

Issues and non-issues in the fidelity-bandwidth trade-off

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Summary

This paper makes seven points in response to certain claims made by Ones and Viswesvaran (1996, this issue). First, we see no evidence that the fidelity-bandwidth trade-off has become a crisis in the empirical literature. Moreover, we seen no evidence that anyone prefers narrow band personality measures over broad bandwidth scales. In addition, because job performance is complex and multidimensional, broad bandwidth predictors are normally required in personnel selection. Finally, our conclusion is simple—the nature of the criterion dictates the choice of predictors and matching predictors with criteria always enhances validity.

Introduction

Life entails unavoidable trade-offs. The existentialists tell us that we must choose between freedom and happiness, that we cannot have both simultaneously. Heisenberg's indeterminacy principle tells us that there is a trade-off between knowing where a particle is and how much it weighs—the process of locating a particle disturbs our ability to measure it. In performance, Fitt's law describes the inverse relation between target accuracy and movement time. And in psychometrics, we have the choice between fidelity and bandwidth—which is analogous to the choice between binoculars and a microscope. One provides a wide field of vision with little detail, and the other provides a narrow field of vision with great detail.

Personality measures are increasingly being used to predict job performance and new questions about old principles arise. One question concerns what to measure. A second concerns how to assess work performance. A third concerns how to align attributes of people with job requirements and a fourth concerns the appropriate level of measurement to maximize performance prediction. The concepts of fidelity and bandwidth are relevant to all these questions.

Shannon and Weaver's (1949) *The Mathematical Theory of Communication* introduces these concepts to social science. Shannon argued that any communication system involves a trade-off between fidelity—quality of information—and bandwidth—complexity of information obtained. Greater fidelity is achieved at the loss of bandwidth and increased bandwidth comes at the price of fidelity. Cronbach (1960) suggested that we subscribe to the psychometric ideal of high fidelity, narrow bandwidth assessments. This ideal may apply to educational assessments, but it may not apply to assessments in the workplace. Our view is based on the idea that important

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work criteria are psychologically complex syndromes—not specific educational skills such as solving analogies, computing long division, or spelling accurately. Because the characteristics of the predictor ought to be driven by the characteristics of the criteria, narrow bandwidth measures will be inappropriate for either the predictors of, or the criteria for, job performance.

With this view in mind we offer seven comments on Ones and Viswesvaran's (1996, this issue) views of the bandwidth–fidelity ‘dilemma’ in personality and job performance assessments. In our view, there is no dilemma. The trade-off between fidelity and bandwidth is unavoidable, and we see no ‘dilemma’ to be resolved. We regard the ‘controversy’ as a straw man, and their argument is easily attacked and resolved. However, the process of addressing what we regard as non-issues reveals some real issues and we would like to comment on these.

Why the Bandwidth–Fidelity Dilemma is not a Dilemma

Ones and Viswesvaran (this issue) claim that ‘bandwidth–fidelity dilemma’ is an old debate that has been rejuvenated by the increased use of personality measures for personnel selection. They provide no support for this statement. Nevertheless they assert that practitioners and researchers must choose between a narrowly-defined variable on the one hand, or a ‘cursory exploration’ of many separate variables on the other hand, and this choice defines the ‘bandwidth–fidelity dilemma’. In their view, the question concerns whether ‘broadly defined personality traits are better in predicting job performance... than narrowly defined personality traits’ and what is ‘... the appropriate breadth of trait measurement’. Thus, a goal of their paper is to evaluate ‘... the merits of using broad versus narrow personality variables in applied organizational settings’. Although the dilemma is characterized as one of bandwidth versus fidelity, their paper largely ignores fidelity.

To avoid unnecessary confusion, it is useful to review Cronbach's (1960, pp. 600–608) definitions. He defines bandwidth as ‘... the amount or complexity of the information one tries to obtain in a given space of time’. He does not define fidelity explicitly; rather Cronbach uses the terms ‘accuracy’, ‘useful decision making’, ‘validity’, and ‘reliability’ in examples when he discusses fidelity. Following Cronbach, it seems appropriate to conceive of fidelity as being on a continuum ranging from ‘high’ to ‘low’ and bandwidth on a continuum from ‘large or wide’ to ‘small or narrow’. These conceptions are consistent with the way the terms fidelity–bandwidth are used in communication systems. As an example of a high fidelity assessment, Cronbach cites the college aptitude test, because the assessment tries to answer one question with great accuracy. In addition, he says that the test content is concentrated in a ‘very narrow range’ by using highly correlated items focused on one central variable. Note that, in this example, fidelity and bandwidth are clearly separate attributes, and that a college aptitude test is a high fidelity, small/narrow bandwidth assessment. An example of a low fidelity assessment might be an unconstrained interview or a reference check. As an example of a large bandwidth assessment, Cronbach points to the Thematic Apperception Test, where over 40 variables may be rated. He considered the Binet and the Minnesota Multiphasic Personality Inventory to be intermediate bandwidth assessments.

