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The effects of stereotypes and observer-pressure on athletic performance

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### Abstract

Although the effects of negative stereotypes and observer pressure on athletic performance have been well researched, the effects of positive stereotypes on performance, particularly in the presence of observers, is not known. In the current study, White males watched a video either depicting Whites basketball players as the best free throwers in the NBA (positive stereotype), Black basketball players as the best free throwers in the NBA (negative stereotype), or a neutral sports video (control). Participants then shot a set of free throws, during which half the participants were also videotaped (observer condition), whereas the other half were not (no observer condition). Results demonstrated that positive stereotypes improved free throw performance, but only in the no observer condition. Interestingly, observer pressure interacted with the positive stereotype to lead to performance decrements. In the negative stereotype condition, performance decrements were observed both in the observer and no observer conditions.

*Keywords:* stereotype threat, stereotype boost, athletic performance, observer pressure, choking under pressure

The effects of stereotypes and observer-pressure on athletic performance

The factors that affect performance decrements in athletics have been widely studied (Baumeister & Steinhilber, 1984; Butler & Baumeister, 1998; Gucciardi, Longbottom, Jackson, & Dimmock, 2010; Otten, 2009; Schlenker, Phillips, Boniecki, & Schlenker, 1995; Wallace, Baumeister, & Vohs, 2005). An emerging body of research has drawn important parallels between academic and athletic performance, particularly the effects that stereotypes may have on both. Research examining the effects of stereotypes on academic performance has been the most widely studied, and suggests that although negative stereotypes impair performance (for review, see Schmader, Johns, & Forbes, 2008; see also Steele & Aronson, 1995; Spencer, Steele, & Quinn, 1999), positive stereotypes may boost performance (Mendoza-Denton, Kahn, Chan, 2008; Shih, Ambady, Richeson, Fujita, & Gray, 2002), but see (Cheryan & Bodenhausen, 2000). Research on the effects of stereotypes on athletic performance, however, has focused primarily on the effects of negative stereotypes on performance (for review, see Beilock & McConnell, 2004; also Beilock, Jellison, Rydell, McConnell, & Carr, 2006; Chalabaev, Sarrazoin, Stone, & Cury, 2008; Chalabaev, Stone, Sarrazin, Croizet, 2008; Stone & McWhinnie, 2008). It therefore remains an open question as to what effect, if any, positive stereotypes might have on athletic performance. Specifically, do positive stereotypes boost athletic performance?

One key difference between the effect of stereotypes on athletic and academic performance are the mechanisms that underlie them (e.g., Beilock et al., 2006). Research on these mechanisms suggests that negative stereotypes impair academic performance by reducing available working memory capacity (an internal process; e.g., Schmader, Johns,

& Forbes, 2008), whereas they impair athletic performance by heightening awareness of external procedures related to the task (Baumeister & Showers, 1986; Beilock, Jellison, Rydell, McConnell, Carr, 2006). As a result, athletic performance may be particularly susceptible to the presence of additional external factors such as observer pressure, which also impairs athletic performance by heightening awareness to external procedures (Baumeister & Steinhilber, 1984; Baumeister, Hamilton, & Tice, 1985; Butler & Baumeister, 1998). The current study therefore contrasts the effect of positive and negative stereotypes on athletic performance in the presence or absence of observer pressure.

#### *Impact of negative stereotypes on performance*

Emerging research in sports psychology has demonstrated that negative stereotypes may impair athletic performance (for review, see Beilock & McConnell, 2004). For instance, in one of the first studies examining whether negative stereotypes affect sports performance, Stone and colleagues (1999) had both Whites and Blacks perform a golf putting task that was either framed as a test of “sports intelligence” or as a test of “natural athletic ability.” The authors found that Black golfers underperformed when the task was framed as a measure of sports intelligence (which is a trait that the authors argue is stereotypically associated with White, not Black, athletes), whereas White golfers underperformed when the task was framed as a measure of natural athletic ability (a trait that is stereotypically associated with Black, not White, athletes).

