Stereotype Threat in Sport:
An Explanation of Black and White Differences

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Abstract

A common observation is that there are clear differences between Black and White athletes. For example, Blacks are overrepresented in basketball, football, and Track and field, whereas White athletes dominate the sports of golf, hockey, and swimming. One explanation for this phenomenon is the field of physiology, which posits that Black athletes have unique genetic characteristics that allow them to consistently outperform White athletes. Sociology and Psychology are two fields that combat the physiological hypothesis, offering their own hypotheses to explain the Black and White differences in sport. Of these three fields, the role of psychology is relatively new and has received little attention. The current paper addresses the differences among these fields using the literature on stereotyping and stereotype threat to raise new explanations for the Black and White differences in sport, along with suggestions for future research.
Stereotype Threat in Sport: An explanation of Black and White Differences

The media, scholars, and public observe clear differences between Black and White athletes. According to Wiggins (1997), theories explaining the perceived differences between Black and White athletes began in 1800s by social scientists, biologists, and the media. They attempted to explain why Black athletes, such as boxer Peter Jackson, dominate sports previously dominated by Whites. Their general conclusion 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). This theory persisted throughout the 20th century, via media articles (Kane, 1971) and biological studies (Jordan, 1969, Meredith & Spurgeon, 1976; Metheny, 1939, Tanner, 1964), and continues into the 21st century (Entine, 2000).

Today, a simple scan of the Racial and Gender Report Card (Lapchick, 2007) reveals clear discrepancies among the racial composition of American sports. In 2006 the National Basketball Association was made up of 21% White and 75% Black athletes, the National Football Association was 31% White and 67% Black athletes, and Major League Baseball was 59.5% White and 8.4% Black athletes. Division I male college athletics have similar numbers; in 2005 basketball was comprised of 31.9% White and 57.8% Black athletes, football was 47.7% White and 45.5% Black, and baseball was 83.7% White and 6.5% Black athletes (Lapchick, 2007). In addition, in the last four Olympic Games, all 32 finalists in the 100-meter races are of West African descent (Entine, 2000). These numbers reveal a large overrepresentation of Black athletes in basketball, football, and track and field, but an underrepresentation of Black athletes in baseball. Scientists, journalists, and a large portion of the public accept the physiological hypothesis that Black athletes possess certain genetic characteristics that allow them to excel
over White athletes, leading to the overrepresentation of Black athletes in athletics. They contend that Black athletes possess a higher level of athleticism, which consists of speed, reaction time, power, and leaping ability, than White athletes do. Physiologists believe that by possessing a higher level of athleticism, Black athletes are better suited for sports such as basketball and football, even though these sports require high levels of strategy, training, and dependence on teammates to excel. This paper will review the physiological viewpoint and challenge it on several different levels, highlighting the literature on stereotyping and stereotype threat to raise new explanations for the Black and White differences in sport, along with suggestions for future research.

Physiological Explanations

The biological approach explaining the disproportionate representation of Black athletes in collegiate and professional sports is simple: the Black population has unique biologic and genetic characteristics when compared to the White population. These characteristics enable the Black athlete to surpass the White athlete on the playing field (Kane, 1971; Entine, 2000). In a Sports Illustrated article, journalist Martin Kane reviewed several scientific studies analyzing the dominance of the Black athlete. Kane (1971) drew his arguments from the field of anthropology. He cites J. M. Tanner (1964), who attributes the apparent Black athletic superiority to racially linked physical characteristics, race related psychological factors, and racially specific historical contexts. Tanner (1964) measured 137 track and field athletes, weight lifters, and wrestlers from the 1960 Olympics and 1958 British Empire and commonwealth Games. His findings revealed that Black athletes have longer leg lengths, narrower hips, wider calf bones, and greater arm circumference than their White competitors. For his article, Kane interviewed Dr. Edward E. Hunt Jr., a professor of anthropology at Pennsylvania State University, who noted that Black
athletes had a greater ratio of tendon to muscle and a relatively denser bone structure. Kane also interviewed Dr. Robert M. Malina, an assistant professor of anthropology at the University of Texas, who claimed the elongated body structure among Black athletes enabled them to function as more efficient heat dissipaters relative to Whites. Finally, Kane argued the institution of American slavery weeded out the genetically weak Black population, resulting in the current physically dominant Black population. Based on the research of others, Kane is convinced that there are significant physical differences between Blacks and Whites and these differences are the main contributor for Blacks’ domination in nearly every sport.

Within Kane’s arguments is the field of anthropometry, the science of measuring different segments of the body to assess an individual’s athletic potential. Scientists conclude that Black males have heavier bone masses and a more developed musculature than White males. Black males also have larger skulls, heels, and appendages. In addition, Black males have longer arms and legs, while also having a denser and shallower chest. Finally, Black males possess far less body fat than their White counterparts (Jordan 1969; Meredith & Spurgeon 1976; Metheny 1939; Petty & Steggerda 1940). Metheny (1939) suggested that the heavier skeletal structure and developed musculature enabled Black males to excel over Whites in contact sports, such as football, while their longer legs and narrow hips would aid them in running activities. Their long arms also allowed them to outperform Whites in throwing activities.

