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Using Theory to Evaluate Personality and Job-Performance Relations: A Socioanalytic Perspective

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The authors used socioanalytic theory to understand individual differences in people's performance at work. Specifically, if predictors and criteria are aligned by using theory, then the meta-analytic validity of personality measures exceeds that of atheoretical approaches. As performance assessment moved from general to specific job criteria, all Big Five personality dimensions more precisely predicted relevant criterion variables, with estimated true validities of .43 (Emotional Stability), .35 (Extraversion–Ambition), .34 (Agreeableness), .36 (Conscientiousness), and .34 (Intellect–Openness to Experience).

Since 1990, meta-analytic reviews have shown that personality measures are useful predictors of job performance. Although these results represent a substantial revision in how applied psychology views personality assessment (cf. Guion & Gottier, 1965; Locke & Hulin, 1962), there is still no agreed theoretical account for the findings. A theory of individual differences in work effectiveness that links assessment to performance would enhance the value of personality measures for forecasting occupational outcomes.

The current study organized criterion measures into the broad themes of (a) getting along and getting ahead and (b) Big Five personality content categories. The correlations between the criterion measures and the personality predictors were meta-analyzed, and the results were compared with earlier findings. The results suggest that there is some practical utility for theory-driven research.

Applying Socioanalytic Theory to Performance at Work

Socioanalytic theory (R. Hogan, 1983, 1991, 1996) is rooted in interpersonal psychology (Carson, 1969; Leary, 1957; Sullivan, 1953; Wiggins, 1979) and is intended to explain individual differences in career success. The theory is based on two generalizations relevant to organizational behavior: People always live (work) in groups, and groups are always structured in terms of status hierarchies. These generalizations suggest the presence of two broad motive patterns that translate into behavior designed to get along with other members of the group and to get ahead or achieve status vis-à-vis other members of the group. Getting along and getting ahead are familiar themes in personality psychology (cf. Adler, 1939; Bakan, 1966; Rank, 1945; Wiggins & Trapnell, 1996). Their importance is justified in Darwinian terms: People who cannot get along with others and who lack status and power have reduced opportunities for reproductive success.

Socioanalytic theory specifies that personality should be defined from the perspectives of the actor and the observer. Personality from the actor's view is a person's identity, which is defined in terms of the strategies a person uses to pursue acceptance and status; identity controls an actor's social behavior. Personality from the observers' view is a person's reputation, and it is defined in terms of trait evaluations—conforming, helpful, talkative, competitive, calm, curious, and so forth. Reputation reflects the observer's view of an actor's characteristic ways of behaving in public. Reputation is the link between the actor's efforts to achieve acceptance and status and how those efforts are evaluated by observers. Reputation describes a person's behavior; identity explains it.

From the lexical perspective (Goldberg, 1981), the Big Five personality factors represent the structure of observers' ratings on the basis of 75 years of factor analytic research from Thurstone (1934) to Goldberg (1993). These factors are a taxonomy of reputation (cf. Digman, 1990; John, 1990; Saucier & Goldberg, 1996) and are labeled as follows: Factor I, Extraversion or Surgency; Factor II, Agreeableness; Factor III, Conscientiousness; Factor IV, Emotional Stability; and Factor V, Intellect–Openness to Experience (John, 1990). Because reputations are a rough index of the amount of acceptance and status a person enjoys (E. B. Foa & Foa, 1980; U. G. Foa & Foa, 1974; Wiggins, 1979) and because reputations are encoded in Big Five terms (Saucier & Goldberg, 1996), it follows that the Big Five factors are also evaluations of acceptance and status (Digman, 1997). Digman (1997) concluded that two higher order factors organize the Big Five model; he noted that these two broad factors precisely parallel earlier dichotomies, such as social interests versus superiority striving (Adler, 1939), communion versus agency (Bakan, 1966; Wiggins, 1991), union versus individualism (Rank, 1945), status versus popularity (R. Hogan, 1983), and intimacy versus power (McAdams, 1985).