In another study, Beilock and colleagues (2006) asked expert male golfers to perform a series of putts before and after receiving either a negative stereotype related to

their putting performance (“men are poorer putters than women”) or receiving control information (“putting performance differs as a function of skill level”). The authors found that expert golfers in the threat condition performed significantly worse on the putting task after the negative stereotype was introduced as compared to expert golfers in the control condition. It is interesting to note that these effects are not limited to expert players. Indeed, Stone and McWhinnie (2008) found that female novice golfers underperformed on a golf putting task when the task was described as a measure of natural athletic ability that had been shown to produce gender differences.

Finally, Chalabaev and colleagues (2008) measured female soccer player’s dribbling ability in a task that was described as being diagnostic of athletic or technical soccer ability. The authors found that women performed significantly worse on the dribbling task in the athletic ability condition (as compared to a neutral control condition). The authors argued that the women in this study (who were French) showed decrements in the athletic ability condition because of strong stereotypes that exist through Europe that soccer is predominantly a male sport, and therefore men are believed to be better suited to excel in the sport than women.

#### *Impact of positive stereotypes on performance*

Just as negative stereotypes may have a negative impact on performance, a wealth of research suggests that positive stereotypes may have a positive impact on performance (e.g., Mendoza-Denton, Kahn, & Chan, 2008; Shih, Ambady, Richeson, Fujita, & Gray, 2002). For instance, in an intriguing study by Shih and colleagues (1999), Asian women were asked to perform a difficult math test when either their ethnicity (Asian) or gender

(female) was primed. These two identities were selected because although Asian individuals are stereotypically viewed as being better at math than White individuals, women are stereotypically viewed as being worse at math as compared to men. The authors found that participants who were primed with their Asian identity performed better on the math test following the prime, but they performed worse when they were primed with their gender identity. Conversely, Cheryan and Bodenhausen (2000) demonstrated that positive stereotypes actually impaired math performance. Specifically, the authors found that when Asian participants were reminded of their identity prior to completing a difficult math test, they underperformed. One potential explanation for these conflicting findings may be that they activated positive stereotypes differently – the former activated identity through a subtle manipulation, whereas the latter activated it through a blatant manipulation. In the latter case, the authors argued that making participants' ethnic identity salient through the blatant manipulation overwhelmed them with the pressure to conform to the expectation that they would excel on the math task (because they were Asian), and they subsequently choked.

Another important consideration when examining the effects of positive stereotypes on performance is that positive stereotypes may improve performance through two disparate mechanisms: stereotype lift and stereotype susceptibility. Stereotype lift occurs when a negative stereotype about an out-group is salient (e.g., Chalabaev et al., 2008; Walton & Cohen, 2003). Stereotype susceptibility, however, is a performance boost that occurs when a positive ingroup stereotype is made salient (Shih et al., 1999; Walton & Cohe, 2003). Although both processes ultimately cause overall

improvements in performance, they may occur through different mechanisms, thereby leading to different outcomes in unique situations.

For instance, Chalabaev and colleagues (2008) used a stereotype lift approach to determine whether positive stereotypes improve athletic performance. In their task, both men and women performed a balancing task after each group was informed that the opposite sex group typically underperformed on this task. The authors found that both men and women performed better on the task when they believed that the opposite sex group traditionally underperformed on the task as compared to a control condition.

Although the results from this study suggest that stereotype lift may improve athletic performance, it remains an open question whether stereotype susceptibility will have the same effect. The current study therefore examined whether stereotype susceptibility improves athletic performance.

#### *Impact of observers on athletic performance*

An additional consideration that has been largely overlooked in research on the effects of stereotypes on athletic performance is whether observer pressure interacts with stereotypes to affect performance. The role of observer pressure in athletic performance is relevant because observer pressure may impair athletic performance through similar mechanisms as those impaired by stereotype threat (Baumeister & Showers, 1986; Beilock, Jellison, Rydell, McConnell, Carr, 2006). Indeed, observer pressure in and of itself has been shown to impair athletic performance (Baumeister & Steinhilber, 1984; Butler & Baumeister, 1998). How does this happen? Consider the following example: When a professional golfer is trying to sink a putt, he needs to focus on the slope of the

