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Can the Online Profile-Based Personality Questionnaire (OPBPQ) Predict Employees' Job Performance?

Iman. Mohammadi[1], Hadi. Farhadi[2*], Gholamreza. Manshaei[3]

[1] PhD candidate, Department of Psychology, Is.C., Islamic Azad University, Isfahan, Iran
[2] Associated Professor, Research Center for Behavioral and Psychological Science, Department of Psychology, Is.C., Islamic Azad University, Isfahan, Iran
[3] Associate Professor, Department of Psychology, Is.C., Islamic Azad University, Isfahan, Iran

*** Corresponding author email address**: h.farhadi@khuisf.ac.ir

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A B S T R A C T

In recent years, increased engagement with social networks has intensified online socialization and the sharing of personal experiences and events. Since online profiles reflect individuals' authentic and dynamic expressions, social media platforms have become valuable tools for research aimed at understanding social behavior. Personality traits are increasingly revealed through user activity on platforms such as Facebook, Twitter, and Instagram, as inferred from the data generated in these networks. The present study aims to investigate two main questions: (1) Is there a correlation between job performance and the personality traits assessed by the Online Profile-Based Personality Questionnaire (OPBPQ)? (2) Which specific personality traits measured by the OPBPQ are statistically significant predictors of job performance? The target population for this study included all employed individuals in Isfahan in the year 2024. Inclusion and exclusion criteria were applied to a randomly selected sample. Out of a total of 1,746 identified individuals, 300 participants were randomly selected for the final sample. To examine the relationships between variables, correlation and regression analyses were employed. Descriptive statistics and distribution indices were used to assess the normality of the research variables, including measures of skewness, kurtosis, standard deviation, and mean. The distribution curves of predictor variables, multiple linear regression diagnostics (tolerance, variance inflation factor (VIF), and Durbin–Watson statistic), Pearson's correlation test, and stepwise regression analysis were all conducted. Data analysis was performed using SPSS version 26. The results demonstrated a significant relationship between personality traits and job performance. Specifically, the traits of conscientiousness, neuroticism, and extraversion were identified as significant predictors of job performance. These findings indicate that the OPBPQ is a valid tool for predicting job performance and can be applied in various human resource functions, including job assignment and employee selection.

Keywords: *OPBPQ, personality traits, job performance.*

1. Introduction

Nearly half of the global population spends more than two hours daily online, amounting to an estimated 6 years and 8 months spent on social networks over a lifetime (Vaid & Harari, 2021). In recent years, the use of virtual environments has expanded significantly, leading to increased interpersonal interactions and the frequent sharing of personal experiences and daily topics (Settanni et al., 2018). Instagram, in particular, has emerged as a dominant platform, with over 800 million active users sharing vast amounts of information each day (Ferwerda & Tkalcic, 2018).

As user profiles on social networks have been shown to accurately reflect individuals' personal expressions, these platforms have become ideal environments for studying human behavior. Individuals frequently use these platforms to maintain communication with friends and family, often engaging by posting content, commenting, and expressing opinions. In response to the limitations of traditional personality assessments, researchers have increasingly sought to analyze users' digital footprints on social media to predict personality traits. Social networks offer several advantages as external data sources, particularly due to the abundance of personal information shared voluntarily by users. Platforms such as Facebook, Twitter, and Instagram contain valuable content that can be easily extracted and utilized for personality analysis (Golbeck et al., 2011).

Foundational meta-analytic studies by Barrick and Mount (1991) and Tett et al. (1991) established preliminary evidence that the Big Five personality traits are useful for employee selection across a range of occupations. These studies evaluated correlations between various personality constructs and job performance, grouping them into the Big Five dimensions. Although the findings were not entirely consistent, subsequent research has generally accepted Conscientiousness as a reliable predictor of job performance, often positioning it as the primary or sole dimension relevant to personnel selection. However, Hurtz and Donovan (2003) have emphasized the need for continued exploration of all five personality traits in relation to occupational outcomes (Hurtz & Donovan, 2000).