While this data analyzes the adult body composition of Blacks and Whites, Pasamanick (1946) compared the gross motor skills between Black and White infants. The study consisted of 53 Black infants and 99 White infants from New Haven. Every participant completes an examination based on the methodology set forth by “Developmental Diagnosis,” by Gesell and Amatruda in 1941. Pasamanick then used the Gesell Developmental Schedules to analyze the
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gross motor behavior the infants display. His results showed that Black infants had a significantly higher score than White infants, leading Pasamanick to conclude that Black infants have a definite acceleration in gross motor behavior over White infants.

Entine (2000) extends the beliefs of Kane and their predecessors. He argued that because of new scientific technology, researchers understand the biology of the Black athlete better now than ever before. According to Entine, new research indicates that Black athletes have a phenotypic advantage. Through evolution, people of African ancestry developed a distinctive skeletal system and musculature, metabolic structures, and other beneficial physical characteristics. While acknowledging that athletic success is a bio-social phenomenon, Entine asserts the slight genetic differences, no matter how minuscule, play the determining role in elite athletic achievement. He concludes by offering this explanation: social constructs and psychological attributes play a role in athletic success, but racial physical differences create a larger pool of potential athletic stars among the Black population. This larger gene pool creates a higher likelihood that a Black athlete will raise to an elite status, thus explaining Black dominance in the realm of athletics.

His evidence is comprised of mainly demographic figures among mainstream sports, specifically the National Basketball Association (NBA), the National Football League (NFL), and Track and Field (Entine, 2000). Black athletes make up nearly 80 percent of the NBA, while the NFL is 65 percent Black. Contemporary Black athletes dominate track and field, believed by some to be the true test of athleticism. Entine created several tables displaying the dominance of runners from African descent. These tables showed that every commonly run track distance record belongs to a runner from African descent. It has been over 40 years since a non-black runner broke the world record in the 100-meter sprint, and all of the 32 finalists of the ’84, ’88,
'92, and '96 were from African descent, an impossible coincidence. In addition, there have been dozens of Black sprinters to break the ten-second barrier, but no White sprinter has achieved this feat. Black runners also dominate the middle and long distance events. Entine uses world rankings of the 10K to display Black dominance (p. 37). This table shows that men from non-African descent cannot even crack the top 20 times for this event.

Citing this evidence, Entine, along with several others cited above, believe the differing physiological construction of Blacks and Whites lead to the dominance of Black athletes in American mainstream sports. Their evidence suggests there are racial differences in body composition and development, and after analyzing elite performance of Blacks and Whites, they conclude these differences can explain Black dominance in major American sports and track and field.

Problems with the Physiological Approach

Is there enough evidence supporting this viewpoint to account for such a large discrepancy? This paper contends that the answer to this question is a resounding no. Within the field of physiology and anthropometry, there is inconsistent data on the genetic variance between races. In addition, supporters of this viewpoint use questionable methodologies that often make sweeping assumptions based on correlations. The fields of sociology and psychology offer different explanations for this phenomenon that address the weaknesses of the physiological viewpoint. These topics challenge the validity of the psychological explanation and deserve an in depth analysis.

One of the earliest sources of doubt about the physiological viewpoint came from a scientist from its own field, Dr. W. Montague Cobb. In his 1934 literature review entitled “The Physical Constitution of the American Negro”, Cobb suggested that no racial group exhibits
supremacy in any particular track and field event. To combat the assertions from his colleagues, Cobb used athletes such as sprinter Howard Drew and sprinter and jumper Ed Gourdin. According to Cobb, these men displayed little to no typical black features and are often mistaken for white men. In addition, he measured famous track and field star Jesse Owen’s calf, heel, and foot, finding they display none of the “negroid” characteristics. In fact, Jesse Owen demonstrated typical “caucasoid” features. Finally, Cobb challenged the belief of a racial group because of the enormous lack of homogeneity within both Black and White cultures.

Since Cobb’s assertions, several studies have been conducted that support him. Lewontin (1972) analyzed blood groups, serum protein, and red blood cell enzyme variants, producing results showing race accounts for only 6% of total genetic variance. He used two sublevels of population structure in his analysis: race and population. Lewontin employed the Shannon information measure, a measure of the frequencies of alleles at particular loci, to analyze the proportion of genetic variance accounted for by differences between races, between populations within races, and between individuals of populations. His results showed that racial differences accounted for 6.3% of genetic variance, population differences accounted for 8.3%, while individual differences contributed 85.4% of the variation. From this data, Lewontin concluded that racial groups are not an appropriate indicator of genetic variance; rather genetic variance depends mainly on individual differences.

