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Race Logic: Measuring Stereotyped Mental Representations of Football Player Positions

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Race Logic: Measuring Stereotyped Mental Representations of Football Player Positions

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THESIS CERTIFICATE OF APPROVAL

The thesis of Jillian Fisher is approved:

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Abstract

This preregistered research sought to capture the mental images associated with the quarterback and wide receiver positions to understand race logic prevalent in the NFL using the two phase, reverse correlation image classification paradigm. Participants in phase one were randomly assigned to the quarterback or wide receiver group and responded to 300 forced choice side by side images, indicating which image appears most like the target position. From these responses, four images were created based on position (quarterback or wide receiver) and participant exposure to football related media content (high or low). These images were used as stimuli in phase two where 237 additional participants rated the images on race, intelligence, and athleticism.

It was hypothesized that the images created from phase one participants of quarterbacks would be rated as "more white" and the images of wide receivers would be rated as "more black," consistent with racial stacking research. Additionally, football consumption was expected to have a polarizing effect on the ratings of the images. That is, the higher consumption participants would produce an image for quarterbacks that appears more white (black for wide receivers) than participants who have lower consumption. Finally, it was hypothesized that quarterbacks would be rated as more intelligent whereas wide receivers would be rated as more athletic. Contrary to predictions for consumption, participants with lower levels of exposure created images that were rated more consistently with race logic- the quarterback was rated as more white whereas the wide receiver was rated as more black. However, there were no significant differences in how each position was rated in terms of intelligence and athleticism. In general, quarterback images were rated higher in both intelligence and athleticism. Implications of current research findings are discussed as well as the race logic construct. Future research is

needed to explore how players, coaches, and staff respond using various techniques including implicit measures.

keywords: reverse correlations, mental representations, football, stereotype, race logic

Race Logic: Measuring Stereotyped Mental Representations of Football Player Positions

Some of the most iconic moments in the National Football League (NFL) for the past five decades portray a white quarterback throwing a pass and a black wide receiver making a miraculous catch. Although an integral part of the NFL history, replaying these moments may inadvertently create generalized expectations for how quarterback and wide receivers look by influencing the mental representation of these positions. Decades later, the landscape of the NFL reflects a similar pattern: in 2016, 78% of quarterbacks were white whereas 88% of wide receivers were black (Woods et al., 2018). In sports, this pattern is attributed to race logic, defined as a complex widespread racial ideology in which racial backgrounds define athletic careers, success, and abilities (Coakley, 2004). A common explanation of race logic involves contrasting black athletes' superior athletic abilities and white athletes' superior mental abilities (Kaiser et al., 2016). However, research into this construct, its prevalence, and how it is manifested within the minds of sports consumers is limited.

In general, race logic has been used as a blanket explanation when racial differences are found. For example, it has been used to explain why athletes tend to racially stack into playing specific positions (Coleman & Scott, 2018; Siler, 2019) and why athletes are portrayed differently by media outlets (Dufur, 1997; Gill & Brajer, 2012; Lewis et al., 2019). In order to produce a measurement of this ideological system, the definition must be reduced to elements from which it can be measured.

The definition suggests two elements: a) there is a stereotypical belief structure involving athletes and b) this structure is a widely accepted within sport. Therefore, any measurement of racial logic in sport first requires understanding how stereotyping is involved. Research suggests that stereotype knowledge is gained through experience (Sherman, 1996). Stereotypes are

continuously modified to incorporate new subcategories within the original stereotype to accommodate continued exposure (Kunda & Oleson, 1995; Maurer et al., 1995; Park et al., 1992; Queller & Smith, 2002; Richards & Hewstone, 2001), ultimately creating specific stereotype information for black (Devine & Baker, 1991) and white athletes (Stone, 2002). Furthermore, research on stereotype threat confirms that there are intelligence and athleticism components for white and black athlete stereotypes (Ash & Cranmer, 2020; Czopp, 2010; Ferrucci & Tandoc, 2018; Stone, 2002; Stone et al., 1999). When combined with the current literature that contends the existence of race logic, stereotype research provides the basis for which a measurement of race logic can be derived.

The second element of race logic suggests it is common and prevalent within sports, an element partially addressed by a study conducted by Kaiser and colleagues (2016) that examined how race logic beliefs operate as a function of involvement. Participants, consisting of fans, non-fans, or football players, were asked to create a football roster of 11 players from a pool of 16 images. Fans and players were significantly more likely to choose a white quarterback when compared to the non-fans, yet all participants were significantly more likely to choose a white quarterback over a black quarterback (Kaiser et al., 2016). This suggests two things: a) involvement with football affects expectations of how players of positions should look, and b) lack of involvement does not prevent people from perpetuating the use of racial stereotypes in football (Kaiser et al., 2016; Mercurio & Filak, 2010; Stone et al., 1999). The effect of involvement posits the question of whether mere exposure to football and level of consumption affects football player mental representations. When the elements within race logic are examined under the guise of stereotype processes, including exposure to sports media and existing athlete stereotype research, the measurement of race logic becomes attainable. The current research aims

to address race logic as it pertains to football players and positions based on people's exposure to the sport.

A Brief Introduction to Stereotypes

Stereotypes can be described as organizing units of information that depict social and cultural relevant characteristics ultimately used to categorize others and define group membership (Devine, 1989). Also, stereotypes have been viewed as a collection of learned associations between social groups and attributes, including information beyond one-word associations in complex patterns (Quinn et al., 2004). Stereotypes are thought to reflect experience primarily dictated by the culture (Hinton, 2017), although experience impacts stereotypes in implicit and explicit ways (Arendt, 2013). Historically, stereotype research has consisted of associating traits to groups through participants' open-ended responses (Allport, 1954; Katz & Braley, 1933) and ordered ratings of trait associations or sorting tasks (Andersen & Klatzky, 1987; Brewer et al., 1981) which are aggregated at the group level to represent a consensus reflecting cultural stereotypes. These types of measures largely relied on the participants' explicit knowledge and willingness to be honest. Additional methods have been developed with the intent of capturing implicit stereotype content through targeting a stereotype category by priming participants with words or images (Dovidio et al., 1986) and implicit association tests that use the difference between reaction times for pairs of words or images to establish the strength and direction of associations (Greenwald et al., 1998).

Stereotypes play an important role in person perception. The dynamic theory of person construal postulates that social perception takes place in a feedback loop, with visual input and higher order cognitive process and stereotype information playing a role in how a person is perceived (Freeman & Ambady, 2011). This theory suggests that stereotypes are activated by

initial categorizations of a social target (Freeman & Ambady, 2011); however, the act of categorizing others is distinct from the process of stereotyping (Andersen & Klatzky, 1987). Person perception and social stereotyping are thought to be largely automatic processes (Devine, 1989) driven by the process of categorizing others (Allport, 1954; Klapper et al., 2017). Race and gender are they most common and instantaneous categorizing components, being completed within the first second from stimuli onset (Fitousi, 2020). However, race takes precedent over gender as demonstrated when reviewing brain imagining (Volpert-Esmond & Bartholow, 2019).

Organizing information in stereotypes affords a systematic way in which information can be used to compare the subject at hand (Bodenhausen & Lichtenstein, 1987). Understanding stereotype associations are an important element of stereotype research (Cox & Devine 2015; Devine, 1989), and these associations are used in daily social interactions because they are more informative that categorical associations (Andersen & Klatzky, 1987) and typically have an evaluative component (Dovidio et al., 1986, Phills et al., 2020). Although, these processes are interdependent, the function of categorizing race in particular is segregated from the application of stereotype information (Ito & Tomelleri, 2017). When individuals attempt to suppress use of racial categories, other forms of stereotyping increase such as feature based stereotyping (Ko et al., 2008).

Racial Stereotypes

Different race categories provide a foundation from which stereotype research has developed over time (Devine & Baker, 1991; Devine & Elliot, 1995; Dovidio et al., 1986; Gaertner & McLaughlin, 1983; Katz & Braley, 1933). In an early study of race-based stereotypes, Katz and Braley (1933) provided participants with a list of adjectives and requested that participants associate them with different racial categories, finding the most consensus on

racially black stereotypes. When this research was repeated by Devine and Elliot (1995), consensus was again found; however, the traits associated with the black stereotype had changed over time. This research found athleticism and rhythmic were most frequently associated with black stereotypes (Devine & Elliot, 1995), whereas superstitious and lazy were originally found in the Katz and Braley (1933) research.

A study by Gaertner and McLaughlin (1983) looked specifically at dichotomous black vs white racial categories and racial stereotyping elements. Participants ascribed more positive traits (ambitious, clean, and smart) to white stereotypes whereas there was no difference for negative traits. Presenting participants briefly with a category via an image or word, referred to as priming, has proven to elicit associations of the primed category. Dovidio, Evans and Tyler (1986) primed racial categories (black or white) and had participants indicate whether a trait represents the primed category or not. The results of this study indicated strong stereotyping of both racial categories. When primed with the white stereotype category, practical and ambitious traits were rated higher than the negative traits of conventional and stubborn, whereas when primed with the black stereotype category, negative traits of lazy and imitative were rated higher than the positive traits of musical and sensitive (Dovidio et al., 1986).

Research using both black and white participants sought to investigate the racial stereotype of both racial categories (Krueger, 1996). Using past research (Devine & Elliot, 1995; Dovidio et al., 1986; Gaertner & McLaughlin, 1983), a trait list was created that included both positive and negative traits. Participants rated each characteristic twice on an 8-point scale (+4 *very typical of participant race* to -4 *very typical of other race*) according to their own personal belief and to reflect the current cultural stereotype. In the analysis phase it was revealed that there was considerable between-subject agreement for both personal beliefs and cultural

stereotypes. The set of traits associated for each relevant group (white or black participants, personal beliefs versus cultural stereotype) showed the contrasting way in which each racial category saw their own race versus how they saw other race group. All participants included athleticism as representative of black individuals as seen in their personal beliefs and cultural stereotype ratings (Krueger, 1996). For black participants, regarding the black stereotype, athleticism and musical were rated highest for both personal belief and cultural stereotype. However, black participants personal beliefs and cultural stereotype of white individuals illustrated a contradiction. Black participants rated arrogance highly for personal beliefs although this was outranked by ambitious in their cultural stereotype. For white participants, their personal beliefs on both black and white stereotypes deviated from their cultural stereotypes. Their personal beliefs regarding the white stereotype contained two negative traits, arrogance and materialistic, whereas their cultural stereotype was represented positively with traits like hardworking and intelligent. White participants personal beliefs on black stereotypes and the cultural stereotype included athletic and aggressive. However, they included hardworking in their personal beliefs, contradicting the cultural stereotype of unreliable.

