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Predicting workplace deviance using broad versus narrow personality variables

Stephanie E. Hastings *, Thomas A. O'Neill

The University of Western Ontario, Rm. 7418, Social Science Centre, London, Ontario, Canada N6A 5C2

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ABSTRACT

Certain "Big Five" factors of personality are theoretically and empirically related to workplace deviance. However, the Big Five are complex in that each is comprised of multiple facets. To advance theory on *how* personality relates to deviant behaviors, and to maximize the prediction afforded by personality variables, we investigated the relations between the Big Five and their constituent facets and workplace deviance. Usable data were collected from 198 participants with work experience. We found that the Big Five obscured important facet–criterion relations. For example, Neuroticism did not predict deviant behaviors, whereas its facet, Anger, was a significant predictor. Moreover, five facets selected *a priori* by expert judges were found to predict 91% as much variance in deviance as did the Big Five. The implications are two-fold: facet-level measurement and interpretation in personnel contexts may be more (a) efficient and (b) defensible. Efficiency is enhanced by minimizing the items needed to achieve comparable prediction, and defensibility is enhanced by having a clearer content domain that is more readily linked to job dimensions. Finally, theoretical understanding is likely to be greater for facets than for factors because the former provide clearer insights regarding the conceptual linkage with the criterion.

1. Introduction

Several meta-analytic studies have demonstrated the validity of personality in the prediction of job performance (e.g., Barrick & Mount, 1991; Tett, Jackson, & Rothstein, 1991). After cognitive ability, personality-related variables account for the most variance in job performance (Schmidt & Hunter, 1998). Beyond job performance, there are other, less researched workplace variables important to organizations that could be related to personality. For example, behaviors that actually *hinder* organizational effectiveness represent a consequential, and much less studied, domain of work behavior (Catano, Wiesner, Hackett, & Methot, 2005). Such behaviors have been referred to as counterproductive workplace behaviors, or more simply, as workplace deviance (Robinson & Bennett, 1995).

At least two meta-analytic studies have investigated the relation between personality and workplace deviance (Berry, Ones, & Sackett, 2007; Salgado, 2002). However, one limitation to the studies included in those meta-analyses is their reliance on the "Big Five" factors of personality (see Digman, 1990). The Big Five are ubiquitous in organizational research, although a growing number of researchers have pointed out that important insights can be gained by considering the narrow traits subsumed within the Big Five framework (e.g., Paunonen & Ashton, 2001). Because narrow traits have more specific definitions and content domains, their relations with other variables tend to be easier to predict and understand (Schneider, Hough, & Dunnette, 1996).

The "Big Five" factor structure is often conceptualized at two main hierarchical levels – at the broad level, the Big Five factors are Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience (Costa & McCrae, 1992). At the narrow level, and according to Costa and McCrae's (1995) dominant taxonomy, each of the five factors contains six constituent facets. That is, six facets make up each of the five factors. Advocates of narrow traits propose that personality-related studies ought to at least *consider* relations at the facet level. Without doing so, relations important to the human resources practitioner could be overlooked (Paunonen, Rothstein, & Jackson, 1999). For example, Extraversion contains facets related to gregariousness (i.e., Friendliness, Cheerfulness, Sociability), but also has facets related to dominance and energy (i.e., Activity Level, Excitement Seeking, Assertiveness). One might imagine that dominance- and energy-related facets, such as Excitement Seeking, could relate positively to deviance, whereas Friendliness and Cheerfulness may exhibit negative or zero relations with deviance. The net effect, at the factor level, may be a non-significant correlation between Extraversion and deviance. The investigator might then conclude that no relation exists between Extraversion and deviance, despite non-trivial facet-level relations. Examples like this have been referred to as the "cancellation effect" (Tett & Christiansen, 2007).

There has recently been a series of reviews in the organizational literature regarding the use of broad versus narrow personality traits (e.g., Barrick & Mount, 2003 versus Rothstein & Jelley,

* Corresponding author. Address: The University of Western Ontario, Rm. 8424C, Social Science Centre, London, Ontario, Canada N6A 5C2. Fax: +1 519 661 3961.
E-mail address: shastin@uwo.ca (S.E. Hastings).