Studies that are more recent support Lewontin’s results. Dean et al (1994) utilized researchers’ new ability to gain a more direct measure of the genetic code: restriction enzyme and polymerase chain reaction techniques. Many believed that the improved ability to directly measure genetic would finally provide the support needed to assert that Blacks exhibit genetic advantages over Whites. Their study tested 257 restriction fragment length polymorphism loci in
American Caucasians, Asian, African American, and American Indian individuals. To analyze their data they used Lewontin (1972) methods, which revealed that between 9.5 and 10.1% of the diversity in restriction fragment length and polymorphism loci is attributable to racial groups. Barbujani et al (1997) produced nearly identical results when analyzing polymerase chain reaction data for 30 macrosatellite loci and 79 restriction fragment length polymorphisms in 16 “genetic populations.” While technology is advancing, the results remain the same. The vast genetic variance the human population demonstrates depends minimally on race. Instead, the individual genetic variance within a population accounts for an overwhelmingly large amount of genetic diversity, which creates a significant problem in the physiological explanation of racial differences in sport. If the genetic code solely predetermines athletic ability and individual, not racial, differences account for the majority of genetic diversity, it holds that there would be several different races that exhibit the genetic ability to excel at the highest level of athletics.

Another problem with many physiological statistics, such as Entine’s cited above, is that they rely purely on a correlational analysis. Looking at a chart of race times or star athletes of a sport and then comparing it to there race is a very superficial method of analysis for an extremely complex phenomenon. Correlational data does not prove causality. These statistics do not prove Blacks have a biological advantage over Whites in running, jumping, basketball, football, and baseball. For this conclusion to be made, several true experiments need to be run involving these athletes. From the physiological viewpoint, these athletes need to have their calf bone, heel, arm, leg, and torso length measured, along with the other specified body parts where Blacks are supposed to have genetic advantages over Whites. Their percent body fat, muscle fibers, maximum oxygen intake, running efficiency, and other bodily functions need to be monitored and analyzed. For a true analysis to take place, all of these statistics should be compared to elite-
level athletic White men and both non-athletic Black and White men. By comparing all of these groups together, an analysis can illuminate any true physiological difference between Black and White athletes. Currently, a study such as this is not feasible due to a lack of the necessary resources. Until a better research methodology is adopted, a convincing test of the physiological-genetic-evolutionary hypothesis will be incomplete, yet the physiological supporters cling to their correlations as proof.

Sociological Explanations

Physiological explanations for racial differences in sport do not address many of the multiple variables that lead to successful athletic performance. The success of an athlete depends not solely on motor skills and physiological factors, but requires certain psychological attributes to excel (Abrahams, 1952). Certain temperaments benefit different sports. Some require a stoic temperament, while others demand a high-strung temperament. Temperament can effect how a person accepts instruction for their given skill, and the perfection of an athletic domain requires attention to and repetition of minute details. Work ethic also plays an important role in athletic performance. In addition, the ability to remain calm under intense pressure, a common circumstance during an athletic activity, enables an elite athlete to outperform his weaker competitors (Edwards, 1972). In summary, a successful athlete does not reach their goals on pure athletic ability. They must hone both the physical and psychological attributes that enable them to succeed in their specific athletic field, along with the opportunity to pursue said field. The field of Sociology argues that the apparent superiority of Blacks in the realm of athletics is due to socioeconomic status, socialization, and stereotypes, rather than physiological differences among Blacks and Whites (Edwards, 1972). Sociologists argue that society gives access and encourages Whites to pursue careers in multiple professional domains, while Blacks are channeled into
sports and entertainment fields to achieve monetary success. Black athletes largely come from low socioeconomic status, where athletics is one of the few, if not the only, activity to curb violence and gang participation among Black youths in the ghetto (Sage, 1970). Young Blacks spend several hours of their adolescent lives playing sports, allowing them to hone their athletic skills. In addition, poor Black communities emphasize excellence in sport as the preeminent avenue for upward mobility opportunities (Edwards, 1997). This emphasis creates stronger motivation for young Blacks to pursue professional athletic careers than middle-class Whites (Sages, 1970).

Williams and Scott (1953) support this idea and challenged Pasamanick (1946) by hypothesizing that the accelerated motor development of Black infants could be a factor of child rearing practices, which are shown to vary with socio-economic class. They performed a similar experiment to Pasamanick (1946), but only used Black infants as subjects, creating two distinct groups of socio-economic background.

Group I was the upper socio-economic group, while Group II was the lower socio-economic group (Williams & Scott, 1953). They obtained gross motor skill levels by analyzing gross motor item scores on the Gesell Developmental Schedules. To determine child-rearing practices, they conducted an interview and observed the subject interaction with the mother. The interview covered the following areas: postnatal condition, care, health of the mother and child, prenatal care, feeding and weaning of the child, the mother’s attitudes toward these, toilet training, sleeping habits, and discipline.

The results supported Williams and Scott’s hypothesis that there is a difference in gross motor behavior among Black infants from an upper and lower socio-economic group (Williams & Scott, 1953). Black infants from a lower socio-economic group displayed significantly higher
gross motor skill development than the upper socio-economic group. In addition, the results obtained by this study correlate almost identically with Pasamanick’s study: the lower socio-economic group from Williams and Scott’s study had similar scores to the Black group of Pasamanick’s study, while the upper socio-economic group had parallel scores to the White group. Williams and Scott also found that lower socio-economic families had significantly different child rearing practices when compared to upper socio-economic families. Specific practices as well as the overall atmosphere in the lower socio-economic households were more permissive and less rigid. By showing the same discrepancies of gross motor skills acceleration between Black infants of different socio-economic background and White and Black infants, this study suggests that motor skill acceleration is not a “racial” characteristic, but a result of socio-economic status and/or child rearing practices.

