Revisiting the Nature and Strength of the Personality Job Performance Relations: New Insights from Interpretable Machine Learning

Can interpretable machine learning methods better reveal the nature and strength of the relations between five-factor model (FFM) personality traits and job performance compared to traditional linear methods?

This study by In-Sue Oh and colleagues, published in the Journal of Applied Psychology, examines how personality traits, based on the five-factor model (FFM), relate to job performance using interpretable machine learning (ML) methods. Traditional research has shown mixed results—some suggest linear relations, while others indicate nonlinear or interactive effects. Using a sample of 1,190 employees from a pharmaceutical company, the researchers compared multiple ML algorithms with traditional linear regression to understand these relations more deeply.

The findings reveal that nonlinear ML models (e.g., support vector machines, gradient boosting machines) slightly yet consistently outperform linear models when predicting job performance using narrower personality facets but not when using broader personality factors. Among the FFM factors, conscientiousness stood out as the strongest predictor, showing a curvilinear relationship with job performance—higher conscientiousness improves performance, but extremely high levels have diminishing returns. Agreeableness also showed a slight curvilinear effect.

At the FFM facet level, conscientiousness facets such as order, deliberation, and self-discipline were especially important. Some agreeableness and extraversion facets also emerged as significant predictors, particularly when distinguishing between corporate sales and individual sales jobs. For example, traits like straightforwardness and altruism mattered more in corporate sales, while positive emotionality was more relevant in individual sales.

Overall, the study emphasizes that ML methods can capture complex, nonlinear, and interactive personality-performance relations better than traditional methods. These insights can improve employee selection and development practices by tailoring personality assessments to specific job demands.

MAJOR TAKEAWAYS:

- Nonlinear ML methods better capture complex relations between personality facets and job performance than traditional linear models.
- Conscientiousness is the most important personality factor for predicting job performance, with curvilinear and interactive effects.
- The importance of narrower personality facets varies by job type, with different traits predicting success in corporate versus individual sales roles.

WHO NEEDS TO KNOW:

- Organizational Psychologists
- HR Professionals
- Business Executives

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