often become associated with different racial identities (1). These beliefs have profound consequences on individuals’ opportunities and future successes in a variety of contexts, such as school, work, and on the athletic field (2, 3). One such example of a negative racial belief is when television analyst Jimmy Snyder said on national television, “Blacks were … bred to be the better athlete because [it] goes way back to the slave period...the slave owner would breed this big Black with his big Black women, so he could have a big Black kid” (4).

Snyder’s comment is an explicit example of racial prejudice in 1988; now, racial expressions are less explicit and even hidden in seemingly complimentary language, but still as pervasive as in the past (5). While few coaches will admit that race plays a role in professional and collegiate sports, a 2011 study did identify a role for race. In a series of anonymous interviews, Paule found that the race of the player influenced his/her recruitment (6). One Division 1 football coach explained how race plays a role in recruiting: “I don’t know if you can be racist against your own race, but…. there’s just less White guys that can run like that. That have the fluid hips and out of breaks and so forth; I just don’t think that it’s very common” (6). Clearly, athletics are not colorblind.

Stacking is defined as racial segregation by position, which is based on a player’s perceived athleticism or intellectual decision-making ability (6). In football, athleticism is a natural ability assigned to blacks, while whites are often associated with intelligence and decision-making skills (7-12). Black players are often found in positions that require speed, strength, and instinct, such as running back or cornerback. Whites are historically concentrated in central positions needing intellectual decision making, such as the quarterback, center, or offensive linemen (7). These racial beliefs lead to segregation and discrimination. For example, in 1968, one senior editor at Sports Illustrated noted that “[when] the play is dead, [how] can white coaches with all their built-in prejudices about the Negro, assign positions like quarterback to Black men?” (13). Essentially, race gives a person their perceived athletic and intellectual traits, which affects the opportunities they have.

Using player data from the years 1960-1985,
researchers measured the percentage of players who were black and white, and looked for patterns in stacking over time. The growth of stacking was noted after multiple rule changes caused football coaches to use running backs less often and wide receivers more often. One rule change prevented defenders from bumping wide receivers more than five yards from the scrimmage line; another prevented the defense from head slapping offensive lineman (7). Such changes led to more positions opening to black players, as such positions were perceived to require speed and instinct (7). The researchers found that the percentage of white quarterbacks increased from 95.5% in 1960 to 97.1% in 1985. They also found that the percentage of black wide receivers increased from 55.3% in 1960 to 61.5% in 1985 (7).

Another study calculated the probability of a black or white player changing their position from high school to college. They looked at 1,006 players from 2008-2009 intercollegiate recruiting classes (12). The researchers found black quarterbacks were 28.5% more likely to change positions from high school to college compared to their white counterparts, while white running backs were 31.7% more likely to change position from high school to college compared to black counterparts (12). This suggests that even highly qualified black and white players are forced to change their positions to fit common racial stereotypes.

Causes of racial stacking can be traced back to coaches’ subjective judgments of players. One study asked coaches to make subjective and objective evaluations on running backs (a position typically stacked towards black players), and found that black players were rated better subjectively, while both races had similar objective ratings (14). Researchers also found black players received more resource allocations from coaches. When faced with unclear information, coaches will fall back on racial stereotypes to make decisions (14). It is a common misconception that black individuals’ athletic abilities come from their genes (8). In a nationally representative sample of 600 white Americans, researchers measured participants’ racial bias and beliefs about genes. They found that white Americans who held racist beliefs tend to attribute blacks’ success to genes, and not hard work (15).

In a study of racial stereotypes in basketball, researchers gave their participants one of four pictures of a (black or white) athlete with an identical radio broadcast (5). They had the participants rate the player on athletic attributes. As a result of the study, researchers found support for the presence of compensatory stereotypes. A white player who was described as unathletic received a positive stereotype of having smarts or hustle. Unathletic black players were not perceived as intelligent and did not receive the benefit, because they are part of the “out group” (5).

Mercurio and Filak analyzed descriptions of NFL quarterbacks from 1998-2007 through sports publications. They found support for racial stereotypes: blacks were athletic, whites were intelligent. A white player’s “mistakes made by [their] lack of physical gifts can be eliminated through hard work while errors [of a black player] made due to cognitive limits will not be as easily erased” (3). According to their data, the standard of perfection expected from a quarterback is dependent on the player’s race, and a black quarterback must meet a higher standard.

