



Big Five facets as predictor of job training performance: The role of specific job demands



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ABSTRACT

Personality facets, especially Big Five facets, have been shown to predict learning in school and university. This paper investigates their potential predictive power for training performance in a work environment. Based on trait activation theory by Tett and Burnett (2003) it was expected that depending on specific job demands, specific personality facets would be predictive. However, it was also tested whether invariant influences exist. Additionally, the impact of age, gender, and general mental ability was controlled for. The sample consisted of $N = 501$ apprentices. Training performance was operationalized by supervisor ratings in several learning domains. Findings confirm the hypotheses and revealed invariant positive contributions from dutifulness and Openness to ideas and invariant negative contributions from deliberation and Openness to fantasy. All other facets only functioned within a specific occupational group. Theoretical and practical implications are discussed.

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The idea that specific situational demands and job characteristics influence the way personality affects job performance has been formalized in a theoretical model by Tett and Burnett (2003). Those authors suggested that the activation of personality traits is dependent on certain situational characteristics (i.e., job demands, distracters, constraints, releasers, and facilitators, see below for an explanation). However, job success is often operationalized in terms of supervisor ratings, earnings or hierarchy level. For these criteria empirical evidence for the predictive power of personality traits exists (Barrick & Mount, 1991). Nowadays, though, there is broad acknowledgment that continued learning is a vital part of succeeding in life in general and within the job in particular (Beckmann & Birney, 2012). Whereas some progress has been made regarding the predictive power of personality traits, especially the Big Five, with regard to learning at an adolescent or young adult age within school (Heaven & Ciarrochi, 2012; Ziegler, Knogler, & Bühner, 2009) or university (MacCann, Duckworth, & Roberts, 2009; Poropat, 2009; Ziegler, Danay, Schölmerich, & Bühner, 2010) contexts, little is known about the way personality influences job training processes. To this end the current study systematically investigated the predictive power of Big Five facets for job training in a longitudinal design for different jobs thereby adding to our understanding how individual differences in personality affect the process of training performance.

1. Trait activation through situational characteristics

Tett and Burnett (2003) suggested that trait activation due to situational characteristics can be regarded as an important factor influencing test–criterion correlations in work settings. Consequently, the model can also be applied when investigating the role of personality as a predictor of job training success. Tett and Burnett's *trait activation theory* differentiates five situational features relevant to personality expression and thus relevant to the predictive power of personality at work. (1) *Job demands* can be found within the specific job descriptions and naturally go along with specific personality traits (e.g., finding people to form a study group requires a certain degree of Extraversion). (2) In contrast, *distracters* are not part of the actual job description but interfere with performance (e.g., the presence of other people in a study group might distract a talkative and extraverted person from learning due to chatting). (3) A *constraint* means that the situation does not allow for specific behaviors to be shown and thereby making the impact of the corresponding trait impossible (e.g., an extraverted participant of an online training cannot profit from his/her sociability in learning groups). (4) A *releaser* on the other hand is a situational feature that counteracts a constraint (e.g., the same participant will profit from his/her sociability if the online training includes presence days allowing for making contacts and forming a study group). (5) A *facilitator* underscores trait relevant situation information and makes trait activation more likely (e.g., the present day invitation sent out by the teaching institution might include a note pointing out the opportunity to form study groups). Thus, the work context offers many diverse situations that potentially activate or deactivate a trait and thereby influence its predictive power. Regarding job training the

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same mechanisms can be assumed. There might even be stronger situational influences within job training programs that include formal schooling like in an apprenticeship. Here, work contexts are interspersed with school contexts possibly increasing the variety of situational features.

2. Personality and job performance

At the moment the most popular models of personality are the Big Five (Goldberg, 1990) and the Five Factor Model (Costa & McCrae, 1995). Within these models, five broad personality domains (i.e. Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness) are used to explain individual differences in personality ratings. This framework has successfully been used to predict job performance. While most research looked at job performance in general, some research aimed at investigating the predictive power of the Big Five for job training. Meta-analytical evidence shows that there are some traits that function sufficiently on an overall level, i.e. are predictive of performance regardless of the specific job looked at. Especially Conscientiousness has been shown to predict job performance regardless of specific job demands (Barrick & Mount, 1991). Research investigating the prediction of job training success by personality differences has shown that differences in Conscientiousness, Extraversion, and Openness to experience allow valid learning predictions (Barrick & Mount, 1991). Especially the impact of Openness to experience seems plausible considering its role in models integrating fluid and crystallized intelligence (Ziegler, Danay, Heene, Asendorpf, & Bühner, 2012). At first sight, these findings of cross-situational consistency might be seen as a contradicting trait activation theory.