green, the grain, and whether there is any wind that may affect his shot (all of which are unpredictable). Weighing these multiple factors is attention-demanding, and the golfer therefore does not also have the attentional resources to devote to his stance or his grip. Thus, by extensively practicing (and thereby automatizing) the latter aspects of his putt, he can devote his full attention to the unpredictable factors facing him on each green. Observer pressure may cause athletes to over-attend to these motor skills that should be automatized (e.g., stance and grip), thereby limiting the attentional resources they can devote to the unpredictable factors (e.g., slope of the green and grain) and thus resulting in a sub-par performance (Baumeister & Steinhilber, 1984; Beilock & Carr, 2001; Beilock & McConnell, 2004; Cheryan & Bodenhausen, 2000; Lewis & Linder, 1997; Wallace, Baumeister, & Vohs, 2005).

In the current study, we sought to examine whether positive stereotypes related to sports performance (free throw ability) could improve athletic performance on a related task. Further, we investigated whether these positive stereotypes continued to boost performance when observer pressure was introduced. In other words, will participants still show a performance boost in the presence of observers?

Our measure of athletic performance in this task was free throw ability, which we selected for several reasons. First, free throws are a reliable measure of athletic ability in which a variety of people can participate in a controlled manner with minimal fatigue or discomfort (e.g., Otten, 2009). Secondly, free throws are an essential part of basketball, a sport with established stereotypes for both White players and Black players alike. Specifically, although Black individuals are stereotyped as having better athletic ability, White players are stereotyped as having greater sports intelligence (e.g., Stone, Lynch,

Sjomeling, & Darley, 1999; Stone, Perry, & Darley, 1997). Due to the nature of free throws, they can be convincingly framed as measures of athletic ability or sports intelligence, and therefore are easily manipulated in a laboratory setting.

We manipulated observer presence using videotaping. Being videotaped has been shown to induce self-awareness, pressure, and subsequent choking in athletic tasks (Baumeister & Showers, 1986; Gucciardi, Longbottom, Jackson, & Dimmock, 2010; Lewis & Linder, 1997), and is an easily controlled observer manipulation. We anticipated that, in the absence of observers (not being videotaped), positive stereotypes would improve free throw performance, whereas negative stereotypes would impair performance (consistent with previous research on stereotype susceptibility and stereotype threat, respectively).

In the presence of observers, however, we anticipated that free throw ability would be disrupted, but only in the positive stereotype condition. Previous research suggests that the reason observer presence impairs performance is that their presence overwhelms their targets with the pressure to succeed, ironically causing the targets to fail (Baumeister & Steinhilber, 1984; Cheryan & Bodenhausen, 2000; Wallace, Baumeister, & Vohs, 2005). Thus, stereotypes likely only interact with observer pressure to impair performance when they are positive. Simply put, when individuals are presented with a positive stereotype and the presence of observers, they will be overwhelmed with the pressure to conform to the positive stereotype (i.e., to have a successful performance) and subsequently underperform (i.e., Cheryan & Bodenhausen, 2000). However, when presented with a negative stereotype and the presence of observers, expectations of performance success are lifted, and thus observer pressure

should not further impair performance (although the negative stereotype in and of itself will undermine athletic performance; for review, see Beilock & McConnell, 2004). In the current study, we examined the effects of positive and negative stereotypes on athletic performance in either the presence or absence of observers.

## Method

### *Participants*

Participants (N = 81) were White males between 18 and 30 years old who were undergraduate and graduate students from Tufts University. Participants were compensated with partial course credit or five US dollars.

### *Materials*

Participants shot all of their free throws on a regulation basketball hoop (10-foot high in a hardwood gym) from the standard free-throw distance (19 feet from the baseline) with a regulation men's indoor basketball.

Participants watched one of three different videos depending on the stereotype condition to which they were randomly assigned. Each of the videos lasted approximately 30 seconds. The video for the positive stereotype condition contained six short clips of White basketball players from the National Basketball Associations (NBA) making free throws. At the end of the video, text appeared on an otherwise blank screen in 16 point font for 3 seconds that stated: "White players shoot the highest free throw percentage in the NBA, making 85%."