Occupational life consists of episodes (Motowidlo, Borman, & Schmit, 1997) organized according to agendas and roles—what will be done and who will do it. Efforts to get along and get ahead take place during these episodes. Although most people try to get along and get ahead while working, there are substantial individual

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differences in how their efforts are evaluated by others. On the one hand, to get along, people must cooperate and seem compliant, friendly, and positive. When successful, they are evaluated by others as good team players, organizational citizens, and service providers (Moon, 2001; Mount, Barrick, & Stewart, 1998). On the other hand, to get ahead, people must take initiative, seek responsibility, compete, and try to be recognized. When successful, they are described by others as achieving results, providing leadership, communicating a vision, and motivating others toward goals (Conway, 1999).

The foregoing discussion suggests a model for understanding motivation and for assessing individual differences in performance at work. People seek acceptance and status in the workgroup, and their behavior reflects these efforts. Individual differences in performance criteria can be organized in terms of the themes of getting along and getting ahead. The Big Five factors can also be interpreted in terms of efforts to gain approval and status (cf. Digman, 1997; Wiggins & Trapnell, 1996).

Measurement: Personality Assessment and the Big Five Factors

There is considerable debate concerning the number of personality factors needed to predict and understand work behavior. Hough and Ones (2001, pp. 233–238) provided a detailed review of this debate, and they made the following points: Tupes and Christal's (1961) analysis of trait ratings is the contemporary foundation for the Big Five. Substantial research has supported the robustness and generalizability of the five factors across different types of assessments, rating sources, language, and culture. Nevertheless, some researchers have criticized the Big Five factors as an incomplete taxonomy and have suggested that important relationships are obscured when analyses are limited to the Big Five rather than a seven-factor model. Tellegen and Waller (1987), R. Hogan and Hogan (1995), Hough (1992), and Saucier and Goldberg (in press) all found seven factors, five of which corresponded to the Big Five, and two additional factors. Saucier and Goldberg concluded that the satisfactoriness of the Big Five can be questioned in light of new criteria for judging the adequacy of structural models for personality attributes.

Measurement: Assessing Job Performance by Using Multidimensional Models

The metaconcepts of getting along and getting ahead are latent in such phrases as *instrumental and expressive roles, initiating structure and providing consideration, task and socioemotional inputs, production-oriented versus service-oriented groups,* and *task performance versus contextual performance.* Consider how the following job-performance models reflect, in part, the themes of getting along and getting ahead. Campbell, McHenry, and Wise (1990) proposed that performance in entry-level jobs in the U.S. Army can be evaluated in terms of five dimensions: core proficiency, general soldier proficiency, effort and leadership, personal discipline, and physical fitness–military bearing. Campbell, McCloy, Oppler, and Sager (1993) subsequently expanded this taxonomy into a general model of job performance consisting of eight factors for job-specific task proficiency, non-job-specific task proficiency, written and oral communication task proficiency, demonstrating effort, maintaining personal discipline, facilitating peer and team performance, supervision–leadership, and management–administration. In these models, proficiency and leadership concern getting ahead, whereas personal discipline and facilitating peer and team performance concern getting along.

Borman and Motowidlo (1993) distinguished between task performance and contextual performance—nontask performance that is important in all jobs. Task performance corresponds to getting ahead, and contextual performance corresponds to getting along with others. Similarly, Hunt (1996) proposed a nine-factor model of entry-level job performance, with the factors differentially appropriate for a variety of jobs. Hunt's model highlights the importance of technical proficiency for job success (getting ahead), but it also emphasizes contextual performance, organizational citizenship, and prosocial behavior. These three dimensions are indices of getting along at work. Finally, Tett, Guterman, Bleier, and Murphy (2000) synthesized 12 models of managerial performance including both published and practitioner models. Tett et al. (2000) identified 53 dimensions of performance in managerial jobs. An inspection of these dimensions suggests the presence of the ubiquitous factors of structure and consideration (Bass, 1990; Fiedler, 1967; Fleishman, 1953). Initiating structure concerns trying to help the group get ahead; being considerate of others is the prerequisite for getting along.