Cronbach's interpretation of Shannon's principle contains, minimally, four proposals: (a) any shift toward greater fidelity reduces bandwidth and, conversely, an increase in bandwidth comes at the price of fidelity; (b) information from extremely large bandwidth assessments is unreliable

and, conversely, small bandwidth assessment is appropriate only when there is one question to be answered; (c) when many outcomes are important, assessment bandwidth must increase; and (d) low fidelity assessments are a problem only when they lead to costly errors or are used to make irreversible decisions (i.e. personnel selection).

One of Cronbach's more useful generalizations (see point c above) is that when criteria are complex, complex measures will be needed as predictors and vice versa. This generalization, which has been around for more than 35 years, provides guidance for measurement choice concerning bandwidth. We know of no body of evidence that questions Cronbach's proposals; consequently, we do not believe that researchers or practitioners face a measurement dilemma. Nevertheless, Cronbach's ideas are most applicable to educational and cognitive measurement and are a special case whose relevance to personality and job performance assessments can be evaluated empirically.

In Personality Measurement, the Choice is Between Broad and Broader, not Narrow versus Broad, Bandwidth Assessment

Using Cronbach's definition, a measure that answers only one question or predicts only one outcome is narrow bandwidth. In contrast, Ones and Viswesvaran define narrow personality measures as 'more concrete' with 'clear behavioral connotations'. Conversely, they define broad bandwidth measures as more 'inclusive, general, and abstract'. Cronbach's definition focuses on the range of predicted outcomes whereas Ones and Viswesvaran focus on the range of abstraction; these are two different definitions of bandwidth. Cronbach's is obviously closer to Shannon's view of bandwidth as the amount or complexity of information obtained.

To support Ones and Viswesvaran's definition of broad versus narrow band personality measures, they need to show that test developers sample each personality domain systematically at different levels of construct breadth. For example, test developers could follow the example of John, Hampson and Goldberg (1991) and systematically assess 'mid-level' constructs, such as 'responsible' and 'cooperative', because users prefer this level of description to either broader or narrower descriptions (see also Angleitner, Ostendorf and John, 1990). Unfortunately, we know of no personality test developers who have been so systematic in sampling the domain of any given dimension; most pay little attention to category breadth. The following two items from the NEO-FFI (Costa and McCrea, 1989) reflect the range of category breadth found in many personality scales: 'I am not a very methodical person', and 'I keep my belongings neat and clean'. The first item is broader than the second, yet both are equally weighted when scoring the NEO-FFI Conscientiousness scale. An examination of items from a variety of inventories will reveal the same unsystematic sampling of category breadth.

We are left with a conundrum—how broad are the scales that Ones and Viswesvaran use when contrasting the efficacy of latent and manifest measures of personality? Ones and Viswesvaran point out that the alpha coefficients for narrow personality variables are lower than those found for broader factors, ranging from 0.38 to 0.71. Because coefficient alpha is determined by the number of items on a scale and the mean inter-item correlation, we can draw one of two conclusions. Either narrow scales have too few items or they are conceptually complex—they are broad bandwidth measures of their corresponding constructs. For example, the 46-item

socialization scale from the California Psychological Inventory (CPI: Gough, 1987) has a generalized validity of 0.54 (Collins, 1995) and a reported reliability of 0.67 (Gough, 1987). Ones and Viswesvaran indicate that this is typical of single scales from personality inventories. Although the reliability of the socialization scale is well below Nunnally's (1978, p. 246) 0.90 'minimum that should be tolerated', the scale is one of the best validated measures in the history of personality psychology. Thus, measures that Ones and Viswesvaran describe as narrow seem to be broad bandwidth assessments.

Like test developers, Ones and Viswesvaran do not control category breadth in sampling personality scales. For example, the competence facet from the NEO PI-R (Costa and McCrae, 1992) may be broad, narrow, or somewhere in between. We suspect that Ones and Viswesvaran are comparing broad measures with broader measures in their discussion.

