J.**, Bottoms, B. L., & Doran, R. A.* (2010). Public attitudes toward applying sex offender registration laws to juvenile offenders. In J. M. Lampinen & K. Sexton-Radek (Eds.), *Protecting children from violence: Evidence based interventions* (pp. 193-217). New York: Psychology Press.
- Mongetta, J. N., Salerno, J. M., **Najdowski, C. J.**, Bottoms, B. L., & Goodman, G. S. (2009). Children as victims, witnesses, and offenders: An introduction through legal cases. In B. L. Bottoms, C. J. Najdowski, & G. S. Goodman (Eds.), *Children as victims, witnesses, and offenders: Psychological science and the law* (pp. 1-15). New York: Guilford Press.
- Stevenson, M. C., **Najdowski, C. J.**, Bottoms, B. L., & Haegerich, T. M. (2009). Understanding adults' perceptions of juvenile offenders. In B. L. Bottoms, C. J. Najdowski, & G. S. Goodman (Eds.), *Children as victims, witnesses, and offenders: Psychological science and the law* (pp. 349-368). New York: Guilford Press.
- Bottoms, B. L., Perona, A. R., Sorenson, E., & **Najdowski, C. J.** (2007). Interviewing suspected victims of child maltreatment. In N. A. Jackson (Ed.), *Encyclopedia of domestic violence* (pp. 137-141). New York: Routledge.
- Najdowski, C. J.**, & Bottoms, B. L. (2007). Juries and children's testimony. In B. L. Cutler (Ed.), *Encyclopedia of psychology and law* (pp. 82-84). Thousand Oaks, CA: Sage.

OTHER PUBLICATIONS

- Najdowski, C. J.** (2011, Summer). Explaining racial disparities in false confession rates: Effects of investigators' biased attitudes and perceptions and suspects' stereotype threat. "Actual Innocence" column in the *American Psychology-Law Society News Newsletter*.
- Beletsky, L., Goff, P. A., Glaser, J., Jones-Brown, D., Sidanius, J., Baldwin, M., Kahn, K. B., & **Najdowski, C. J.** (2010, October). Diagnosing the problem: How to address unwarranted disparate treatment. In the Consortium for Police Leadership in Equity's report, *The Contract for Policing Justice*.

Najdowski, C. J. (2008, Fall). *Voice of the students*. Graduate Student Representative's column in the American Psychological Association Division 37 *Advocate* Newsletter.

Najdowski, C. J. (2008, Summer). *Voice of the students*. Graduate Student Representative's column in the American Psychological Association Division 37 *Advocate* Newsletter.

Najdowski, C. J. (2008, Spring). *Voice of the students*. Graduate Student Representative's column in the American Psychological Association Division 37 *Advocate* Newsletter.

MANUSCRIPTS SUBMITTED FOR PUBLICATION

Bottoms, B. L., **Najdowski, C. J.**, Epstein, M. A., & Badanek, M. J. *Factors related to recovering memory of childhood abuse and trauma: Defensive emotion-regulation reactions and context*. (revise & resubmit)

MANUSCRIPTS IN PREPARATION

Bottoms, B. L., **Najdowski, C. J.**, Torres, J. O.^{*}, & Epstein, M. A. *Ethnic differences in child physical abuse: Incidence and identification as a victim*.

Bottoms, B. L., **Najdowski, C. J.**, Stevenson, M. C., & Veillieux, J. C. *Teaching and professional training in psychology and law: A historic review of the scholarship*.

Bottoms, B. L., Salerno, J. M., **Najdowski, C. J.**, Dave, R.^{*}, & Kemner, G.^{*} *Jurors' acceptance of the "gay panic" defense: Effects of political orientation and moral outrage*.

Najdowski, C. J. Race, ethnicity, and injustice: How cultural factors contribute to wrongful convictions. Invited chapter to appear in J. R. Acker & A. D. Redlich (Eds.), *Examining wrongful convictions: Stepping back, moving forward*.

Najdowski, C. J., Bottoms, B. L., & Epstein, M. A. *Understanding women's suspicions of unremembered childhood sexual and physical abuse*.