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2003). At one extreme, broad factors that cover a wide content domain have been argued to be most useful for theory development because they offer parsimony (Barrick & Mount, 2005; Ones & Viswesvaran, 1996). On the other hand, narrow trait advocates point out that more variance can be explained in a criterion by a set of theoretically relevant and specifically defined traits (Paunonen & Ashton, 2001; Paunonen et al., 1999). This debate is particularly important for researchers and practitioners who aim to (a) maximize the variance accounted for in the criterion by using the fewest number of tests (thereby increasing utility), and (b) identify traits that have logical linkages to the criterion (thereby enhancing the defensibility of selection systems and generating theory around trait–criterion relations).

In a recent review of the broad versus narrow personality debate, Rothstein and Goffin (2006) concluded that narrow traits are actually outperforming broad factors in the prediction of job performance. However, much less attention has been placed on evaluating the merits of narrow traits in the prediction of workplace deviance, despite the importance of this criterion for organizational effectiveness (cf. Ashton, 1998). For example, researchers have found that employee thefts resulted in a loss of between five and ten billion dollars annually, and all forms of deviance together accounted for approximately $40 billion (Harper, 1990). Accordingly, minimizing losses associated with workplace deviance is a priority for current research and practice, yet few studies in this area have made any comprehensive comparison of broad to narrow variables and their relative merit.

In light of the gaps in the literature, the purpose of this study is to investigate the level at which personality is best measured and operationalized to satisfy two goals: to maximize the prediction of workplace deviance, and to understand the theoretical underpinnings of personality–criterion relations. Accordingly, we compare the predictive validity of the Big Five factors to their constituent facets using a combination of empirical and rational techniques. This study offers two significant advantages over previous research: (a) narrow traits to be compared to the Big Five were selected by expert judges rather than relying solely on empirical, *post-hoc* relations; and (b) all personality variables were corrected for unreliability to unconfound predictive validity from measurement error.

2. Method

2.1. Participants and procedure

One hundred ninety eight participants with work experience (67.5% female) in an introductory psychology course at a large Canadian University participated in this study in exchange for course credit. Participants ranged in age from 17 to 36 years (M = 18.85 years), and had been employed in their current (or most recent) organizations for an average of 14 months (tenure ranged from 1 to 48 months). The majority of participants reported working in sales (19%) and food service (17%), whereas 15% worked as cashiers, 12% were manual labourers, 10% were in customer service, 7% were in management, and 20% were categorized as 'other'.

Research has suggested that respondents are likely to accurately and honestly self-report instances of deviance, provided that they are guaranteed anonymity (Bennett & Robinson, 2000). Thus, in order to reduce socially desirable responding, the study was conducted online and respondents were assured at several points throughout the study that identifying information could not be linked to individual responses. Participants completed the deviance measure first, followed by the personality scales.

2.2. Measures

Workplace deviance: Workplace deviance was measured with the self-report scale developed by Bennett and Robinson (2000). Deviance was assessed with 19 items, such as "Littered your work environment" and "Acted rudely toward someone at work". Respondents were asked to rate how often they engaged in these behaviors, from "never" (1) to "daily" (7). Responses on these items were summed to form a total deviance score.

Personality: The Big Five and their constituent facets were measured with a questionnaire developed by Johnson (2001) using items from the International Personality Item Pool (Goldberg, 1999). Each personality factor is measured with 6 facets comprising 4 items each, and is scored on a 5-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5).

3. Results

The mean for workplace deviance was 2.13 (SD = 1.01) and Cronbach's alpha was .92. Regarding personality, Cronbach's alpha ranged from .79 (Openness) to .88 (Agreeableness) for the Big Five, and .54 (Dutifulness) to .83 (Anger) for the narrow traits. Recall that the most important goal of this study is to compare the predictive validity of the Big Five to narrow traits. That the reliability coefficients were higher for broad factors than for narrow traits gives the Big Five an unintended advantage. Accordingly, we first corrected the correlation matrix for unreliability (see Table 1),[1] then submitted the corrected correlation matrix to multiple regression using REGRESS (Hunter, 1996).[2]

To investigate the predictive validity of the corrected Big Five factors, they were entered simultaneously in a multiple regression equation, as predictors, and workplace deviance was entered as the criterion. Not surprisingly, substantial variance was explained, R^2 = .35. Turning to the narrow traits, we identified the trait that demonstrated the strongest within-factor corrected correlation with deviance, for each Big Five factor, and entered those traits into a multiple regression equation. The five disattenuated narrow traits (Excitement Seeking, Cooperation, Dutifulness, Anger, and Emotionality) accounted for almost as much variance in workplace deviance as did the Big Five, R^2 = .33.