However, a different study analyzed positive and negative media reports on NFL draft picks by looking at their athletic traits and abilities (9). The researcher found the participants’ ratings did not have a significantly large gap (12.3% gap), between white and black quarterbacks’ leadership abilities. Players were characterized for their intellect and their athletic ability, which led to players being rated on similar attributes. This decline in anti-intellectual stereotypes maybe one reason the number of black quarterbacks has continued to increase from 2.9% in 1985 (7).

Another study asked participants to rate four black or white quarterbacks on their athletic traits, while only having a picture and description of the player. The researchers found no significant difference in leadership between races. Researchers found that black quarterbacks were rated significantly higher in physical strength and natural ability compared to white counterparts (10). This finding further supports the idea that athleticism is a stereotypical black ability, which may influence how players receive opportunities in their position.

Other researchers have looked at historical trends in the NFL and college recruiting as well as perceptions of black and white athletes by fans, the media, coaches, and players. However, there is little research on whether stacking has increased or decreased over time in the NFL. One organization, The Institute for Diversity and Ethics in Sport, has investigated racial representation within the NFL, reporting that nearly 70% of players during the period of 1990-2017 were black (17).

In the current study, we investigated the historical trends of racial segregation by position in the National Football League (NFL) by measuring stacking among a central (quarterback) and a non-central (cornerback) position. We examined the NFL’s team rosters from 1990 to 2016, identifying each player’s race by publicly available photos. Our study has three hypotheses. First, the cornerback, a position which is characterized as athletic (6, 7, 12), will remain stacked over time toward blacks because of continued presence of the
“black athlete” stereotype (2, 5, 9-11, 16). Second, the positions characterized as requiring intellect and that are central to the game, such as a quarterback (7, 12), will become less stacked towards whites with time, due to diminishing intellectual stereotypes that nonetheless still exist due to the continued presence of racially based stereotypes in (10,16). Third, we hypothesized that the average career length of players measured by years and games will differ based on the centrality of the position and the race of the player. White quarterbacks should have longer careers than blacks, and black cornerbacks will have longer average careers than whites. We expect these differences due to the presence of racial stacking; players who are “mismatched” for their position may have fewer chances to develop and may be held to a higher standard (14,16). As a result, we found that the cornerback position has remained stacked towards black athletes. The quarterback position has seen an increase in black athletes. We found no racial differences in the number of active years or games played within a position, therefore our data suggest the “black athlete” stereotype continues to be prevalent in the NFL in both central and non-central positions.

Results
We researched the rosters of NFL teams from 1990-2016, classifying all quarterbacks and cornerbacks by their race. Then we averaged the number of games and years played within the NFL for the groups of black or white players. First, we investigated the relationship between the years 1990-2016 and the percentage of black quarterbacks. A linear regression revealed a significant linear relationship (t(25)=10.03, p<0.0001) and increased stacking of black cornerbacks over time. We fitted the data by the linear equation \( P_{QB} = (0.0053 \times \text{year}) - 9.68 \) / 100. For every year there was a 0.53% increase in black quarterbacks. Furthermore, the calendar year accounted for 80% of the variation in \( P_{QB} \) (\( R^2 = 0.80 \)) (Figure 1).

Second, we investigated the relationship between the calendar year and the percentage of black cornerbacks. A linear regression between years 1990-2016 and the percentage of black cornerbacks revealed a significant linear relationship (t(25)=5.73, p<.0001). The calendar year predicted the percentage of black quarterbacks by the linear equation \( P_{CB} = 0.0047 \times \text{year} - 9.221 \). Each year led to a 0.47% increase in black quarterbacks. Furthermore, the calendar year accounted for 56.8% of the variation in percent of black quarterbacks (\( R^2 = 0.568 \)) (Figure 2).

Third, we investigated whether a player’s position and race impacted the total number of games played over one’s career. A t-test for independent samples revealed that there is not a statistically significant difference in games played between black and white cornerbacks (t(977)= 0.49, p=0.31), although on average black cornerbacks played in more games (M=55.2, SD=50.2) than white cornerbacks (M=48.1, SD=43.2) (Figure 3). Although white quarterbacks played in more games (M=44.9, SD=55.5) than black quarterbacks (M=41, SD=42.8), a t-test for independent samples revealed that there is also no significant difference in games played between black and white quarterbacks (t(894)=0.53, p=0.29) (Figure 3).

