

# Stereotype Threat Effects on Black and White Athletic Performance

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Two experiments showed that framing an athletic task as diagnostic of negative racial stereotypes about Black or White athletes can impede their performance in sports. In Experiment 1, Black participants performed significantly worse than did control participants when performance on a golf task was framed as diagnostic of “sports intelligence.” In comparison, White participants performed worse than did control participants when the golf task was framed as diagnostic of “natural athletic ability.” Experiment 2 observed the effect of stereotype threat on the athletic performance of White participants for whom performance in sports represented a significant measure of their self-worth. The implications of the findings for the theory of stereotype threat (C. M. Steele, 1997) and for participation in sports are discussed.

Since no one can be indifferent to the abuse and expectations of others we must anticipate that ego defensiveness will frequently be found among members of groups that are set off for ridicule, disparagement, and discrimination. It could not be otherwise. (Allport, 1954, p. 143)

Gordon Allport (1954) observed that being the target of a negative stereotype about an important social identity is distressing and promotes a number of defensive reactions. Specifically, when negative stereotypes are made salient in a situation, Allport predicted that members of a stigmatized group may respond with “obsessive concern” about being labeled and treated in terms of the negative characterization of their group. Their concern could turn to anger, aggressiveness, and militant action, but the potential threat of being stereotyped negatively might also lead targets to become anxious, withdrawn, and even “self-hating.” Indeed, research has shown that to reduce the threat engendered by being the target of a negative stereotype, people may attribute their predicament to the perceiver’s prejudice (Crocker, Voelkl, Testa, & Major, 1991), engage in self-serving social comparisons (e.g., see Major, Schiaccitano, & Crocker, 1993), or disengage their self-esteem from the situation (e.g., Major, Spencer, Schmader, Wolfe, & Crocker, 1998). Whereas many of the specific reactions described by Allport have yet to be investigated empirically, the current literature suggests that being the target of a negative

stereotype represents a significant threat to self-regard, one that creates substantial concern and discomfort for individual members of a stigmatized group (Crocker, Major, & Steele, 1998).

Researchers have recently turned their attention to whether negative reactions to being the target of a negative stereotype occur among traditionally nonstigmatized groups (e.g., Aronson et al., 1999; Brown & Josephs, 1999). The purpose of the current research was to examine whether majority group members such as White college students also experience concern and suffer distress when they are the target of a negative stereotype about their racial identity. Specifically, we examined the responses of majority group members in the context of sports in which there appear to be negative stereotypes about White athletes. Our research was guided by the hypothesis that many people who participate in sports hold negative racial stereotypes about athletes, and when these stereotypes become salient in a performance context, they may threaten the self-worth of those to whom they apply. This hypothesis is relevant to traditionally stigmatized groups such as minorities or women, but our central tenet is that it applies equally to White males and females who are not often examined as the target of negative racial stereotypes (Fiske, 1998). Sports and athletics may represent one of the few domains in which Whites are stereotyped negatively and suffer psychologically as a result.

In proposing this hypothesis, we make at least two theoretical assumptions that require some discussion. First, there is the assumption that people hold racial stereotypes that are specific to athletes. Racial stereotypes about athletes—particularly Black and White athletes—represent overgeneralized beliefs about the causes of athletic success and failure. The available archival and empirical evidence suggests that people hold very specific positive and negative dispositional beliefs about what lies at the heart of Black and White athletic performance. The current study focuses on the negative beliefs about race and athletic performance that, when salient in a sports performance context, may cause increased concern and distress among the athletes to whom they apply.

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Our second prediction is that the salience of negative stereotypes can have a negative impact on the athletic performance of Black and White participants in sports. Although negative stereotypes about athletes can affect performance through interaction with people who hold race-based expectancies (e.g., Darley & Fazio, 1980; Horn, Lox, & Labrador, 1998), the purpose of the current research was to examine a more subtle process by which stereotypes might influence performance in sports: that of stereotype threat. The theory of *stereotype threat* (Steele, 1997) states that when a negative stereotype about a group becomes salient as the criterion for evaluating performance, individual group members become concerned that their performance may confirm the validity of the negative stereotype. The increased concern created by the threat imposes an additional psychological burden to the task, which, in turn, reduces an individual's ability to perform to their potential. Thus, in the absence of interpersonal interaction, negative stereotypes, when made salient in a stereotype-relevant domain, can have a negative impact on performance in that context. The primary goal of the current research was to examine how stereotype threat processes might operate in the context of sports for both Black and White participants.

### The Character of Racial Stereotypes About Athletes

The contemporary beliefs that underlie racial stereotypes about athletes can in part be traced to the historical debate over the perceived differences between Black and White athletic performance. According to Wiggins (1997), theories about the perceived differences between Black and White athletes were first published in the 1800s by coaches, social scientists, biologists, medical doctors, and, most notably, sportswriters. Most of the accounts at that time were attempting to explain why some Black athletes, such as boxer Peter Jackson or bicyclist Marshal "Major" Taylor, consistently outperformed popular White athletes in sports previously dominated by majority group members. The general conclusion drawn by the various theorists was that "Blacks were physically different from Whites and possessed an accompanying character and temperament that was unique to their species" (Wiggins, 1997, p. 313).

Nature versus nurture explanations for why Black athletes seem to dominate some sports (e.g., Kane, 1971; Worthy & Markle, 1970) or appear to play sports differently than White athletes (e.g., J. M. Jones & Hochner, 1973; see also George, 1992) continue to be debated in the 20th century. One well-known example appeared in an article titled "An assessment of 'Black is best'" in *Sports Illustrated* by senior editor Martin Kane (1971). Kane, reviewing others, argued that Black athletes have superior physical abilities that can be attributed to a form of Social Darwinism—the average Black man possesses superior physical qualities because the hardship of slavery "weeded out" those who did not possess adaptive physical characteristics. Kane acknowledged that motivation and opportunity are important, but he stated that the average Black athlete possesses superior physical athletic qualities because only the genetic material of the fittest was passed on after decades of enslavement. Kane's evolutionary account is representative of many classic dispositional explanations that have been offered for the performance differences observed between Black and White athletes.

Theories stressing an environmental explanation for Black and White differences in athletic performance have been just as prolific. As early as the 1930s, W. Montague Cobb (1934) argued that differences in the performance of Black and White athletes could be attributed to socialization, proper training, and certain incentives (see also Jordan, 1969). In response to Kane's (1971) article, sports sociologist Harry Edwards (1973) raised a number of alternative explanations for Black superiority in sports. For example, Edwards suggested that surviving slavery had as much to do with intelligence and character as it did with physical strength and speed. Becoming a successful athlete, according to Edwards, clearly requires great physical ability, but it also requires the Black athlete to overcome many political, psychological, and racial barriers.

Edwards also proposed that implicit in Kane's (1971) genetic argument was the implication that Whites are superior intellectually to Blacks. By postulating a genetic endowment for physical strength, Edwards (1973) suggested that "even well meaning people" are implying that Black athletes are "little removed from apes in their evolutionary and cultural development" (p. 199). Although historically many writers had emphasized Black physical ability versus White intelligence when explaining differences in athletic performance, Edwards observed that natural ability and intelligence are often used as mutually exclusive attributes when people account for racial differences in sports performance.

The historical debate over the relationship between race and sports performance indicates that many people think dispositionally about what causes successful performances in sports, but the dispositions attributed to successful Black and White athletes are very different. Not only do people generally assume that athletic performance is a function of one's physical and mental genetic formula, but they also have a pervasive tendency to assume that if a Black athlete does well in sports it is because he or she is better physically outfitted, and that if a White athlete does well, it is because he or she uses superior sports intelligence to overcome physical deficits. These attributions have also been observed by many contemporary writers (e.g., Hoberman, 1997; McCall, 1997) and sports journalists (e.g., see Price, 1997) and are illustrated in recent popular films about sports such as "White Men Can't Jump" and "Hoop Dreams." We contend that beliefs about the relationship between race and sports performance form the basis for the stereotypes that can guide judgments and evaluations of athletic performance.

### Empirical Evidence for Racial Stereotypes About Athletes

Evidence that people hold racial stereotypes about Black and White athletes generally reflects the historical debate. For example, Devine and Baker (1991) found that the attributes assigned to the social category of Black athlete included unintelligent and ostentatious, and Biernat and Manis (1994) reported that Black males were perceived to be more athletic than White males. In perhaps the most comprehensive study, Sailes (1996) asked Black and White college students to rate the intelligence, academic preparation, athletic style of play, competitiveness, physical superiority, athletic ability, and mental temperament of Black and White college athletes. The results showed that White participants rated Black athletes as significantly less intelligent, less academically prepared, and more temperamental, whereas Black partici-

pants rated White athletes as significantly less competitive and as exhibiting less “athletic style.”<sup>1</sup> Thus, judgments about the characteristics of Black and White athletes tend to reflect the stereotype that Blacks athletes are physically superior but intellectually inferior to White athletes.