Aggressiveness and intelligence traits were seen as stereotypic traits in a study investigating the use of racial stereotypes in hiring decisions for two positions (Collier & Shaffer, 1999). In previous research (Collier & Shaffer, 1996, as cited in Collier & Shaffer, 1999), it was determined that the general manager position required increased amounts of intellectual ability, whereas the linebacker coach was considered to require increased amounts of aggressiveness due to the nature of the position. In Collier and Shaffer (1999), participants were presented with images of a black and white candidate for these positions and allotted 90 or 180 seconds to make a hiring decision. White candidates were overly represented in the general

manager position and black candidates for the linebacker position, but only when given longer to decide (Collier & Shaffer, 1999). Exposure to a social target is thought to automatically activate stereotype information (Devine, 1989; Freeman & Ambady, 2011); however, use of stereotype information is not always automatic.

Stereotype Change and the Effects of Exposure

Perceptual fluency is gained through our experience with anything including our social surroundings. Our perceptual fluency with social targets influences initial category assignment and as experience is gained, the precision of category assignment and breadth of stereotype associations are increased, generating very specific stereotype representations (Oppenheimer & Frank, 2008). However, experience with stereotyped individuals alone does not guarantee the accuracy of the stereotype content; the continued use of stereotypes is established by the predictably in the consistency of the experience (Kahneman & Klein, 2009).

As we gain experience and exposure to stereotyped groups, how consistent or inconsistent the members represent the stereotype affects the application of the stereotype in several ways. First, the stereotype validity model emphasizes how exposure to stereotyped individuals who confirm the stereotype encourages its continued use (Madon et al., 2006) and mere exposure increases the probability that information will be accepted as valid, at least in the immediate future (Jackson et al., 1993). Furthermore, perceivers suffer psychological effects when presented with counter-stereotypical information inducing behavior aimed at sabotaging counter-stereotypical individuals (Rudman & Fairchild, 2004). Recipients of this backlash effect tend to avoid furthering the reaction by reverting to behavior that is more consistent with stereotypical behavior (Rudman & Fairchild, 2004).

Exposure uniquely affects implicit and explicit stereotype beliefs. For example, Arendt (2013) examined the effects of increasing exposure on stereotypical beliefs. Participants were divided into five conditions based on the number of passages they read that contained stereotypical information about a criminal foreigner. After reading these passages, participants completed two measures: the implicit association test on criminal foreigners and explicit beliefs about the commonality of crime among foreigners. Results displayed a difference in how increased exposure to the stereotypical content affected the participants beliefs about foreigners committing crimes. Implicitly, increased stereotype exposure strengthened associations regarding foreigners and criminality. However, exposure did not affect explicit beliefs about criminal foreigners (Arendt, 2013).

Exposure to stereotype congruent and incongruent information also affects memory. A meta-analysis on memory effects revealed that inconsistent information was remembered better. However, there were several caveats to this enhanced memory effect with the most important being the level of processing counter stereotypical information was subjected to (Stangor & McMillan, 1992). That is, counter stereotypical information requires additional processing in order for existing stereotype content to be modified in memory (Dijksterhuis & Van Knippenberg, 1995; Stangor & McMillan, 1992).

On the other hand, decision making favors use of stereotype consistent information (Falbén et al., 2019). In a series of experiments, researchers investigated the ease of classifying males and females faces on gender stereotypical/non-stereotypical occupations or traits. Results from this study illustrated a bias toward stereotypical information as images paired with stereotype congruent information were classified more quickly, were more preferred, and required less evidence (Falbén et al., 2019).

Examining how stereotype content is maintained defines the boundary conditions of when and how stereotype content is modified at the group level. Changes in the central tendency of group trait ratings signify a change in the stereotype content (Garcia-Marques & Mackie, 1999), as seen when Devine and Elliot (1995) recreated Katz and Braley's cultural stereotype research from 1933. Research has found that content was modified when several group members violated the stereotype itself, and when single individuals violated the information, the members in the group were perceived as more variable (Garcia-Marques & Mackie, 1999). This research established an understanding of how stereotype consistent and inconsistent information was generalized from individual members to the stereotype about the group. Using the paradigm established by Garcia-Marques and Mackie (1999), Paolini and colleagues (2009) sought to examine the how the pressure of being held accountable affected changing the stereotype content based on presentation with a single group member that confirmed or disconfirmed the stereotype content. It was found that explicitly being held accountable for changing the content of stereotypes increased generalizing from a single group member to group level membership under both conditions of stereotype consistent and inconsistent information. However, generalizing decreased when the validity of the information was questioned (Paolini et al., 2009). Preservation of the original stereotype content occurs if a group member is perceived to unreliably violate the terms of group membership.

Lastly, research on the development of stereotype mental representations found that experience with a stereotype does affect how the group is represented mentally (Sherman, 1996). Participants were asked to create a stereotype for a novel group after having read behavioral information about several group members representing acts of kindness and intelligence. Exposure was manipulated by the amount of information presented (1-4 blocks) to determine if

information described or defined the novel group. Analysis revealed that participants with less information (1 block) were more likely to define the novel group and create a prototype for group members based on the behavior of a few members. As experience increased with the novel group, the resulting stereotype became more abstract and segregated from the original exemplars generated with less exposure (Sherman, 1996).

Subtyping and Racialized Athlete Stereotypes

As exposure to stereotype inconsistent information increases, the original stereotype information is modified in one of two ways: the original information within the stereotype accommodates new information or the new inconsistent information is partitioned off from the original stereotype, creating a new subset within the original group used to establish group membership (Queller & Smith, 2002). Subtyping group membership within a stereotype suggests both a hierarchical organization structure (Brewer et al., 1981) and requires regular exposure over time in order to be created (Queller & Smith, 2002). Furthermore, two processes have been identified which allow for integration of counter stereotypic information with regard to typicality within group membership (Richards & Hewstone, 2001). Subtyping creates a subordinate category under which the superordinate stereotype was formed (Maurer et al., 1995; Park et al., 1992; Richards & Hewstone, 2001). For example, a black person represents the superordinate level whereas black athlete represents a subtype of the black person stereotype (Devine & Baker, 1991). On the other hand, subgrouping allows for patterns recognized within the group membership (Maurer et al., 1995) and appears more strongly when related to ingroup membership (Park et al., 1992). When asked to provide reasoning about ingroup and outgroup variability, participants were more likely to refer to their own membership to the group using the self as an indicator in the perception of group variability (Park et al., 1992; Park & Judd, 1990).

Participants were able to recall information that was inconsistent with superordinate stereotypes (racial or gender category) as this engaged a higher level of processing (Berthold et al., 2019). However, recall over a longer period reflected failure to assimilate the contradictory information into existing stereotype information (Berthold et al., 2019). Increasing experience and exposure to social groups enhances the subgrouping propensity (Richards & Hewstone, 2001), thereby increasing the likelihood that stereotyping would extend to different sports and positions within particular sports. In the case of race logic, sport specific and position specific stereotype information is contained under the superordinate athlete stereotype.

The athlete subtype has been conceptualized within stereotype research as a subtype of larger racial stereotypes (Devine & Baker, 1991; Kunda & Oleson, 1995; Maurer et al., 1995; Queller & Smith, 2002; Richards & Hewstone, 2001). In a research study investigating the effects of athlete stereotype beliefs, participants (all white) were assigned to play the role of academic advisor to student athletes (Czopp, 2010). Belief in stereotypical athletic performance associated with different races influenced advice given, such that black student athletes were discouraged from pursuing educational goals while white student athletes were not. In a real world setting of college football, current football coaches were asked to evaluate a set of football players (black and white) on several subjective and objective attributes (Thomas et al., 2015). When the results of their evaluations were analyzed it was determined that both black and white athletes had similar objective evaluations, but black players invoked biased subjective evaluations and were allocated more resources than white athletes (Thomas et al., 2015).

Race was seen as a crucial factor when student peers evaluated student athlete college essay submissions (Ash & Cranmer, 2020). If the submission was framed as belonging to a black athlete, it was rated more highly when compared to how white athletes' submissions were rated.

Furthermore, when shown an image of a basketball player (black or white) and then listening to college basketball game, participants created evaluations consistent with race-based athletic stereotypes: the black player condition was described as having more ability and playing a better game whereas the white player was described as having a better mental game and as hustling more (Stone et al., 1997).

Analysis into athlete identity has revealed significant differences in how black and white athletes view themselves (Cox & Whaley, 2004). Athletic identity, preceived ability, and level of interest was rated higher by black athletes than by white athletes (Cox & Whaley, 2004). Research has also suggested that although the traits associated with the black athlete stereotype may be positive in theory (increased athletic ability), this contributes to negative beliefs about lack of work ethic and overall arrogance based on the assumption black athletes can only credit their natural ability for any athletic successes (Moskowitz & Carter, 2018). Regardless of how positive the traits associated with black and white athlete stereotypes are or how differentiated they are from larger racial stereotypes, there are several negative implications for their continued use in creating situations where performance is hindered via stereotype threat (Stone, 2002; Stone et al., 1999).

Stereotype threat research provides a unique opportunity to validate the content contained within different athlete stereotypes specific to the athlete's race. Stereotype threat is researched by priming participants with various stereotype content (or not) and then assessing performance on various tasks. In sports, stereotype threat research has consistently found that white athletes appear to be consistently threatened in paradigms were their natural ability and athleticism was questioned (Stone et al., 1999; Stone, 2002), and black athletes cave under mental ability pressures (Moskowitz & Carter, 2018).

When asked to perform to assess natural ability, white athletes engaged in self-handicapping by avoiding practice when their identity and natural ability was threated (Stone, 2002). Being awarded athletic scholarships creates additional stress on student athletes as they must remain committed to maintaining their grades and remain engaged academically. One research study investigated the relationship between performance and level of academic engagement which included scholarship status. Level of overall academic engagement was found to affect black and white college athletes in different ways when primed with different identities: athlete, student athlete, or research participant (Stone et al., 2012). Priming both student and athletic identity reduced performance on both difficult and easy tasks for black student athletes with scholarships and priming academic identity reduced performance on the difficult task for white student athletes (Stone et al., 2012).