Salerno, J. M., Bottoms, B. L., **Najdowski, C. J.**, Stevenson, M. C., & Wiley, T. R. A. The application of sex offender registry laws to juveniles: Biases against stigmatized adolescents. Invited chapter to appear in M. K. Miller & J. Chamberlain (Eds.), *Current psycho-legal perspectives on children, families, and law*. Oxford, OH: Oxford Press.

Stevenson, M. C., **Najdowski, C. J.**, Salerno, J. M., Wiley, T. R. A., Bottoms, B. L., & Sorenson, K. M.^{*} *Perceptions of abuse history as a cause of sex offending and support for juvenile sex offender registration*.

CONFERENCE PRESENTATIONS

Najdowski, C. J., & Bottoms, B. L. (2012, November). *Using social psychology to explain racial disparities in false confession rates*. To be presented in R. Norris & A. D. Redlich (Chairs), Broadening theory and methodology in innocence research. Symposium at the annual meeting of the American Society of Criminology, Chicago, Illinois.

Noblitt, C. R.,^{*} **Najdowski, C. J.**, & Bottoms, B. L. (November, 2012). *African American's experiences of stereotype threat in police encounters: The influence of past criminal contacts*. To be presented at the annual meeting of the American Society of Criminology, Chicago, Illinois.

Najdowski, C. J., Bottoms, B. L., Goff, P. A., & Spanton, J.^{*} (2012, June). *Minorities' experiences of police encounters: Effects of racial/ethnic identity on stereotype threat and anxiety*. Presented at the John Jay College of Criminal Justice Tenth Biennial International Conference, New York, New York.

Najdowski, C. J., & Bottoms, B. L. (2012, May). *Extending stereotype threat theory: Evidence of effects in police encounters*. Presentation at the annual convention of the Association for Psychological Science, Chicago, Illinois.

Najdowski, C. J., & Bottoms, B. L. (2012, March). *Stereotype threat in police encounters: Explaining racial disparities in police stop rates*. Presentation at the annual meeting of the American Psychology-Law Society, San Juan, Puerto Rico.

- Najdowski, C. J.**, Bottoms, B. L., Goff, P. A., & Spanton, J.* (2012, March). *Do Hispanics experience stereotype threat in police encounters?* Presentation at the annual meeting of the American Psychology-Law Society, San Juan, Puerto Rico.
- Najdowski, C. J.**, Goff, P. A., & Bora, A.* (2011, August). *Why experiencing racial profiling leads to anxiety in future police encounters: The mediating effects of trust in the police and stereotype threat.* Presentation at the annual meeting of the American Psychological Association, Washington, D.C.
- Najdowski, C. J.**, & Ullman, S. E. (2011, August). *The effects of revictimization on coping and depression in women sexual assault victims.* Presentation at the annual meeting of the American Psychological Association, Washington, D.C.
- Stevenson, M. C., & **Najdowski, C. J.** (2011, August). *Are sexually abused juvenile sex offenders perceived as particularly dangerous?* Presentation at the annual meeting of the American Psychological Association, Washington, D.C.
- Ullman, S. E., & **Najdowski, C. J.** (2011, June). *Problem drinking in women sexual assault survivors over 8 years: Effects of drinking to cope and tension-reduction expectancies.* Presentation at the annual meeting of the Research Society on Alcoholism, Atlanta, Georgia.
- Najdowski, C. J.**, & Goff, P. A. (2011, March). *A social psychological approach to understanding racial profiling: Stereotype threat in police encounters.* Presentation at the 4th International Congress on Psychology and Law, Miami, Florida.
- Stevenson, M. C., **Najdowski, C. J.**, & Wiley, T. R. A. (2011, March). *Young adults' understanding of juvenile sex offender registration laws.* Presentation at the annual meeting of the American Psychology-Law Society, Miami, Florida.
- Thompson, R., Wiley, T. R. A., Dancy, B., **Najdowski, C. J.**, Wallis, J. R., & Perry, S. P. (2010, August). *Intentions to seek mental health services in African American families.* Presentation at the annual meeting of the American Psychological Association, San Diego, California.
- Ullman, S. E., **Najdowski, C. J.**, & Adams, E. (2010, June). *Women, Alcoholics Anonymous, and related mutual aid groups: Review and recommendations for research.* Presentation at the annual meeting of the Research Society on Alcoholism, San Antonio, Texas.
- Wallis, J., Wiley, T. R. A., **Najdowski, C. J.**, & Thompson, R. (2010, April). *What would that be like?: Urban African American youth's expectations of mental health services.* Presentation at the annual meeting of the Midwestern Psychological Association, Chicago, Illinois.
- Wiley, T. R. A., Thompson, R., Wallis, J. R., **Najdowski, C. J.**, Dancy, B., & Perry, S. P. (April, 2010). *Effects of depression history on African American mothers' perspectives on mental health service efficacy.* Presentation at the Quality of Behavioral Healthcare: A Drive for Change through Research conference, Clearwater Beach, Florida.
- Najdowski, C. J.**, Stevenson, M. C., Salerno, J. M., Wiley, T. R. A., Bottoms, B. L., & Sorenson, K. M.* (2010, March). *Perceptions of abuse history as a cause of juvenile sex offending and support for registry laws.* Presentation at the annual meeting of the American Psychology-Law Society, Vancouver, Canada. (Received American Psychology-Law Society Student Section Outstanding Student Poster Award.)
- Stevenson, M. C., **Najdowski, C. J.**, & Sorenson, K. M.* (2010, March). *Perceptions of juvenile sex offenders who were sexually abused themselves.* Presentation at the annual meeting of the American Psychology-Law Society, Vancouver, Canada.
- Wiley, T. R. A., Thompson, R., **Najdowski, C. J.**, Wallis, J. R., & Dancy, B. (2010, March). *Who I turn to: A qualitative study of self-identified sources of support among urban African American youth.* Presentation at the biennial meeting of the Society for Research on Adolescence, Philadelphia, Pennsylvania.
- Najdowski, C. J.**, & Ullman, S. E. (2010, February). *The effects of revictimization on coping in women adult sexual assault victims.* Presentation at the National Summit on Interpersonal Violence and Abuse Across the Lifespan: Forging a Shared Agenda, Dallas, Texas.