Personality-Based Meta-Analyses

Barrick and Mount (1991) classified personality measures by using the Big Five model and found corrected mean validities for at least two dimensions that were large enough to suggest they are significant predictors of overall job performance. These included Conscientiousness (ρ = .22) and Extraversion (ρ = .13). Tett, Jackson, and Rothstein (1991) found corrected mean validities between the Big Five factors and job-performance ratings ranging from .16 for Extraversion to .33 for Agreeableness. They attributed their larger validities to the use of confirmatory research strategies, job analysis, and published versus unpublished studies. With the exception of Emotional Stability (ρ = .19), Salgado (1997, 1998a) replicated the Barrick and Mount results by using data from the European community. Hurtz and Donovan (2000) estimated the criterion-related validities of explicit Big Five measures for predicting overall job performance and contextual performance. Their results for Conscientiousness (ρ = .22) were consistent with those reported by Barrick and Mount, although true validities for Emotional Stability (ρ = .14) and Extraversion (ρ = .09) differed. Other scale validities were equal to or less than .10. The Big Five dimensions predicted overall performance somewhat better than contextual job performance. Other useful meta-analyses (e.g., Frei & McDaniel, 1998; Mount & Barrick, 1995a; Ones, Hough, & Viswesvaran, 1998; Ones & Viswesvaran, 2000; Ones, Viswesvaran, & Schmidt, 1993; Vinchur, Schippmann, Switzer, & Roth, 1998; Viswesvaran & Ones, 2000) focused on specific occupations or personality construct measures.

Previous meta-analyses of the personality–job performance relationships had four constraints in the source data that may have limited their findings. First, none were based on an explicit model of personality, in part because there are few personality theories designed to understand occupational performance. Hurtz and Donovan (2000) suggested that future research should match person-

ality constructs and dimensions of job performance on theoretical grounds. Second, it is difficult to classify the scales of various personality inventories into the Big Five categories because most of the inventories used in earlier analyses were not developed with the Big Five model in mind. These studies included measures of psychopathology, personality disorders, values, and career interests. In addition, some scale classifications relied on as few as two raters. Two important exceptions are the studies by Hurtz and Donovan, which used only Big Five inventories, and the studies by Mount et al. (1998), which used a single inventory. Third, the earlier reviews define job performance almost exclusively in terms of ratings of overall job performance. Hurtz and Donovan used ratings for both contextual and task performance and found a pattern of correlations similar to that for overall job performance criteria. Campbell (1990) and others argued that job performance is multidimensional, but unfortunately, few studies actually report dimensional correlates. Fourth, with one exception, none of the earlier reviews aligned predictors with criterion measures by using the underlying performance constructs, as recommended by Campbell. Hough (1992) aligned predictor and criterion measures and demonstrated the usefulness of measurement alignment for estimating validity. The difficulties faced by earlier meta-analyses probably attenuated validities, restricted the generality of the findings, and reduced the usefulness of results for practitioners.

Current Research

We used socioanalytic theory to define the links between personality and job performance and used meta-analysis to evaluate the links. Overall, the analyses investigate the following four claims:

1. Experts can classify job criteria reliably in terms of the degree to which they reflect efforts to get along or get ahead. For example, we expect such behavior as *coming to work early* and *staying late* reflects attempts to get ahead; we expect that assisting a coworker with a deadline reflects attempts to get along. In addition, experts can evaluate the personality-based performance requirements of jobs (see also Raymark, Schmit, & Guion, 1997). Identifying the personality characteristics that underlie dimensions of job performance is necessary to align predictors and criteria by using Campbell's (1990) strategy.

2. The most robust Big Five predictors of subjective performance criteria (e.g., overall job-performance ratings) are Emotional Stability and Conscientiousness. Persons who seem calm, self-confident, and resilient (Emotional Stability) or dependable and disciplined (Conscientiousness) will be evaluated more positively than those who do not seem calm and dependable. Tett et al. (1991) provided evidence for the generalized validity of Emotional Stability and Conscientiousness measures by using data from North America; Salgado (1997, 1998a) provided data from the European community. Although they used overall job performance as their criteria, we believe that similar results will be obtained when specific indicators of getting along and getting ahead criteria are aggregated. The question of how well the Big Five predict overall or aggregated performance criteria has not received a definitive answer (i.e., Barrick & Mount, 1991; Hough, 1992; Hurtz & Donovan, 2000; Salgado, 1997; Tett, Jackson, & Rothstein, 1991).