Recent research suggests that such stereotyped beliefs about Black and White athletes can influence perceptions of an athlete’s performance (e.g., Sapolsky, 1980). In a perceptual confirmation paradigm, Stone, Perry, and Darley (1997) had White participants evaluate a basketball player while listening to a radio broadcast of a college basketball game. Half the participants were led to believe the target player was White, and half were led to believe the target was a Black athlete. On the broadcast, it was clear that the identified athlete played very well. The results showed that whereas the White male target was perceived as exhibiting less “natural athletic ability” but more “court smarts” and “hustle,” the Black male target player was perceived as exhibiting less court smarts and hustle, but more natural athletic ability. The Black target was also perceived to be a better basketball player even though all participants heard the same running account of the athlete’s basketball performance.

Thus, the available empirical evidence tends to mirror what is found in the popular sports literature: People hold racial stereotypes about athletes that are both positive and negative. Specifically, Black athletes are perceived to have natural athletic ability (which is a positive sports attribute) but are thought to be less intelligent, even in a sports context (a negative sports attribute). In contrast, White athletes are perceived to have less natural athletic ability (a negative sports attribute) but are thought to be intelligent and perhaps harder working (positive sports attributes). These stereotyped beliefs have been shown to influence judgment and perception processes, but it is not currently known whether they can also influence how athletes perceive themselves.

### Stereotype Threat and Athletic Performance

The current investigation began with the assumption that the racial stereotypes about Black and White athletes are known not only by spectators and coaches but also by the athletes themselves. That is, given the long history of the debate over Black superiority in sports, it seemed likely to us that Black and White participants in sports may have knowledge of these cultural stereotypes (e.g., Devine, 1989). If so, then it is possible that knowledge of the positive and negative stereotypes about Black and White athletes could have an impact on an athlete’s performance in a sports event.

Recent theory and research on the concept of stereotype threat suggests that reminders of a negative stereotype about racial identity can impede performance in a relevant domain. According to Steele and his colleagues (e.g., Steele, 1997; Steele & Aronson, 1995), when a negative stereotype about a group becomes salient as a criterion for test evaluation, individual group members can become concerned about confirming the negative stereotype. The concern raised by the salience of the stereotype can subsequently cause individual group members to perform more poorly than they would in a neutral context. For example, Steele and Aronson showed that when the specter of innate intelligence was made salient in the context of a standardized test of academic ability, or when race was simply made salient, White students performed significantly better than did Black students. However, when the

test was framed as nondiagnostic of innate intelligence, or when race was not made salient, Black and White students performed equally well. Similar performance effects have been observed among women when the gender stereotype concerning math ability is made salient in a testing context (e.g., Spencer, Steele, & Quinn, 1999). Thus, even subtle indications that one is being evaluated on the basis of a negative characterization about one’s group identity can have a debilitating effect on performance in a stereotype-relevant domain.

We propose that similar effects may occur in the world of sports. For example, if an athletic performance were framed as indicative of sports intelligence—one’s ability to think strategically while playing a sport—Black athletes may infer that they are being evaluated on the basis of a negative characterization linked to their racial identity. The concern they would feel about confirming the negative stereotype—the suspicion of inability (Steele, 1997)—could subsequently reduce their capacity to play to their potential. Likewise, making salient the negative stereotype that Whites have poor natural athletic ability may also raise the suspicion of inability among White participants in sports. Specifically, if an athletic performance were framed as indicative of natural athletic ability—one’s genetically determined physical gifts—White athletes may infer that they are being evaluated on the basis of a negative characterization about their racial identity. Consequently, they may become concerned about confirming the negative stereotype and subsequently perform more poorly than if the stereotype is not made salient.

The hypothesized effects of stereotype threat on athletic performance were tested in an experiment in which Black and White participants completed a sports-related task that was based on the game of golf. We predicted that if the negative stereotypes about Black athletes (i.e., poor sports intelligence) and White athletes (i.e., poor natural athletic ability) were made salient during an athletic performance, concern over confirming the stereotype would cause each group’s athletic performance to suffer, relative to when each group’s performance on the task was being evaluated on the basis of either the positive stereotype concerning their group (i.e., natural athletic ability for Blacks, sports intelligence for Whites) or a nonstereotype relevant criterion.

In addition, we examined whether subtle indicators of racial stereotypes about athletes could engage stereotype threat. In their research, Steele and Aronson (1995) showed that simply making race salient by asking participants to indicate their racial identity on their test form was enough to cause poor academic performance among Black college students. Apparently, when asked to indicate their race, Black participants made the inference that their performance was being evaluated on the basis of the negative stereotype concerning intelligence, even when the test itself was framed as measuring a nonstereotyped dimension. We reasoned that such subtle connections between race and performance may also engage stereotype threat among athletes. For example, describing a sports task as a “standardized measure of athletic aptitude” may contribute to the threat process for Blacks if they generally perceive that standardized tests have an element of racial bias to them (Steele,

<sup>1</sup> Other results are less supportive of our contentions. Participants did not rate Black and White athletes differently on the dimensions of athletic ability or physical superiority.

1997). This concern may be especially enhanced given that the current task involved playing golf—a sport in which Black athletes have faced discrimination and few have been highly successful at the professional level (Tiger Woods being a notable exception). Consequently, we predicted that if race were made salient in the context of performing a standardized measure of athletic aptitude that was based on the game of golf, Black participants might perform more poorly than control participants, even though the sports task itself was framed as diagnostic of a nonstereotyped dimension.

Potential psychological mediators of the hypothesized relationship between stereotype threat and athletic performance were also measured (e.g., Major et al., 1998; Steele & Aronson, 1995). In this case, multiple mediators seemed possible. Once the possibility of confirming a negative athletic stereotype is salient, participants may seek ways to self-handicap so that failure will be nondiagnostic of dispositional attributes (E. E. Jones & Berglas, 1978). When provided the opportunity, participants for whom stereotype threat is salient may indicate that they had less sleep the night before, had suffered more stress recently, or are not able to focus on the athletic task. They may also indicate suspicion about test bias when the test is framed as diagnostic of a negative stereotype about their social group (Steele & Aronson, 1995). Other potential mediators of the relationship between stereotype threat and athletic performance include situational anxiety and performance expectancies. If concern over confirming a negative stereotype about one's racial identity causes a high level of anxiety, it may decrease performance by increasing arousal. Similarly, once stereotype threat is salient, participants may lower their expectations about their performance during the athletic test, or they may lower their motivation and expend less effort during the test. Many of these processes have been shown to be affected by stereotype threat manipulations (e.g., Aronson et al., 1999; Spencer et al., 1999).

Finally, we investigated several psychological coping strategies that targets may use when they perform under stereotype threat conditions. For example, one way to cope with the possibility of confirming a negative racial stereotype is to disidentify with or devalue the domain (e.g., Steele, 1997; Crocker & Major, 1989). If stereotype threat caused poor athletic performances as predicted, it might subsequently cause Black participants to rate their perceived intelligence and White participants to rate their perceived athleticism as less self-descriptive or less important to their overall self-worth. Alternatively, to maintain self-worth, participants could discount the validity of the test when it was framed as diagnostic of the attributes relevant to the negative stereotype for their respective group (e.g., Major & Schmader, 1998). Participants completed measures of these psychological disengagement processes after they completed the sports performance task.

## Experiment 1

### Overview

In a 2 (race: Black or White)  $\times$  4 (test frame: natural athletic ability, sports intelligence, race prime, or no-prime control) experimental design, participants completed a preperformance questionnaire and then performed a "standardized" measure of athletic performance that was based on the game of golf. Performance on

the task, as measured by the number of strokes required to complete the 10-hole golf course, was the primary dependent measure.

### Method

**Participants.** Participants were 82 male and female, Black and White undergraduates at Princeton University, who were offered \$4 for participation in a study on sports psychology. No one with extensive knowledge of golf (e.g., members of the golf team or students who reportedly played more than once a week) was used in the study. The data from 2 participants (1 Black and 1 White) were excluded before the analysis because they failed to follow instructions during the experiment. The final sample consisted of 40 Black and 40 White participants.

**Procedure.** Participants completed the procedures individually. When they arrived at the laboratory, a Black male experimenter explained that they would complete a brief questionnaire, perform a sports test that was based on the game of golf, and then answer questions about their performance after the test was completed.

Participants then read a handout that explained the purpose of the study. The athletic test was described as a standardized measure of sports psychology called the Michigan Athletic Aptitude Test (MAAT). Participants were told that the MAAT was developed in 1988 by the exercise and sports psychology department at the University of Michigan. The handout noted that the test was based on the game of golf but had been normalized such that each successive level in the test represented a standard increase in performance difficulty. Ostensibly, performance on the test had been shown to correlate with actual performance on many of the physical and mental activities relevant to most college varsity sports, such as basketball, baseball, and hockey. At this point, the cover story altered its course according to which test frame condition participants had been assigned to randomly.