- Ullman, S. E., & **Najdowski, C. J.** (2009, November). *Prospective changes in attributions of self-blame and social reactions to women's disclosures of adult sexual assault*. Presentation at the annual meeting of the International Society for Traumatic Stress Studies, Atlanta, GA.
- Najdowski, C. J.**, & Ullman, S. E. (2009, August). *Prospective effects of sexual victimization on PTSD and problem drinking*. Presentation at the annual meeting of the American Psychological Association, Toronto, Canada.
- Ullman, S. E., & **Najdowski, C. J.** (2009, June). *Correlates of alcohol-related help-seeking following sexual assaults in community-residing women*. Presentation at the annual meeting of the Research Society on Alcoholism, San Diego, California.
- Najdowski, C. J.**, Bottoms, B. L., Vargas, M. C. *, & Cummins, M. L. * (2009, March). *Understanding jurors' perceptions of juvenile defendants: Effects of intellectual disability and confession evidence*. Presentation at the annual meeting of the American Psychology-Law Society, San Antonio, Texas.
- Salerno, J. M., Stevenson, M. C., Bottoms, B. L., Wiley, T. R. A., **Najdowski, C. J.**, Pimentel, P. *, & Vaca, Jr., R. A. * (2009, March). *Public support for juvenile sex offender registry laws: Reaction to threat or moral outrage?* Presentation at the annual meeting of the American Psychology-Law Society, San Antonio, Texas.
- Salerno, J. M., Stevenson, M. C., Bottoms, B. L., **Najdowski, C. J.**, Wiley, T. R. A., Vaca, Jr., R. A. *, & Schmillen, R. A. * (2009, February). *Juvenile sex offender registry laws are motivated by perceptions of threat and desire to punish*. Presentation at the annual meeting of the Society for Personality and Social Psychology, Tampa, Florida.
- Najdowski, C. J.**, Bottoms, B. L., Vargas, M. C. *, Khan, S. *, & Stevenson, M. C. (2008, August). *Jurors' perceptions of juvenile defendants in adult criminal court*. Presentation at the annual meeting of the American Psychological Association, Boston, Massachusetts.
- Najdowski, C. J.**, & Ullman, S. E. (2008, August). *Predicting PTSD and self-rated recovery in adult sexual assault survivors*. Presentation at the annual meeting of the American Psychological Association, Boston, Massachusetts.
- Ullman, S. E., & **Najdowski, C. J.** (2008, June). *Understanding the effects of alcohol-related sexual assaults: Characteristics and consequences*. Presentation at the annual meeting of the Research Society on Alcoholism, Washington, D.C.
- Salerno, J. M., Stevenson, M. C., **Najdowski, C. J.**, Wiley, T. R. A., & Bottoms, B. L. (2008, May). *Beliefs about the effectiveness of juvenile sex offender registry laws in preventing child sexual abuse*. Invited presentation at "Protecting Children from Violence: Emerging Trends and Research," a pre-conference held in conjunction with the annual meeting of the American Psychological Society, Chicago, Illinois.
- Ullman, S. E., & **Najdowski, C. J.** (2008, April). *Correlates of suicidal ideation and attempts in adult female sexual assault survivors*. Presentation at the annual meeting of the American Association of Suicidology, Boston, Massachusetts.
- Stevenson, M. C., Bottoms, B. L., Diamond, S. S., **Najdowski, C. J.**, Stec, I. *, & Pimentel, P. * (2008, March). *Jurors' discussions of a defendants' childhood maltreatment during capital sentencing deliberations*. Presentation at the annual meeting of the American Psychology-Law Society, Jacksonville, Florida.
- Ullman, S. E., & **Najdowski, C. J.** (2008, February). *Effects of multiple trauma types in sexual assault victims by race, class, and sexual orientation*. Presentation at the Summit on Abuse and Violence in Relationships: Connecting Agendas and Forging New Directions, Bethesda, Maryland.
- Ullman, S. E., **Najdowski, C. J.**, & Filipas, H. H. (2007, November). *CSA, PTSD, and substance use as predictors of revictimization in rape victims*. Presentation at the annual meeting of the International Society for Traumatic Stress Studies, Baltimore, Maryland.
- Najdowski, C. J.**, Bottoms, B. L., Vargas, M. C. *, & Khan, S. * (2007, September). *Jurors' perceptions of intellectually disabled juvenile defendants in adult criminal court*. Presentation at the OU/UTEP Conference on Interrogations and Confessions, El Paso, Texas.