Sports sociologists contend that unique socialization patterns dictate which sports a person selects to participate in. They contend that a lack of Black role models, absent or inadequate facilities, inadequate coaching, and the presence of institutionalized discrimination all play a significant role in the athletic career path a Black child pursues. Because of these poor conditions, Blacks flock to the few sports where these barriers do not exist, which accounts for the high numbers of Black basketball and football players and the lack of Black athletes in sports like golf and swimming (Coakley, 1990; Edwards, 1972; Sailes 1984, 1987, 1990; Eitzen and Sage, 1989).

Entine (2000) claims that because Black athletes compose 15% of Major League Baseball, two percentage points higher than their national representation, Black baseball players hold an advantage over White players. He also cites that the Black baseball players are more likely to win the most valuable player award and become stars as evidence for Black dominance.
in baseball. The 2008 Racial and Gender Report Card: Major League Baseball by Richard Lapchick reveals that African-American representation is down to 8.2%, the lowest percentage in the more than 20 years of the publication of the Report Card. If Black baseball players are truly more naturally talented baseball players, why is their representation in the sport fading? Ogden (2002) interviewed 27 youth baseball coaches from six states about the under-representation of Black players on their teams and opposing teams. The most common reasons for the lack of racial diversity was the scarcity of baseball facilities in Black neighborhoods, the cost of playing “select” baseball, the lack of parents’ interest in the sport, and the lack of community support. If racial representation in baseball is based mainly on physical abilities, this significant decrease in Black representation should not be occurring. It appears young Black athletes are losing access and motivation to pursue baseball, which, according to sociologists, are important factors.

Another main argument from sport sociologists is that under the same learning environment, Black and White athletes would achieve comparable results. A study by McClure (1972) supported this belief. He compared the performance of Black and Whites in swimming when the learning environment was equal for both races. Most people assume that Blacks are inferior swimmers to Whites, possibly because of their dense bone structure and lower body fat, yet McClure’s results provided evidence that Black and Whites perform equally when the learning environment is held constant. McClure believes the lack of adequate training facilities and Black role models contributes to the lack of Black representation in swimming. He suggested that as the economic situation of Blacks improves, society will see more Black swimmers excelling in competition.

Sociology of Sport takes this learning environment and analyzes it even further under that concept of “stacking.” Loy and McElvogue (1970) initiated this research and defined “stacking”
as the overrepresentation of Blacks and Whites at certain positions in American Football and Baseball. Whites dominate positions that, according to organizational theory, are central to group success. Examples of these positions are quarterback in football and pitcher in baseball because they have such a significant impact on the outcome of the team’s performance. Black athletes tend to dominate the peripheral positions such as wide receiver in football and outfield in baseball. The physiological approach would argue that accurate assessments of Black and White physical differences result in stacking, but the conflicting physiological data referred to previously in this paper does not support this idea. Sport sociologists believe bias is the main factor guiding stacking. Research shows that the main causes for this phenomenon are coaches and managers. According to McPherson, Curtis, and Loy (1989), coaches and managers believe that Blacks and Whites have distinct mental and physical characteristics that differentially qualify the players for particular positions in football and baseball.

Stereotypes are incomplete and overgeneralized beliefs a person holds toward a specific racial group. Sailes (1996) is one of the most extensive studies providing evidence of athletic racial stereotypes. This study asked White and Black participants to rate the academic preparation, intelligence, mental temperament, competitiveness, physical superiority, and athletic ability of Black and White college athletes. White participants rated Black athletes as less academically prepared, less intelligent, and more temperamental, while Black participants rated White athletes as significantly less competitive and athletic. These results, along with the results of Devine & Baker (1991) and Biernat and Manis (1994) reflect the main stereotypes of Black athletes as physically superior but intellectually inferior to White athletes. The media also contributes to the persistence of these stereotypes. Commentators and announcers attribute the success of the Black athlete to his natural athletic ability and the success of a White athlete to his
work ethic or cognitive abilities. In addition, commentators describe Black athletes in more “athletic” terms than Whites (Eastman & Billings, 2001; Murrell & Curtis, 1994; Wonsek, 1992). Rada (1996) showed that the public perceives commentators to be neutral observers and because of this perceived neutrality, the common viewer is able to affirm and justify the “Black athleticism” and “White intellectualism” stereotypes.