The video for the negative stereotype condition contained six clips of Black NBA basketball players making free throws. At the conclusion of this video, text appeared on

an otherwise blank screen in 16-point font for 3 seconds that stated, “Black players shoot the highest free throw percentage in the NBA, making 85%.” In both of these conditions, the race of the basketball players was visually clear and salient. In addition, the videos in both conditions were matched for camera quality, camera angle, video length, era of the shown basketball players, and video format. Each condition consisted of six consecutive clips, without time in between clips.

The video in the third stereotype condition—the control condition—contained six clips of Major League Soccer (MLS) soccer players scoring penalty kicks. At the conclusion of the video, text appeared on an otherwise blank screen in 16-point font for 3 seconds that stated, “Midfielders have the highest penalty kick success rate in the MLS, making 85%.” The control-condition video was matched with the videos in the other conditions for video length, video format, and camera quality. The control-condition video utilized more distanced camera angles to deemphasize race. Penalty kicks were selected as the control condition for the free throws because both actions are standardized and occur individually outside of the flow of normal game play in their respective sports.

The clips for all of the videos were downloaded from YouTube and edited using iMovie HD 6.0.4. All clips of free throws and penalty kicks were edited to start immediately prior to the attempt and to end immediately following its success (all free throws and penalty kicks were successful on behalf of the shooter). The videos were presented on a 15-inch Macintosh Macbook Pro computer screen using QuickTime player at full-screen.

### *Procedure*

Upon arrival to the study location, participants first completed a consent form that was approved by the Tufts University's Institutional Review Board. Participants were told that the purpose of the study was to examine how watching specific sports videos affects sports' performance, specifically free throw abilities. After completing a consent form, participants were given a practice session in which they shot 10 free throws. The first 5 free throws of the practice session were untimed. For the remaining 5 practice free throws, however, participants were told to take no more than 10 seconds to shoot after receiving the ball (i.e. after a participant shot, the experimenter rebounded the ball and handed it to the participant, at which point the participant had 10 seconds to shoot again). The 10-second time limit was selected because it is the NBA's free throw time limit. The experimenter monitored each free throw with a stop watch.<sup>1</sup>

Following the practice session and a one-minute break, participants shot 15 free throws to establish a baseline ability (with the 10-second time limit for each of the 15 throws). The experimenter noted how many free throws each participant successfully made of the 15. Following the baseline free throws, participants were then shown a video to induce the positive stereotype, negative stereotype, or control condition. Participants were pseudorandomly assigned to the experimental condition after they completed their baseline free throws. This ensured that the experimenter remained blind to the participants' condition during the baseline free throws.

At the conclusion of the baseline free throws, participants were seated in a comfortable chair at a table along the middle of the gym's sideline. Participants were told that they would watch a 30-second sports video in order to determine how certain sports videos affect sports performance. The experimenter started the video for the participant

and proceeded to walk away from the participant's line of vision toward a chair 30-feet away near the gym's baseline. Participants watched one of three videos. In the positive stereotype condition, participants watched a video of White NBA players making free throws; in the negative stereotype condition, participants watched a video of Black NBA players making free throws; and in the control condition, participants watched a video of soccer players making penalty kicks.

After watching the videos, participants were told they would complete another series of 15 free throws. Regardless of which video they had seen, half the participants were asked if they could be videotaped while they shot the remaining free throws. They were told that the videos would be posted on YouTube as part of an educational tool designed to help others with sports performance. Participants in the videotaped condition were asked to sign a consent form agreeing to be videotaped. Participants were videotaped using a standard mini-DV video recorder supported by a tripod. The video recorder was kept out of participants' view during their baseline free throws, and only brought onto the court for participants in the observer condition after they had watched one of the three aforementioned videos. The video recorder was then placed underneath the basketball hoop into which participants were shooting.

At the conclusion of the final set of free throws, participants completed a short questionnaire about their personal basketball experience and how important their athletic ability is to them (1 = very unimportant, 7 = very important). The latter question served to determine how strongly they identified with the domain of athletic performance. We asked this question because previous research suggests that individuals who have high domain identification are most susceptible to the negative effects of stereotype threat

(Spencer et al., 1999). After completion of the questionnaire, participants were debriefed, compensated, and dismissed.