Because the narrow traits were selected *post-hoc* (based on their observed relation with workplace deviance), there was a possibility we capitalized on chance. That is, sampling error could cause fluctuations affecting which narrow trait would have been selected under each Big Five factor, and the magnitude of that correlation. Consequently, the predictive validity of narrow traits may have been overestimated. Accordingly, we asked a group of 10 expert judges, comprised of industrial/organizational psychology graduate students, to rate the relevance of each trait for predicting workplace deviance. Ratings were provided on a five-point Likert scale ranging from "Strong negative relation with workplace deviance" (−2) to "Strong positive relation with workplace deviance" (+2). The narrow trait with the largest absolute rating within each Big Five factor, averaged across judges, was selected to form a set of five *expert-selected narrow traits*. These narrow traits were then corrected for unreliability and entered in a multiple regression equation where the prediction was only slightly lower, R^2 = .32, than it was for the Big Five and the empirically-selected narrow traits. This is not surprising as expert judges selected three of the five most predictive narrow traits (the experts chose Morality and Liberalism instead of Cooperation and Emotionality). Thus,

[1] The personality variable inter-correlations were also corrected for unreliability and are available from the second author.

[2] Note that the multiple R based on these corrected values could not be tested for significance because the standard errors are biased (see Aiken & West, 1991).

Table 1
Zero-order and observed and corrected personality–deviance correlations.

Variable	*R*	Variable	*R*	Variable	*R*	Variable	*R*	Variable	*R*
Extraversion	−.06	Agreeableness	−.47**	Conscientiousness	−.39**	Neuroticism	.12	Openness	−.20**
	(−.06)		(−.52)		(−.44)		(.14)		(−.24)
Friendliness	−.15*	Trust	−.14*	Self efficacy	−.21**	Anxiety	−.07	Imagination	.01
	(−.18)		(−.17)		(−.26)		(−.09)		(.01)
Gregariousness	−.05	Morality	−.43**	Orderliness	−.25**	Anger	.28**	Artistic interests	−.21**
	(−.07)		(−.51)		(−.3)		(.33)		(−.27)
Assertiveness	−.03	Altruism	−.42**	Dutifulness	−.36**	Depression	.08	Emotionality	−.23**
	(−.04)		(−.51)		(−.51)		(.1)		(−.32)
Activity level	−.05	Cooperation	−.42**	Achievement striving	−.32**	Self Consciousness	−.09	Adventurousness	−.11
	(−.06)		(−.52)		(−.39)		(−.12)		(−.15)
Excitement seeking	.17*	Modesty	−.23**	Self discipline	−.22**	Immoderation	.17*	Intellect	−.24**
	(.21)		(−.29)		(−.3)		(.23)		(−.32)
Cheerfulness	−.11	Sympathy	−.36**	Cautiousness	−.23**	Vulnerability	.11	Liberalism	.04
	(−.14)		(−.47)		(−7)		(.14)		(.07)

Note: $N = 198$. Values in parentheses are corrected correlations.
* $p < .05$.
** $p < .01$.

the difference in prediction offered by the Big Five relative to narrow traits was trivial (3%), and in this case, sampling error or capitalization on chance could not explain the strong prediction of narrow traits.

Besides comparing the Big Five to narrow traits using multiple regression, we draw attention to several noteworthy factor- and facet-level correlations among personality variables and workplace deviance (see Table 1). We refer to *uncorrected* correlations here as statistical significance testing facilitates our interpretations. For Extraversion, Excitement Seeking correlated positively with deviance ($r = .17$, $p < .05$), yet Friendliness exhibited a negative relation ($r = -.15$, $p < .05$). These facets essentially cancel one another out when aggregated to the factor level, which is why Extraversion was not significantly related to deviance ($r = -.06$, *n.s.*) despite significant facet-level results. A similar finding pertains to Neuroticism, where the non-significant factor-level correlation (uncorrected $r = .12$, *n.s.*) masks meaningful relations between deviance and both Anger ($r = .28$, $p < .01$) and Immoderation ($r = .17$, $p < .05$). Concerning Openness to Experience, several facets were predictive of deviance, whereas others were not. In this case, however, the factor Openness was significant ($r = -.20$, $p < .01$), yet having the facet-level information identifies those traits driving the prediction.

Findings were somewhat different for Agreeableness and Conscientiousness. Factor-level correlations offered reasonably consistent summaries of the relations among constituent facets and deviance in both cases (Table 1). For these two factors it appeared to be the underlying latent trait, or variance common to the facets, that was most predictive.