The validity of these stereotypes lack any scientifically demonstrated evidence, which means coaches and managers are displaying discriminatory behavior by employing a racially motivated stacking strategy to assign positions. This discriminatory behavior may have a significant effect on racial representation in athletics and the avenues Blacks and Whites pursue, providing further evidence against the physiological viewpoint. If coaches believe in discriminatory stereotypes concerning Black and White athletes’ capabilities, then they will coach them differently and encourage them or force them to play certain positions, only augmenting the racial discrepancies of sports and positions within a specific sport. Johnson (1988) displayed evidence of this phenomenon. He used Cincinnati youth football and baseball coaches as participants and gave them a profile of potential players. After analyzing the profile, the coach was instructed to assign the player a position based on their traits. The profile included the race of the player and ratings on multiple traits. The traits of the player included both physical (height, weight, speed, quickness) and mental (emotional control, instinct, sport “sense”, leadership) abilities. The results showed that coaches were more likely to place Black athletes in peripheral positions and White athletes in central positions, even though the Black and White profiles displayed the same traits. They concluded that knowing the race of the player influenced the coaches by placing the players into positions according to racial stereotypes. By conforming to racial stereotypes, coaches and managers play a strong role in creating the
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stacking phenomenon and contribute to the uneven proportions of Black and White athletes in various sports.

Psychological Explanations

The stereotypes and discrimination mentioned by Sociology relates to another field challenging the physiological theory: psychology. According to social psychologists, perceptual confirmation of stereotypes and stereotype threat prevail as the dominant psychological explanations for the skewed racial representation seen in athletics. Perceptual confirmation occurs when a person subscribing to a stereotype observes or interacts with members of a target group, stereotypes elicit expectancies that guide the interpretation of the target’s behavior (Duncan, 1976; Sagar & Schofield, 1980). The field of Sociology firmly establishes that athletic stereotypes do exist, but perceptual confirmation provides an explanation on how people use stereotypes to evaluate performance. Until recently, this phenomenon had not received much attention in the realm of athletics.

Stone, Perry, Darley (1997) produced significant results that revealed a perceptual confirmation of athletic racial stereotypes. In their experiment, Stone, Perry, and Darley instructed participants to evaluate a basketball player while listening to a radio broadcast of a college basketball game. Half of the participants were told the player was White, while the other half was led to believe he was Black. Their results showed that if the player was perceived to be White, the participants rated him as having a lower “natural athletic ability” but more “court smarts” and “hustle,” while the Black player was perceived as showing less court smarts and hustle, but more natural athletic ability and an overall better basketball player.

The perceptual confirmation paradigm may play a significant role in coaches’ expectancies, eliciting race-consistent behavior from athletes. By succumbing to racial
stereotypes, coaches may vary their feedback to Black and White athletes. Feedback refers to the information coaches offer to athletes based on perceptions of ability (Solomon & Kosmitzki, 1996). Research in the educational domain indicates that teachers offer differential feedback to students perceived as high and low expectancy in terms of academic ability (Brophy, 1983; Rejeski & Hutslar, 1980). Specifically, results showed that high expectancy individuals received more feedback than did low expectancy individuals. In the athletic domain, studies have shown that high expectancy athletes were offered more evaluative and specific feedback than low expectancy athletes (Krane, Eklund, & McDermott, 1991; Sinclair & Vealey, 1989). High expectancy athletes received instruction that was more effective and positive than low expectancy athletes. If coaches allow racial stereotypes to effect their perception, then they will play an important role in a Black or White athlete’s future. For example, a White football player will be high expectancy for the quarterback position and a low expectancy for the receiver position. The coaches expectancy will ultimately lead him to push the athlete to become a quarterback. The White athlete may be just as athletic as his Black teammate, but because perceptual confirmation guides the coach, he only provides positive feedback for the White player if he is playing quarterback. By subscribing to the racial stereotypes, coaches put themselves at risk of perceptual confirmation, resulting in a misguided approach to coaching. Youth and elite athletes are affected by coach feedback, and without enough positive and effective feedback nearly all athletes will fail in their domain. This phenomenon certainly plays a role in Black and White athletes’ choice of sport.

Since Black and White athletic stereotypes clearly exist, stereotype threat provides another psychological explanation for the phenomenon in question. Stereotype threat suggests that for individual members of a stigmatized group, the presence of a negative stereotype in a
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performance context causes concern about validating the negative stereotype, resulting in an impaired performance (Steele, 1997; Steel et al., 2002). Several studies validate this theory, showing that the salience of a negative stereotype in a performance context can impair women on tests of math ability (Schmader & Johns, 2003; Spencer et al., 1999), African-American students on standardized tests of verbal ability (Steele & Aronson, 1995), and physical tasks (Stone et al., 1999; Beilock et al., 2006). An important factor in stereotype threat is the importance of the task to the subject’s self-worth. If the task or context is unimportant to the subject, then stereotype threat has a decreased effect on behavior. When the subject is engaged in and values the task, stereotype threat effects are more readily observed (Steele, 1997; Stone, 2002).