## Results

Of the 81 participants in the study, eight either rated the importance of their athletic ability or their own perceived athletic ability as a 3 or lower on a 1 to 7 scale of importance (1 = not at all important, 7 = very important), and were therefore excluded from the analyses. This left 74 participants: 15 in the positive stereotype, no observer condition, 11 in the negative stereotype, no observer condition, 12 in the control, no observer condition, 12 in the positive stereotype, observer condition, 11 in the negative stereotype, observer condition, and 13 in the control, observer condition. Participants were relatively inexperienced basketball players. Overall, participants reported playing no more than approximately 5 hours of basketball a month.

In order to examine the effects of primes and pressure on performance, we created an overall free throw performance score by creating a difference score between the number of free throws each participant made in the time 1 baseline condition and the number of free throws made in the time 2 post-manipulation condition. We entered these difference scores into a 3 (Prime: positive stereotype, negative stereotype, or control) x 2 (Pressure: no observer or observer) ANOVA. Results revealed a main effect for prime ( $F(2,68) = 3.29, p < .05, \eta_p^2 = .09$ ), a main effect of pressure ( $F(1,68) = 6.78, p < .02, \eta_p^2 = .09$ ), and a prime X pressure interaction ( $F(2,68) = 3.47, p < .04, \eta_p^2 = .09$ ). Below we discuss the *t*-tests we conducted to explain why the significant main effects of prime and pressure, as well as the interaction between the two, emerged.

*Effects of observer pressure on performance*

In order to examine the effects of observer pressure on performance, we conducted a select number of planned *t*-tests in which we compared changes in performance over time (using the difference scores) in the observer pressure (videotaped) to the no pressure (not videotaped) conditions for each of the 3 prime conditions (positive stereotype, negative stereotype, and control). In the positive stereotype condition, participants who were videotaped performed significantly worse over time than those who were not videotaped ( $t(25) = 3.36, p < .005$ ). In the negative stereotype condition, however, participants' performance declined to a similar extent regardless of whether or not they were videotaped ( $t(20) = .49, p = .63$ ). Observer pressure also did not affect performance in the control condition ( $t(23) = .47, p = .64$ ). These results therefore suggest that observer pressure only affected performance in the positive stereotype condition. We examine these patterns of results more closely in the next sections.

*Effects of negative stereotypes on performance*

Given that extensive research has demonstrated that negative stereotypes impair athletic performance (for review, see Beilock & McConnell, 2004), we next examined whether individuals in the negative stereotype condition performed worse over time (using difference scores) as compared to individuals in the control condition. Since we found no effect of observer pressure in the control condition, we collapsed across the observer and no observer control conditions<sup>2</sup>. Overall performance change in the negative

stereotype condition was significantly worse than performance change in the control condition ( $t(45) = 2.20, p < .04$ ).

#### *Effects of positive stereotypes on performance*

Next, we evaluated how positive stereotypes affected performance compared to negative stereotypes. Since we had previously found effects of observer pressure on performance in the positive stereotypes condition, we examined these results separately for the positive stereotype no observer pressure condition and positive stereotype observer pressure condition. Results revealed that performance in the positive stereotype, no observer pressure condition was significantly better than performance in the negative stereotypes condition ( $t(24) = 3.42, p < .005$ ). Moreover, performance also improved in the positive stereotypes as compared to control condition ( $t(25) = 2.03, p = .05$ ).

Interestingly, performance in the positive stereotype, observer pressure condition did not differ from performance in the negative stereotype condition ( $t(21) = .15, p = .88$ ), suggesting that, as was the case with the presence of negative stereotypes, observer pressure impaired performance. Thus, although positive stereotypes improved performance over time in the no observer pressure condition, they led to performance decrements over time in the observer pressure condition.

#### *Performance in the control condition*

Finally, we examined whether performance changed over time (time 1 versus time 2) in the control condition. Again, since we had previously found no effect of observer pressure on performance in either the no observer or observer condition, we collapsed

across these two conditions. Results revealed no change in performance between time 1 and time 2 in the control condition ( $t(24) = 1.03, p = .31$ ), suggesting two critical conclusions. First, practice effects or fatigue were not responsible for the changes we observed in performance over time in the positive and negative stereotype conditions. Second, being videotaped in the absence of a positive or negative stereotype was not sufficient in and of itself to impair performance (since performance was not affected by observer presence in the control condition).