4. Discussion

The present study found that *both* personality factors and facets predicted workplace deviance. More importantly, however, the level of optimal prediction (i.e., factor or facet) depended on the personality variable. That is, factor-level correlations obfuscated important facet-level findings for Extraversion, Openness to Experience, and Neuroticism. For these variables, facet aggregation led to: (a) the cancellation effect (Extraversion), (b) a masking effect where a lack of significant relations at the factor level was found even though constituent facets were significant predictors (Neuroticism), and (c) a factor-level correlation that was not larger than some of its facets (Openness to Experience). In these cases, variance unique to certain individual facets was more important and effective in the prediction of deviance than were factor-level summary scores (cf. Paunonen, 1998).

On the other hand, Agreeableness and Conscientiousness factors exhibited *slightly* stronger prediction than did most of their constituent facets, all of which were significantly related to workplace deviance.[3] Thus, the common variance among the facets that underlie these factors was most important. This is in line with meta-analytic evidence which has shown that Conscientiousness and Agreeableness predict deviance (Berry et al., 2007; Salgado, 2002). However, the fact that these meta-analyses concluded that the other Big Five factors are less important ignores the possibility that facets of those factors can be predictive, which is what our findings suggest.

Overall, our results indicate that, where predictability is concerned, facets will occasionally outperform factors, and factors will sometimes do better than facets. Nevertheless, facet-level relations are informative in both cases, whereas factors are not. Even for Agreeableness, where the factor-level correlation was strongest and significant, it can be observed that Trust was a relatively trivial contributor in the prediction of deviance relative to Morality, Altruism, and Cooperation. Moreover, when factors are *not* significant and results are only analyzed at the factor level, there is a risk of missing non-negligible facet-level relations. Taken together, facets will almost always offer additional information and insight regarding the theoretical relation between personality and criteria (Paunonen et al., 1999; Schneider et al., 1996).

4.1. On the broad versus narrow debate

Although there are several potential advantages, the primary contribution of the Big Five is that of theoretical parsimony: if researchers and practitioners can theorize about and operationalize personality using the same five factors, results across studies can (ostensibly) be aggregated more readily. Ultimately, this enables tests of the generalizability of validities across jobs and situations. Thus, there is no doubt that the Big Five are very useful (Barrick & Mount, 2003; Rothstein & Jelley, 2003).

The main advantage of narrow traits is that they provide clearer, and more defensible, interpretations of trait–criterion relations. For example, in this study, it is much easier to explain why a narrow trait, such as Anger or Immoderation, relates to workplace deviance, compared to the broader Neuroticism factor, which contains near-irrelevant components such as Depression and Self-consciousness. A hypothetical, but equally plausible, example can be generated for the Openness to Experience factor as it relates to brainstorming effectiveness in organizational work groups.

[3] The exceptions were for the disattenuated Dutifulness and Cooperation correlations (see Table 1).

Whereas Innovation is a facet of Openness to Experience and would likely be positively related to brainstorming, Openness also includes items related to voting preferences and aesthetic appreciation, which, arguably, are of little relevance to brainstorming effectiveness. Stated simply, relevant (i.e., criterion-oriented) narrow traits can demonstrate more informative relations than can broad factors because of their enhanced explanatory power (Schneider et al., 1996).

Interestingly, relevant narrow traits or facets have the potential to account for greater variance in a criterion than do Big Five factors. In general, to the extent that all facets of a factor do not relate to the criterion in the similar direction and magnitude, the factor–criterion relation will not be as strong as some facet–criterion relations. This is because narrow traits retain trait-specific variance that may be predictive of the criterion, although that variance is essentially diluted when aggregating facet-level scores to the factor level (Paunonen & Nicol, 2001). We observed this in our results, where factor-level correlations with deviance were not significant (e.g., Neuroticism), yet facets demonstrated non-trivial prediction (i.e., Immoderation and Anger). Accordingly, not only do narrow traits (or facets) offer the possibility of equal or more variance accounted for in the criterion (because of their trait-specific variance), but any observed relations are more readily understood and defended (Paunonen et al., 1999).

4.2. Practical implications

The results of this study suggest that human resource practitioners might significantly reduce the number of items used in screening new applicants. Whereas the Big Five, as a block, accounted for slightly (2%) more variance than did the best within-factor set of narrow traits, and 3% more variance than did the expert-selected set of narrow traits, one could argue that the utility of using six times the number of items to achieve that prediction is negative. For the practitioner who has limited testing time, it would usually be preferable to sacrifice a large number of test items in favor of gaining the opportunity to examine other constructs related to job performance (e.g., general mental ability).