This impression might change when looking at the predictive power of the Big Five for academic performance. Here it has been shown that narrower facets of the Big Five are much better predictors of academic performance than the broad domains (Bratko, Chamorro-Premuzic, & Saks, 2006; Steinmayr, Bipp, & Spinath, 2011; Ziegler et al., 2010). Personality facets represent less abstract characteristics located below the more global personality domains. Ziegler et al. (2010) could show that compound or cancelation effects on facet level distort test–criterion correlations on domain level. Such compound effects occur if facets within one domain have opposing test criterion correlations. Compound effects offer an explanation for the sometimes seemingly low test criterion correlation of Big Five domain scores. However, they also demonstrate that Big Five facets belonging to the same domain can have opposing effects depending on the specific criterion used. An explanation for this counterintuitive finding might be found within trait activation theory. Thus, applied to the prediction of job training success personality facets not only seem a fruitful option in terms of overall performance. Based on research on academic performance it also seems reasonable to assume that they are more prone to be affected by the mechanisms suggested in the trait activation theory. Another theoretical explanation supporting the claim that facets might be a more optimal predictor of job training is the higher congruence in terms of symmetry (Brunswik, 1955) between personality facets and job training success criteria.

However, little is known about the influence of situational features on the way narrow facets function in job training contexts. Mount and Barrick (1995) could show that specific Conscientiousness facets predict job training. However, this meta-analysis did not include facets from other Big Five domains. Tett, Steele, and Beauregard (2003) could show that personality facets outperform the broader domains as predictors of job performance. Unfortunately, job training was not used as a criterion here. The present study aims to overcome this lack of knowledge by testing the predictive power of all Big Five personality facets as predictors of job training success. Additionally, trait activation theory will be tested by testing whether the prediction achieved by the facets is invariant across diverse jobs and hence job demands.

When it comes to predicting job performance or job training cognitive ability or general mental ability (GMA) has repeatedly been shown to be an outstanding predictor (Schmidt & Hunter, 1998). Recent research showed that specific aptitudes along with general mental ability are also valid performance predictors in job training contexts (Ziegler, Dietl, Danay, Vogel, & Bühner, 2011). Consequently, the present study will not only focus on personality facets but also control for individual differences in cognitive ability.

3. Summary and aims of the present study

As noted above, it has been shown that personality facets are valid predictors of academic performance as measured in schools or universities. However, lifelong learning makes it important that people always learn and thus academically perform outside of these learning environments. So far, little is known regarding the predictive power of personality facets for job training as a specific learning environment that can be considered an important part in each career. The first research question of the present study therefore was whether personality facets predict job training. Based on prior findings we expected substantive predictions for some facets, especially from the domains of Openness and Extraversion. To acknowledge the general impact of cognitive ability, we controlled for its influence, expecting incremental validity for personality facets. Moreover, theoretical as well as empirical arguments show that specific job demands influence trait activation and thus the test–criterion correlations of personality traits. The second research question therefore aimed at testing the invariance of personality facet predictions for job training across different jobs and therefore, job demands and training contents. Considering prior research we expected invariance for the facets of Conscientiousness, Extraversion, and Openness, which are the domains that were all shown to be valid job training predictors.

4. Method

4.1. Participants

The data set included $N = 501$ apprentices and was provided by courtesy of Provalids GmbH (Provalids), a company operating in the pharmaceutical industry. Participants originally applied for and trained in one of four occupational groups: laboratory professions (e.g. chemical laboratory assistants, biology laboratory technicians), skilled production workers (e.g. skilled chemical workers, pharmaceutical production technicians), metal/electronic technicians (e.g. machine operator technician, electrician mechanics) and skilled commercial workers (e.g. office communication assistants, foreign language correspondence clerks). See Table 1 for more information about gender, age distribution, and education level before apprenticeship split for each occupational group.

Table 1
Sample composition.

Occupational group	n	Gender		Age at time of assessment		Prior level of education		
		Female	Male	M	SD	HS	RS	F(Abi)
Laboratory professionals	148	95	53	17.46	1.87	0	59	89
Skilled production workers	117	30	87	17.03	2.09	16	96	5
Metal/electronic technicians	139	4	135	16.65	1.78	9	117	13
Skilled commercial workers	97	63	34	18.21	2.00	2	23	72

Note. M = mean; SD = standard deviation; HS = Hauptschule (secondary general school); RS = Realschule (intermediate secondary school); F(Abi) = (Fach)Abitur (specialized Grammar School; range from lowest to highest level of education in Germany).

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