Little Evidence Indicates that Practitioners and Researchers Prefer Narrow Bandwidth Measures

Ones and Viswesvaran state in their summary that 'Most human resource practitioners and researchers appear to assume that more specific and narrow measures of personality traits result in better more fine-grained understanding of the person, and therefore ought to be preferred over global measures'. We find this statement perplexing for several reasons. First, the claim that human resource practitioners prefer 'narrow measures' is unsubstantiated. In fact, interviews and integrity tests are the assessments most widely used by practitioners and both are wide bandwidth assessments.

Second, the claim that researchers prefer 'narrow measures' is unsubstantiated. Some prominent researchers in I/O psychology consider the bandwidth of all job performance measures to be broad and, advocate multiple and complex predictors to map the criterion space (cf. Borman and Brush, 1993; Borman and Motowidlo, 1993; Borman, White and Forsey, 1995a; Borman, White, Pulakos and Oppler, 1991; Campbell, 1990; Campbell, McHenry and Wise, 1990; Campbell, McCoy, Oppler and Sager, 1993; Motowidlo and Van Scotter, 1994; Murphy, 1994; Murphy and Cleveland, 1995, pp. 115–120).

Third, the claim that narrow measures provide a more fine-grained understanding of a person and should therefore be preferred over global measures also seems odd. Employment decision-makers frequently use the strategy of first determining the general suitability of a job applicant using broad bandwidth assessments, and then use narrower bandwidth assessments to determine more specific person–job fit. Consider assessments for hiring truck drivers. The first evaluation concerns conscientiousness and stress tolerance—will they be good organizational citizens and will they be able to handle pressure. These are broad bandwidth assessments for complex criteria. The second evaluation concerns determining suitability for pick-up and delivery driving versus line-haul driving. Still more narrow bandwidth assessments are used to predict success in soliciting new business and in following-up with customers. Although each successive evaluation is more specific, all the foregoing examples are broad bandwidth, driven by complex criteria—e.g., even the interpersonal skills needed for soliciting new business are complex.

The claim that practitioners and researchers should prefer narrow measures over global ones is unsupported. Few users seem interested in predicting specific, individual behaviors. Ones and

Viswesvaran acknowledge this, perhaps inadvertently, in their discussion of internal consistency reliability: '... how likely is it that an employer would be interested in hiring someone organized, but not self-controlled, neat but not responsible?'. Useful workplace criteria (e.g., absenteeism, citizenship, initiative, productivity, promotability, safety, turnover, etc.) are complex and practitioners and researchers must use broad bandwidth assessments to predict them. Therefore, it is not surprising that Ones and Viswesvaran easily reach the conclusion they set out to reach—'to provide evidence that the implicit assumption that narrower personality traits ought to be universally preferred over broad-band ones such as the Big-Five, may not be correct'.

How Should Job Performance be Conceptualized in View of the Fidelity-Bandwidth Trade-Off?

Ones and Viswesvaran note that validity studies frequently use supervisory ratings of overall job performance as criteria, and that utility analyses '... suggest that the contribution of predictors in personnel selection ought to be judged in terms of overall job performance rather than individual components of it'. Citing the act frequency literature, they conclude that multiple acts are more predictable than 'single criteria' (*sic*). In addition, they report that job components are correlated and hierarchically organized under a general factor. For these reasons, Ones and Viswesvaran conclude that overall job performance should be preferred as the criterion in validation research.

The criterion problem is a real issue. In our view, both the nature and the bandwidth of the criterion dictate the choice of predictor(s) (Hogan and Hogan, 1994). The recent interest in defining the criterion space (Campbell, 1990) and the dimensionality of job performance (Borman *et al.*, 1995a; Motowidlo and Van Scotter, 1994; Murphy, 1994) will enhance the value of personality measurement. Studies comparing cognitive measures and training and/or overall job performance during the 1980s (e.g. Hunter, 1983) led to the conclusion that cognitive measures are the best single predictors of job performance (cf. Hunter and Hunter, 1984). Overall job performance was used as the organizing criterion in meta-analytic studies of the validity of personality measures (cf. Barrick and Mount, 1991; Ones, Viswesvaran and Schmidt, 1993; Tett, Jackson and Rothstein, 1991). But the bandwidth of this criterion may be too broad to be used efficiently with most personality measures. Are there more appropriate criteria to assess the personal requirements of job performance? With such questions unanswered and too many contrary findings, it is premature to conclude that the overall job performance criterion is the gold standard in validation research.