Traditional stereotype threat research contends that exposure to stereotypical information, regardless of the format of delivery (explicitly stated or primed), will cause performance to confirm those stereotypes (e.g., white athletes will perform worse when natural ability is being measured) (Jackson et al., 1993). This belief also extends to other predictions of future success. Stereotype inconsistent performance is discounted and undermines probability of future success whereas stereotype consistent performance biases future predictions in the performers favor (Jackson et al., 1993).

When asked to rate images of black and white athletes on natural ability, physical strength, intelligence, and leadership and read a description of football performance, participants rated both black and white athletes in stereotypical ways and descriptions as more credible when they included stereotypical consistent information (Ferrucci & Tandoc, 2018). This research also found a main effect for participant race in propensity to stereotype, finding that black

participants were more likely to subscribe to stereotypical beliefs than white participants. When presenting written descriptions of crimes perpetuated by athletes, race was only assumed by 71 out of 238 participants, but those who did assume the race were more likely to identify themselves as sport fans (Freeman & Ambady, 2011). However, emotional reactions to criminal offenses and sentences given appeared to be reduced by level of fandom. Stereotype threat is pervasive in sports (Smith & Martiny, 2018) and has the potential for detrimental outcomes.

Subgrouping the Athlete Stereotype in Sport Research

Research in the sports field presents compelling evidence that racial athlete subtypes have been further divided into subgroups by sports (Stone et al., 1997), fanbases (Scott, 2013), and playing central or peripheral positions (Mills et al., 2018). Football specific research has found several differences supporting the creation of stereotype subgroups by position for both players and coaches, supported by literature on racial stacking and content analysis. Racial stacking research uses data generated when teams commit to their final rosters, often having to code the player's race. Content analysis provides insight into how athletes are depicted in various formats (magazines, advertisements, etc.). Although these types of research can be insightful, methodologically it presents a challenge and often yields conflicting results due to the coding needed to complete the analysis.

In general, content analysis on athletes has found evidence that both supports and refutes race logic conclusions that an athlete's race acts as a determinant of how they are perceived and described by others. In addition to the element of race, many researchers have also investigated the dichotomy of intelligence versus athletic skill and how it is ascribed to white and black athletes respectively. A study based on the use of a psychological test, the Wonderlic test, found that scores did not favor particular races in its application (Gill & Brajer, 2012). From a

historical perspective, this finding may seem encouraging as racial discrepancies appear to dissipating in terms of how athletes are described. It cannot, however, account for the continued practice of racial stacking.

A comprehensive study reviewed two major publications that covered the NFL draft both in online and print formats from 1998-2007 (Bigler & Jeffries, 2008). Bigler and Jefferies (2008) restricted this study to quarterback prospects only, coded for race based on images found online, and rated valence of evaluations for each quarterback based on five categories of ability (arm strength, accuracy, leadership, decision making, and athleticism). In addition to the two researchers, a third coder was used in order to diminish the possibility of bias in the coding scheme, reporting a 78% consensus and finding most of the differences in coders were based on semantic differences (somewhat negative versus negative). Racial discrepancies were found in each individual category of ability, although only one was statistically significant: black quarterbacks were evaluated more positivity in terms of athleticism and arm strength compared to white quarterbacks.

Another study, aimed at understanding how quarterback prospects were rated in terms of intelligence and athleticism, examined written descriptions from 1998-2008 in the sportsillustrated.com NFL draft section (Mercurio & Filak, 2010). Results suggested that white quarterbacks were described in terms of mental abilities as opposed to physical abilities, whereas the opposite way true for black quarterbacks. The most recent study to review the quarterback position, this time in regard to coverage of high school athletes' commitment to collegiate level, found no differences in how black and white quarterbacks were described (Lewis et al., 2019).

Racial stacking is the most researched and closely related part of race logic, using data from many professional sports teams to review race and position associations. For decades, a

racial segregation among positions has been documented. Race has been found to be a significant factor for not only positions in which black and white athletes play (Lewis, 1995; Pitts & Yost, 2013; Siler, 2019), but also for coaching staff (Day & McDonald, 2010; Foreman & Turick, 2020; Singer et al., 2010; Turick & Bopp, 2016) and plays called on the field, referred to as racial tasking (Bopp et al., 2019; Woods et al., 2018).

American football has considerable history rich with documentation articulating the prevalence of racial stacking that occurs in both college and the NFL (Lewis, 1995). The quarterback position, historically, has been overwhelming played by white athletes in the NFL based on the assumption that playing this position requires increased cognitive skill and white athletes are stereotyped to possess this ability (Buffington, 2005; Siler, 2019; Woods et al., 2018). Positions that require speed such as the running back, wide receiver, and defensive backs (Coleman & Scott, 2018) or aggressiveness, like defensive tackle positions attract black athletes (Woods et al., 2018). It has also been argued that white players are slotted to play central roles while not white (other race) athletes fill peripheral positions (Foreman & Turick, 2020; Mills et al., 2018), as if race was the deciding factor in who superstar, front and center athletes should be. Furthermore, counter stereotypical quarterbacks and running backs are more likely to change into stereotypical positions when transitioning from high school to college football (Pitts & Yost, 2013).

Football coaches also fall prey to racial stacking and racialized outcomes. Analysis on the hiring practices and promotions of coaches in college and the NFL revealed the race of the coach had implications on their coaching career. White coaches are extended additional time in their tenure as head coach, averaging a year longer than black coaches (Turick & Bopp 2016). Black coaches are more likely to coach positions typical of black players, regardless of their own

playing experience, and are less likely to be considered for central coaching positions by both white and nonwhite head coaches (Foreman & Turick, 2020). Moreover, with six years of data on NFL hiring practices, race had a direct effect on the hiring of head coaches and both offensive and defensive coordinators (Braddock et al., 2012). The size of one's social network and relative power of individuals in said social network affect the likelihood of being considered for a coaching position for black candidates only (Day & McDonald, 2010), having no affect for white candidates.

Specificity of Mental Representations

As opposed to general stereotype research, where researchers depend on participants to generate a list of traits and/or accurately recreate their internalized associative networks when primed, research using reverse correlation methodology has demonstrated that it is possible to create images representing how stereotypes are visualized. This paradigm uses stimuli that the participants themselves generate, freeing the researchers of a priori assumptions. Findings from this research include how specific traits are associated with facial features, race, different occupations, and group membership (Dotsch & Todorov, 2012). The reverse correlation paradigm consist of four steps (Brinkman et al., 2017) in two distinct phases of data collection with separate participants used in each phase. The first step is creating a base image and noise patterns. In step 2, participants complete force choice trials with two or four images. Step 3 is the image generation phase where the stimuli is created using Phase 1 participants responses. Finally in step 4, Phase 2 participants rate the images created on various dimensions which is then used for data analyses (Brinkman et al., 2017; Todorov et al., 2011).

First impressions based on facial features go beyond physical features to include traits such as trustworthiness versus untrustworthiness (Dotsch & Todorov, 2012; Klapper et al.,

2017), dominance vs submissiveness (Dotsch & Todorov, 2012; Todorov et al., 2015), and warmth versus competence (Imhoff & Dotsch, 2013). The social categorization process appears to selectively engage trait attribution considered typical of social category, regardless of valence. Behavioral information manipulations to depict trustworthy or criminal traits create unique effects on the mental representations (Dotsch et al., 2011). For example, the words stupid and criminal generated two unique classification images (Dotsch et al., 2013).

This research has also revealed how ingroup membership affects mental representation of prototypical group members for varying levels of group membership (the self, their nationality, superordinate group) in hierarchical fashion: the self and nationality image looked the most similar (Imhoff & Dotsch, 2013), whereas the superordinate group most resembled their own nationality ingroup (Imhoff et al., 2011). In separate research, outgroup members were represented more negatively (Dotsch et al., 2008), and increased prejudice toward the outgroup subsequently influenced this further. Classification images have also been created to represent prototypical group memberships of liberal versus conservative and gay versus straight (Tskhay & Rule, 2015) and teachers versus managers (Imhoff & Dotsch, 2013). This paradigm has also been able to detect differences in how faces are perceived and encoded within memory by asking participants involved in relationships to create classification images of partners. Those participants currently in a relationship created images that were rated as more attractive whereas single participants created images of past partners that were rated as less attractive (Karremans et al., 2011).

Furthermore, classification images have been created to capture the prototypicality of race and resident subtypes of racial stereotypes (Hinzman & Maddox, 2017). Six race distinct images were created for each of black and white men: highly prototypical, low prototypicality,

businessman, athlete, doctor, and rapper. When evaluating the faces created to represent a black

or white cop, it was found that black cops were rated more dominant, more negative, and less

positive overall when compared to the ratings of white cops (Lloyd et al., 2020). Differences

were also illustrated in the faces created to represent the different socioeconomic classes (poor,

middle class, and rich) of both black and white individuals (Lei & Bodenhausen, 2017), with

prejudice polarizing how the classification images were rated on several characteristics. In

addition, this paradigm has been able to detect differences in how welfare recipients and non-

welfare recipients are represented internally as mental images (Brown-Iannuzzi et al., 2017),

with distinct images and ratings made for race, laziness, incompetence, unattractiveness,

likeableness, and unhappiness. Differences have also been detected in how immigrants are

perceived based on their assimilation into America with the more assimilated images

representing a more racially white appearance (Kunst et al., 2018).

Sports undoubtably play a significant role in American culture and history (Dyreson,

2014), warranting the label of a national pastime. Consumption of sport related content is defined

as being direct (attending games) and indirect, which includes any consumption of a sporting

event through television or online means (Wann et al., 2001). Passive consumption, or

perception outside awareness (Merikle, 2001), is likely to have different effects on consumers

than actively watching a game or searching on the internet (Mehus, 2005). A meta-analytic

review of consumers attitudes and black stereotypes in the media suggests that media

consumption has a significant and negative impact (Gaur, 2020). In other words, what was

viewed via media consumption largely impacted the global perception of group members. Level

of sport related consumption specifically reflects differences in attitudes based on race such that

black athletes were typically more liked than white athletes as sport related consumption

increased (Brown et al., 2019).