**Test frame manipulation.** Participants in the natural athletic ability condition read that the test was designed to measure personal factors correlated with natural athletic ability. Natural athletic ability was defined as "one's natural ability to perform complex tasks that require hand-eye coordination, such as shooting, throwing, or hitting a ball or other moving objects." It was explained that as test difficulty increased, so would the demand on their natural athletic ability or hand-eye coordination.

Participants randomly assigned to the sports intelligence condition read that the test was designed to measure "personal factors correlated with the ability to think strategically during an athletic performance." The handout explained that as test difficulty increased, so would the demand on their ability to use different strategies while performing the athletic test.

Participants in the race-prime and no-prime control conditions read that the test was designed to measure psychological factors correlated with "general sports performance." The handout explained that as test difficulty increased, so would the demand on the psychological factors that correlate with general sports performance.

After participants had read the handout, the experimenter reiterated the instructions and answered questions. Participants then completed a pretest questionnaire. First, they completed a five-item self-report measure of situational anxiety (Mattsson, 1960). Participants were instructed to indicate their current level of anxiety on 7-point scales with endpoints ranging from *uneasy* to *at ease*, *comfortable* to *uncomfortable*, *upset* to *peaceful*, *relaxed* to *tense*, and *in control* to *not in control*. To measure self-handicapping processes, participants indicated how many hours of sleep they had the night before, and they rated how focused they felt and how much stress they had been under lately. They also indicated how much bias they perceive in standardized tests on a 7-point scale ranging from *not at all* (1) to *very much* (7).

Last, participants completed a brief demographic questionnaire on which they indicated their gender, age, year in school, and racial identity. The racial identity question was used to prime race prior to performance on the athletic test (e.g., Steele & Aronson, 1995). The demographic questionnaire was presented first in the questionnaire packet in the race-prime condition.

In the no-prime control condition, this demographic questionnaire was moved to the end of the posttest session to avoid making race systematically salient prior to performance on the athletic test.

*The athletic performance test.* The athletic test was designed to resemble a miniature golf course. For each hole or “phase” in the test, participants used a putter to hit a golf ball down a 3 ft (0.91 m) × 10 ft (3.05 m) stretch of carpet into a “hole.” The carpet was low-pile and green-gray in color. On each phase, participants started with their ball on a 4 in. (10.2 cm) × 6 in. (15.2 cm) computer mouse pad. At the end of the carpet was an inclined felt mat with the three holes in the mat: a hole 5 in. (12.7 cm) in diameter, a hole 4 in. (10.2 cm) in diameter, and a hole 3 in. (7.6 cm) in diameter. To complete each phase of the test, participants were told the ball had to roll up the incline and fall into one of the holes.

Participants were required to complete 10 different phases on the course. This was accomplished by placing 2-in. (5.1-cm) × 4-in. (10.2-cm) × 3-in. (7.6-cm) pieces of wood either on or under the carpet and by moving the hole apparatus up or down the carpet. Once the golf test began, the experimenter changed the putting surface according to a pretested pattern of increasing difficulty. Tape was placed on the lab floor and on the carpet to make sure that the obstacles and hills were placed in exactly the same position for all participants. Once each phase was completed, the experimenter changed the layout of the carpet and hole apparatus and then handed participants the golf ball so they could begin the next phase.

*Test instructions.* To begin the test, the experimenter gave participants a putter and a golf ball. He then stated that their goal on each phase was to putt the ball into one of the three holes using the fewest strokes possible. In addition, participants were told that the hole in which the ball fell would be recorded, and that the small hole was worth one point, the middle hole was worth two points, and the largest hole was worth three points. Thus, after each phase, participants received a score for the number of strokes and a score for accuracy, and they were led to believe that each score from the 10 phases would be summed at the conclusion of the test to obtain an overall score for performance and an overall score for accuracy.

Participants were told that the experimenter also wanted to know, before each phase, how many strokes they expected to need and in which hole they expected the ball to fall. After each new phase of the course was configured by the experimenter, participants were asked to estimate and then report verbally to the experimenter their predictions for performance and accuracy on each phase. Participants were then allowed to take three practice putts on the first phase of the test, and after the practice session they began the recorded trials.

It should be noted that the experimenter’s interaction with participants while they completed the test was kept as minimal as possible. Whereas the experimenter maintained a cordial demeanor throughout the experiment, interactions were kept brief and standard. When asked questions about the test, the experimenter responded with short, direct answers without providing suggestions for how to complete each phase. In this way, every effort was made to diminish and standardize verbal interaction between participants and the experimenter during the golf test.

After they finished the last phase of the test, participants completed a posttest questionnaire. First, they completed the same five-item self-report measure of situational anxiety. Participants then completed a short version of the Self-Attributes Questionnaire (Pelham & Swann, 1989) designed to measure self-perceptions of athletic ability and intelligence. They rated how self-descriptive each attribute was by ranking themselves relative to other college students their age. They were also asked to rate how certain they were that each attribute applied to them, how important each attribute was to their self-worth, and how much they matched their ideal self on each attribute. Ratings for each attribute were made on a 10-point scale ranging from A to I, with A indicating that they ranked in the bottom 5% of college students and I indicating they ranked in the top 5% of college students. Last, participants reported how biased they thought the test was against their strategic and natural athletic abilities; they also rated their mental and physical effort while performing the test and the quality of their perfor-

mance on the test. These final measures were collected on a 9-point scale ranging from *below average* (1) to *above average* (9).

**Results**

Gender did not significantly moderate the effects of race and test frame effects on the performance and self-report measures reported below; consequently, we collapsed across this variable in the analyses.

*Test performance.* The number of strokes required to finish the course was submitted to a 2 (race) × 4 (test frame) analysis of variance (ANOVA). The ANOVA revealed only the predicted Race × Test Frame interaction effect,  $F(3, 72) = 5.70, p < .001$ . Orthogonal contrasts and simple effects analyses were then conducted to determine the meaning of the interaction across the eight experimental conditions (see Table 1). First, a planned contrast of the mean differences showed that in the no-prime control condition, White participants ( $M = 24.6$ ) performed slightly, though not significantly, worse than Black participants ( $M = 22.1$ ),  $F(1, 72) = 1.71, p < .20$ . The slight difference here suggests that despite White dominance in the professional sport of golf, Black and White participants were on a relatively level playing field in the current golf setting.

Next, the simple interaction effect between race and the natural athletic ability, sports intelligence, and race-prime conditions was significant,  $F(1, 72) = 7.15, p < .001$ . Planned contrasts revealed that among Black participants, performance was significantly better when the test was framed as a measure of natural athletic ability ( $M = 23.10$ ) compared with when it was framed as a measure of sports intelligence ( $M = 27.20$ ) or when race was primed prior to performance ( $M = 27.30$ ),  $F(1, 72) = 6.27, p < .01$ . Performance in the sports intelligence and race-prime conditions did not differ significantly ( $F < 1$ ). Also as predicted, performance by Black participants when the test was framed as diagnostic of sports intelligence or when race was primed was significantly worse compared with the no-prime control group using Dunnett’s two-tailed  $t$  test for comparison,  $t(72) = 2.45, p < .05$ . Thus, the data supported the prediction that making race or sports intelligence salient would undermine the performance of Black participants on the golf task.

**Table 1**  
*Effects of Race and the Athletic Test Frame on Performance, Change in Anxiety, and Discounting in Experiment 1*

Race and variable	Test frame manipulation			
	Natural ability	Sports intelligence	Race prime	Control
<b>Black participants</b>				
Strokes	23.10	27.20	27.30	22.10
Change in anxiety	-2.00	+4.90	-2.10	+1.20
Discounting	2.80	2.70	2.40	3.20
<b>White participants</b>				
Strokes	27.80	23.30	22.90	24.60
Change in anxiety	+1.90	+0.70	-2.60	+0.40
Discounting	6.30	2.00	2.70	2.70

*Note.* As in golf, more strokes indicate a poorer performance on the task. Higher numbers indicate more of each variable.

Conversely, as was predicted by the hypothesis about the effects of stereotype threat on White athletes, when the test was described as a measure of natural athletic ability, a planned contrast showed that White participants performed significantly worse on the golf task ( $M = 27.80$ ) compared with when the task was framed as a measure of sports intelligence ( $M = 23.30$ ) or when race was primed prior to performance ( $M = 22.90$ ),  $F(1, 72) = 8.04$ ,  $p < .005$ . As with the Black participants, White participants in the sports intelligence and race-primed conditions did not differ significantly ( $F < 1$ ). However, among White participants, the difference between the natural athletic ability and no-primed control conditions was not significant according to a two-tailed Dunnett's  $t$  test for comparison. This suggests that whereas framing the task as indicative of natural athletic ability decreased White performance compared with when the test was framed as diagnostic of sports intelligence or when race was made salient, the natural athletic ability frame did not significantly impair their performance compared with when the task was framed as diagnostic of a nonstereotyped dimension.