Given the growing influence of social networks on individuals' daily lives, personality traits have become a prominent focus in organizational psychology research. Understanding personality can aid in predicting behavior, tailoring interpersonal responses, and identifying individual strengths and limitations (Souri et al., 2018).

Most existing studies have used machine learning algorithms to analyze social media data and predict personality traits. For instance, Ock and An (2021) conducted a study that evaluated the application of machine learning-based personality assessments for personnel selection. They reviewed prior research validating machine learning models in personality prediction and emphasized the ongoing need for validation, along with the development of new approaches to interpreting personality based on digital behavior data (Ock & An, 2021).

Kern et al. (2019) explored the relationship between personality traits, values, and job preferences using social network data. They demonstrated that linguistic patterns from platforms like Twitter could be used to construct personality profiles and match individuals to occupations with similar characteristics. Their findings revealed that personality-based digital fingerprints can distinguish occupational preferences, thereby offering potential applications in career guidance and employee development (Kern et al., 2019).

Subramani (2018) examined personal characteristics using Instagram data, including images, post content, and performance indicators. The study assessed visual features such as filters and colors, as well as linguistic and behavioral indicators, concluding that all three data types contributed meaningfully to personality prediction. Notably, image features yielded particularly accurate classification outcomes (Subramani, 2018).

In another study, Ferwerda and Tkalcic (2018) investigated personality prediction through Instagram image analysis. They focused on two categories of features: visual (e.g., color saturation) and content-based attributes. Participants completed personality questionnaires and granted researchers access to their Instagram profiles, enabling the development of predictive models (Ferwerda & Tkalcic, 2018).

Moraes et al. (2020) explored the use of social network data for personality assessment in recruitment contexts. Utilizing both the Myers-Briggs Type Indicator and the Big Five model, they implemented text classification algorithms to predict personality traits. Their findings indicated that support vector machines (SVMs) outperformed other models across all traits. These results underscore the utility of social media data in evaluating candidates for recruitment purposes (Moraes et al., 2020).

Hurtz and Donovan (2003) further analyzed the link between personality and job performance, focusing on the criterion-related validity of the Big Five traits. Although

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they reported moderate validity for Conscientiousness, they argued for the inclusion of other traits in occupation-specific contexts. Their study called for theoretical alignment between personality constructs and job performance criteria, especially through the use of more narrowly defined sub-traits (Hurtz & Donovan, 2000).

A recent study introduced the Online Profile-Based Personality Questionnaire (OPBPQ), a tool designed to assess personality using digital footprints, particularly from Instagram. The OPBPQ collects data on image content, usage patterns, and post quality and quantity. Findings from this study demonstrated the tool's high accuracy in predicting personality traits and established its reliability and validity (Mohammadi et al., 2024).

The present study seeks to address the following questions: (1) Is there a relationship between personality traits identified by the OPBPQ and job performance? (2) Which of the OPBPQ-measured personality traits significantly predict individual job performance?

2. Methods and Materials

2.1. Study Design and Participants

This study employed a sequential exploratory mixed-method design, consisting of a qualitative and a quantitative phase. This design is typically applied when the key constructs are not clearly defined or when appropriate measurement tools do not yet exist. In the qualitative phase, the construct of personality prediction through digital footprints and its underlying dimensions was explored through a literature review. Subsequently, initial questionnaire items were developed. The psychometric properties of the resulting questionnaire were then assessed in the quantitative phase (Nikpour et al., 2018).

The study population consisted of employees in Isfahan in 2024. Participants were selected through random sampling based on a set of inclusion and exclusion criteria. Inclusion criteria were: consent to participate, continuous Instagram activity for at least two years, a minimum of 10 posts, an active personal profile, and age between 20 and 50 years. Exclusion criteria included failure to fully complete the questionnaires, lack of adherence to the study protocol, and having a commercial or advertisement-focused profile.