Fourth, we investigated whether a player’s position and race had any significant effect on the total years played over one’s career. A t-test for independent samples reveal there is no significant difference in years played between black and white quarterbacks (t(296)=1.35, p=0.09), although on average white quarterbacks played more years (M=5.4, SD=4.1), than their black counterparts (M=4.6, SD=3.5) (Figure 4). Likewise, there was no significant difference in years played between black and white cornerbacks (t(976)=0.32, p=0.37). Although black cornerbacks played slightly more years (M=4.7, SD=3.4), than their white counterparts (M=4.4, SD=2.8), this difference was not significant (Figure 4).

Figure 1: Linear Regression Test of Black Cornerback Percentages. The graph illustrates the linear relationship of the year and the percentage of black CB. The relationship is statistically significant (p<0.0001). Each year accounted for 80% of CB variation (r²=0.80).

Figure 2: Linear Regression Test of Black Quarterback Percentages. The graph illustrates the linear relationship of the year and the percentage of black players. The relationship is statistically significant (p<0.0001). The year accounted for 56.8% of QB variation (r²=0.568).
Discussion

Our first hypothesis, that the cornerback position will remain stacked over the years, was supported by a significant positive linear relationship between calendar year and the percentage of black cornerbacks \( (p<0.0001, R^2=0.80) \). Our second hypothesis, that the quarterback position will become less stacked towards white players with time while remaining stacked, was partially supported by the data \( (p<0.0001, R^2=0.568) \). Although black quarterbacks have an increasing presence within the NFL, the percentage is higher than the percentage of blacks within the US population \( (12.3\% \text{ in } 2016) \) \( (18) \). This suggests the quarterback position may soon become stacked towards black players, rather than their white counterparts. Our third hypothesis, that average career length and games played within a position will differ by race, was not supported by the data. There was no significant difference between games or years played and race in either positions, although the lack of difference might be due to the high variability of both years and games played (Figures 3 and 4) and the extremely small number of white cornerbacks \( (n=12) \).

Our data demonstrated growth in the number of black cornerbacks over time \( (0.53\% \text{ average increase in black cornerbacks per year}) \) (Figure 1). These findings are consistent with past research, such as the study of stacking in defensive positions from 1960-1985 \( (7) \). Their data showed that rule changes in 1977 emphasized athleticism and as a result the league saw an increase of black linemen and cornerbacks. Our study found this trend has continued into the present with 98% of cornerbacks being black. Although our data is highly suggestive of continuance of the stereotypical belief of the “black athlete” as a reason for segregation and discrimination within the NFL, our data is not enough to conclude stereotypes are the cause of this trend. Future researchers should look to investigate and interview football players, coaches, and recruiters in youth, college, and professional football to assess their viewpoints. Interviews may divulge players’ sentiments and the coaches’ or recruiters’ stereotypes regarding player recruitment. One example of such a study was conducted by Thomas, Good, and Gross. They interviewed college coaches regarding how and why they recruit certain players \( (14) \).

The percentage of black quarterbacks within the NFL has also increased by 0.47% per year on average (Figure 2). The findings are consistent with a past study, which investigated viewpoints from news articles and magazines on racial conflict in the quarterback position (16). This study found claims from a majority of news articles that the NFL was becoming colorblind and unbiased regarding race, which would allow negative black intellectual stereotypes to fade \( (16) \). The fading of the stereotypes, then, would lead to growth in the number of black quarterbacks. Our data supports this prediction that the NFL quarterback position is becoming less stacked. Although the data is suggestive of a decline of discrimination evident in the quarterback position over time, it is possible that racial conflict and racism are prevalent in the NFL and football recruiting. Also, ideas of racial positioning among the quarterback are changing; quarterbacks are increasingly seen as a position requiring speed and strength, suggesting the decline of the anti-intellectual black quarterback stereotype at the expense of the “athletic” black quarterback stereotype.
Our study found that the percent of black cornerbacks and quarterbacks has increased with time. One possible alternative interpretation is that the percent of black players is increasing across all NFL positions, regardless of changing racial stereotypes. Future research should investigate a position not typically considered as intellectual or athletic, such as the offense guard. If the percent of black guards is has not increased in time, then this would support our idea of racial stereotypes influencing the stacking of positions. An analysis by Reid and McManus of racial stacking in the 2000s tentatively supports this idea; 50% of guards were black in 2000, while 48.2% were black in 2014 (19).