The measure of accuracy was submitted to a 2 (race)  $\times$  4 (frame) ANOVA, which revealed only a significant main effect for race,  $F(1, 72) = 3.97$ ,  $p < .05$ . White participants tended to putt the ball into a smaller hole ( $M = 1.84$ ) significantly more than did Black participants ( $M = 1.99$ ). The accuracy of the participants' performance on the golf test, however, was not influenced by the way in which the test was framed.

*Self-handicapping.* The four measures of self-handicapping were analyzed using a Race  $\times$  Frame multivariate analysis of variance (MANOVA), which revealed only a significant main effect for the test frame,  $F(12, 183) = 2.56$ ,  $p < .01$ . Overall, participants in the no-primed control condition reported more hours of sleep ( $M = 7.55$ ) compared with participants in the sports intelligence condition ( $M = 6.50$ ), and they reported feeling less stressed lately ( $M = 3.45$ ) compared with participants in the race-primed condition ( $M = 4.95$ ) and natural athletic ability condition ( $M = 4.85$ ), all Tukey honestly significant differences (HSDs)  $> 3.72$ ,  $p < .05$ . There was no evidence that Black and White performance was mediated by self-handicapping strategies.

*Situational anxiety.* The five individual measures of situational anxiety from the pre- and posttest collection were combined into one pretest ( $\alpha = .81$ ) and one posttest ( $\alpha = .88$ ) measure of anxiety. The anxiety measures were then analyzed as a repeated measure in a 2 (anxiety)  $\times$  2 (race)  $\times$  4 (framing) mixed ANOVA. The analysis revealed a significant interaction between the anxiety measures and the framing manipulation,  $F(3, 72) = 3.36$ ,  $p < .02$ , but also revealed that the predicted three-way interaction between anxiety, race, and test frame did not reach significance,  $F(3, 64) = 2.04$ ,  $p < .11$ . The means presented in Table 1 are change scores that were computed by subtracting the first from the second anxiety measure. They show that changes in anxiety from pre- to posttest somewhat mirror that of the performance measure. For example, Black ( $M = 1.2$ ) and White ( $M = 0.4$ ) participants showed little change in anxiety from pre- to posttest in the no-primed control condition. In contrast, Black participants in the sports intelligence condition showed a relatively large increase in anxiety from pre- to posttest ( $M = 4.9$ ), whereas White participants showed little change ( $M = 0.7$ ). In the natural athletic ability condition, White participants showed a slight increase in anxiety from pre- to posttest ( $M = 1.9$ ), whereas Black participants

showed a slight decrease in anxiety from pre- to posttest ( $M = -2.0$ ). This simple interaction pattern between race and the natural ability versus sports intelligence conditions is significant,  $F(1, 72) = 6.07$ ,  $p < .02$ , and it suggests that some of the effects of stereotype threat on performance for each group may have been mediated by how much anxiety participants experienced when under stereotype threat.

Examination of the overall correlation between anxiety and performance, however, did not yield the significant positive relationship between anxiety and performance that would support a mediational analysis ( $r = .04$ ). In addition, the potential mediating effect of anxiety on performance was not evident in the race-primed condition where, despite their differences in performance, Black and White participants reported less anxiety from pre- to posttest ( $M_s = -2.1$  and  $-2.6$ , respectively). Thus, situational anxiety did not appear to mediate performance during the golf test.

*Expectancies about performance and accuracy.* The total number of strokes participants estimated they would need to complete the course and the hole they expected on average to successfully putt the ball were subjected to a Race  $\times$  Frame ANOVA. The results revealed a main effect for race on both the total number of strokes expected,  $F(1, 72) = 9.72$ ,  $p < .003$ , and the hole into which participants predicted that the ball on average would fall,  $F(1, 72) = 4.34$ ,  $p < .04$ . White participants expected to complete the course in fewer strokes ( $M = 20.83$ ) and predicted that they would be more accurate ( $M = 1.69$ ) relative to the predictions reported by Black participants ( $M_s = 24.90$  and  $1.86$ , respectively).

*Disidentification processes.* The participants' posttest ratings of perceived athleticism, perceived certainty and importance of athleticism, and perceived match to their athletic ideal self were analyzed with a 2 (race)  $\times$  4 (framing) MANOVA. The analysis revealed a significant main effect only for the test frame,  $F(12, 183) = 2.76$ ,  $p < .002$ . Participants in the no-primed control condition rated themselves lower on perceived athleticism and match to their ideal athletic self compared with the other experimental conditions (Tukey HSD  $> 3.72$ ,  $p < .05$ ). A similar MANOVA across the four intelligence ratings revealed no significant effects for the experimental variables.

*Discounting processes.* The participants' posttest ratings of how biased the test was against their natural athletic ability revealed a significant Race  $\times$  Frame interaction,  $F(3, 72) = 6.21$ ,  $p < .001$ . As seen in Table 1, White participants in the natural athletic ability condition reported that the test was significantly more biased against their natural athletic ability ( $M = 6.22$ ) compared with White and Black participants in the other experimental conditions (all Tukey HSDs  $> 4.41$ ,  $p < .05$ ). There were no significant effects for the experimental variables on participants' perceptions of bias against their ability to think strategically during the test.

*Effort.* The measures of how much physical and mental effort was expended during the test revealed significant main effects only for race, physical effort,  $F(1, 72) = 7.45$ ,  $p < .008$ , and mental effort,  $F(1, 72) = 3.68$ ,  $p < .05$ . Black participants reported higher levels of physical effort and mental effort compared with White participants. Participants' perceived quality of their performance showed no significant effects for the experimental variables.

## Discussion

The results of Experiment 1 generally support the hypothesis that the salience of negative stereotypes about Black and White athletes can adversely affect their performance in a sports event. As predicted, when performance on the golf task was framed as diagnostic of sports intelligence, Black participants performed significantly worse compared with when the athletic task was framed as diagnostic of natural athletic ability (a positive stereotype about Black athletes) or when the test was framed as a measure of a nonstereotyped dimension. A similar decrement in Black performance was observed when race was primed but performance on the golf test was described as a standardized measure of a nonstereotyped dimension. This is consistent with the findings of Steele and Aronson (1995), who reported similar test-framing and race-priming effects on the performance of Blacks on a test of academic intelligence. It appears from these data that any situational cue that makes race salient prior to performance in a stereotype-relevant domain—and, specifically, makes race and the specter of intelligence salient—has the potential to adversely affect the performance by Blacks in that domain.

Somewhat less clear in Experiment 1 are the effects of stereotype threat on White athletes. Framing sports performance as diagnostic of natural athletic ability caused a significant decrease in the performance of White participants on the golf task compared with when the test was framed as diagnostic of sports intelligence or when race was simply primed and the test was described in nonstereotypic terms. There was also evidence that White participants significantly discounted the validity of the test after performance when stereotype threat was induced by the natural athletic ability frame. However, whereas the mean difference was in the predicted direction, the performance data indicated that White participants in the stereotype threat condition did not perform significantly worse than White participants in the no-prime control condition. Thus, there was some question about the reliability of the effect of stereotype threat on White participants in Experiment 1.

A second experiment was conducted to test the reliability of the stereotype threat effect on White participants and pursue other questions raised by the results of Experiment 1. For example, the results of Experiment 1 provided partial evidence that performance anxiety may have contributed to athletic performance decrements under conditions of stereotype threat. Specifically, increases in anxiety occurred alongside the poorer performance of the Black participants in the sports intelligence condition and the White participants in the natural athletic ability condition. In contrast, no change or decrease in anxiety appeared alongside better performances by the Black participants in the natural athletic ability condition and the White participants in the sports intelligence condition. Whereas this simple interaction pattern was significant, the overall correlation between situational anxiety and performance did not support a mediation interpretation. In light of other evidence suggesting that anxiety plays a role in stereotype threat processes (e.g., Spencer et al., 1999), Experiment 2 was designed to directly manipulate the amount of anxiety participants might attribute to their performance on the golf task. Specifically, if making salient a negative stereotype about one's social identity decreases performance because it increases performance anxiety, it should be possible to improve performance by introducing factors

that decrease the negative effects of performance anxiety. One way to accomplish this would be to provide participants with another explanation for their arousal such as a misattribution cue. Thus, the second experiment was designed to control directly the potential impact of situational anxiety that may arise when stereotype threat is salient in a sports performance context.

We also designed Experiment 2 to further examine the role of psychological disengagement processes in the response to stereotype threat among White athletes. One central tenet in the theory of stereotype threat concerns the importance of the performance domain to perceptions of self-worth. Steele (1997) proposed that being a target of a negative stereotype about one's group will only engage stereotype threat if performance in that domain is perceived to be important to the target's perceptions of self-worth. Otherwise, if the performance does not carry any weight for the target's self-worth, then the salience of a negative stereotype should not have a detrimental impact on performance. Major et al. (1998) presented evidence that supports this prediction. In their research, African American participants who were classified as psychologically disengaged on the basis of responses to the Disengagement subscale of the Intellectual Orientation Inventory (see Major et al., 1998) did not show decrements in self-esteem following failure feedback on a test of academic ability. In comparison, participants classified as psychologically engaged did report significantly lower self-esteem following negative performance feedback. These data suggest that the people most negatively affected by the threat of confirming a negative stereotype are those who engage their sense of self-worth in the outcome of performances in the stereotype threatened domain (cf. Aronson et al., 1999).