### Discussion

Our central question in the study was whether positive stereotypes would improve free throw performance and, if so, whether the addition of observer pressure would eradicate this effect. Indeed, we found that positive stereotypes improved free throw performance, but only in the no observer condition. Critically, when participants were videotaped (in the observer condition), positive stereotypes hindered performance. Simply put, the interaction of observer pressure with the positive stereotype caused participants to underperform. Additionally, we also found that negative performance-related stereotypes hindered athletic performance regardless of whether or not additional pressure (videotaping) was introduced, a finding that is consistent with previous research. It is important to note that in both the observer and no observer conditions, control performance did not change over time, suggesting that these effects were not due to participant fatigue or practice effects.

The finding that positive stereotypes (i.e., telling participants that White basketball players are the best free throwers in the NBA) led to a boost in performance extends previous research examining the effects of stereotypes on athletic performance. Previous research suggests that negative stereotypes about one's ingroup impair athletic performance (for review, see Beilock & McConnell, 2004; also Beilock, Jellison, Rydell, McConnell, & Carr, 2006; Chalabaev, Sarrazoin, Stone, & Cury, 2008; Chalabaev, Stone, Sarrazoin, Coizet, 2008; Stone & McWhinnie, 2008), however it has remained an open question whether positive stereotypes would boost performance. The current study extends this previous research by showing that positive stereotypes can improve performance, provided they are presented in the absence of observer pressure.

Interestingly, when combined with observer pressure, positive stereotypes led to a decline in performance. We do not believe these performance decrements were attributable to observer pressure alone, however, because free throw performance was not affected by observer pressure in the control condition. Indeed, performance was affected by observer pressure, but only in the positive stereotype condition and not in the negative condition. Why might this be?

Observer pressure is believed to undermine athletic performance because it causes athletes to over-attend to motor skills that should be automatized (e.g., their grip on a golf club or bat), thereby limiting the attentional resources they can devote to the unpredictable factors (e.g., weather, their opponents), resulting in poorer performance (Baumeister & Steinhilber, 1984; Beilock & Carr, 2001; Beilock & McConnell, 2004; Cheryan & Bodenhausen, 2000; Lewis & Linder, 1997; Wallace, Baumeister, & Vohs, 2005). Critically, observer pressure has been shown to have a greater effect on

performance when coming from a supportive audience, presumably because athletes become overwhelmed by the pressure to succeed (Baumeister & Steinhilber, 1984; Cheryan & Bodenhausen, 2000; Wallace, Baumeister, & Vohs, 2005). Thus, when participants were presented with positive stereotypes and the presence of observers, it is likely that observer pressure made them feel as though they needed to conform to their ingroup and excel on the free throw task. Ironically, this expectation caused them to underperform. Thus, observer pressure should not further impair athletic performance when combined with negative stereotypes because negative stereotypes do not set high performance expectations, and therefore do not place additional pressure on the athletes.

At first glance, the fact that performance in the control condition was not affected by observer pressure may seem surprising as it is inconsistent with previous research findings on the effect of observer pressure on athletic performance (Baumeister & Showers, 1986; Gucciardi, Longbottom, Jackson, & Dimmock, 2010; Lewis & Linder, 1997). However, there are several plausible explanations for this finding. First, the control condition featured a video clip of soccer players making penalty kicks. Presenting a non-basketball related video may have unintentionally removed pressure from the participants by taking their minds off their free throw performance entirely. Alternatively, we may have found a null effect in the control condition due to the small sample sizes in these conditions. It is important to note that we had comparable sample sizes in the two prime and pressure conditions, and still found significant effects. However, it may be the case that positive or negative stereotypes have a particularly powerful effect on performance. Further, the interaction of these effects with observer pressure may also be powerful, thereby showing significant effects with relatively small sample sizes.