- Najdowski, C. J.**, Bottoms, B. L., Epstein, M. A., & Badanek, M. J. (2007, August). *Individual differences in women's suspicions of unremembered childhood abuse*. Presentation at the annual meeting of the American Psychological Association, San Francisco, California.
- Ullman, S. E., & **Najdowski, C. J.** (2007, July). *Revictimization as a moderator of psychosocial risk factors for problem drinking in female sexual assault survivors*. Presentation at the annual meeting of the Research Society on Alcoholism, Chicago, Illinois.
- Torres, J. O.^{*}, **Najdowski, C. J.**, Bottoms, B. L., Epstein, M. A., & Badanek, M. J. (2007, May). *Ethnic differences in child physical abuse: Incidence and identification as a victim*. Presentation at the annual meeting of the Midwestern Psychological Association, Chicago, Illinois.
- Najdowski, C. J.**, Bottoms, B. L., Epstein, M. A., & Badanek, M. J. (2006, August). *Understanding women's suspicions of unremembered childhood sexual and physical abuse*. Presentation at the annual meeting of the American Psychological Association, New Orleans, Louisiana. (Received American Psychological Association Division 37 Student Poster Award.)
- Bottoms, B. L., **Najdowski, C. J.**, Stevenson, M. C., & Veilleux, J. C. (2006, March). *The scholarship of teaching in the field of psychology and law*. In B. M. Schwartz (Chair), Pedagogical approaches in the psychology and law classroom. Symposium at the annual meeting of the American Psychology-Law Society, St. Petersburg, Florida.
- Hiltz, C. J.**, Shirley, M. C., McMullin, D., & Fink, G. (1999, November). *Psychiatric symptoms, substance use, and pain: A comparison of fibromyalgia and rheumatoid arthritis patients*. Presentation at the annual meeting of the Association for Advancement of Behavior Therapy, Toronto, Canada.