

Validity Study

Relationship of a Biodata Instrument and a Big 5 Personality Measure with the Job Performance of Entry-Level Production Workers

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Scores on a predictor battery of biodata and personality measures completed by a sample of 180 entry-level production workers were correlated with supervisory ratings of job performance collected specifically for this study. The biodata assessment and the Big 5 personality construct of emotional stability were significantly correlated with the criterion measure (uncorrected correlations were .59 and .15, respectively). However, the Big 5 construct provided small incremental validity in predicting the criterion measure when combined with the biodata assessment in a stepwise multiple regression analysis.

Sample

N	180 Entry-level production workers in the automotive supply industry
Gender	65% were men, 35% were women
Race	84% were White, 12% were Black, 4% were Hispanic/Latino, 6% were Asian American, and 1% were Native American Indian
Age	Mean = 31.1

Location

The data for this study were collected at a Tier 1 Global Automotive Supplier located in the Midwestern United States.

Predictor Information

The predictors in the study consisted of a biodata inventory and a Big 5 personality measure. The biodata inventory was developed specifically for selecting manufacturing employees and contains items related to school, teamwork, and both work and personal experiences. It has an empirical key based on manufacturing norms. The Big 5 personality measure was obtained from the International Personality Item Pool. It has scales for conscientiousness, emotional stability, openness to experience, extraversion, and agreeableness. Table 1 contains the reliabilities and intercorrelations of the five predictors.

Table 1
Predictor Reliabilities and Intercorrelations

Predictor	(1)	(2)	(3)	(4)	(5)	(6)
(1) Biodata	(.95)	.35	.36	.31	.28	.51
Personality Measure						
(2) Conscientiousness		(.87)	.50	.58	.41	.58
(3) Emotional Stability			(.90)	.44	.48	.41
(4) Openness to Experience				(.86)	.62	.61
(5) Extraversion					(.90)	.51
(6) Agreeableness						(.87)

Note: Reliability estimates are in parentheses. All coefficients are significant at the .01 level.

Criterion Information

The criterion consisted of supervisory ratings of job performance. The rating score was a composite of knowledge, skills, and abilities and task ratings made on a six-point scale. The coefficient alpha for the rating scale was .92.

Validity Information

Table 2 presents the uncorrected and corrected correlations of the predictors with the criterion for this concurrent validity study. Restriction of range was calculated using the uncorrected validity coefficient and the standard deviations of the unrestricted and restricted groups. A stepwise multiple regression analysis was conducted on the predictor measures against the composite criterion. Significant positive beta weights were obtained for the biodata assessment ($r^2 = .32$) and the emotional stability personality construct ($r^2 = .37$). The validity coefficient had a non-significant change in the stepwise multiple regression analysis. These findings suggest that the Big 5 personality measure in conjunction with the biodata assessment was not a useful addition to the predictor battery.

Table 2
Validity Coefficients

Predictors	Uncorrected	Corrected for range restriction
Biodata	.59*	.72*
Personality		
Conscientiousness	.08	.10
Emotional stability	.15*	.17*
Openness to experience	.01	.01
Extraversion	-.02	-.02
Agreeableness	.05	.06

Race and Sex Differences

Race and sex differences (d scores) in the predictors and the criterion are shown in Table 3. The effect size is the mean score difference between a minority group and whites described in standard deviation units. A positive effect size indicates that whites or men have higher scores than a minority group or women on the predictors or on the performance ratings.

Table 3
Race and sex differences (d scores)

Variable	Male-Female	Race comparisons		
		White-Black	White-Hispanic	White-Asian
Biodata	.20	.05	-.26	.49
Personality				
Conscientiousness	-.06	-.11	-.07	.37
Emotional stability	.04	-.13	-.36	.72
Openness to experience	.00	-.06	-.46	.44
Extraversion	-.20	.17	.21	.64
Agreeableness	-.52	.17	.13	.69
Performance rating	.20	.38	.17	-.59

Questions about this validity study should be addressed to:

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