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Football Scores on the Big Five Personality Factors across 50 States in the U.S.

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Abstract

Despite the growing evidence of role personality plays on sport and exercise related behavior, little is known about the influence of personality traits on football players in the U.S. The purpose of this study was to explore the effects of the big five personality traits on football achievements. Extraversion (E), Agreeableness (A), Conscientiousness (C), Neuroticism (N), and Openness (O) traits obtained from 619,397 U.S. respondents in a previous study were used as predictors to state-level football scores in this study. Across 50 states in the U.S., football ranks were positively correlated with state scores on the Big Five personality factors of conscientiousness and agreeableness. However, when applying multiple regression analyses to the prediction model for football ranks based on five independent variables of the Big Five personality factors, only conscientiousness and neuroticism would significantly predict football ranks. Agreeableness correlates with football ranks but does not contribute to the prediction model since agreeableness is collinear with conscientiousness, extraversion, and openness. Neuroticism insignificantly correlates with football ranks but contributes to the prediction because the suppressor effect of conscientiousness by neuroticism has improved its predictor of football ranks. The findings implied that in order to increase high ranks in football practice, selection for athletics would focus on persons with high conscientiousness and neuroticism.

Keywords: Conscientiousness; Neuroticism; Extroversion; Agreeableness; Openness; Football

Introduction

Personality can be defined as the intrinsic organization of an individual's mental world that is stable over time and consistent over situations [1]. The importance of personality as a predictor for behavior performance has been recognized in psychology [2]. Researchers have recently reported the significant effects of personality on sports [3].

What personality type of person is the successful athlete playing football? Are the athletes' personality traits related to their performance on the football field? Using the Profile of Mood States [4-6] had different answers to these questions. It has been reported that no unifying theory of personality and no consensus about which personality dimensions to measure or how to measure them, comparisons of personality were difficult to interpret and, arguably, unreliable [7].

Contemporary research uses the Big Five personality factor model (Extraversion (E), Agreeableness (A), Conscientiousness (C), Neuroticism (N), and Openness (O)) as a reliable and valid measurement for psychological characteristics [8] based on the three main reasons. First, the five dimensions are rooted in biology [9]. Second, the dimensions are relatively stable throughout life [10], and third, the dimensions are found in several cultures [11].

Most research has focused on the effects of the five personality traits on human behavior. Agreeableness reflects warmth, compassion, cooperativeness, and friendliness. Agreeableness was negatively related to rates of robbery, murder, and property crime [12]. Extraversion is associated with sociability, energy, and health. Different from agreeableness, extraversion reflects sociability and outgoingness more than friendliness and warmth [13]. Conscientiousness reflects dutifulness, responsibility, and self-discipline. Low-conscientiousness individuals are more likely to commit acts of violence and deviance than are high-conscientiousness individuals [12]. Neuroticism reflects anxiety, stress, impulsivity, and emotional instability and is related to antisocial behavior, poor coping, and poor health [12]. Openness reflects curiosity, intellect, and creativity. Open individuals prefer jobs that involve a high degree of abstract and creative thought [12].

Little contemporary research has explored the effects of the five personality traits on football although football is one of the key sports in the United States. This research attempted to explore the influence of football players' personality traits on their achievements. The purpose of this study was thus to examine the effects of neuroticism, extraversion, openness, conscientiousness, and agreeableness on football ranks across 50 states to propose the most effective way to develop a successful football team based on personality traits.

Literature

Some studies have specifically examined the role of the Big Five in predicting academic performance [14]. Studies have also indicated a positive relationship between conscientiousness and job performance [15]. Piedmont et al. [16] examined the coaches' ratings on their games and found that there were significant correlations between athletic ability and personality. Kovacs [17] reported that conscientiousness and neuroticism have a direct correlation to athletic performance. Extraversion has been found to predict sport performance, particularly in team athletes [18]. Aidman and Schofield [3] reported that Agreeableness and Openness are not correlated with sport performance.