Present Study

This research had two main goals. The first goal was to investigate the internal mental

representations of the quarterback and wide receiver position and the second goal was to explore

how the level of sports media consumption influences these mental representations. This

research used the reverse correlation paradigm (Brinkman et al., 2017) involving two distinct

phases. The stimuli for Phase 1 were created using face average software (DeBruine & Jones,

2017), combining both black and white faces in order to create a single racially ambiguous male

face. During Phase 1 participants responded to several pairs of images to elect the image that

most accurately depicted a quarterback or wide receiver (dependent upon the condition

assignment). Upon completion, participants reported their individual football related

consumption. Images were generated from the consolidation of participant responses in order to

create four unique images: quarterback image by low consumers, quarterback image by high

consumers, wide receiver image by low consumers, and wide receiver image by high consumers.

The second phase, using a new pool of participants, rated the images in terms of perceived race,

athleticism, and intelligence. Consistent with racial stacking research, it was hypothesized that

the images of quarterbacks would be rated as "more white" and the images of wide receivers

would be rated as "more black". Furthermore, it was hypothesized that increased football-related

consumption would have a polarizing effect on the images (Arendt, 2013; Kaiser et al., 2016).

That is, the higher consumption participants would produce an image for quarterbacks that

appeared more white (black for wide receivers) than participants who had lower consumption. It

was also hypothesized that quarterbacks would have higher overall intelligence ratings whereas

wide receivers would have higher overall athleticism ratings. Phase 1 used a 2 (position: quarterback and wide receiver) by 2 (sport media consumption: high or low) between subjects design to complete the generation of images. Phase 2 used a within-subjects design, with each participant rating each of the four images on four dimensions. The present study was preregistered at aspredicted.org and is available at the following link: https://aspredicted.org/ev73e.pdf. The research materials are available at https://osf.io/zv4rx/.

Phase 1

Method

Participants

Participants were recruited through Amazon's Mechanical Turk (MTurk) Human Intelligence Tasks to complete the study on Qualtrics. Previous experiments using reverse correlations to investigate racial stereotypes (Hinzman & Maddox, 2017; Lei & Bodenhausen, 2017) successfully generated distinct images using 35 participants per image condition. However, concerns were raised regarding type one error inflation using this paradigm (Cone et al., 2020), in part due to the low number of participants used to create the images. In order to correct for the over inflation of type one errors, 493 participants were recruited to participate in Phase 1 of this study so that > 100 participants would contribute to each of the four resulting images. Workers were compensated $2.00 for completion due to the long nature of the study design. The survey included a filter requiring the participants be located within the United States and those not currently in the United States were restricted from participating. Ages ranged from 20-68 with a mean age of 33.25. There were 273 males, 161 females, 2 other, and 64 declined to respond. Participants reported race and ethnicities in an open text format with broken down as: 342 white, 53 black, 9 Asian, 14 Hispanic, 4 Native American, and 15 other.

Materials

Base Image One image was created for use as the base image for both the quarterback and wide receiver conditions. A biracial image was created using the Face Research lab face-database (DeBruine & Jones, 2017) by averaging seven white male faces and seven black male faces (see Figure 1).

Noise Patterns Noise patterns were created using the rCir package in R (Dotsch, 2017). Three hundred random sinusoid noise patterns along with the inverse of each pattern were generated for a total of 600 noise patterns unique to each condition (quarterback or wide receiver, 1200 total), which were then superimposed on the base image to create 300 pairs of the base image with each version of the noise pattern (Dotsch, 2017). Figure 2 shows the base image with examples of both noise patterns. In a previous study using the reverse correlation design, aimed at creating the clearest sex-type body images, it was found that an image could be created from as few as 100 trials. However, image quality was rated highest at 300 trials (Lick et al., 2013).

Football Consumption This construct was assessed using a self-report questionnaire aimed at quantifying overall exposure to American Football. Items were adapted from previous research related to sport media consumption (Wakefield, 2016). Participants rated their frequency of engagement and consumption on a 5-point scale (*never* to *a great deal*) regarding the time spent watching football games (M =3.57), attending football games(M = 3.17), watching the Superbowl (M = 3.33), reading information online about football (M = 3.25), watching football related shows on television (M = 3.34), and listening to podcasts or radio broadcasts about football (M = 3.07). This 6-item assessment was reliable (Cronbach's α=.87) and items were averaged to form one consumption score (M= 3.17, SD=.86).

Typicality Trait Ratings Participants rated the typicality of quarterback and wide receiver traits using a slider scale 0 to 100, with 0 meaning the position does not possess the trait of athleticism and intelligence at all. Participants were randomly assigned what position they rated first.

Procedure

Categorization Task

Participants were randomly assigned to complete one of the two image tasks: quarterback or wide receiver. Using the two-image forced choice task (2IFC), in each trial participants were shown each pair of stimuli (base image plus noise and base image plus reversed noise) and asked which photo looked more like a quarterback (or wide receiver) for a total of 300 trials. Upon completion of the categorization task, participants answered the football consumption and trait typicality ratings for both quarterback and wide receiver (presented in random order) as well as demographic questions.

Classification Image Generation

The classification images were generated as group level aggregations of participant responses. First, participants' football consumption composite scores were used to create two distinct categories of high and low consumption using a median split (median = 3.17) (Callender & Osburn, 1977). Next, the classification images were created based on football consumption level (high or low) for each position (quarterback and wide receiver), resulting in four classification images: quarterback/high football consumption, quarterback/low football consumption, wide receiver/high consumption, and wide receiver/low consumption (depicted in Figure 3).

Results from Phase 1

Trait Ratings

Dependent t-tests were conducted to investigate the relationship between position and trait ratings. First, we analyzed whether the trait ratings for intelligence and athleticism varied within each position (see Table 1). The wide receiver was rated higher on athleticism ($M = 77.54$, $SD = 17.22$) than intelligence ($M = 73.74$, $SD = 18.42$), $t(437) = 4.09$, $p < .001$, $d = .21$. In contrast, the quarterback position was not rated differently on intelligence ($M = 75.55$, $SD = 17.71$) and athleticism ($M = 75.67$, $SD = 16.90$), $t(438) = -0.14$, $p = .89$.

Next, we analyzed whether quarterbacks and wide receivers were rated differently on each trait. The quarterback position was rated higher on intelligence ($M = 75.51$, $SD = 17.71$) than was the wide receiver position ($M = 73.74$, $SD = 18.42$), $t(437) = 2.46$, $p = .014$, $d = .10$. The wide receiver position was rated higher on athleticism ($M = 77.54$, $SD = 17.22$) than was the quarterback position ($M = 75.68$, $SD = 16.91$), $t(437) = 2.68$, $p = .008$, $d = 11$.

Phase 2

Method

Participants

Participants were recruited from MTurk to complete the image rating task on Qualtrics. Due to the concerns regarding type one error rates within the RCIC paradigm (Cone et al., 2020) and subsequent changes to amount of participants in Phase 1, we sought to recruit over 200 participants and recruited 237. Previous power analysis revealed that 137 participants would be required for 80% power for a within subjects design in order to detect a small effect (Faul et al., 2009). Two hundred and thirty-four participants completed the survey in Qualtrics. Workers were compensated $1.00 for completion of the task. Ages ranged from 21-70 with a mean age of 38.03. There were 143 males, 87 females, 1 other, and 2 declined to respond. Participants

reported ethnicities and race in a free text format broken down as follows: 139 white, 55 black, 9 Asian, 4 Hispanic, 3 Native Americans, and 23 other.

Measures and Procedure

Each participant rated each of the four classification images (see Figure 3) on the dimensions of athleticism, intelligence, black racial depiction, and white racial depiction using a scale of 0 to 100, with 100 representing an exact match between the image and trait or race depiction. Next, participants were presented with the four images in a randomized order and were asked to place them in order from most typical to least typical for quarterbacks and wide receivers, assigning a numerical value 1-4, with 1 being most typical (see Table 5). Then, participants rated intelligence and athleticism for each position independent of the images (see Table 2). Finally, participants reported their behavioral intentions for future football consumption (see Table 3) as well as demographic questions.

Results

This study had three pre-registered hypotheses which were analyzed with the ratings for athleticism, intelligence, racially white, and racially black using four repeated measures analysis of variance (ANOVA). All estimated marginal means are reported in Table 4 and interactions are depicted in Figure 6 and 7. In addition to the pre-registered hypotheses and analysis, participants rank ordered the images to establish the most to least typical image for each position and their responses were analyzed using repeated measures ANOVAs. To conduct this analysis, participants responses were collapsed across all conditions of order presentation for the quarterback position. Next, the average score was computed for each image with lower scores representing the more typical images. Means for each quarterback and wide receiver image are recorded in Table 5. This was then repeated for the wide receiver position. The ANOVA was

conducted using the average score for each of the four images. Dependent t-test analyses were run on participants responses regarding trait typicality of intelligence and athleticism for the quarterback and wide receiver position in general (not how it related to the stimuli images).

Racially White

A repeated measures ANOVA was conducted to determine how racially white the images were perceived to be as a function of the position of the image (quarterback or wide receiver) and the Phase 1 participants' exposure to football related media content (low or high). There was a significant main effect for position of the image (quarterback or wide receiver), $F(1, 199) = 20.19$, $p < .001$, $\eta_p^2 = .092$, such that the quarterback images were rated as more racially white compared to wide receiver images. There was also a significant main effect for exposure (low or high from the participants in Phase 1) of the image, $F(1, 199) = 4.33$, $p = .039$, $\eta_p^2 = .021$, such that images created by those with lower exposure to NFL related media content were rated more racially white than images created by those with higher exposure. There was a significant interaction of image position and football exposure, $F(1, 199) = 12.55$, $p < .001$, $\eta_p^2 = .059$ (see Figure 6). The quarterback low exposure image ($M = 65.71$, $SD = 24.21$) was rated as appearing the most racially white whereas the wide receiver low exposure image ($M = 55.1$, $SD = 27.45$) was rated as appearing the least racially white. The quarterback high exposure image ($M = 63.8$, $SD = 24.24$) and the wide receiver high exposure image ($M = 61.96$ $SD = 24.81$) were rated in between these two images.