In the context of sports, the perception of stereotype threat should have the most negative impact on the performance of athletes for whom performance outcomes represent a significant measure of their self-worth. People who do not place much stock in the outcome of a sports performance for their self-worth, in contrast, should not be concerned about confirming a negative stereotype about their social group and therefore should be less affected by the way in which performance is framed. We tested this hypothesis in Experiment 2 by comparing the performance under conditions of stereotype threat of two separate groups: those for whom athletic performance would represent a significant aspect of their self-worth (i.e., "athletically engaged" individuals) and those for whom athletic performance was not perceived as important to their self-worth (i.e., "athletically disengaged" individuals).

Finally, Experiment 2 was also designed to improve the procedures and address some potential alternative interpretations of the performance differences observed between the conditions in Experiment 1. For example, the procedures for Experiment 1 were conducted entirely by an experimenter who was not blind to the hypothesis. Given that the procedure involved constant interaction between the experimenter and each participant, it is possible that despite our best efforts, experimenter bias may have played a role in the outcome. If in fact stereotype threat can decrease performance in the absence of any biased interaction between target and perceiver, then it should be possible to observe differences in performance even when the experimenter is blind to the levels of the independent variables. In addition, to further examine potential mediators of performance, multiple self-report measures of anxiety

were gathered and participants were allowed to report their expectations for performance in private to reduce the possibility that self-presentation concerns affected their predictions in Experiment 1. Finally, several new measures of psychological disengagement processes were also included at the end of Experiment 2 to further examine coping responses to stereotype threat.

## Experiment 2

### Overview

In Experiment 2, White participants completed the laboratory golf course either under high-threat (i.e., a natural athletic ability test frame) or low-threat conditions (i.e., a "sports psychology" test frame). To directly control their anxiety, some participants were provided with a plausible external attribution for their arousal. The hypothesis was that if stereotype threat caused heightened performance anxiety, then participants who were provided with a misattribution cue for their arousal would perform as well on the golf test as would participants for whom stereotype threat was not activated by the test frame. Furthermore, we predicted that the interaction between stereotype threat and misattribution would only be significant among participants who were classified as "psychologically engaged"—those to whom the test performance held importance for their self-worth. Those classified as "psychologically disengaged" were predicted to be unaffected by the test framing or misattribution manipulations. Finally, Experiment 2 was conducted using two White male experimenters, one who delivered the manipulations but was blind to participants' level of psychological disengagement and one who administered the golf test but was blind to all levels of the experimental manipulations. The design of Experiment 2 was a 2 (chronic athletic disengagement: engaged vs. disengaged)  $\times$  2 (test frame: high threat vs. low threat)  $\times$  2 (misattribution: high vs. low) factorial with performance on the golf test as the primary dependent measure.

### Method

**Participants.** Participants were 104 undergraduates at the University of Arizona who participated in the study for partial course credit. Data from eight participants were excluded from the analysis because they expressed suspicion about the validity of the cover story during debriefing. Two more participants were eliminated because they failed to complete several of the posttest measures. Participants excluded from the analyses were distributed equally across the experimental conditions. The final analysis is based on data from 94 participants who identified themselves as European American or White on a pretest questionnaire.

In addition, participants were recruited for participation on the basis of their self-ratings of athleticism and golf experience collected during a mass pretesting of the introductory psychology participant pool. Included in the mass survey was the Self-Attributes Questionnaire (Pelham & Swann, 1989) used in Experiment 1 to measure self-perceptions of athleticism. Only those who rated their athletic ability above the upper 50th percentile were recruited to participate (scores  $\geq 6$ ,  $M = 7.85$ ). Also included in the mass survey was the question, "How many times a week do you play golf?" Only those who reported that they played no more than one round of golf per week (scores  $\leq 1.0$ ,  $M = 0.9$  days per week) were recruited to participate. In summary, participants in Experiment 2 were White college students who rated athleticism as self-descriptive but who did not have strong skills in the game of golf.<sup>2</sup>

Also included in the pretest was a scale devised to measure chronic athletic disengagement. Our Athletic Disengagement Scale (ADS) was

based on the Disengagement subscale of the Intellectual Orientation Inventory (see Major et al., 1998). Each item on the Disengagement subscale was reworded to form a scale relevant to athletics consisting of the items "No athletic test will ever change my opinion of how athletic I am," "How I do athletically has little relation to who I really am," and "I really don't care what tests say about my athletic ability." Each question was answered on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

The items on the ADS demonstrated an acceptable level of internal consistency in the sample ( $\alpha = .66$ ). In addition, scores on the ADS were distributed normally among the selected sample despite the fact that participation was limited to only those who rated themselves as above average in athleticism ( $M = 3.37$ ,  $SD = 1.18$ , range 1–6). Participants were classified as high or low in psychological disengagement on the basis of a median split and were randomly assigned to the experimental conditions described below.

**Procedures.** The procedures for Experiment 2 were similar to those used in Experiment 1. Participants were recruited by phone to participate individually in a study on sports psychology. Once the participants arrived at the lab, the first experimenter (who was blind to their disengagement score) asked them to complete a pretest questionnaire, which included the following measures in order: (a) the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970) alternative form A (Devito & Kubis, 1983), which consisted of 10 of the 20 total items of the STAI A-state scale, (b) several filler items, and (c) a "demographic questionnaire" that asked participants to indicate their gender, age, year in school, and race. Once participants completed the pretest, the experimenter introduced the experimental manipulations.

**The misattribution manipulation.** To provide an external attribution for their arousal, participants randomly assigned to the high-misattribution condition were asked to read a letter ostensibly from the psychology department. The letter stated that the lab space had been recently renovated (which in fact it had) and that it was important to know if the renovations made research participants feel tense or uneasy. The letter further explained that to assess the effects of the new lab space on sensitive psychological factors such as emotions, participants would be asked to rate the lab space after their participation in the study. When participants finished reading the letter, the experimenter reiterated the main points of the letter and reminded participants that they would complete a questionnaire at the end of the study to rate the lab space. Participants randomly assigned to the low-misattribution condition did not receive the letter and went directly from the pretest measures to the performance frame manipulation.

**The test frame manipulation.** To manipulate the framing of the athletic test, participants were handed a booklet that described the golf test in the same way it was presented in Experiment 1. Participants randomly assigned to the high threat condition read that the test was designed to measure personal factors correlated with natural athletic ability (defined as hand-eye coordination). Participants randomly assigned to the low threat condition read that the test was designed to measure psychological factors that correlated with general sports performance. After the participants read the handout, the experimenter asked them if they understood the purpose and nature of the task and then concluded with the statement, "You are encouraged to give 100% effort on the test in order to accurately measure

<sup>2</sup> Previous reviewers of this article who identified themselves as non-golfers questioned whether playing golf one day per week can create strong skills in the game of golf. As nonskilled golfers, we reasoned that it would not—playing less than one round of 18 holes per week is just enough golf to alert one to his or her poor skills. Nevertheless, we acknowledge that the amount of skill or experience with a sport could be an important factor to examine in future research on the effects of stereotype threat in a sports domain.



your natural athletic ability ([or in the control condition] 'the psychological factors that correlate with general sports performance')."

After the first experimenter answered the participants' questions, he led them into another room of the lab and introduced the second experimenter (a White male who was blind to all levels of the experimental variables). The first experimenter explained that the second experimenter would lead them through the test, and then he left participants alone with the second experimenter.

*The golf test.* The golf test and instructions were similar to those used in Experiment 1 with the exception that the test was shortened from 10 to 8 holes.<sup>3</sup> In addition, to reduce interaction between the second experimenter and the participants, the second experimenter introduced the golf test by explaining to participants that it was necessary to minimize talking to maximize their concentration during the test. To allow them to record their expectancies in private, the experimenter gave participants a clipboard with a "prediction sheet" which contained the following instructions: "Before each phase, indicate the number of strokes and the hole that you expect to score on each new phase. Please remember to write down your expected scores prior to beginning each new phase." Participants were instructed to place the clipboard upside down on a chair at their end of the carpet so the experimenter could not view their predictions. Once the second experimenter was sure participants understood the task, he conducted the test using the same procedures as those described in Experiment 1.

*Postperformance measures.* Following the completion of the golf test, the second experimenter led participants back to the first experimenter. The first experimenter then asked participants to complete the posttest measurement packet, which consisted of the alternative form B of the STAI A-state scale and six additional anxiety items taken from the somatic A-state subscale of the Competitive State Anxiety Inventory-2 (CSAI; see Martens, Burton, Vealey, Bump, & Smith, 1990). Examples of the CSAI items included "My hands are clammy" and "My body feels tight," and these items were answered on a 4-point scale ranging from *not at all* (1) to *very much so* (4). Next in the packet was the Self-Attributes Questionnaire (Pelham & Swann, 1989) and the same version of the ADS used in the pretest. The final page of the posttest packet held the same questions asked at the completion of Experiment 1 about participants' perceptions of the golf test (e.g., perceptions of bias against their natural athletic ability) and their effort during the test.