In response to the aforementioned suggestions a reviewer reminded us that the Big Five may be measured with far fewer items than with the 120 items used here (e.g., the NEO–FFI uses 60 items). However, we still believe narrow traits will tend to offer greater utility than will even short measures of the Big Five. First, the NEO–FFI would be unlikely to show as strong validities, on average, as do longer Big Five measures because less breadth is captured (see Costa & McCrae, 1992, p. 54). Second, that 60-item measure is still three times longer than our expert-selected five facets (four items each), which means that for a third of the items used only 3% of the variance accounted for is lost. Third, narrow traits always have the added benefit of increased explanatory power relative to the Big Five, and accordingly, are more defensibly used (e.g., for legal purposes in personnel selection). Fourth, because the linkages between narrow traits and criteria are often more understandable, theoretical developments regarding those linkages can be advanced. Thus, it appears that measuring the entire Big Five, instead of focusing on relevant narrow traits, offers diminishing returns and a trend toward negative utility.

4.3. Strengths and limitations

Although we used a self-report measure of deviance, some have recommended using peer-reported deviance as employees might be unwilling to give accurate self-reports (e.g, Skarlicki & Folger, 1997). However, Penney and Spector (2005) compared self- and peer-reports of deviant behavior and found that, whereas 16% of peers reported never having seen the target employee engage in any form of deviance, only 1% of the targets reported never engaging in deviance. The authors concluded that peer-reports are likely a "deficient indicator" (p. 792) of deviance, and recommended using self-reports if *anonymity was guaranteed*. Likewise, other researchers have argued that objective measures of deviance (e.g., organizational records) are limited due to the covert nature of most deviant behaviors. For example, Sackett, Burris, and Callahan (1989) noted that correlations with objective measures such as theft are attenuated since this behavior often goes undetected. Given the methods used in this study (online administration and multiple statements assuring anonymity), and its purpose (to compare the predictive validity of broad to narrow traits), we felt that the self-reports were a reasonable vehicle for data collection.

The generalizability of our results should be considered in light of our student sample. In this regard, Fox, Spector, and Miles (2001) compared student and non-student samples in their study of deviance, and found very few differences. In the few areas in which the two samples differed, the results showed that non-student samples tended to show *stronger* relations. Moreover, as the goal of this study was to *compare* the predictive validity of broad to narrow traits, our use of a student sample is unlikely to seriously change the conclusions reached. Notwithstanding that point, generalizing validity coefficients to real selection situations from our results should be cautioned, and future studies designed to reflect a closer approximation of applicant scenarios would be useful. For example, student participants can be asked to imagine they are completing personality tests to get hired for an actual job (e.g., Jackson, Wroblewski, & Ashton, 2000; Mikulay & Goffin, 1998).

One other issue is that we used the same scales to measure broad and narrow traits. Some research has used different measures for each (e.g., Paunonen, 1998), which allows for the testing of the incremental prediction of narrow and broad personality variables beyond one another. Because our measure of the broad and narrow variables was one and the same, we could not test whether narrow traits actually accounted for variance that broad traits did not. On the other hand, few studies report all personality–criterion relations for Big Five factors *and* facets as we did here. Reporting factor- and facet-level results allows the reader to carefully dissect the importance of each hierarchical level of prediction him- or herself. Thus, whereas we can not show incremental prediction for broad or narrow variables beyond one another, we were able to highlight a variety of important findings (e.g., cancellation effects, masking effects).

Finally, the present study has two unique strengths relative to previous research in this field. First, to compare the predictive validity of broad to narrow personality variables, we corrected for unreliability. This is a significant advantage because Big Five factors tend to be measured with more items, and accordingly, greater reliability, than are narrow traits. Correcting each for unreliability puts these variables on equal footing for comparison purposes. Second, we had experts choose five facets for comparison with the Big Five (by rating all facet relevancies for predicting workplace deviance). Whereas almost all studies in this area use *post-hoc* approaches for comparing broad to narrow validities (e.g., Tett, Steele, & Beauregard, 2003), these approaches are susceptible to sampling fluctuations and may overestimate narrow trait validity coefficients. By using expert-selected traits, we provide compelling evidence that narrow traits can and do compete with the Big Five in terms of predictive validity of workplace deviance, yet narrow traits have the added advantage of explanatory power.

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