This interaction was formally investigated using simple effects analysis. For high exposure images, there was not a significant difference in how racially white the quarterback or wide receiver images were rated, $F(1, 199) = 1.57$, $p = .212$. However, for low exposure images

there was a significant difference, with quarterbacks rated as more racially white than wide receivers, $F(1, 199) = 21.06$, $p < .001$, $d = .41$.

Racially Black

A second repeated measures ANOVA was conducted regarding the racial depiction of the image as appearing black as a function of the position of the image (quarterback or wide receiver) and the Phase 1 participants' exposure to football related media content (low or high). There was a significant main effect for position of the image (quarterback or wide receiver), $F(1, 199) = 14.65$, $p < .001$, $\eta_p^2 = .069$, such that the wide receiver images were rated as more racially black in comparison to the quarterback images. There was a significant main effect for exposure (low or high from the participants in Phase 1) of the image, $F(1, 199) = 9.09$, $p = .003$, $\eta_p^2 = .044$, such that images created by people with lower NFL related media content exposure were rated significantly higher than the images created by the people with high exposure to NFL related media. There was also a significant interaction for exposure of the image (high or low) and position of the image (quarterback or wide receiver), $F(1, 199) = 19.06$, $p < .001$, $\eta_p^2 = .087$ (see Figure 7). The wide receiver low exposure image ($M = 63.52$, $SD = 25.18$) was seen as the most racially black image whereas the quarterback low exposure image ($M = 53.32$, $SD = 29.37$) was rated as the least racially black image. The wide receiver high exposure image ($M = 54.95$, $SD = 28.58$) was rated lower than the quarterback high exposure image ($M = 55.31$, $SD = 27.41$).

A simple effects analysis was used to investigate this interaction further. For high exposure images there was not a significant difference in how racially black the quarterback or wide receiver images were rated, $F(1, 199) = .64$, $p = .426$. However, for low exposure images there was a significant difference; the wide receiver was rated as more racially black than the quarterback, $F(1, 199) = 33.721$, $p < .001$, $d = .37$.

Athleticism

A third repeated measures ANOVA was conducted regarding the athletic appearance of the image as a function of the position of the image (quarterback or wide receiver) and the Phase 1 participants' exposure to football related media content (low or high). There was a significant main effect for position of the image (quarterback or wide receiver) $F(1, 199) = 7.89$, $p < .001$, $\eta_p^2 = .038$, such that the quarterback images were rated as more athletic than the wide receiver images, $d = .11$. Exposure did not have a significant effect on the appearance of athleticism ($p = .471$) nor was there an interaction between exposure and position for athleticism ratings ($p = .275$). The quarterback high exposure image ($M = 66.86$, $SD = 20.07$) was seen as most athletic followed by the quarterback low exposure image ($M = 66.48$, $SD = 21.08$). The wide receiver high exposure image ($M = 63.56$, $SD = 21.39$) was seen as the least athletic while the wide receiver low exposure image ($M = 65.10$, $SD = 20.95$) was rated third in athletic appearance.

Intelligence

A fourth repeated measures ANOVA was conducted regarding the intelligence in the appearance of the image as a function of the position of the image (quarterback or wide receiver) and the Phase 1 participants' exposure to football related media content (low or high). Neither position, $p = .054$ nor exposure, $p = .390$, had a significant effect on the ratings of intelligence; the interaction was also not significant, $p = .796$. The quarterback high exposure image ($M = 64.80$, $SD = 19.98$) was rated as most intelligent followed by the quarterback low exposure image ($M = 64.34$, $SD = 19.97$). The wide receiver high exposure image ($M = 63.58$, $SD = 20.79$) was rated third and the wide receiver low exposure image ($M = 62.63$, $SD = 20.33$) was rated lowest for intelligence.

Rank Ordered Images for Quarterback

A repeated measures ANOVA was conducted regarding the typicality in which the image represented a quarterback as a function of the position of the image (quarterback or wide receiver) and the Phase 1 participants' exposure to football related media content (low or high). Position of the depicted image significantly affected how the images were rated in terms of quarterback typicality, $F(1, 185) = 11.93$, $p < .001$, $\eta_p^2 = .061$, such that quarterback images were rated as more typical of the quarterback position than the wide receiver images, $d = .26$. Phase 1 participants' exposure (high or low) did not have a significant impact on how the images were rated, $p = .465$, nor was there a significant interaction between position and exposure, $p = .485$. The quarterback high exposure image ($M = 2.25$, $SD = 1.15$) was rated as most typical of a quarterback whereas the wide receiver low exposure image ($M = 2.63$, $SD = 1.17$) was rated least typical. The quarterback low exposure image ($M = 2.38$, $SD = 1.13$) was rated second and the wide receiver high exposure image ($M = 2.62$, $SD = 1.08$) was rated third. The order in which the images were ranked can be seen in Figure 4.

Rank Ordered Images for Wide Receiver

A second repeated measures ANOVA was conducted regarding the typicality in which the image represented a wide receiver as function of the position of the image (quarterback or wide receiver) and the Phase 1 participants' exposure to football related media content (low or high). Neither position, $p = .67$, nor exposure, $p = .958$, had a significant main effect; the interaction was also not significant, $p = .90$. The wide receiver low exposure image ($M = 2.51$, $SD = 1.24$) was rated at the least typical, followed by the wide receiver high exposure image ($M = 2.50$, $SD = 1.05$). The quarterback high exposure image was rated the second most representative of a wide receiver ($M = 2.47$, $SD = 1.13$) while the quarterback low exposure image was rated

the most typical (*M* = 2.46, *SD* = 1.10). Image ranking order for wide receivers can be seen in Figure 5.

Trait Ratings Independent of Images

Dependent t-test were conducted in order to investigate the relationship between position and trait ratings. First, we analyzed whether the trait ratings for intelligence and athleticism were dependent upon the position. The results from the wide receiver position demonstrated that athleticism (*M* = 71.78, *SD* = 19.32) was rated higher than intelligence (*M* = 68.32, *SD* = 17.43), *t*(232)= 2.65, *p* = .009, *d* = 19. The results from the quarterback position demonstrated that intelligence (*M* = 68.58, *SD* = 19.07) and athleticism (*M* = 70.02, *SD* = 19.28) were not rated differently, *t*(232)= -1.18, *p* = .240.

Next, we analyzed whether quarterbacks and wide receivers were rated differently on each trait. Ratings of wide receiver intelligence (*M* = 68.32, *SD* = 17.43) and quarterback intelligence (*M* = 68.58, *SD* = 19.07) were not significantly different, *t*(232)= .23, *p* = .818. Ratings of wide receiver athleticism (*M* = 71.78, *SD* = 19.32) and quarterback athleticism (*M* = 70.02, *SD* = 19.28) were also not significantly different, *t*(232)= -1.14, *p* = .147.

Discussion

This research had two goals: to investigate how quarterbacks and wide receivers were mentally represented and how increased consumption of football related media influenced these mental representations. There were three hypotheses preregistered on aspredicted.org. First, it was hypothesized that the quarterback image would be rated as more racially white, and the wide receiver image would be rated more racially black. Results supported this hypothesis. Second, it was hypothesized that exposure would polarize the images ratings in Phase 2; as exposure increased, the quarterbacks would be rated as more white and wide receivers would be rated as

more black. The results demonstrated that exposure had the opposite effect; the images created

by lower exposure participants in Phase 1 produced more racially polarized ratings in Phase 2

compared to the images created by higher exposure participants. Lastly, it was hypothesized that

the quarterback images would be rated as more intelligent while the wide receiver would be rated

as more athletic. This research measured trait relationship in two ways: the typicality of the trait

relative to the position and trait represented in the four images generated. The analysis did not

support this hypothesis, with only one finding of significance: the quarterback position images

were rated higher for athleticism than the wide receiver images.

In support of hypothesis one, the quarterback images were rated as more racially white

than both the wide receiver images. This finding is consistent with the racial stacking research in

the sense that the quarterback position has historically been played by white athletes (Pitts &

Yost, 2013; Siler, 2019; Woods et al., 2018; Woodward, 2004) and contributes to the racial

depiction reflected in the participants' ratings of quarterback images. The wide receivers' images

were rated as more racially black than the quarterback images. This is again in line with latest

racial stacking research as of 2016, finding that 88% of wide receivers in college were black

athletes (Woods et al., 2018).

The second hypothesis was regarding the effect exposure would have on the image

ratings. Images were generated for high and low levels of exposure for each position. It was

hypothesized that as exposure increased, racial logic (white quarterback and black wide receiver)

stereotyping would also increase. However, exposure had the opposite effect. Racial stereotyping

increased at lower levels of football related media consumption and did not affect how the

images produced by the higher exposure participants were rated by Phase 2 participants. This

finding could be explained by research regarding the generation of mental representations of

stereotypes. Sherman (1996) found exposure to stereotyped groups affected how groups were represented within the mind. When asked to generate mental representations of novel groups, participants with less exposure to the novel group members represented the entire group by generating mental images that were exact representations of the group members they were exposed to. However, as exposure to additional group members increased, the mental representation was modified to incorporate all the group members in one more nonfigurative representation, not specific to any one group member. In addition, increased exposure to counter stereotypical representations in real world contexts can reduce the propensity to maintain strict stereotypical beliefs (Dasgupta & Asgari, 2004). Long term exposure thus forces individuals to accommodate counter stereotypical exemplars within the existing stereotype structure as seen with higher exposure quarterback and wide receiver images. When combined with racial stacking, it is likely that low exposure participants have seen both a white quarterback and black wide receiver and generated mental representations for these positions consistent with the exact players seen playing those positions as implicitly held stereotypes represent the earliest experiences with group members (Gawronski et al., 2017).