The following points challenge the usefulness of the overall job performance criterion. First, Brinkmeyer (1995) content analyzed over 6300 employment advertisements to determine what employers seek in new employees; this is the criterion expectation from the employer's view. She found that interpersonal skills were as frequently sought as technical skills, and the most common interpersonal themes were communication, sensitivity to others, and leadership. Similarly from a content analysis of interviews, Borman *et al.* (1995a) identified seven dimensions of interpersonal job performance for Army enlisted personnel; in a subsequent study, Borman, Ackerman, Kubisiak, Quigley, Gaines and Stroupe (1995b) identified 10 job performance

dimensions—including technical, personality, and interpersonal skills—from job performance requirements nominated by supervisors from a variety of organizations. These descriptive studies indicate that employers regard job performance as multidimensional.

Second, Campbell *et al.*'s, (1990) analysis of 200 criterion measures used in Project A indicated that a five-factor solution provided the best fit for modeling the structure of job performance. For the five criterion factor scores, the mean intercorrelations were highest among the proficiency measures (mean $r = 0.53$). Intercorrelations between the proficiency measures and the effort/leadership and personal discipline factors were modest (mean r s about 0.28 and 0.19, respectively); the proficiency and fitness/bearing factors were uncorrelated (mean r s = 0.03 and 0.04). Similarly, we found that academic training criteria were unrelated to citizenship criteria in a sample of military electricity and electronic technicians (Driskell, Hogan, Salas and Hoskins, 1994). Borman *et al.* (1995), found that evaluations of interpersonal skills were uncorrelated with job knowledge or technical proficiency scores in first tour Army soldiers. In addition, Borman *et al.* concluded that using interpersonal criterion variables along with evaluations of technical proficiency increased the variance accounted for in supervisory ratings by a factor of 2 to 2.5. Using non-military samples, Borman and Brush (1993) constructed a taxonomy of managerial performance and found 18 dimensions. Obviously, not all of these dimensions are statistically independent and some of them are cognitive; however, five dimensions entail interpersonal skills.

Third, Motowidlo and colleagues introduce the concept of contextual performance and expand the criterion domain even further (Borman and Motowidlo, 1993; Motowidlo and Van Scotter, 1994). Their idea is that employees' contributions to the effectiveness of an organization goes beyond the letter of the position requirements. These contributions involve volunteering, persisting, helping, being loyal to the organization, etc. Motowidlo and Van Scotter (1994) found that task performance and contextual performance contribute independently to overall job performance; contextual performance explained 12 per cent to 34 per cent of the variance in overall performance beyond that variance explained by task performance. They reported a correlation of 0.20 between measures of task and contextual performance. As jobs in the U.S. economy become less well defined (Cascio, 1995), contextual performance will make a unique contribution to the multidimensional nature of job performance.

These few studies challenge the usefulness of overall job performance as the criterion of choice. Campbell's statement that 'Job performance really is multidimensional', requires that we think beyond the cognitive requirements of job performance (Campbell *et al.*, 1990, p. 314). However, what are appropriate criterion alternatives for personality predictors? We believe that Project A (Campbell *et al.*, 1990) provides a useful strategy for organizing measurements. The Project A research analyzed the latent structure of both the predictor and the criterion domains and then aligned measures of both domains. Although this strategy seems obvious (e.g. see Pulakos, Borman and Hough, 1988), it is seldom used—either because researchers pay little attention to the construct validity of performance indicators or because they believe that overall job performance is the most appropriate criterion. In our judgment, different performance factors will be differentially important to employers and will be predicted by different construct measures.

We have some evidence for the effectiveness of aligning the predictor and criterion domains using the Hogan Personality Inventory (HPI: Hogan and Hogan, 1992, 1995). When the seven HPI scales are organized in terms of the Big Five personality factors, the HPI adjustment scale (Big Five emotional stability) is associated with stress-related criteria—absences, injuries, worker compensation claims and ratings of performance insecurity. The HPI ambition and sociability scales (Big Five extraversion) are associated with criteria reflecting leadership and

enthusiasm for social interaction—promotions, organizational status, subordinates ratings of accessibility, interviewers' impressions. The HPI likeability scale (Big Five agreeableness) is associated with interpersonal conviviality—peer ratings of sensitivity, customer service, and quality of interaction. The HPI prudence scale (Big Five conscientiousness) is associated with organizational citizenship—disciplinary incidents, honesty, carelessness, ratings of thoroughness. The HPI intellectance and school success scales (Big Five intellect/openness) are associated with training and academic performance, and creativity—interest/acceptance of innovation, motivation to stay current and learn new things, awareness of the big-picture. Although data support these relations (cf. Hogan and Hogan, 1992, 1995), results presented by Hough, Eaton, Dunnette, Kamp and McCloy (1990) illustrate the alternative approach. When any personality scale is used to predict any criteria, virtually no relations emerge (see also Pearlman, 1985). However, when measures of single constructs are used to predict relevant criteria, correlations improve substantially and support Campbell's (1990) point that meaningful test-nontest correlations can only be found when the latent structure underlying both the predictor and the criterion constructs is similar. This is a real and important issue with profitable applications.