3. When performance criteria are classified in terms of getting along and getting ahead, we hypothesized that a more nuanced pattern of personality–performance links would emerge. When successful job performance requires getting along, Emotional Stability, Conscientiousness, and Agreeableness should predict performance because persons with elevations on these dimensions are rewarding to deal with—they are positive (i.e., Emotional Stability; George, 1990; Mount et al. 1998; Staw, Sutton, & Pelled, 1994), predictable (i.e., Conscientiousness; Hough, 1992; Parasuraman, Zeithaml, & Berry, 1986), and sensitive to others (i.e., Agreeableness; Barrick, Stewart, & Piotrowski, 2000; R. Hogan, Hogan, & Busch, 1984). Digman (1997) provided additional justification for this hypothesis. From 14 studies evaluating the Big Five model, Digman found two super factors. The first was defined by Emotional Stability, Agreeableness, and Conscientiousness. Digman concluded that this factor (a) reflected social desirability and the socialization process (impulse restraint and conscience vs. hostility, aggression, and neurotic defense), and (b) could be interpreted in socioanalytic terms as a basic human aim "toward peer popularity" (p. 1251).

When successful job performance requires getting ahead, the dimensions of Emotional Stability, Extraversion (Ambition), and Intellect–Openness to Experience will predict performance. This is because getting ahead is associated with being confident (i.e., Emotional Stability; Gough, 1990; Stogdill, 1948), ambitious and hardworking (i.e., Extraversion–Surgency; R. Hogan, Curphy, & Hogan, 1994; McClelland, Atkinson, Clark, & Lowell, 1953; Vinchur et al. 1998), and curious and eager to learn (i.e., Intellect–Openness to Experience; Barrick & Mount, 1991; Costa & McCrae, 1992; McCrae & Costa, 1997). Digman's (1997) second super factor is defined by Extraversion and Intellect–Openness to Experience. He concluded that this factor (a) reflected personal growth (vs. personal constriction) and surgency, and (b) could be interpreted in socioanalytic terms as a basic human aim "toward status" (p. 1251).

4. When predictors and performance criteria are aligned by using their common personality constructs, mean validities will increase compared with previous meta-analytic studies (Ashton, 1998; J. Hogan & Roberts, 1996; Paunonen, Rothstein, & Jackson, 1999). Several researchers have speculated that criterion specificity may moderate the validity of personality measures (Tett et al., 1991; Warr & Conner, 1992). Other researchers have interpreted the small validities of personality measures as the result of using global (vs. narrow) criteria, which masks specific relations (Robertson & Kinder, 1993; Salgado, 1997). We expected that aligning predictors and criteria in terms of underlying constructs would provide evidence for both the convergent and discriminant validity of the personality variables. These analyses should answer the question of whether validity increases as the bandwidth of the criterion measures moves from broad (multiple constructs) to narrow (single construct).

Method

Case Selection

We identified 43 independent samples (N = 5,242) from published articles, chapters, technical reports, and dissertations between 1980 and 2000 that were catalogued in Hogan Assessment Systems' archive. The

studies met the following criteria: (a) They used job analysis to estimate personality-based job requirements, (b) they used a concurrent ($k = 41$) or predictive ($k = 2$) validation strategy with working adults, (c) the criteria were content explicit and not just ratings of overall job performance, and (d) the predictor variables were scales of the Hogan Personality Inventory (HPI; R. Hogan & Hogan, 1995). We excluded studies using (a) clinical patients and therapists, (b) undergraduate or graduate students, (c) self-reported performance criteria, (d) performance criteria other than ratings and objective productivity–personnel measures, (e) only an overall performance criterion, (f) laboratory or assessment center studies, and (g) studies unrelated to work contexts.

Table 1 lists the distribution of studies ($k = 43$) by job title and Holland (1985) occupational type. Most job titles correspond to the Holland Realistic, Social, Enterprising, and Conventional types; no studies involved Investigative and Artistic occupations. Ideally, every Holland type would be present in the analysis, but our sample composition reflected the base rate of occupations in the U.S. economy. Gottfredson and Holland (1989, 1996) reported that the majority of occupations are Realistic (66.7%), Conventional (13.4%), and Enterprising (11.1%) and that Social (4.6%), Investigative (3.0%), and Artistic (1.2%) occupations are less common. The jobs in Table 1 represent the most frequent types in the U.S. economy.