The present study has focused on the five personality traits at state level based on the assumption that psychological characteristics are geographically clustered across the country. There are at least three main reasons for geographic variations on personality across 50 states in the United States. First, the early child rearing practices form psychological characteristics and these practices are shaped by larger societal institutions in which individual lives [19]. Secondly, in the United States the groups of immigrants who chose to leave their homeland possess

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restricted gene pools of nonrandom samples of personality traits [20]. Finally, there appear geographic variations on personality because the specific personality of social founders may influence regional people's personality traits [21]. Rentfrow et al. [20] examined big five personality traits from over half a million U.S. residents and found that (1) North Dakota was ranked as the state with highest extroversion but Maryland as the state with lowest extroversion; (2) North Dakota was again ranked as the state with the highest agreeableness but Alaska as the state with lowest agreeableness; (3) New Mexico was ranked as the state with the highest conscientiousness but Alaska as the state with the lowest conscientiousness; (4) West Virginia was ranked as the state with the highest neuroticism but Utah as the state with the lowest neuroticism; (5) Washington, D.C. as the district with highest openness but North Dakota as the state with the lowest openness. As a result, fifty U.S. states possessed different levels of big five personality traits [20].

When 50 states are differentiated by their own personality, they will influence athletic performance since the five personality factors (neuroticism, extraversion, openness, conscientiousness, and agreeableness) reflect the core aspects of humans in the sport domain. Therefore, this study hypothesized that there would be significant relationship between football ranks and the big five personality factors across 50 states.

Methods

Ethical clearance

According to Rentfrow et al. [20], the personality data were collected as part of an ongoing study of personality involving volunteers assessed over the World Wide Web. The website is a noncommercial, advertisement-free website containing a variety of personality measures. Potential respondents could find out about the site through several channels, including search engines, or unsolicited links on other websites. The data reported in the present research were collected between December 1999 and January 2005. Respondents volunteered to participate in the study by clicking on the personality test icon; they were then presented with a series of questions about their personalities, demographic characteristics, and state of residence. After responding to each item and submitting their responses, participants were presented with a customized personality evaluation based on their responses to all the items [20].

Study design

The present study explored a model of the relationships between the state-level five personality factors and the state-level football scores. The independent variables are state ranks for each personality dimension, adapted from Rentfrow et al. [20]. The dependent variable is the state ranks for football scores, adapted from Bleacher report [22].

Sampling

Table 1 provides 51 state ranks for each personality dimension and football score, which were adapted from Rentfrow et al. [20] and the Bleacher report [22].

According to Rentfrow et al. [20], in order to avoid the possibility that respondents may complete a survey multiple times resulting in unreliable and misleading results, the researchers used several criteria to eliminate repeat responders. "First, one question included in the survey asked: "Have you ever previously filled out this particular questionnaire on this site?" If respondents reported completing the questionnaire before, their data were excluded. Second, IP addresses were used to identify repeat responders. If an IP address appeared two or more times within a 1-hr period, all responses were deleted. Third, if an IP address appeared more than once in a time span of more than 1 hour, consecutive responses from the same IP address were matched on several demographic characteristics (gender, age, ethnicity etc.) and eliminated if there was a match. Finally, only respondents who indicated that they lived in the 50 U.S. states or in Washington D.C. were included." [20].

The sample size was 619,397 respondents (55% female). The median age of respondents was 24 years (SD 59.8 years). The sample was comprised of White (80.2%), African American (4%), Asian (6.6%), Latino (4.6%), and other (4.6%). The respondents included social class (13.5%), working class (15.6%), middle class (42.8%), and upper-middle class (25.7%) and upper class (2.4%). Overall, these analyses indicate that our Internet-based sample was generally representative of the population at large [23].

Procedure-data collection and data analysis

Independent variables were extraversion, agreeableness, conscientiousness, neuroticism, and openness. The five personality traits were obtained from The Big Five Inventory [13]. The Big Five Inventory consists of 44 short statements designed to assess the prototypical traits defining each of the five factor model dimensions based on a 5-point Likert-type rating scale ranging from 1 (disagree strongly) to 5 (agree strongly). The Big Five Inventory scales have shown reliability and validity compared with other five factor model measures at the individual level [24].

Dependent variable was state-level football scores ranked in order for 50 states, which were available online from the Bleacher report [22].

Multiple regression analyses were conducted to find the causative relationship between football scores and five personality traits.