The third hypothesis investigated the relationship between positions and the traits associated with them. It was hypothesized that quarterbacks would be rated higher for intelligence and wide receivers would be rated higher in athleticism. Past research on racial stereotypes (Gaertner & McLaughlin, 1983; Krueger, 1996), athlete stereotypes (Moskowitz & Carter, 2018; Stone, 2002), content analysis (Bigler & Jeffries, 2008; Mercurio & Filak, 2010; Thomas et al., 2015), and stereotype threat (Stone et al., 1999, 2012) have all independently and reliably found a specific pattern in how these traits are ascribed to different races. The white athlete stereotype encompasses some element of mental prowess over black athletes, whereas

black athletes embody some elusive natural athletic ability over white athletes. The current research did not find that pattern. Quarterbacks were not rated differently on the two traits, nor were there significant differences when comparing quarterbacks versus wide receivers on each trait. Past research suggests we retrieve specific processes in light of available cues (Bordalo et al., 2021). Given there were explicit instructions to attend to typicality and there are clear athlete stereotypes of wide receivers and quarterbacks, beliefs regarding intelligence and athletic ability specific to each position should have been activated. Traits were also measured in the absence of the images and results again indicated that both athleticism and intelligence were associated to both positions as ratings for each trait and each position were similar. Over time perhaps lack of presentation or maintenance of the connection/covariation of quarterback and intelligence or wide receiver and athleticism has weakened these connections (Queller & Smith, 2002).

To further investigate the representational value of the images generated by Phase 1 participants, Phase 2 participants rank ordered each of the four images on the typicality for each position. The images created to represent the quarterback position were ranked as more typical of a quarterback than the wide receiver images. These results demonstrate that images generated were representative of the position it was intended to represent, validating the existence of unique mental representations for both the quarterback and wide receiver position. No past research has attempted to generate mental representations for any football position or sport specific stereotyped image.

Implications of the Current Research and Future Applications of the Race Logic Construct

In the present research, intelligence and athleticism were not associated with wide receivers and quarterbacks in the predicted ways. However, race was significantly associated with both quarterback and wide receiver positions. This can be explained in one of three ways:

racial logic stereotypes have not developed to the position, these attributes are no longer representative of these particular positions, or the structure of the position-based subgroups excludes information associated to the higher-level racial athlete stereotype.

Past research has indicated that race is decoded automatically, independent of the application of associated stereotypical information (Ito & Tomelleri, 2017). This could explain why the quarterback and wide receiver mental representations included a racial element yet excluded the accompanying stereotypical trait attribution for the position or athlete stereotype. The automatic nature of race categorizing (Devine, 1989; Fitousi, 2020; Volpert-Esmond & Bartholow, 2019), level of processing required to maintain stereotypes (Stangor & McMillan, 1992), and implicit effects of media consumption (Arendt, 2013) preclude that subgrouping the athlete stereotype to the position level may not be a process that takes place. That is, passive exposure to football players in and of itself does not necessitate the conditions required to develop stereotypes in the first place even though race is encoded in every day person perception (Andersen & Klatzky, 1987). This explanation contradicts past findings as researchers were able to successfully measure the stereotype content associated with quarterbacks (Ferrucci & Tandoc, 2018). When considering this body of evidence holistically, these contradictory findings highlight the need for future research to establish concrete evidence that subgroup stereotypes specific to each position have been established within the mind.

The second explanation relates to the current cultural relevance of attributional patterns found within racial logic stereotyping. Stereotype content is modified in line with current cultural beliefs as seen by the research first conducted by Katz and Braley (1933) and then repeated by Devine and Elliot (1995). Although increased exposure to media content likely affects implicit stereotype information more so than explicit information, there is less temporal stability in

implicitly held attitudes (Gawronski et al., 2017), likely due to the varied content of media exposure. Furthermore, past research has examined the belief-based discrepancy in athletic dominance (Hughey & Goss, 2015; Sheldon et al., 2007), finding that people may attribute success to genetics, although gene mapping has been unable to fully identify genetic underpinnings (Zilberman-Schapira et al., 2012). However, when black and white participants are explicitly asked, research found that genetics differences were not the sole explanation of determining athletic success (Jayaratne et al., 2009). This could in part explain Kaiser and colleagues' (2016) difficulty in analyzing participant justifications for placement of white players in the quarterback position, although coding of the justifications loosely resembled that of the brain versus brawn dichotomy. These results, when combined with the current research, may represent a cultural shift in how athletes, specifically quarterbacks and wide receivers are viewed.

The third explanation is that racial logic beliefs do not extend to the subgroup stereotypes of positions. That is, that attributes based on racial backgrounds and associated to the racial athlete stereotypes do not spread to the subgroups within. This would preclude the use of racial logic for justification for anything other than racial stacking by position (Woods et al., 2018; Woodward, 2004). Racial logic, by definition, would then need to be reduced to a simple association between race and position as dictated by current racial stacking practices because use of the word "logic" requires that a valid conclusion can be drawn from a premise. Race is the premise in which conclusions would need to be drawn at two separate levels: subgroup position level and the athlete stereotype level. This distinction would eliminate the assumptions that attributional patterns associated with race at the athlete stereotype level are not subsumed to the subgroup level. Furthermore, the importance of this distinction can be seen in a research design

in which the words quarterback and athlete appear to be used interchangeably. Ferrucci and Tandoc (2018) reported that white quarterbacks were rated as more intelligent and better leaders, while black quarterbacks were rated as having more physical strength and natural ability. Descriptions used in this research included both the words quarterback and athlete and images of black or white athletes. Therefore, it is impossible to dissociate the stereotype of quarterback from the stereotype associations of athletes based on their race.

The current research presents the conceptual framework from which a measurement of race logic was derived. The findings of this research bring attention to limitations to the explanatory power of race logic and definition. This research does not confirm the current definition of race logic, as seen in this passage found in a Sport Management Textbook, written by Pedersen and Thibault (2017):

> The popularly held belief that African American athletes owe their athletic success to their natural athletic abilities suggests that they have some genetic advantage over Whites when it comes to achievement in sport. A parallel belief is White athletes achieve excellence because of their discipline, intelligence, and hard work. This attributional pattern is often referred to as race logic. When people of color dominate a sport, a desire emerges to search for a "Black gene" or an "athletic gene" associated with race to explain this dominance (pg. 390).

The results of the present research do suggest the practice of racial logic be dissociated at the athlete stereotype and subgroup level. Racial stacking is evidence of race logic at the position level, but trait attributional patterns are not reliably demonstrated at this subgroup level. Although attributional patterns may be seen at the athlete stereotype level, racial logic should not offer explanatory power as to why certain position or sports are racially dominated.

Dissociation of two processes within racial logic clarifies conflicting and inconsistent research findings. Content analysis at the subgroup level often yields contradictory results in part due to the methodological challenges of unique coding schemes presented in each. Since 1998, when Mikaela Dufur suggested race logic was the primary factor in determining athletic success both on and off the field, finding that advertisements of black athletes in Sports Illustrated were primarily derogatory in nature in comparison to white athletes, other research has found that no such differences exist. Written descriptions of NFL draft prospects demonstrated no distinct racial difference (Bigler & Jeffries, 2008), and when examined more recently, this finding was upheld (Lewis et al., 2019). A third study did find that athletic descriptions did vary by race, specifically for the quarterback position (Mercurio & Filak, 2010). However, the use of position and athlete stereotype attributions may lead to contradictory results as participants are recalling racial associations at the subgroup position level and attributes at the race-based athlete stereotype level. Racial differences can be reliably found at the position level (Coleman & Scott, 2018; Pitts & Yost, 2013; Woods et al., 2018; Woodward, 2004), but research aimed at exploring attributional patterns associated with positions has yielded unclear results (Bigler & Jeffries, 2008; Buffington, 2005; Ferrucci & Tandoc, 2018; Mercurio & Filak, 2010; Schultz et al., 2018).

Strengths, Limitations, and Future Directions

Reverse correlation image classification research has been found to inflate Type I errors with a suggested correction being the use of individual classification images over the group level classification image (Cone et al., 2020). In this research design, this limitation was addressed by adding additional participants in Phase 1 to reduce the power a participant decision had on the resulting image generation. Typically, this paradigm uses 20-30 participants during the image generation phase and each participant completes a set number of trials (this research had 300

trials). Responses are aggregated at the group level to produce the image. In a typical design that would be 6000 to 9000 responses to generate one image. However, this research used over 35,000 (original 493 participants in two position groups, divided in half to create exposure conditions X 300 trials), thereby reducing the impact one decision had on the overall group classification image. In addition, Phase 2 participants rank ordered the created images to better understand the relationship between intended position of the images (quarterback or wide receiver) and the perception of the position. The position in which the image was created was related to how the images were ordered for each position: quarterback images were ranked more typical for the quarterback position.

Past research had found that 300 trials in the image generation phase created the clearest body type images (Lick et al., 2013). However, more recent research has suggested that 150-200 trials enhances compliance with the task at hand (Kevane & Koopmann-Holm, 2021). Furthermore, more recently it has found that quality classification images be generated with shorter methodology (Schmitz et al., 2021). In addition to changes to the research design, research may benefit from targeting participants by race or levels of consumption, particularly people who have no interest in football and most purely represent passive, indirect consumers of the sport.

This current line of research should be continued by investigating the mental representations of football players as held by current and past players of football, coaches of football, and any support staff related to football operations. Understanding how players, coaches, and staff represent players mentally will illuminate differences in stereotypes between consumers and producers of the game of football. Furthermore, understanding how football

players are represented mentally can contribute to the continued examination of how or why racial stacking occurs. This research can also be carried over to other positions and other sports.

Exposure in the present research was accomplished by asking participants a series of questions aimed at capturing both casual/passive exposure and intentional/active exposure to football media products based on past research sport consumption research (Wakefield, 2016). Future research could benefit from specifically recruiting participant groups based on their self-reported exposure or consumption of football related media products. This may help further understanding the impact of exposure on mental representations of football players.

Lastly, the current research would benefit from the use of alternative techniques, specifically regarding the reverse correlation paradigm in order to replicate and validate current research results. Future research could be aimed at generating individual level classification images (Cone et al., 2020), using a confidence scale to rate the images used in the trials (Kevane & Koopmann-Holm, 2021), or in combination with reduced number of trials (Schmitz et al., 2021). The current research used indirect methodology in regard to generation of the stimuli used in the paradigm. However, the measurements of race and attributes associated to each position were explicit. Future research designs should include implicit measures aimed at understanding the strength of associations between positions and race, positions and attributes, and race and attributes. Implicit associations tests can be designed in this manner and would further disentangle the dissociation of racial logic beliefs at the athlete stereotype level and position subgroup level.