Table 1
Distribution of Studies on the Basis of Holland Code and Job Title

Holland code	DOT code	DOT job title	No. studies
Conventional (10 studies)			
CES	239.367-010	Customer service representative	5
CSE	211.362-010	Cashier I	1
CSE	209.362-010	Clerk, general	3
CSE	243.367-014	Post office clerk	1
Enterprising (16 studies)			
ECS	369.467-010	Manager, branch store	2
ERS	250.357-022	Sales representative	3
ERS	239.167-014	Telephone/telegraph dispatcher	1
ESA	189.167-022	Manager, department	6
ESC	299.357-014	Telephone solicitor	1
ESR	187.117-010	Administrator, hospital	1
ESR	189.117-022	Manager, industrial organization	1
ESR	184.167-114	Manager, warehouse	1
Realistic (10 studies)			
RCS	905.663-014	Truck driver, heavy	3
REI	891.684-010	Dockhand	1
REI	590.382-010	Operator, automated process	2
RES	913.463-010	Bus driver	1
RES	910.363-014	Locomotive engineer	1
RIE	019.061-022	Ordnance engineer	1
RSE	962.362-010	Communications technician	1
Social (7 studies)			
SEC	193.262-014	Dispatcher, governmental services	1
SER	372.667-018	Corrections officer	1
SER	377.677-018	Deputy sheriff, civil division	1
SER	355.674-014	Nurse aide	1
SER	375.263-014	Police officer I	2
SIE	168.267-014	Claims examiner, insurance	1

Note. Classifications are based on work by Gottfredson and Holland (1989, 1996). DOT = Dictionary of Occupational Titles. Holland codes: R = Realistic; I = Investigative; A = Artistic; S = Social; E = Enterprising; C = Conventional.

Job Analysis

All studies included one or more types of job analyses during the initial stages of the research. Approximately 30% of the studies ($k = 13$) used the critical incidents method (Flanagan, 1954) to define exceptional behavior (for example, see J. Hogan & Lesser, 1996). Over half of the studies ($k = 27$) used worker-oriented methods to determine the knowledge, skills, and abilities required for successful job performance. These job analyses generally followed the Goldstein, Zedeck, and Schneider (1993) method for content validation research (cf. R. Hogan & Hogan, 1995, p. 75). The remaining studies ($k = 18$) used the Performance Improvement Characteristics job analysis approach (J. Hogan & Rybicki, 1998). This personality-based job analysis uses a 48-item Performance Improvement Characteristics checklist to profile jobs in terms of the Big Five factors. Raymark et al. (1997) described a similar method for evaluating personality-based job requirements. Although job analysis results are often used to justify predictor measures, these results were used to develop criterion dimensions.

Measures

Predictors. All studies used the HPI; this eliminated the need to classify predictors by construct. The HPI is a 206-item true–false inventory designed to predict occupational performance. The inventory contains seven primary scales that align with the Big Five as seen in Figure 1. Although there is no universal consensus on the optimal number of personality attributes, the Big Five is a useful method for organizing the scales on most inventories, including the HPI. Note that the Big Five Extraversion factor splits (conceptually and empirically) into Ambition and Sociability (cf. R. Hogan & Hogan, 1995, p. 11). The Big Five Intellect–Openness to Experience factor splits into Intellectance—which reflects creativity—and School Success—which reflects achievement orientation. The internal consistency reliability and test–retest reliability, respectively, for each scale is as follows: Adjustment (.89/.86), Ambition (.86/.83), Sociability (.83/.79), Likeability (.71/.80), Prudence (.78/.74), Intellectance (.78/.83), and School Success (.75/.86).

The HPI is based on the Big Five personality model; findings using the HPI could generalize to other Big Five inventories, depending on the magnitude of scale-to-scale correlates. Data are available concerning the relationship between the HPI and the following measures: Goldberg's (1992) Big Five factor markers (R. Hogan & Hogan, 1995, p. 24), the NEO Personality Inventory—Revised (NEO–PI–R; Costa & McCrae, 1992, 1995) as reported by Goldberg (2000), the Interpersonal Adjective Scales (R. Hogan & Hogan, 1995, p. 24; Wiggins, 1991), the International Personality Item Pool (Goldberg, 1999), the Personal Characteristics Inventory (Mount & Barrick, 1995b), and the Inventario de Personalidad de Cinco Factores (IP/5F; Salgado, 1998b, 1999; Salgado & Moscoso, 1999).