From a pool of 1,746 individuals, 300 participants were randomly selected. Demographic findings revealed that the average age of participants was 33.42 years, with a standard deviation of 4.93. Among the participants, 159 (53%) were male and 141 (47%) were female. In terms of marital status, 165 (55%) were married and 135 (45%) were unmarried. Regarding educational background, 9 individuals (3%) had less than a high school diploma, 18 (6%) had a diploma, 15 (5%) had an associate degree, 162 (54%) held a bachelor's degree, 57 (19%) had a master's degree, and 39 (13%) had a doctoral degree.

2.2. Data Collection

Following a comprehensive review of relevant literature, the initial version of the questionnaire was developed, and its reliability and validity were established (Mohammadi et al., 2024). The translation of the instrument from the source language into English was carried out using the method proposed by Behr and Zabel (2020) (Behr & Zabal, 2020). In the subsequent quantitative phase, various forms of validity—face, content, construct, convergent, and discriminant—were evaluated, along with the reliability of the instrument.

2.3. Data Analysis

Correlation and stepwise regression analyses were conducted to examine relationships among variables. Regression analysis requires several assumptions to be met, including normal distribution of scores, linearity between variables, absence of multicollinearity, and independence of residuals. All statistical analyses were performed using SPSS version 26.

3. Findings and Results

The assumption of normality is evaluated to determine whether the distribution of sample scores approximates that of the population. This assumption implies that the difference between the sample's score distribution and the population's normal distribution is zero. To assess this assumption, skewness and kurtosis indices were used. The results related to this assumption for the study variables are shown in Table 1.

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Table 1

Descriptive Statistics and Normality Indices for Research Variables

Variable	Mean	Standard Deviation	Skewness	Kurtosis
Job performance	38.42	5.02	-0.387	-0.911
Neuroticism	21.8	5.55	-0.525	-0.436
Extraversion	28.7	6.47	-0.937	0.478
Openness to new experience	27.7	4.41	0.770	0.841
Agreeableness	32.31	4.66	-0.598	0.733
Conscientiousness	34.56	5.55	0.785	0.655

According to the data in Table 1, the skewness and kurtosis values for all variables fall within the acceptable range of ±2, indicating that the assumption of normality is met.

The assumption of multicollinearity arises when predictor variables in a multiple regression model are highly correlated, which can increase the standard error of regression coefficients and reduce model precision. To assess multicollinearity, the tolerance coefficient and the variance inflation factor (VIF) were calculated {Miles, 2001 #155904}. Additionally, the Durbin-Watson statistic was used to evaluate the independence of residuals. The results are reported in Table 2.

Table 2

Assessment of Multicollinearity and Independence of Errors

Variable	Tolerance	VIF	Durbin-Watson
Job performance	-	-	2.09
Neuroticism	0.525	1.9	-
Extraversion	0.480	2.08	-
Openness to experience	0.885	1.13	-
Agreeableness	0.593	1.68	-
Conscientiousness	0.713	1.4	-

The results in Table 2 indicate that all VIF values are below 2.5 and tolerance values exceed 0.4, thereby confirming the absence of multicollinearity. Additionally, the Durbin-Watson statistic falls between 1.5 and 2.5, supporting the assumption of independence of errors.

Pearson's correlation test was used to examine the relationships between job performance and personality traits, and the results are presented in Table 3. The analysis revealed significant correlations between job performance and the personality traits of neuroticism ($r = -0.288$), extraversion ($r = 0.168$), openness to experience ($r = 0.096$), agreeableness ($r = 0.110$), and conscientiousness ($r = 0.293$), all at $p < 0.05$. These findings suggest that increases in extraversion, openness, agreeableness, and conscientiousness—and decreases in neuroticism—are associated with higher job performance.

Table 3

Pearson Correlation Coefficients Between Personality Traits and Job Performance (n = 300)

Variable	r	p-value
Neuroticism	-0.288	.001
Extraversion	0.168	.002
Openness to experience	0.096	.041
Agreeableness	0.110	.027
Conscientiousness	0.293	.001

Stepwise regression analysis was performed to determine the predictive power of personality traits for job performance.