However, videotaping participants in the absence of the stereotypes may not have been a sufficiently powerful manipulation to allow us to find effects solely due to observer pressure. Future research should investigate this point.

In the present study, observer pressure in the positive stereotype condition may have caused performance decrements by leading participants to believe they needed to live up to the expectations of the stereotype. This expectation may have heightened their attention to nuances of their performance that should have been automatized, thereby hindering their performance. Future research should investigate this as a potential mechanism underlying underperformance caused by the interaction of positive stereotypes with observer pressure.

An important caveat to our finding that observer pressure impaired free throw performance is that the majority of our participants were novices. Thus, since the majority of the participants in this study were not highly experienced basketball players, it is unlikely that they were particularly well-rehearsed in how to automatize the process of making free throws. It is therefore possible that introducing the additional pressure of being videotaped may have distracted participants and caused them to over-attend to their body posture and technique when throwing free throws, thereby leading to underperformance.

It is important to note, however, that we do not believe the choking effects we observed with the novice basketball players are unique to lack of experience, simply that inexperience may have inflated these effects. Indeed, Otten (2009) conducted a study examining the effects of observer pressure on free throw ability for relatively experienced basketball players and found that about two-thirds of the participants in the observer

condition showed an improvement in performance when videotaped, whereas the other one-third showed performance decrements when they were videotaped. The individual differences that lead to greater susceptibility in choking under observer pressure are intriguing and merit future research.

Our findings suggest that it might be possible to minimize the negative effects of observer pressure on performance by training novice players to automatize their free throw technique. Indeed, Beilock, Kulp, Holt, and Carr (2004) found that women underperformed on difficult math problems when they were put under pressure (doing increasingly demanding and difficult problems), but this effect dissipated when they practiced the difficult problems (so their performance became automated). As predicted, we also found that negative stereotypes (that Black athletes have better free throw ability than White athletes) impaired participants' performance. This finding is consistent with previous research that negative stereotypes impair athletic performance (Beilock, Jellison, Rydell, McConnell, & Carr, 2006; Chalabaev, Sarrazoin, Stone, & Cury, 2008; Stone, Lynch, Sjomeling, & Darley, 1999; Stone & McWhinnie, 2008). However, the addition of observer pressure did not amplify these decrements. This finding suggests that observer pressure may only impair performance when it is coupled with positive stereotypes. Indeed, this assertion is consistent with previous research on choking under observer pressure (Baumeister & Steinhilber, 1984; Beilock & Carr, 2001; Cheryan & Bodenhausen, 2000; Wallace, Baumeister, & Vohs, 2005).

In summary, the present study confirms previous findings showing that positive stereotypes can lead to a performance boost in athletics. However, in the presence of observers, the positive stereotypes may interact with observer pressure and result in

choking and performance decrements. The present study also confirms previous findings that demonstrate the deleterious effects that negative stereotypes have on athletic performance. Specifically, negative stereotypes lead to performance decrements. Interestingly, these decrements are not further bolstered by observer pressure. These findings therefore present intriguing implications for a potential role of positive stereotypes in improving athletic performance.

## Footnotes

1. Due to logistical limitations, the experimenter was unable to record how long each participant took for each free throw. However, none of the participants in any of the conditions was allowed more than 10 seconds per free throw during the baseline or post-manipulation free throw set.
2. A closer examination of the effect of negative stereotypes on performance relative to the control condition for the observer and no observer conditions revealed no significant differences between the negative stereotype and control conditions in either observer condition: (no observer:  $t(21) = 1.66, p = .11$ ; observer:  $t(22) = 1.46, p = .16$ ). Although it may be the case that these conditions were underpowered on their own to reach significance, it is also important to note that no effects of observer were found in either the control or the negative stereotype condition. It is therefore unlikely that observer pressure disproportionately impaired performance in the negative stereotype condition as compared to the control condition.

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*Figure 1.* The difference scores for mean free throw success are displayed for each condition. The difference scores reflect the change in group performance between time 1 (baseline) and time 2 (post-manipulation) for each condition. At time 1 and time 2, free throw success was based on 15 free throw attempts. Time 1 denotes baseline free throw performance for all participant groups. Error bars represent the standard error.

Figure 1.