Overlooked Support for the Fidelity-Bandwidth Trade-Off

Ones and Viswesvaran evaluate the ability of the Big Five to predict 'narrow' criteria (e.g. technical proficiency) and broad criteria (a composite of four 'narrow' variables) and these data appear in their Table 1 (p. 618). Although they do not discuss the table, it contains clear evidence for the fidelity-bandwidth trade-off. In the table, the breadth of the predictor measures is held constant while the criterion domain varies. As predicted from the fidelity-bandwidth trade-off, when the criterion is broad bandwidth, the validities of the Big Five predictors are uniformly moderate (ranging from 0.14 to 0.22). When the criterion bandwidth is more narrow, the validity coefficients are higher in specific cases. Examining the narrow criteria—e.g. technical job proficiency, irresponsible behavior, and effort—the table shows that for each of the Big Five dimensions the validity exceeds the validity for the composite job performance measure. For example, the validity of conscientiousness for predicting the composite of job performance is 0.22, whereas the validity for predicting irresponsible behavior is 0.37.

Note that the table also illustrates the effects of aligning predictor and criterion measures using the common underlying construct. Technical proficiency is best predicted by openness to experience; irresponsible behavior is best predicted by conscientiousness and so forth. Table 1 illustrates that the fidelity-bandwidth trade-off is a trade-off, not a dilemma.

Problems with the Assumptions and the Conclusions of Ones and Viswesvaran's Table 2

Ones and Viswesvaran's Table 2 (p. 618) contains the data supporting their conclusion that 'broader personality traits have higher predictive validity for composites of job performance dimensions than narrower traits'. Although we agree with the conclusion, it does not follow from

their Table 2. For their demonstration, the authors fixed the bandwidth of the criterion domain (broad) and, classified the Big Five measures as 'narrow'; but no facet level scale components were included in the analysis—and the facets are, in our judgment, narrow bandwidth measures. They conclude that the validities for composites of four Big Five personality scales are 'substantially higher' than the validities for the 'narrower' composites consisting of two Big Five personality scales. However, we were not persuaded by their results.

The average increment in the validity coefficient going from a two-scale composite to a four-scale composite was 0.015 (on a scale from -1 to 1). The average gain going from two imperfectly measures personality scales to a composite of four personality scales measured perfectly was 0.033. The argument that the 'broader' four-scale composite versus the 'narrower' two-scale composite substantially improves the size of the validity coefficients is not compelling. In fact, one might argue from these data that the use of the 'narrow' composite results in decisions just as valid as the 'broader' composite—but with more parsimonious scales. In our view, these data show that broad bandwidth measures predict broad bandwidth criteria and no claims can be made about the relations between narrow bandwidth predictors and broad bandwidth criteria.

What Happens to Fidelity in the Fidelity–Bandwidth Trade-Off?

In their empirical example, Ones and Viswesvaran fail simultaneously to increase the fidelity of both the predictor and the criterion domain and this is a critical oversight. In our judgment, Hogan's (1995) and Hough's (1992) criticism of the Big Five model reflected the need by researchers to examine more precisely personality–performance relations to enhance the fidelity of each. This seems consistent with Ones and Viswesvaran's statement that 'Large validity coefficients for narrow-bandwidth personality measures are possible, only if the criterion is also narrow and homogenous, and both the predictor and the criterion tap into the same construct'.

Consider Ones *et al.* (1993) meta-analysis of integrity measures. Integrity is a composite of the Big Five dimensions of conscientiousness, emotional stability, and agreeableness and it is related to overall performance across a variety of occupations. Employers are rarely interested in this information. Instead, a typical employer is interested in how well a test predicts performance as a truck driver, stock clerk, or bank teller. Although employers want employees to have some integrity, there are also specific psychological resources within the integrity domain that may be particularly important for a job. A bank teller's ability to handle the interpersonal aspect of client relations would most appropriately be assessed through the agreeableness component of integrity. In contrast, agreeableness may not be as important for truck drivers, who spend relatively little time with external customers; however, conscientiousness is crucial for such issues as adhering to rules for operating motor vehicles. By examining facets of job performance within a more specific domain, the fidelity of the information increases. The key untested question remains; if narrow bandwidth predictors from integrity subdimensions are used to predict criteria more specific than overall job performance, will validity be enhanced? This is how one would test the bandwidth–fidelity trade-off.

