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 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]. Second, in the United States the groups of immigrants who chose to leave their homeland possess...
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 extraversion but Maryland
as the state with lowest extraversion; (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, conscien-
tiousness, neuroticism, and openness. The five personality traits were
obtained from The Big Five Inventory [13]. The Big Five Inventory con-
sists 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 va-
idity 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 ($r$=.21, .11, and -.02, respectively). Using the Spearman rank-
order correlation coefficient yielded similar results. Football ranks were
positively correlated with Agreeableness and Conscientiousness ($r$=.40
and .43, two tailed $p$<.001), but were not significantly correlated
to Extraversion, Neuroticism, and Openness ($r$=.20, .10, and -.01,
respectively).

Multiple regression analyses were used to test the causative
relationships between football ranks and five personality traits
(Extraversion, 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
($R^2=.27$, $F(5, 44)=3.29$, $p<.05$). It was found that conscientiousness
and neuroticism predicted football rank ($\beta$=.37 and .28, respectively,
$p<.05$).

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
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

| 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       | 6            | 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])
When the players help others in their team but in order to attain the promote tight social relations so it correlates with the football scores friendliness at the individual level. Agreeableness was correlated with Neuroticism is negatively related social involvement [12,27]. The research social behavior; however, the direction of these relationships changed model. The suppressor effect of Conscientiousness by Neuroticism is uncorrelated with Y may be significant in a multiple regression Football scores is not significant. The reason for this is Neuroticism in the model although the correlation between Neuroticism and Conscientiousness states and more artists and entertainers are in low large proportions of computer scientists and mathematicians in high conscientious football players were long healthy lives, which is consistent with previous research [26]. Conscientiousness was negatively related to spending time in a bar and 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 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.

Since low-Conscientiousness individuals are more likely to commit acts of violence and deviancy 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 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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Table 2: Descriptive Statistics of Football and the Big Five Personality Traits

| Trait                  | Mean     | Std. Deviation |
|------------------------|----------|----------------|
| Football rank          | 24.78    | 13.54          |
| Extroversion rank      | 28.10    | 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 3: Pearson Correlations of Football Rank, Extroversion Rank, Agreeableness Rank, Conscientiousness Rank, Neuroticism Rank, and Openness Rank

| Predictor | C     | E     | A     | O     | N     |
|-----------|-------|-------|-------|-------|-------|
| r (p)     | .43** | .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

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

Average of 50-state data

| Trait                  | Mean     | Std. Deviation |
|------------------------|----------|----------------|
| Football rank          | 24.78    | 13.54          |
| Extroversion rank      | 28.10    | 14.99          |
| Agreeableness rank     | 25.78    | 14.93          |
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| Neuroticism rank       | 26.14    | 14.98          |
| Openness rank          | 25.68    | 14.83          |

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