Conclusion

To our knowledge, the current research is the first to attempt disentangling the definition and use of the race logic construct, primarily in reference to sports. The definition was

apportioned into measurable components based on theoretical underpinnings of existing stereotype research. Results from the current research demonstrated that mental representations of the quarterback and wide receiver position are uniquely stored in the mind of consumers. Furthermore, recommendations for future use of the concept of racial logic require dissociation of the two key components within race logic: the relationship between position and race (position subgroup) and the race-based athlete stereotype. The current research validates the existence of the position subgroup component and absence of trait attributions consistent with the race- based athlete stereotype at the level of position subgroups. Future research is required to substantiate the measurement of race logic and definitional elements.

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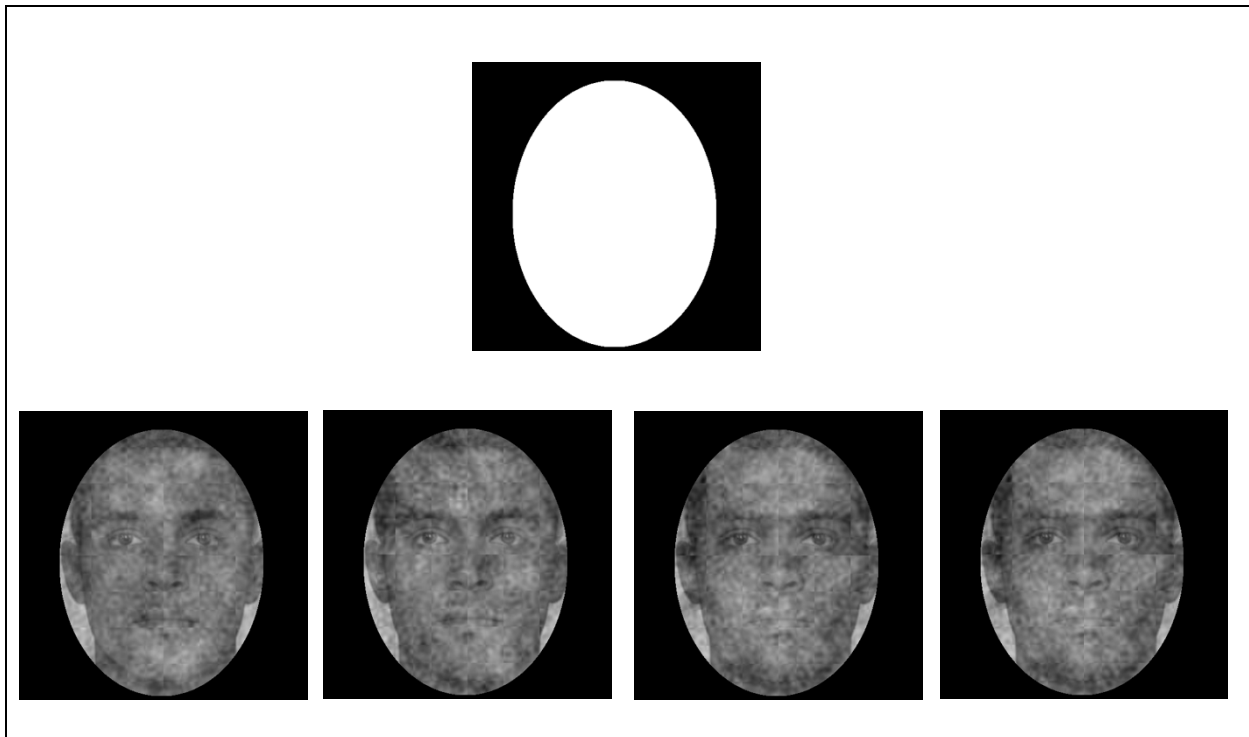
Figure 1

Base Image Generation
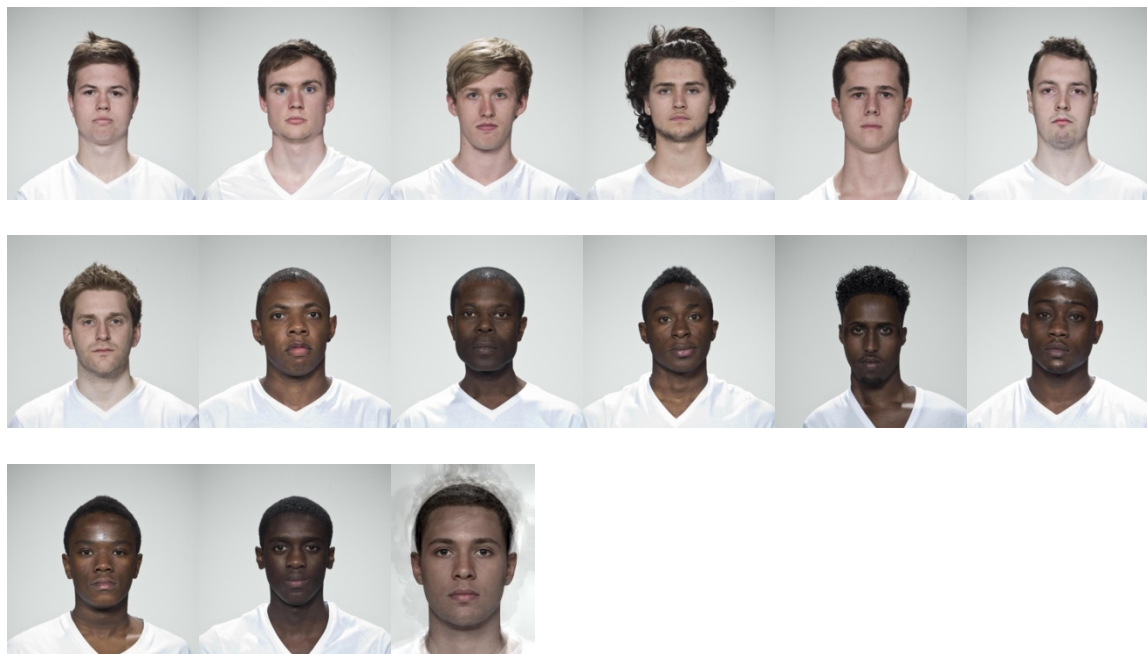
Note. Images 1-14 were selected from face database and averaged. Last image is the generated

base image.

Figure 2

Base Image and Noise Images
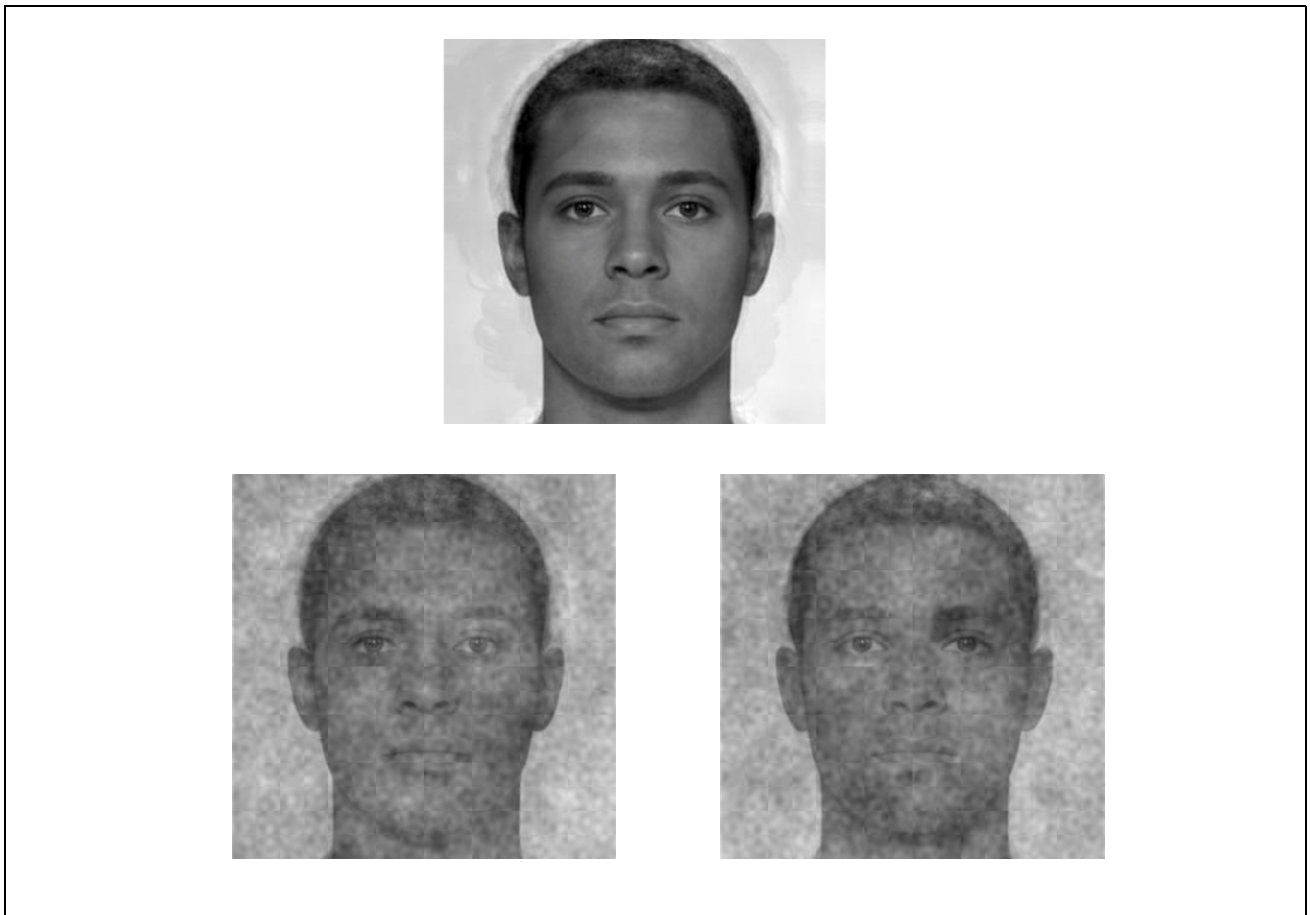
Note. Top image is base image created from averaging seven black and white faces. Bottom two images are a sample of the pair of images as seen in image classification phase (inverse noise, original noise pattern).
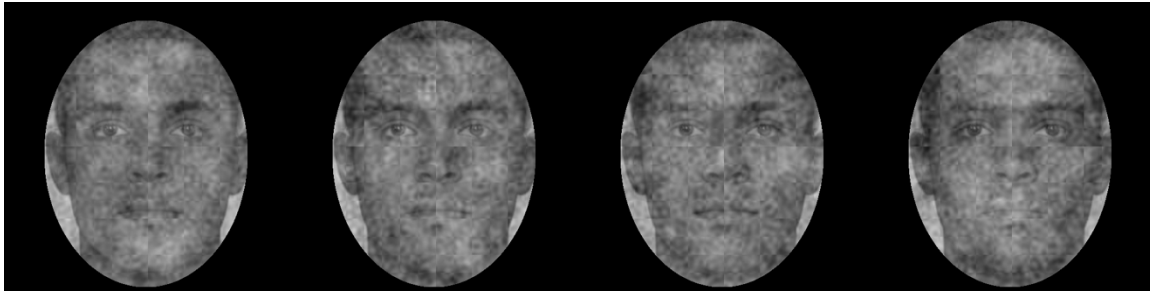
Figure 3