Criteria. Subject matter experts (SMEs) reviewed the criterion variables used in each archived study and made two judgments. First, they classified each performance criterion as getting along or getting ahead. Getting along was defined as *behavior that gains the approval of others, enhances cooperation, and serves to build and maintain relationships.* Getting ahead was defined as *behavior that produces results and advances an individual within the group and the group within its competition.* SMEs were asked not to classify criteria about whose meaning they were uncertain. Second, SMEs were also asked to identify the HPI personality construct most closely associated with each performance criterion. The seven HPI scale constructs were defined, and SMEs were asked to nominate only one scale for each criterion listed. Definitions of each perfor-

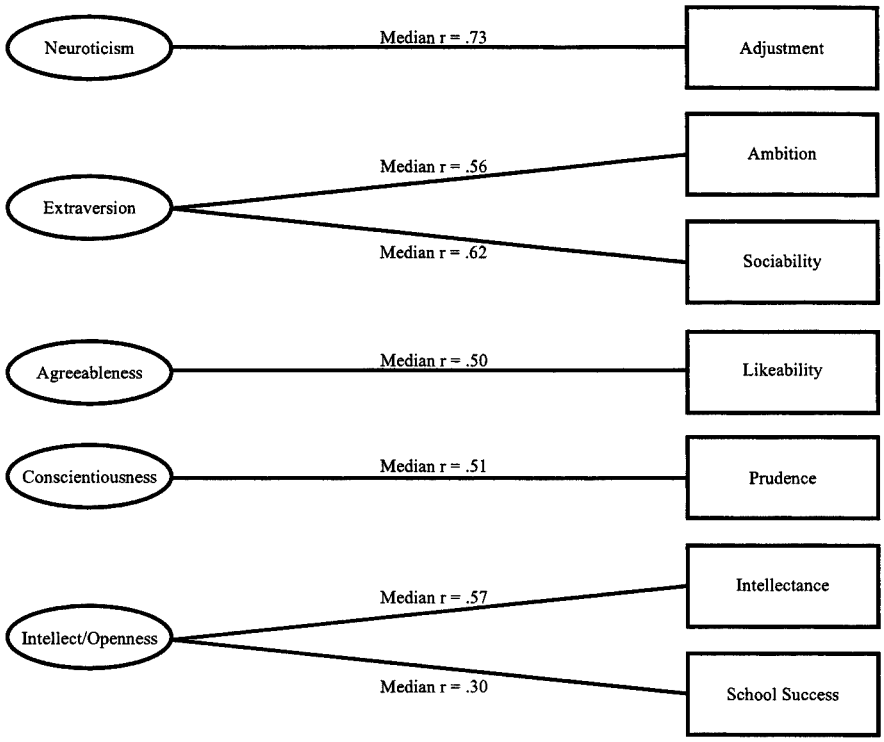

Figure 1. Links between dimensions of the Big Five and the Hogan Personality Inventory (HPI). Median correlation coefficients summarize HPI relations with the NEO Personality Inventory—Revised (NEO–PI–R; Goldberg, 2000), Goldberg's (1992) Big Five Markers (R. Hogan & Hogan, 1995), Personal Characteristics Inventory (Mount & Barrick, 1995b), and the Inventario de Personalidad de Cinco Factores (Salgado & Moscoso, 1999). The ranges of correlates are as follows: Adjustment–Emotional Stability–Neuroticism (.66 to .81), Ambition–Extraversion–Surgency (.39 to .60), Sociability–Extraversion–Surgency (.44 to .64), Likeability–Agreeableness (.22 to .61), Prudence–Conscientiousness (.36 to .59), Intellectance–Openness–Intellect (.33 to .69), and School Success–Openness–Intellect (.05 to .35).

mance criterion came from the original validation study. The results allowed us to align the criteria with the predictors on the basis of their common meaning (Campbell, 1990). Table 2 shows representative variables from each work motive and each personality construct.

SMEs ($N = 13$) had their doctorate ($n = 7$) and master of arts degree ($n = 6$) and were industrial–organizational psychologists experienced in validation research using the HPI. Criterion classification was based on the absolute level of rater agreement. Classification required 10 of the 13 raters (77%) to agree. Of the 139 criteria, 115 (83%) were classified as either getting along or getting ahead, and 95 (68%) were classified in terms of a single personality construct.