Results

The means and standard deviations of the data were summarized in table 2 as follows

Table 3 indicates that football ranks were positively associated with scores on the Big Five Inventory factors of Agreeableness (r=.40, two-tailed p=.003) and conscientiousness (r=.42, two-tailed p=.002) but were not significantly correlated to extraversion, neuroticism, and openness (rs=.21, .11, and -.02, respectively). Using the Spearman rank-order correlation coefficient yielded similar results. Football ranks were positively correlated with Agreeableness and Conscientiousness (rs=.40 and .43, two tailed ps<.001), but were not significantly correlated to Extraversion, Neuroticism, and Openness (rs=.20, .10, and -.01, respectively).

Multiple regression analyses were used to test the causative relationships between football ranks and five personality traits (Extroversion, Agreeableness, Conscientiousness, Neuroticism, and Openness) as illustrated in table 4 as follows:

The result of the regression for football ranks indicated conscientiousness and neuroticism explained 27% of the variance ($R2$=.27, $F(5, 44)$=3.29, p<.05). It was found that conscientiousness and neuroticism predicted football rank (βs=.37 and .28, respectively, ps<.05).

Discussions

Agreeableness correlates football rankings but does not contribute to the prediction model since Agreeableness is collinear with Conscientiousness, Extraversion, and Openness. Neuroticism does not

State	Football	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Alabama	1	20	36	36	30	48
Alaska	42	49	51	51	47	49
Arizona	29	24	31	9	45	31
Arkansas	15	31	41	37	10	27
California	4	38	28	27	37	6
Colorado	32	28	29	15	50	8
Connecticut	38	33	43	46	15	12
Delaware	42	21	37	34	19	42
District of Columbia	42	3	50	40	31	1
Florida	2	10	14	8	36	13
Georgia	10	6	8	3	33	20
Hawaii	37	39	24	49	40	46
Idaho	22	46	39	26	32	30
Illinois	17	9	26	11	20	21
Indiana	8	34	19	14	13	34
Iowa	26	15	15	33	22	43
Kansas	31	13	17	5	34	38
Kentucky	27	36	21	19	7	45
Louisiana	9	30	13	30	8	29
Maine	42	11	46	50	12	35
Maryland	33	51	38	35	17	10
Massachusetts	34	42	40	43	11	4
Michigan	5	17	11	21	26	36
Minnesota	35	5	2	22	41	40
Mississippi	13	19	3	12	4	41
Missouri	25	18	16	10	25	32
Montana	42	43	42	29	39	16
Nebraska	11	4	10	7	44	44
Nevada	39	37	48	24	42	9
New Hampshire	42	50	30	44	14	14
New Jersey	36	14	34	45	5	15
New Mexico	41	22	33	1	29	23
New York	30	32	47	42	3	2
North Carolina	23	35	7	2	24	33
North Dakota	42	1	1	23	43	51
Ohio	6	25	27	38	9	24
Oklahoma	7	27	9	6	27	37
Oregon	21	44	18	31	48	3
Pennsylvania	14	12	35	28	6	25
Rhode Island	42	40	45	48	2	28
South Carolina	12	26	20	16	16	26
South Dakota	42	7	23	17	49	39
Tennessee	24	29	6	13	23	19
Texas	3	16	25	18	28	17
Utah	18	8	4	4	51	18
Vermont	42	47	12	41	18	7
Virginia	16	45	44	39	21	11
Washington	28	48	22	25	46	5
West Virginia	20	23	32	32	1	22
Wisconsin	19	2	5	20	35	47
Wyoming	40	41	49	47	38	50

Table 1: State Rankings for Each Five Factor Personality Dimension and Football Score. (Rentfrow et al. [20] and the Bleacher Report [22])

correlate football rankings but contribute to the prediction because the suppressor effect of Conscientiousness by Neuroticism has improved its predictor of football rankings [25].