Images Generated from Participants in Phase 1

Note. Top image is the mask used in image generation. Bottom row left to right: Quarterback with high exposure, Quarterback with low exposure, Wide Receiver with high exposure, Wide Receiver with low exposure
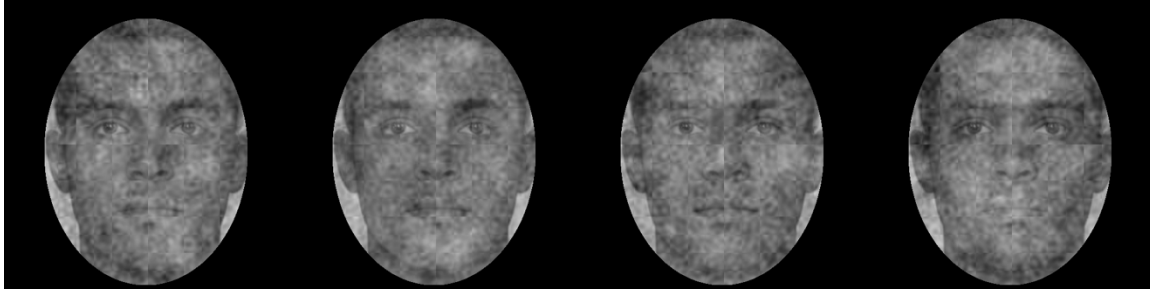
Figure 4

Results from Image Typicality Rating for Quarterback.

Note. Participants ordered images: Quarterback high, Quarterback low, Wide Receiver high,

Wide Receiver Low

Figure 5

Results from Image Typicality Rating for Wide Receiver.

Note. Quarterback low, Quarterback high, Wide Receiver high, Wide Receiver low

Figure 6

Extent to Which Images were Rated as Racially White by Position and Football Exposure
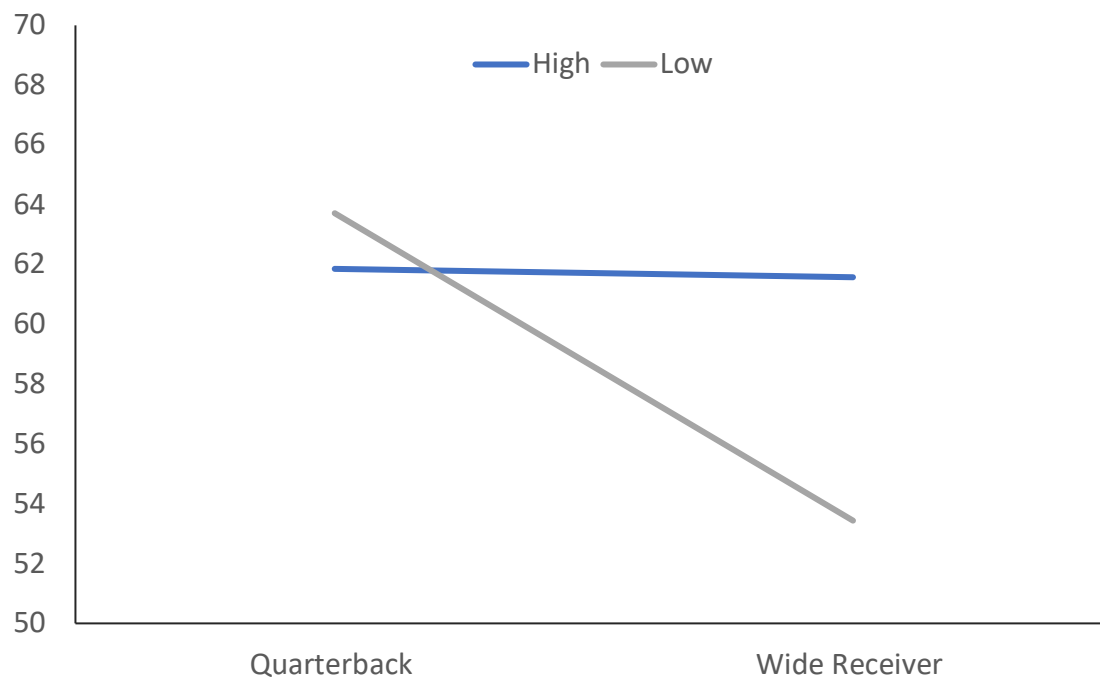
Figure 7

Extent to Which Images were Rated as Racially Black by Position and Football Exposure
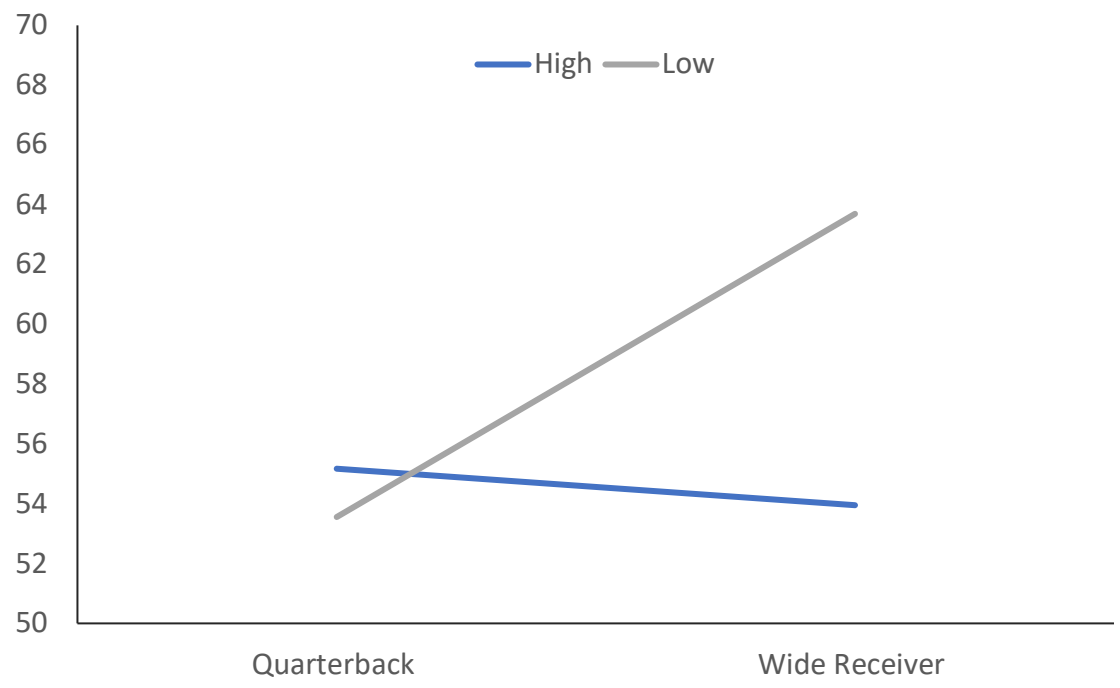
Table 1

Attributes Typicality Trait Ratings from Phase 1 Participants

	Mean	Standard Deviation
To what extend does a typical Quarterback have the following attribute - Intelligence	75.54	17.71
To what extend does a typical Quarterback have the following attribute – Athleticism	75.67	16.90
To what extend does a typical Wide Receiver have the following attribute - Intelligence	73.74	18.42
To what extend does a typical Wide Receiver have the following attribute – Athleticism	77.54	17.22

Note. Participants were given a slider scale 0-100 with 0 representing not at all typical and 100 most typical.

Table 2

Attributes Typicality Trait Ratings from Phase 2 Participants

	Mean	Standard Deviation
To what extent does a typical Quarterback have the following attribute – Intelligence	68.58	19.07
To what extent does a typical Quarterback have the following attribute – Athleticism	70.02	19.28
To what extent does a typical Wide Receiver have the following attribute – Intelligence	68.32	17.34
To what extent does a typical Wide Receiver have the following attribute – Athleticism	71.78	19.32

Note. Participants were given a slider scale 0-100 with 0 representing not at all typical and 100

most typical.

Table 3

Phase 2 Participants Responses Regarding Future Football Media Consumption

	Mean	**Standard Deviation**
How likely are you to watch football games every week?	7.00	2.60
How likely are you to attend football games every week?	6.15	3.13
How likely are you to watch the SuperBowl?	7.12	2.59
How likely are you to spend time reading information online about football?	6.80	2.47
How likely are you to spend time watching television shows about football?	6.90	2.58
How likely are you to spend time listening to podcasts or radio broadcasts about football?	6.39	2.90

Note. Participants rated this set of questions on a scale 1 (Never) to 10 (Always)

Table 4

Estimated Marginal Means of Mental Images of Quarterback and Wide Receiver

	Quarterback High	**Quarterback Low**	**Wide Receiver High**	**Wide Receiver Low**
Athleticism	66.85	66.47	63.56	65.20
Intelligence	64.81	64.34	63.58	62.63
Racially White	63.80	65.71	61.96	55.10
Racially Black	55.31	53.32	54.95	63.53

Note. Total possible range is from 0 (Not at all) to 100 (Completely)

Table 5

Typicality Scores for Quarterback and Wide Receiver Position for Each Image

	Quarterback High	**Quarterback Low**	**Wide Receiver High**	**Wide Receiver Low**
Typical Quarterback	2.25	2.38	2.62	2.64
Typical Wide Receiver	2.47	2.46	2.51	2.51

Note. Images were placed in order from 1 (most typical) to 4 (least typical)