Following the posttest material, the experimenter announced that the psychology department wanted feedback concerning the new lab space. He then gave participants a short questionnaire, ostensibly from the psychology department, on which they rated the overall impact of the lighting, temperature, and noise level of the lab on their performance using a 9-point scale ranging from *no impact* (1) to *extreme impact* (9). After participants completed these measures, the first experimenter announced that the study was completed and conducted a thorough debriefing.

## Results

*Misattribution manipulation.* To examine the impact of the misattribution manipulation, participants' ratings of how much impact the lights, temperature, and noise had on their performance were averaged to form one overall measure of misattribution ( $\alpha = .87$ ). A 2 (athletic disengagement: high or low)  $\times$  2 (test frame: high or low threat)  $\times$  2 (misattribution: high or low) ANOVA revealed only a significant main effect for the misattribution manipulation,  $F(1, 86) = 8.62, p < .005$ . Participants in the high-misattribution condition perceived that the lab had significantly less impact on their performance ( $M = 3.14$ ) relative to the impact reported by participants in the low-misattribution condition ( $M = 4.34$ ). This suggests that participants who were told that the lab space might cause them to experience anxiety, and that they would be asked to report its effect on them, appeared to monitor

Table 2

*Effects of Psychological Disengagement, the Test Frame, and Misattribution Cue Manipulation on Performance and Performance Expectancies in Experiment 2*

Misattribution and variable	Psychological disengagement and test frame manipulation			
	Engaged participants		Disengaged participants	
	High threat	Low threat	High threat	Low threat
Low misattribution				
Strokes	28.2	21.4	21.8	23.5
Expectancies	25.3	20.4	18.0	21.0
High misattribution				
Strokes	22.0	24.8	19.5	20.7
Expectancies	22.9	23.5	22.6	20.2

the effect of the lab but to report that it did not have much impact on them during their participation in the experiment.

*Test performance.* The number of strokes required to finish the course was submitted to a 2 (athletic disengagement: high or low)  $\times$  2 (test frame: high or low threat)  $\times$  2 (misattribution: high or low) ANOVA. The analysis revealed a significant main effect for athletic disengagement,  $F(1, 86) = 5.02, p < .02$ , and a significant Test Frame  $\times$  Misattribution interaction,  $F(1, 86) = 6.03, p < .02$ , both of which were qualified by the predicted three-way interaction between athletic disengagement, test frame, and misattribution manipulation,  $F(1, 86) = 4.27, p < .04$ . As seen in Table 2, the interaction between the stereotype threat and misattribution manipulations on performance was significant among athletically engaged participants, simple interaction  $F(1, 86) = 10.69, p < .001$ . A planned contrast revealed that as predicted, in the absence of the misattribution cue, athletically engaged participants performed significantly worse on the golf test when it was framed as a measure of natural athletic ability ( $M = 28.20$ ) compared with engaged participants in the high-threat/high-misattribution condition ( $M = 22.0$ ), engaged participants in the low-threat/low-misattribution condition ( $M = 21.40$ ), and engaged participants in the low-threat/high-misattribution condition ( $M = 24.80$ ),  $F(1, 86) = 11.50, p < .001$ . Whereas the somewhat poor performance in this latter condition was unexpected, a planned contrast among the control groups revealed no significant differences, and evidence presented below suggests that the performance by engaged participants in the low-threat/high-misattribution condition was not a function of stereotype threat processes.

Also as predicted, athletically disengaged participants performed relatively well on the golf test regardless of the testing conditions (simple interaction  $F < 1$ ). In addition, a planned comparison showed that athletically disengaged participants performed better than did athletically engaged participants when stereotype threat was high (i.e., those in the high-threat/low-

<sup>3</sup> The course was shortened from 10 to 8 holes so that participants could complete the additional questionnaires and finish their participation within a 1-hr block of time.

misattribution condition,  $M = 21.80$ , Tukey HSD = 4.39,  $p < .05$ ). Thus, as predicted, the White athletes most negatively affected by the threat of confirming a negative stereotype about their natural athletic ability were those whose self-worth was contingent upon the outcome of their athletic performance. Also, the experimental factors in this test had no significant effects on the measure of accuracy.

**Anxiety.** Forms A and B of the STAI were analyzed as repeated measures in a 2 (pre- to posttest)  $\times$  2 (disengagement)  $\times$  2 (test frame)  $\times$  2 (misattribution) mixed ANOVA. The analysis revealed a significant main effect only for the repeated variable,  $F(1, 86) = 5.38$ ,  $p < .03$ ; the means indicated a significant increase in anxiety from pre- to posttest across all of the conditions. There were no effects for the experimental factors on the CSAI. Thus, as in Experiment 1, we did not find evidence that anxiety mediated performance when stereotype threat was salient in a sports performance context.

**Expectancies.** The number of strokes that participants expected to need to complete the course were summed and subjected to an Athletic Disengagement  $\times$  Test Frame  $\times$  Misattribution ANOVA, which revealed a significant main effect for athletic disengagement,  $F(1, 86) = 4.30$ ,  $p < .04$ , and a significant three-way interaction between the experimental variables,  $F(1, 86) = 4.90$ ,  $p < .03$ . As seen in Table 2, the pattern of this interaction closely paralleled that of the performance data, but among the engaged participants, a test of the simple interaction between the test frame and the misattribution manipulation was not significant,  $F(1, 86) = 2.95$ ,  $p < .08$ . Nevertheless, a significant moderate correlation between performance and expectancies ( $r = .40$ ,  $p < .0001$ ) across all of the experimental conditions indicated a potential mediational relationship between expectancies and performance during the task.<sup>4</sup>

**Psychological disengagement processes.** Each rating dimension in the Personal Attributes Questionnaire (PAQ) was analyzed in a mixed-model ANOVA that used the measurement trial (pre- vs. posttest) and the type of rating made (self-descriptiveness, self-certainty, self-importance, and ideal-self match) as repeated measures, and the disengagement, test frame and misattribution factors as between-subjects variables. The analysis revealed no effect from pre- to posttest, indicating that self-ratings were unaffected by the experimental manipulations. There was, however, an interaction between the type of attributes rated and the disengagement variable,  $F(3, 81) = 3.61$ ,  $p < .01$ . The means revealed that engaged participants rated athleticism as more important to their self-concept ( $M = 7.10$ ) than did disengaged participants ( $M = 6.00$ ) at the pretest (Tukey HSD  $> 2.81$ ,  $p < .05$ ), but the differences were less at the posttest ( $M_s = 7.06$  and  $6.45$ , respectively, Tukey HSD  $< 2.81$ , *ns*). Post hoc comparisons showed that none of the other ratings between the groups at pre- or posttest were significant. These data suggest that whereas the induction of stereotype threat did not influence self-ratings directly, the tendency to disengage one's self-worth from the effects of test performance may be a function of how important that domain is to one's perceptions of self-worth. Indeed, the correlation between pretest levels of psychological disengagement and the perceived importance of athleticism for self-worth was moderate and significant across the sample ( $r = -.41$ ,  $p < .0001$ ).

A similar mixed-ANOVA analysis of the ADS revealed only an expected main effect for a priori level of disengagement,  $F(1,$

$86) = 34.14$ ,  $p < .0001$ , showing that participants classified as high in disengagement ( $M = 4.39$ ) were still significantly more disengaged following the golf test compared with participants classified a priori as engaged ( $M = 3.43$ ).

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<sup>4</sup>One problem, however, with drawing strong conclusions about a mediational relationship between performance and expectancies in this case is the potential reciprocal relationship between the two variables. Specifically, since expectancies were measured prior to performance on each hole during the test, it is possible that expectancies guided performance, but it is also conceivable that prior performance on each hole influenced the expectancies formed for each subsequent hole. Thus, the relationship between the two variables could be reciprocal.

To begin to test the direction of the mediational effect, we first used a hierarchical procedure to regress performance onto the main effects and all higher order interaction terms. The results paralleled the results of the ANOVA, showing that with the other effects accounted for in the equation, the Threat  $\times$  Misattribution interaction term accounted for a significant proportion of the variance in performance ( $\beta = 0.75$ ,  $p < .002$ ), as did the three-way interaction between the disengagement, threat, and misattribution manipulations ( $\beta = -0.48$ ,  $p < .04$ ). Third, when performance expectancies were regressed onto the experimental variables, the three-way interaction between the experimental variables was also significant ( $\beta = -0.56$ ,  $p < .03$ ).