Like Kovacs' [17] finding, there is an association between conscientiousness and sport ranking. Conscientiousness is significantly positively correlated with football ranking. Moreover, the present analysis indicated that conscientiousness would predict football rankings. In addition, the study found the football rankings were significantly associated with neuroticism. A state with higher neuroticism would get higher football rankings because neuroticism is a strong predictor for football rankings. In sum, the significance of these relationships may contribute to selection and management of football teams. It also helps forecasting the results of football competition based on the profile of big five personality traits. In order to increase high ranks in football practice, selection for athletics would focus on

Average of 50-state data	Mean	Std.Deviation
Football rank	24.78	13.54
Extroversion rank	26.10	14.99
Agreeableness rank	25.78	14.93
Conscientiousness rank	25.84	14.92
Neuroticism rank	26.14	14.98
Openness rank	25.68	14.83

Table 2: Descriptive Statistics of Football and the Big Five Personality Traits Enrollment in local colleges.

	(1)	(2)	(3)	(4)	(5)	(6)
1. Football rank		.22	.39**	.41**	.12	-.05
2. Extroversion rank			.43**	.44**	-.12	-.31*
3. Agreeableness rank				.65**	-.18	-.30*
4. Conscientiousness rank					-.32*	-.12
5. Neuroticism rank						.10
6. Openness rank						

(**) Correlation is significant at 0.01 levels (1-tailed)

(*) Correlation is significant at 0.05 levels (1-tailed)

Table 3: Pearson Correlations of Football Rank, Extroversion Rank, Agreeableness Rank, Conscientiousness Rank, Neuroticism Rank, and Openness Rank.

persons with high Conscientiousness and Neuroticism. Future research might also find the model of these relationships useful when expanding athletic departments.

Since low-Conscientiousness individuals are more likely to commit acts of violence and deviance than are high-Conscientiousness individuals [12], football players with low conscientiousness may be likely to commit doping or other deviant behavior. Conscientiousness reflects the degree to which football players prefer systematic and focused tasks and clearly defined rules and regulations so conscientious individuals tend to engage in health promoting behavior and live long healthy lives, which is consistent with previous research [26]. Conscientiousness was negatively related to spending time in a bar and entertaining guests at home [20] so conscientious football players were not related to social involvement. Rentfrow et al. [20] also reported that large proportions of computer scientists and mathematicians in high Conscientiousness states and more artists and entertainers are in low Conscientiousness states.

Neuroticism reflects anxiety, stress, impulsivity, and emotional instability. Table 4 indicates that Neuroticism is a significant predictor in the model although the correlation between Neuroticism and Football scores is not significant. The reason for this is Neuroticism is a suppressor. According to Cohen et al. [25], a suppressor that is uncorrelated with Y may be significant in a multiple regression model. The suppressor effect of Conscientiousness by Neuroticism has improved its predictor of football rankings. A football player with high Neuroticism may take a risk to attain the goal by doping or anti-social behavior; however, the direction of these relationships changed when controlling for urbanization and income [20]. The research showing inverse relationships between Neuroticism and longevity and Neuroticism is negatively related social involvement [12,27].

Agreeableness reflects warmth, compassion, cooperativeness, and friendliness at the individual level. Agreeableness was correlated with football scores but it did not predict football scores since football players with high agreeableness were positively associated with activities that promote tight social relations so it correlates with the football scores when the players help others in their team but in order to attain the goal, the cooperativeness should be replaced by competition.

An increase in conscientiousness is associated with an increase

*Predictor	C	E	A	O	N
r (p)	.43(.00)	.20(.15)	.40(.00)	-.01(.91)	.10(.44)
β (p)	.36(.05)	.00(.96)	.22(.20)	.05(.68)	.27(.05)

Predictors: C: Conscientiousness; E: Extraversion; A: Agreeableness; O: Openness; N: Neuroticism

Dependent Variable: Football rank

Table 4: Spearman's rho Bivariate and Multivariate Contributions–DV=Football ranks.

in football ranking. Moreover, the present analysis indicated that conscientiousness would predict football ranks. In addition, the study found the football ranks were significantly associated with neuroticism. A state with higher neuroticism would get higher football ranks and neuroticism is a strong predictor for football ranking. In sum, the significance of these relationships may contribute to selection and management of football teams. It also helps forecasting the results of football competition based on the profile of big five personality traits. In order to increase high ranks in football practice, selection for athletics would focus on persons with high conscientiousness and neuroticism. Future research might also find the model of these relationships useful when expanding athletic departments.

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