Although there is significant evidence of positive and negative stereotypes about Black and White athletes, the cognitive processes of stereotype threat must apply to the physical performance of sport for this phenomenon to be applicable. Currently, most studies on stereotype threat analyze its effect on the working memory system. Schmader and Johns (2003) conducted a study involving the stereotype that women are poorer in math than men. They compared the participants (all female) working memory capacity with their performance on a difficult math test. The results showed that women given the stereotype threat condition displayed lower working memory capacity and poorer performance when compared to the control group. They concluded that the stereotype threat reduced working memory capacity, which resulted in weaker performance. Croizet and colleagues (2004) supported these conclusions from their own study. In their study, Croizet and colleagues measured heart rate variability (HRV), an indicator of mental workload (Mulder, 1992), to performance. Coizet and colleagues (2004) induced a negative intellectual stereotype for their experimental group, while instructing the control group the test...
was non-diagnostic. The groups both took the Raven Advanced Progressive Matrices Test (Raven, 1962). Participants, whom the intellectual stereotype was prevalent to, produced results that coincide with Schmader and Johns earlier work. These participants showed lower scores when compared to the control group, along with a decrease in HRV. A decrease in HRV signifies an increase in mental workload; therefore, Coizet and colleagues (2004) concluded that this increase in mental workload was a direct cause for the decreased performance on the test. These two studies provide a strong basis for the supposition that impaired working memory is a key cognitive component of stereotype threat when dealing with difficult reasoning and math problem-solving tasks.

If stereotype threat is impairs working memory, then novice athletes may be susceptible to stereotype threat because athletic tasks utilize working memory if they are not already automated. A novice athlete in a specific task would not have endured the multiple hours of practice and repetition as an expert athlete would, therefore the task would not be automated and still be employing working memory. Stone, Lynch, Sjomeling, and Darley (1999) conducted a true experiment to test whether stereotype threat does have a measurable effect on athletic performance among novices. They developed a putting course as their athletic task and tested both Black and White participants. A third of each race was told the task was a general sports performance test. This group served as the control group because this is not a stereotype-inducing prime. Another third of each race was told it was a test of athletic ability, while the final third was told it was a test of sports intelligence. The results showed that both experimental conditions validated the stereotype, whether it was positive or negative. Black participants performed much better on the “athletic ability” condition and worse on the “sports intelligence” condition when compared to their racial control. White participants performed worse on the
“athletic ability” condition and better on the “sports intelligence” condition than their racial control. Another interesting statistic was that there was not a significant difference between the scores of both control groups. This shows there was no measurable difference between Black and White performances on this putting task. Stone and his colleagues concluded that negative stereotypes concerning race led to diminished performance, meaning the motor-skill of putting induced stereotype threat effects.

This study shows that stereotype threat influences novice athletic performance, but what if the athlete is an expert and does not rely on working memory capacity? Practiced athletic performance does not utilize working memory, rather it requires the use of several highly proceduralized components. These processes rely on integrated procedures that do not rely heavily on working memory and run automatically. Beilock et. al. (2006) provided a possible answer for this question. To conduct this study, Beilock and his colleagues used expert golfers and “choking under pressure” literature. This literature has extensive research that explains how high pressure situations affect elite level athletes. Beilock & Carr (2001), Gray (2004), and Lewis & Linder (1997) refer to this process as explicit monitoring theory: pressure leads to a heightened self-consciousness about performing correctly, leading to an increase of attention to controlling step-by-step processes of a well-learned motor skill. When a motor skill is well-learned, it becomes a procedural memory and nearly runs automatically. By focusing more attention on the specific steps of the procedure, the automatic skill is disrupted, leading to a decrease in performance (Kimble & Perlmutter, 1970; Langer & Imber, 1979; Masters, 1992). Gray (2004) produced results supporting this theory using Division I baseball players, while Beilock, Bertenthal, McCoy, & Carr (2004) and Perkins-Keccato, Passmore, & Lee (2003) showed the same pattern using putting tasks.
Beilock et. al. (2006) hypothesized that stereotype threat uses the same method of disturbance as “choking under pressure” literature suggests: the negative stereotype causes the athlete to increase attention to the steps of a motor-skill, leading to a decrease in performance. Their first experiment confirmed that stereotype threat indeed affects elite level golfers. All participants were men and they completed a putting task. The control group was given no stereotype while the researchers told the experimental group they found evidence that women were better putters than men. By inducing this negative stereotype, Beilock and his colleagues displayed similar results as Stone et. al. (1999), and concluded elite putters were susceptible to stereotype threat.

Beilock et. al. (2006) conducted two more experiments to confirm their hypothesis that the extra attention stereotypes induce actually causes the negative stereotype threat effects seen from previous studies. To test this, the second experiment split their participants into two groups. One group was given a single task, putting, while the other was given a dual task, putting and word-monitoring. The dual task participants performed significantly better than the single task participants under the stereotype threat condition. These results correlate with the “choking under pressure” literature, displaying that diverting attention through the use of another task disables a person from concentrating on the step-by-step procedure of a motor-skill. A third experiment was conducted to ensure that the second task did not simply divert attention away from the stereotype rather than the motor-skill. Experiment 3 used a similar procedure changing one factor. The negative stereotype concerned race, and the word monitoring task used racial words to ensure that the negative stereotype remained salient in the participants’ mind. The results were replicated from Experiment 2, allowing Beilock and colleagues to conclude that the dual task
condition alleviated the stereotype threat by reducing the amount of explicit attention to execution in the proceduralized skill.