Although Ones and Viswesvaran do not use both broad and narrow bandwidth personality scales to predict both broad and narrow job performance criteria, two examples from the

published literature illustrate the trade-off. First, Roberts and Donahue (1994) compared typical methods of personality assessment with methods developed from Symbolic Interactionism and Identity Theory (Stryker and Statham, 1985). They asked participants to describe themselves in general and then in specific roles as worker or partner. Participants rated themselves on general attributes such as 'organized' and 'assertive' that applied to them globally; they also rated themselves for their behavior in specific roles. These later ratings were both narrower in bandwidth and higher in fidelity than the general self-ratings because they represented less information about the person and were more accurate descriptions of how they saw themselves in a specific role. Participants rated themselves on 16 different attributes in general and in specific roles. These single-item ratings were collapsed into measures of positive affect, competence, and dependability across the general self and several roles. To test the fidelity-bandwidth trade-off, the positive affect and competence dimensions from the general self, the worker role, and the partner role were used to predict general and specific criteria. Consistent with the fidelity-bandwidth trade-off, the general self-ratings predicted criteria moderately well across both role contexts, whereas the specific scales predicted corresponding role criteria quite well and with considerable specificity. For example, general self positive affect predicted marital satisfaction ($r = 0.39$) and work satisfaction ($r = 0.30$). Positive affect in the partner role predicted marital satisfaction at a much higher magnitude ($r = 0.62$), yet was relatively unrelated to work satisfaction ($r = 0.15$). Likewise, positive affect in the worker role predicted work satisfaction at a much higher magnitude than general self positive affect ($r = 0.62$) and also was relatively unrelated to marital satisfaction.

Second, Murphy and Lee (1994) used a Big Five personality measure to predict scores on an overt integrity test and a personality-based integrity test. These instruments contained both narrow and broad bandwidth measures; the Big Five personality measure, the HPI, was analyzed both at the level of the primary scales and the narrower facets that compose them. The overt integrity test, London House Personnel Selection Inventory (PSI) contains narrow bandwidth scales concerning theft admissions and attitudes toward theft and dishonesty. The personality-based integrity test, PDI Employment Inventory (EI), contains broad bandwidth scales for job performance and tenure. Results from 180 respondents who completed the three tests confirmed the fidelity-bandwidth trade-off. On the one hand, the HPI prudence scale (Big Five conscientiousness) predicted all integrity scale criteria, but correlated more highly with the broad bandwidth EI job performance ($r = 0.62$) and tenure ($r = 0.58$) than the narrow bandwidth PSI theft admissions ($r = 0.17$) and honesty attitudes ($r = 0.33$). On the other hand, the best narrow bandwidth facet scale from the HPI prudence scale—avoids trouble—correlated with PSI theft admissions ($r = 0.28$) and honest attitudes ($r = 0.38$) and with EI job performance ($r = 0.61$) and tenure ($r = 0.42$). Again, consistent with the fidelity-bandwidth trade-off, when narrow personality measures are used to predict specific criteria, validity increases.

In our judgment, this is the missing piece in Ones and Viswesvaran's paper. Although we agree with their conclusions that broader personality measures have higher validities for broad composites of job performance than narrow bandwidth measures, we consider findings such as those summarized above to be more appropriate tests of fidelity-bandwidth predictions.

Summary

Our response to the claims of Ones and Viswesvaran (1996, this issue) can be summarized in four points. First, in their discussion of fidelity and bandwidth, they: (a) ignore fidelity and (b) use an

idiosyncratic definition of bandwidth. Second, the major claim of their paper—that there is a crisis in the empirical literature centering on the fidelity–bandwidth trade-off—is unsupported. Although the trade-off is real, there is no crisis. Third, although Ones and Viswesvaran provide no data to support their claim that the bandwidth of predictors should be matched to the bandwidth of criteria in order to enhance validity, such data are available in the published literature. And finally, Ones and Viswesvaran's discussion has the merit of focusing attention on the need to match the characteristics of predictors to the characteristics of criteria.

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