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Table 4

Stepwise Regression Analysis for Predicting Job Performance from Personality Traits

Step	Predictor Variables	R	R^2	SE	ΔR^2	df1	df2	F	p
1	Conscientiousness	0.293	0.086	4.8	0.086	1	298	27.9	.001
2	+ Neuroticism	0.342	0.117	7.73	0.031	1	297	10.49	.001
3	+ Extraversion	0.360	0.129	4.7	0.012	1	296	4.24	.040

Table 4 indicates that conscientiousness alone explains 8.6% of the variance in job performance ($F = 27.9$, $p < .001$). The addition of neuroticism increases the explained variance to 11.7%, contributing an additional 3% ($F = 10.49$, $p < .001$). In the third step, extraversion adds a further 1.2%, bringing the total explained variance to 12.9% ($F = 4.24$, $p < .05$).

Table 5

Regression Coefficients for Predicting Job Performance

Variable	B	SE B	β	t	p
Constant	40.41	3.47	-	11.64	.001
Conscientiousness	0.199	0.055	0.218	3.58	.001
Neuroticism	-0.258	0.067	-0.284	-3.86	.001
Extraversion	0.113	0.055	0.145	2.06	.040

As shown in Table 5, conscientiousness ($t = 3.58$, $p < .001$), neuroticism ($t = -3.86$, $p < .001$), and extraversion ($t = 2.06$, $p = .040$) are all significant predictors of job performance. The standardized beta coefficients indicate that a one-unit increase in conscientiousness or extraversion leads to an increase of 0.218 and 0.145 standard deviations in job performance, respectively, while a one-unit increase in neuroticism is associated with a 0.284 standard deviation decrease in job performance.

4. Discussion and Conclusion

The primary objective of this study was to evaluate the predictive ability of the OPBPQ for job performance. Based on distribution indices, the skewness and kurtosis values for all variables fell within acceptable ranges, confirming the normality assumption. In addition, the variance inflation factor (VIF) and tolerance values indicated that multicollinearity was not present. The Durbin-Watson statistic confirmed the independence of residuals.

Pearson correlation results revealed significant relationships between personality traits and job performance. Specifically, the traits of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness were all significantly associated with job performance. Higher levels of extraversion, openness, agreeableness, and conscientiousness, and lower levels of neuroticism, were associated with higher job performance.

Stepwise regression analysis demonstrated that conscientiousness was the strongest predictor of job performance among the Big Five traits. When neuroticism was added in the second step, the model's predictive power improved significantly. In the third step, the addition of extraversion further enhanced the model's predictive capability. These findings underscore the importance of conscientiousness, neuroticism, and extraversion in predicting employee performance.

The results of this study align with previous findings by Kern et al. (2019) and Moraes et al. (2020), who demonstrated that personality traits and values extracted from social network data could be used to identify ideal job matches and support recruitment processes. These studies, grounded in the Big Five model and the Myers-Briggs framework, illustrated the potential of using digital data to develop career aptitude maps. Both studies suggested applications in career guidance for recent graduates, career changers, disengaged employees, and the unemployed. The present study extends these findings by showing that digital footprints can also be used to predict job performance. Similarly, Hurtz and Donovan (2003) found a significant association between job performance and conscientiousness in the Big Five model (Hurtz & Donovan, 2000; Kern et al., 2019; Moraes et al., 2020).

The current study demonstrated that personality traits, particularly conscientiousness, neuroticism, and

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extraversion, are significant predictors of job performance. These findings support the predictive utility of the OPBPQ for use in organizational settings.

The use of a cross-sectional design is a limitation of this study, as it limits conclusions regarding temporal processes and causal relationships. Future research could address this limitation through longitudinal or qualitative methodologies. Challenges in sampling and participant cooperation also posed limitations.

This study contributes to the scientific literature, practical application, and broader community by highlighting the predictive capacity of the OPBPQ. The researchers recommend implementing this tool in diverse settings, including psychotherapy clinics, workplaces, and industries, both within Iran and globally. Additionally, the OPBPQ holds potential for predicting a range of other constructs, including organizational citizenship behaviors, counterproductive work behaviors, psychological well-being, and other relevant psychological dimensions. This study opens new pathways for exploring the integration of social media data and digital footprints in psychological and organizational research.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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