From the mounting evidence, it appears stereotype threat can convincingly be applied to the realm of athletics, resulting in discrepancies among Black and White performance. Stereotype threat does not solely occur during a task, but can lead to decreased practice and preparation within a specific context, resulting in self-handicapping. The phenomenon of self-handicapping is well documented and is considered a defensive strategy to deflect responsibility for a poor performance by constructing barriers to success (Jones & Berglas, 1978; Tice, 1991). If the performance is poor, the self-handicapper can attribute the failure to the barrier, not an internal characteristic. Stone (2002) demonstrated that activating a negative stereotype could dictate how a person approaches a specific skill and lead him or her to engage in self-handicapping. In another golf-putting task, Stone’s experimental group was told the task was a test of “natural athletic ability,” in order to create a salient stereotype. Under this framing, White athletes practiced the task less than the White participants from the control group, whom did not receive instructions inducing a negative stereotype. By reducing practice, the participants are intentionally self-handicapping themselves. The negative stereotype brought on this self-handicapping process in an attempt by the participants to mask how well the task reflected their true abilities. This experiment reveals that stereotype threat can be so influential that people experiencing the threat will go to great lengths to cope with its ill effects, resulting in a wall hiding their true abilities. By self-handicapping, due to stereotype threat, Black and White athletes may be underutilizing their abilities, leading to poorer performance or complete withdrawal from a specific sport. Stereotype threat clearly affects athletes, and Stone (2002)
shows that it may also explain why Black and White participation among different sports exhibits such a large discrepancy.

The fact that stigmatized groups engage in self-handicapping during an athletic task establishes a link between stereotype threat and the discrepancy of Black and White athletic representation. By using this strategy to defeat a negative stereotype, a person may in fact be supporting the negative stereotype. A poor performance by a subject could validate a negative stereotype held by an observer, such as a coach or manager. There is already evidence that coaches and managers hold negative and positive stereotypes about Black and White athletes (McPherson, Curtis, and Loy, 1989) and the poor performances caused by self-handicapping only support these stereotypes. For example, if a White boy decides to self-handicap himself by not practicing for basketball, his performance will likely suffer. In turn, his coach will see the low performance level and feel like the stereotype that Blacks dominate Whites on the basketball floor is validated, leading to less encouragement and instruction given to the White boy by said coach. In addition, poor, or a lack of, preparation leads to repeated failure in a specific domain, eventually changing perception of self-worth in the performance domain. This leads to disengagement of the performance domain, which may lead to a complete withdrawal of the domain. Meaning, the White boy will continue to perform poorly, eventually leading to his disinterest or withdrawal from the sport.

Conclusions and Future Directions for Research

Until its methodology catches up with its theology, the physiological hypothesis for the racial discrepancy in athletics between Black and White athletes will remain incomplete. Its own studies continue to contradict each other and many of the cited evidence relies on correlational data. The physiological hypothesis depends on several assumptions and suggests that success of
an athlete depends mainly on the field’s narrow definition of athleticism, while ignoring several variables that sociology and psychology are capable of addressing. Sociology of Sport is a well-documented field with a large amount of evidence to support its hypothesis and has challenged the physiological hypothesis on this subject for many years.

Psychology’s theories as an explanation for the discrepancy between Black and White athletic representations are new to this arena, but in a short amount of time they have shown great promise. While this theory shows promise, it still needs much more empirical evidence to solidify its status as a prevailing theory for this phenomenon. In Stone et al. (1999) and Stone (2002), normal college students were used as the participants, but would the study yield the same results had college or professional athletes been used as subjects? Some may assume that if an athlete of either race can make it to the collegiate level, they have developed coping mechanisms to overcome negative stereotypes about their race, but recently a speech by Warren Moon has shown even the best athletes in the world can succumb to stereotype threat. In Warren Moon’s Hall of Fame induction speech, he said:

I only played this game not for just myself, not just for my teammates, but I always had that extra burden when I went on that field that I had a responsibility to play the game for my people. That extra burden I probably didn't need to go out on the field with, because I probably would have been a much better player if I didn't have that burden. But you know what, I carried that burden proudly.

This quote displays the effects of stereotype threat on a hall of fame caliber athlete, which makes perfect sense because elite level athletes would be extremely engaged in an athletic context, which makes them ideal subjects to experience stereotype threat (Stone, 2002). If a similar experiment to Stone et al. (1999) is conducted using college or professional athletes and yields
significant results, the effects of stereotype threat on athletic performance will gain more credibility.

Jon Entire refers to track and field as the most accurate test of natural athletic ability and claims the “virtual takeover of elite-level track by athletes of African descent, is powerful anecdotal evidence of innate physical differences between populations” (p. 29). It has been over 40 years since a non-black runner broke the world record in the 100-meter sprint, and all of the 32 finalists of the ’84, ’88, ’92, and ’96 were from African descent, an impossible coincidence. Even if one concedes the Black gene pool allows Blacks to run faster and jump further than Whites, which this paper does not, this monopoly of an event by Blacks activates the “natural Black athlete” stereotype among White runners, possibly leading to stereotype threat. As stated above, to experience stereotype threat the subject must value the domain and the stereotype activated (Steele, 1997; Stone, 2002). An elite White sprinter would place an extremely high value on a 100-meter dash and one can assume if he glances at his competitors only to see Black runners, the stereotype of natural Black speed will become activated. With genetic variance having a high rate within both races, there should be many White runners with the appropriate genetic construction to be an elite sprinter, but the track and field statistics contradict this assumption. These circumstances create an ideal situation for stereotype threat, and a miniscule genetic difference cannot explain the vast difference in results for White and Black sprinters. It is very possible that White boys that possess the physical characteristics of an elite sprinter participate in self-handicapping practices at a young age due to the strong negative stereotypes about White sprinters coming from parents, coaches, or the media. There are multiple variables affecting this situation and without properly analyzing the psychological factors, it seems
overzealous to assume that a few miniscule genetic differences account for an entire race’s domination of a sport.