We next examined whether controlling for expectancies would reduce the variance accounted for by the predicted interaction between the experimental variables on the performance measure. When performance expectancies were accounted for prior to accounting for the main effects and interaction terms in the equation, the three-way interaction term predicted less variability in performance ( $\beta = -0.30$ ,  $p < .21$ ). However, the Threat  $\times$  Misattribution interaction term still accounted for significant variability in performance ( $\beta = 0.61$ ,  $p < .01$ ). Thus, the data suggest that among White athletes, the moderating effect of chronic athletic disengagement on performance under conditions of stereotype threat may in part be a function of the expectations for performance formed during the athletic task.

One simple way to test for reciprocation is to reverse the mediational regression equation—in this case, hold performance constant and then examine the variance accounted for in expectancies by the experimental factors. This analysis showed that the amount of variance accounted for in the expectancy measure by the three-way interaction between the experimental factors was reduced when performance was held constant ( $\beta = -0.38$ ,  $p < .12$ ). Thus, expectancies and performance appear to have influenced each other to a significant degree, but the causal direction of this relationship cannot be determined by multiple regression analysis (e.g., Baron & Kenny, 1986).

Another way to examine the relationship between expectancies and performance is to analyze predictions and performance on the first few holes of the golf course. If, for example, the stereotype threat frame lowered expectancies prior to performance on the test, we should find that participants lowered their predictions prior to performance on the first hole. Alternatively, if the frame first caused a poor performance that influenced subsequent expectancies, then we should find that expectancies were lower on the second than on the first hole. Separate ANOVAs on the measures of expectancies and performance for the first and second hole of the course revealed no significant effects for the experimental factors on expectancies for the first hole but revealed a significant three-way interaction on performance for the first hole,  $F(1, 86) = 4.46$ ,  $p < .04$ , a marginal three-way interaction for expectancies on the second hole,  $F(1, 86) = 3.55$ ,  $p < .06$ , and a significant three-way interaction for performance on the second hole,  $F(1, 86) = 3.86$ ,  $p < .05$ . The means indicate that whereas all participants reported similar expectancies for performance on the first hole (it should be noted that they did practice three times on the first hole), performance on

*Discounting processes.* Finally, a three-way ANOVA on the posttest measure of how biased the test was against the participants' natural athletic ability revealed a significant Disengagement  $\times$  Misattribution interaction,  $F(1, 86) = 4.24, p < .04$ . The means indicated that disengaged participants thought the task was more biased against their natural athletic ability when the misattribution cue was not present ( $M = 4.09$ ) compared with when it was present ( $M = 2.79, p < .05$ ), whereas engaged participants thought the task was more biased against their natural athletic ability when the misattribution cue was made salient ( $M = 3.26$ ) compared with when it was not ( $M = 2.88$ ). These differences were not significant, however, on the basis of post hoc comparisons. A similar analysis of perceptions of the test's bias against their ability to think strategically revealed a significant Test Frame  $\times$  Misattribution interaction,  $F(1, 86) = 5.46, p < .02$ . Post hoc comparisons showed that participants in the low-threat condition found the test to be more biased against their ability to think strategically ( $M = 3.87$ ) when the misattribution cue was absent compared with when the misattribution cue was present ( $M = 2.33$ ), Tukey HSD = 3.70,  $p < .05$ . Perceptions of bias among participants in the high-threat condition in the presence ( $M = 2.61$ ) and absence ( $M = 2.58$ ) of the misattribution cue fell between the low-threat groups. There were no differences between

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the first hole was lowest for engaged participants in the natural athletic ability condition for whom the misattribution cue was not salient ( $M = 3.36$ ) compared with participants in the other experimental groups (overall  $M = 2.45$ , range = 1.83–2.90). The pattern was similar for the expectancies and performance on the second hole. On the basis of this analysis, it appears that the most likely account of the relationship between expectancies and performance is that performance on the first hole influenced participants' expectations and performance on the subsequent holes.

Nevertheless, a potentially important insight into this relationship is revealed by the within-cell correlations between performance and expectancies. The data show that overall, engaged participants reported a significant positive correlation between their expectancies and performance ( $r = .44, p < .002$ ), whereas the relationship for disengaged participants was not significant ( $r = .24, p < .11$ ). This suggests that engaged participants may have been trying harder to use their previous performance to predict the next. However, among the engaged participants, the correlation between expectancies and performance was moderately positive in all of the experimental conditions except for one: the condition in which stereotype threat had its greatest impact on performance (i.e., among engaged participants in the high-threat/no-misattribution condition,  $r = .14$ ). This finding suggests that in the control conditions, engaged participants were using prior performance to predict subsequent performance on each hole of the course, but that when stereotype threat was most virulent, participants were not able to use prior performance to predict their subsequent performance accurately. Even participants in the low-threat/high-misattribution condition who performed almost as poorly as those in the high-stereotype-threat condition were able to predict their performance more accurately ( $r = .50, p < .13$ ), which suggests that their poor performance was not a function of the same processes that reduced performance among participants for whom stereotype threat was the strongest. Although it is difficult to pinpoint the exact nature of the processes contributing to these differences, the within-cell correlations suggest that, among engaged participants for whom performance on the golf task represented an important measure of their self-worth, expectancies and performance were influencing each other, except at times when stereotype threat was operating at full strength in the situation.

the experimental conditions on the ratings of how much mental and physical effort was exerted during the test.

### Discussion

The data from Experiment 2 extended our knowledge of stereotype threat as it applies to the performance domain of athletics. First, we established the reliability of the performance differences observed in Experiment 1 for White participants when their athletic performance was framed as diagnostic of natural athletic ability compared with when their athletic performance was framed as diagnostic of a nonstereotype-relevant dimension. This supports the claim that poor natural athletic ability is a negative stereotype held about White athletes (e.g., Stone, Perry, & Darley, 1997), and it supports our hypothesis that the negative stereotype about White athletes has the potential to influence their athletic achievement when made salient in the context of a sports performance. The data indicate that White athletes themselves are aware of the stereotype about their athletic deficiencies and that this cultural belief, when made salient as a criterion for evaluation, negatively affects their performance.

In addition, Experiment 2 extended our understanding of the role of psychological disengagement in performance when people feel the threat of confirming a negative athletic stereotype about their racial group. According to the theory of stereotype threat (Steele, 1997), making salient a negative stereotype about one's racial identity prior to task performance is most likely to have a negative influence on those for whom the task represents a significant measure of their self-worth (see also Crocker & Major, 1989). The present data support this assumption, as performance decrements occurred more for White participants whose self-worth was contingent on the outcome of their athletic performance, measured in this case as a chronic tendency to psychologically engage one's self-worth toward performance in athletics (e.g., Major et al., 1998). White participants for whom athletic performance was rated as irrelevant to their self-worth were unaffected by the framing or misattribution manipulations. Thus, White participants in sports whose self-worth is not contingent on their athletic achievement do not appear to suffer when the negative stereotype about their natural athletic ability is brought to mind in a sports context.

The data from Experiment 2 also showed that there are factors that can be introduced into the performance situation that may help athletes overcome the debilitating effects of stereotype threat. As predicted, the salience of the negative stereotype about White athletes had less negative impact on athletic performance when a situational cue was available to explain performance anxiety. Whereas the effect of the misattribution cue was not mediated by the amount of anxiety participants reported before and after performance, there was evidence that the misattribution cue (the lab space) caused less discomfort among participants for whom the cue was salient. This implies that, rather than decreasing anxiety per se as would be predicted by a misattribution interpretation, the misattribution cue may simply have distracted participants from the stereotype made salient by the natural athletic ability test frame. Thus, participants in the high-misattribution conditions reported that the lab space was less bothersome relative to low-misattribution participants—indicating that they were monitoring the lab's effects on them—and, because they were paying attention

to the lab space and not to the possibility of confirming the negative stereotype, engaged participants in the high-misattribution/high-threat condition were able to perform better than were engaged participants in the high-threat condition for whom the misattribution cue was not salient. This suggests that anything that can distract targets from thinking about a negative stereotype about their group identity in a testing situation may circumvent the stereotype threat processes that interfere with effective test performance.

### General Discussion

The goal of this research was to investigate how the salience of racial stereotypes about athletes influence Black and White participants' performance on a sports-oriented task. The results of both experiments provided evidence to suggest that making salient negative racial stereotypes about Black and White athletes has the potential to cause poorer athletic performance in these groups relative to when they perform an athletic task in a positive or neutral evaluative context. The current findings shed new light on the phenomenon of stereotype threat (Steele, 1997; Steele & Aronson, 1995) and add to our understanding of the social psychological factors that influence motivation and performance.

The present evidence for stereotype threat among White participants extends the theory and research on stereotype threat by documenting that majority group members may suffer from the negative effect of being stereotyped according to their racial identity. Overall, the data are consistent with our claim that when made salient, natural athletic ability activates a culturally shared negative stereotype about White athletes. Knowledge of the negative beliefs about their natural athletic ability, in turn, creates threat in the mind of the White athlete for whom performance represents an important measure of their self-worth. The threat of demonstrating poor athletic ability, through mechanisms discussed below, subsequently impedes the athletic performance of Whites. These findings further support Steele's (1997) contention that stereotype threat is a general psychological phenomenon that could have a negative impact on the performance and self-evaluation of any group member, including traditionally nonstigmatized individuals such as White college students (cf. Aronson et al., 1999; Croizet & Claire, 1998).