Future studies must further investigate the racial barriers within the NFL. These studies should consist of multiple means of investigation (such as interviews and data analysis) on other positions and programs within the NFL. One future study could look further on the percentages of black quarterbacks and their white counterparts among the starting position, secondary position, and third position. This idea is based on the development of players and their opportunity to advance within a football team’s hierarchy. If players of one race are predominantly found in the second or third string position, this would suggest that player advancement may be hindered by racial discrimination.

The third hypothesis, that career length and total games played among a position varies by race, was not supported by the data. Although there was not a significant difference in years played between white and black players for both cornerback and quarterback positions, we propose that the non-significant difference in a player’s career number of games by their race and position may be noteworthy. It was estimated that the black cornerbacks played about 7.1 games more than their white counterparts, while white quarterbacks played about 3.9 more games than black counterparts (Figures 3 and 4). Seven games are not a meaningless difference; it removes the opportunity for player development and televised marketing. Those seven games could show a player’s progress on television in a game situation. We theorize the reason we could not find any significant differences between years played or games played for either position was because of the variability and low sample size of the white cornerback group. The standard deviation of every position was large, which created a wide range of years or games a player could have, making comparisons difficult. Because of these difficulties, drawing conclusion about career lengths should be done with caution.

A potential source of error was our inability to find a photo for all NFL players. To find the photos, we looked on Wikipedia, ESPN, and multiple Google Image photo pages. There needed to be irrefutable evidence with an image of the player in the right uniform and right face. There were certain players whose photo was not publicly available, so that person was excluded from the data. Inclusion of these players would have expanded the sample size for either position or race.

Our research supports the idea of there being a dual effect from the growth of black player prevalence within the NFL. Black players are gaining the opportunity to earn high revenue and remove certain stereotypes put on black culture. An example is breaking the intellectual barrier by obtaining opportunities in the quarterback position. While the data shows that the quarterback position is not currently stacked towards blacks in the NFL, the data suggests if the trend continues, then the quarterback position will become stacked among black players. This positive effect can lead to the empowerment of black culture and communities. Although there may be a positive effect of the increased black representation in a central position like quarterbacks, there could also be a negative effect. Our data suggests the “black athlete” stereotype continues to dominate in the NFL. Despite the positive connotation, such a stereotype has negative consequences. This athletic association may act as a barrier to success for blacks in general because they will be judged upon their presumed athleticism or body, rather than their intellect, leadership, or hard work.

Method and Materials

All the player data was collected through two different websites. The quarterback data was gathered from the NFL’s website (21). Quarterback data was collected according to specific rules of data collection. To be included in the study, a quarterback had to play in at least one game of the 16 regular season games and have at least one statistic within his yearly statistic book. The requirement for a posted statistic is because while a quarterback may play all 16 games, he might have only held the ball for the kicker attempting a field goal, rather than performing the typical roles of quarterback. Because the NFL website lacked pre-2000 data on cornerbacks, another prominent website was used (22). This website only collected players who played in at least one game. Therefore, all listed cornerbacks were included in the initial analysis. There was a total of 391 quarterbacks and 1135 cornerbacks initially collected.

NFL players who began their careers prior to 1990 were included in the dataset if they continued to play after 1990. Any players within this category were used to calculate the percentages of black and white quarterbacks and cornerbacks within the specific years of 1990-2016 but were not used to calculate average career length. Because we chose to restrict our data to between 1990-2016 for this project, by adding players
who started before 1990, we would have shortened their career length captured by our data collection range. This abbreviated career length would create errors within the data when averaging the career lengths of each race within their position.

We determined the race of each player by searching Google for an image of the person. If we could not confirm a player’s race, then they were labeled as “other”. When calculating the percent of players by year there were 390 quarterbacks (one player was neither white nor black) and 1055 cornerbacks included; the race of 80 players could not be identified. When calculating career length, 298 quarterbacks were included, with 92 quarterbacks excluded because their careers started before 1990. Finally, a total of 978 cornerbacks were used in career calculations due to 80 players not being identified and 77 players starting their career prior to 1990.

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References