To address the track and field evidence, social psychologists should conduct experiments consisting of participants performing a more “athletic” task, such as running the 100-meter dash. A within-subjects test could be performed, where each participant would run the race alone and then compare that time to a time from experimental conditions. Possible experimental conditions would be to prompt the participant with a negative stereotype and then time them, or have them race an entire heat of the opposite race. For example, one experimental condition could place a White runner in a heat completely made up of Black runners. Theoretically, the presence of all Black opponents should make a negative stereotype salient, inducing stereotype threat, resulting in a poorer performance by the White participant. If stereotype threat is a strong factor in athletic performance, then it can be expected that both of these studies would provide similar results to the Stone, Lynch, Sjomeling, and Darley (1999) experiment. An experiment such as this may pose problems, such as fatigue from running multiple 100-meter dashes. The control group could be constructed so that White and Black participants ran alone or against their own race. These times would then be averaged and serve as the base comparison for the experimental groups’ performance.

Due to the increasing amount of evidence supporting the negative effects of stereotype threat on performance, many social psychologists have attempted to develop methods to combat it. Instruction to view intelligence as a ductile trait (Aronson, Fried, & Good, 2002), testing in same-sex environments (Inzlicht & Ben-Zeev, 2000), and exposure to positive role models (Marx & Roman, 2002; McIntyre, Paulson, & Lord, 2003) are all strategies that have provided evidence of increasing the academic performance of a stigmatized group. Stone et al. (1999) showed that
stereotype threat is reduced when a situational explanation is provided for poor performance or arousal (see also Brown & Josephs, 1999). While all of these strategies appear to be effective in an experimental context, their applicability to athletics may be difficult. For instance, the evidence of same-sex environment would correlate to segregated sports teams. Having a Black and White league is clearly not socially acceptable, making this an ineffective strategy in the realm of athletics. Discovering practical methods of reducing stereotype threat for athletes should be a high priority because decreasing or eliminating stereotype threat should cause a diminution of the differences between Black and White athletic performance.

Another important reduction strategy for stereotype threat is education. Johns, Schmader, and Martens (2005) have found evidence that teaching about stereotype threat offers a practical means of reducing its detrimental effects. In a math context, the study gave groups of men and women difficult math problems described as a problem-solving task or a math test. A third group was told the problems were for a math test, but the experimenter instructed the participants that stereotype threat could interfere with a woman’s performance on a math test. The results confirmed the stereotype threat for women in the math test condition, meaning they performed worse than men on the problem set. When the experimenter instructed women about the negative effects of stereotype threat, they performed comparable to men, suggesting that teaching about stereotype threat is a practical method of reducing its detrimental effects. Could this context translate to an athletic context? Stereotype threat is experienced in both contexts, suggesting that a study instructing participants on the detrimental effects of stereotype threat on athletic performance may yield similar results to Johns et al. (2005).

Another important finding within the stereotype threat literature is that for many of the studies a control condition was present where the tester did not make race or gender salient or
tied to performance. These control groups consistently showed that racial and gender differences disappear when the context was more neutral (Beilock, Jellison, et al., 2006; Croizet & Claire 1998; Gonzales, Blanton, & Williams, 2002; Steele & Aronson, 1995; Stone, Lynch, Sjomeling, & Darley, 1999). This suggests another way to reduce stereotype threat: emphasizing or stressing the racial neutrality of the situation may help to alleviate these concerns. Instead of preaching about the effects of stereotype threat, it may be just as effective to stress the racial neutrality of sport. Educating people in this manor may result in similar athletic performance seen in the control group of Stone, Lynch, Sjomeling, & Darley (1999).

Final Conclusions

This literature review is not intended to dismiss the physiological hypothesis to explain the phenomenon in question, rather it addresses the physiological viewpoints multiple weaknesses. At this moment in time, the methodologies needed to obtain empirical results to support this hypothesis are not feasible. This literature review’s goal is to highlight the growing theory of stereotype threat in an athletic context as a major contributor to the Black and White athletic discrepancy seen in sports. Studies show that Stereotype threat affects several other contexts, and evidence supports it effects the athletic context. By conducting more research in the athletic context, there stands a possibility that the stereotypes commonly held today about Black and White athletes are false. Once there is little doubt in the validity of these negative stereotypes, an effort can be made to educate the public and work toward eliminating the stereotypes. By giving the psychological hypothesis credibility and actively pursuing further research, a far more complete and better understand of this phenomenon can be achieved.
References