The data from Experiment 1 indicate that negative racial stereotypes about Black athletes can have similar adverse consequences. The negative stereotype about the innate intelligence of Blacks appears to permeate even a domain such as sports in which Blacks are successful at the collegiate and professional level. The belief that Blacks are naturally gifted but unintelligent athletes may reflect the general cultural stereotype about the innate intelligence of Blacks (Steele, 1997), or it may stem from racist needs to derogate Blacks because of their success in athletics (Davis, 1990; Harris, 1993). Whatever its origin, it too appears to represent a culturally shared belief that is known to Blacks who participate in sports. And, just as making a connection between race and intelligence has been shown to decrease performance in the domain of academics (e.g., Steele & Aronson, 1995), when made salient in a sports performance context, the negative stereotype about the intelligence of Black athletes can impede their performance in sports. One implication of this finding is that the psychological processes engaged by stereotype threat for some target

groups (e.g., Blacks, women) in one context may operate in another context, if cues that activate the same stereotyped dimension (i.e., intelligence, math ability) are made salient prior to performance on a task. The conditions under which targets generalize stereotype threat processes across performance domains are an important direction for future research.

### *How Does Stereotype Threat Impede Athletic Performance?*

Several potential mediators of how stereotype threat interferes with effective athletic performance were measured in the current experiments. The overall picture sketched by the findings is somewhat complex; it appears that the battle to reduce stereotype threat impedes athletic performance in part because concern about confirming the stereotype increases anxiety and in part because it creates self-doubt about the ability to perform. The threat of confirming a negative stereotype about one's athletic potential appears to set into motion a sequence of psychological processes that ultimately inhibit the ability to perform up to one's capacity.

There was some evidence that after a negative stereotype about one's race was made salient in the performance context, people for whom the stereotype represented a significant threat to their self-worth experienced concern that they might confirm the stereotype's veracity through their own performance. For example, in Experiment 1, Black participants in the sports intelligence condition and White participants in the natural athletic ability condition both reported increased anxiety from pre- to posttest, but participants in the control conditions showed either decreases or very little change in anxiety from pre- to posttest. Whereas the self-report measures did not correlate significantly with performance in these conditions, the effect of the misattribution cue on performance in Experiment 2 suggests that if the situation can provide a diversion from this concern, individuals under threat of confirming a negative stereotype are able to perform at the same level as those who do not perceive stereotype threat. Performance anxiety appears to be part of the experience of stereotype threat, and whereas we did not find direct evidence of mediation, it may indirectly contribute to the poor performances shown to follow from the salience of a negative stereotype (e.g., Steele & Aronson, 1995; Spencer et al., 1999).

The data suggest that concern over confirming the stereotype may also lead targets to lower their expectations for performance in the situation. Those participants most threatened by the negative athletic stereotype in Experiment 2 reported lower expectations for performance compared with those participants not threatened by the stereotype (e.g., disengaged participants or participants threatened by the stereotype but for whom the misattribution cue was salient). However, inspection of the relationship between performance and expectancies on each hole (see Footnote 4) indicated that participants may have lowered their expectations in reaction to their initial poor performance on the first hole of the course. We also did not find self-report evidence that engaged participants reduced their effort on the task when stereotype threat was salient. This suggests that targets do not necessarily lower their expectations once the negative stereotype is salient, but rather, they may lower expectations following the first indication that their performance might confirm the veracity of the negative stereotype. Thus, lowered expectations may have contributed to the poor perfor-

mance by those most affected by stereotype threat, but in the current data, threatened participants did not lower their expectations until after they had initially performed poorly. Given the interplay between expectancies and performance under stereotype threat in the current research, it is clear that more research is needed to better understand the role played by expectancies in stereotype threat phenomena.

In summary, the current data suggest that stereotype threat impedes performance, because the threat of confirming a negative stereotype about one's racial identity creates anxiety and self-doubt in the target individual. When a negative stereotype is salient in a performance domain, such as when taking an advanced academic exam or performing in a sports event, the "suspicion of inability," which raises doubt about the ability to perform, and the concomitant frustration or anxiety about the predicament may combine to overcome the capacity to perform effectively. Factors that reduce the impact of the threat, such as the importance of the performance to one's self-worth, or factors that reduce the effects of anxiety and self-doubt directly, such as something in the context that can refocus them on the task, may hold these processes in check and allow the targets of stereotype threat to perform up to their potential.

#### *Coping With Stereotype Threat in Sports*

Both experiments provided evidence that psychological disengagement and disengagement processes play a role in how individuals attempt to cope with stereotype threat (e.g., Major & Schmader, 1998). In Experiment 1, after they had completed the golf test that was framed as diagnostic of natural athletic ability, White participants rated the test as significantly more biased against their natural athletic ability than did participants in the other conditions. Challenging the validity of the test in this way suggests that White athletes were attempting to discount their performance as diagnostic of their perceived athletic ability. Black participants, however, did not similarly discount the validity of the test when it was framed as a measure of their sports intelligence. We cannot offer a definitive explanation for this group difference based on the present research, but one possibility is that the race of the experimenter may have played a role. As Steele and Aronson (1995) showed, subtle indicators of the link between performance and a negative social identity are capable of engaging stereotype threat processes. If the race or gender of an evaluator can serve as a cue for bias in a testing situation, then it is possible that the Black experimenter in Experiment 1 served as such a cue for White participants, but not for Black participants, to challenge the validity of the test. We note further that in Experiment 2, White participants did not discount their performance when the test was framed as a measure of natural athletic ability, but the experimenter was also White. If the race of the experimenter did play a role, it might indicate that subtle contextual cues are not only capable of signaling the threat of verifying a negative stereotype about one's social group, but they may also be capable of cueing the use of specific strategies for coping in response to the perceived threat.

In Experiment 2, the chronic tendency to disengage one's self-worth from the outcome of an athletic performance significantly moderated the relationship between stereotype threat and performance in the athletic performance test. However, it is difficult to

know what the effect for chronic disengagement indicates about the psychological coping mechanisms that promoted a good performance on the test. We measured several variables to provide some indication, and the only variable that correlated significantly with the measure of disengagement was the measure of the importance performance in sports had for their sense of self-worth. Disengaged participants' ratings of athletics as less important to their self-worth could suggest that they identified less with the domain of athletics compared with engaged participants, and therefore, cared less about performing well on the golf test. We doubt this interpretation, however, because disengaged participants rated themselves to be above average athletes both before and after their performance. In addition, they performed relatively well on the golf test in each of the experimental conditions, which indicates that they were not coping with stereotype threat by withdrawing interest or effort during their performance.

The data are more compatible with a "devaluing" process whereby people reduce the importance of performance in a domain to maintain perceptions of global self-worth (e.g., Major & Schmader, 1998; see also James, 1890/1952; Tesser, 1988). With respect to athletics, chronically disengaged sports participants may represent people who participate in organized sports and consider themselves to be athletic but who do not rely on their performance in sports as a basis for evaluating their overall self-worth. Consequently, when faced with the salience of the negative stereotype about White athletes, it did not impair their performance because confirming the negative characterization was not perceived as a threat to their global self-esteem. Chronically engaged sports participants, in contrast, not only may identify themselves as athletic but also may rely on their performance in sports for their perceptions of overall self-worth. As a result, the potential for a poor performance was perceived as a threat to their global self-worth, and their concern interfered with their ability to perform. A direction for future research is to investigate how people who are disengaged from a performance outcome, but who identify with the domain, perceive and respond to the threat of confirming a negative stereotype about a social identity.

#### *Conclusions*

The present research showed that the salience of stereotype threat in the context of an athletic performance can adversely affect the performance of both Black and White individuals who play sports. Referring back to Allport's (1954) observations, we find that the current data support his assumption that once targets become aware that they are being evaluated in terms of a negative stereotype, they become intensely concerned about being labeled and treated in terms of the negative characterization. The concern they feel appears to overwhelm their ability to think and perform as well as they do when a negative stereotype is not made salient in the situation. Thus, the challenge to the self imposed by the salience of a negative stereotype about an important social identity appears to consume the very resources that targets require to overcome the threat.

The specific conditions of stereotype threat that lead to poorer athletic performance, however, are different for various groups. For example, Blacks suffer when the stereotype concerning their supposed poor sports intelligence is made salient, whereas Whites suffer when the stereotype concerning their supposed poor natural

athletic ability is made salient. The problems that follow from stereotype threat salience appear to occur primarily among individuals for whom sports performance is important to their sense of self-worth. It also appears that contextual factors, such as the way in which performance is framed and cues that distract people from thinking about the negative stereotype, can reduce the harmful impact of a salient negative stereotype. The current data suggest that stereotype threat processes stem from the context in which targets perform, and the implication is that changes in the performance context can reduce the negative impact that stereotypes can have when they are brought to mind (e.g., Crocker, 1999; Steele, 1997).

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