An alternative method for evaluating the correspondence among multiple raters is to compute an index of agreement by using Cohen's (1960) kappa. On the basis of procedures outlined by Hubert (1977), interrater agreement estimates ranged from $K = .48$ (Big Five aligned criteria) to $K = .60$ (getting along and getting ahead criteria). Although there are several benchmarks for interpreting kappa (Altman, 1991; Fleiss, 1981; Landis & Koch, 1977), they all indicate that kappa values between .40 and .60 indicate moderate to good interrater agreement. On the basis of percentage agreement and the values of kappa, we considered the raters' judgments to be sufficiently reliable to justify aggregating them to define the criteria and to align them with the personality constructs. These results also support the view that SMEs can reliably classify criteria as work motives and personality-based performance requirements.

Meta-Analytic Procedures, Statistical Corrections, and Within-Study Averaging

We used the meta-analytic procedures specified by Hunter and Schmidt (1990) to cumulate results across studies and to assess effect sizes. All studies used zero-order product–moment correlations, which eliminated the need to convert alternative statistics to values of *r*. Corrections were made for sampling error, unreliability in the measures, and range restriction. Reliability of the personality measures was estimated by using within-study coefficient alpha, $M = .78$, range = .71 (Prudence) to .84 (Adjustment), rather than by relying exclusively on the values reported in the HPI manual. Although some researchers (e.g., Murphy & De Shon, 2000) have argued against the use of rater-based reliability estimates, we followed procedures outlined by Barrick and Mount (1991) and Tett et al. (1991) and used the .508 reliability coefficient proposed by Rothstein (1990) as the estimate of the reliability of supervisory ratings of job performance. For objective criterion data, we (conservatively) assumed perfect reliability, following Salgado's (1997) method. Note that Hunter, Schmidt, and Judiesch (1990) recommended a reliability estimate of .55 for objective criteria. The frequency-weighted mean of the job performance reliability distribution was .59, which is comparable with the value of .56 reported by Barrick and Mount (1991), and the mean square root reliability of .76 corresponded with the value of .778 reported by Tett et al. (1991). We also computed a range restriction index for HPI scales. Following procedures described by Hunter and Schmidt (1990), we divided each HPI scale's

Table 2
Example Criteria Representing Getting Along, Getting Ahead, and Personality Constructs

Theme/construct	Sample criteria[a]
Getting along	Demonstrates interpersonal skill
	Works with others
	Shows positive attitude
	Shares credit
Getting ahead	Works with energy
	Exhibits effort
	Values productivity
	Shows concern for quality
Adjustment	Remains even tempered
	Manages people, crisis, and stress
	Shows resiliency
	Demonstrates patience
Ambition	Exhibits leadership
	Demonstrates effectiveness
	Takes initiative
	Generates new monthly accounts
Likeability	Shows interpersonal skill
	Exhibits capacity to compromise
	Demonstrates tactfulness and sensitivity
	Shares credit
Prudence	Stays organized
	Works with integrity
	Abides by rules
	Follows safety procedures
Intellectance	Achieves quality with information
	Analyzes finances/operations
	Seems market savvy
	Displays good judgment
School Success	Capitalizes on training
	Exhibits technical skill
	Makes progress in training
	Possesses job knowledge

[a] All example criteria are ratings except for "Generates new monthly accounts."

within-study standard deviation by the standard deviation reported by R. Hogan and Hogan (1995). This procedure produced an index of range restriction for each HPI scale, $M = .87$, range = .81 (Ambition) to .94 (School Success), within each study, and we used this value to correct each predictor scale for range restriction.

Hunter and Schmidt (1990) pointed out that meta-analytic results can be biased unless each sample contributes about the same number of correlations to the total. To eliminate such bias, we averaged correlations within studies so that each sample contributed only one point estimate per predictor scale. For example, if more than one criterion from any study was classified as getting along, the correlations between each predictor scale and those criteria were averaged to derive a single point estimate of the predictor–criterion relationship. Note that this procedure uses both negative and positive correlations rather than mean absolute values for averaging correlations. This is the major computational difference between the current analyses and those presented by Tett et al. (1991, p. 712). We did not correct correlation coefficients to estimate validity at the construct level. Although some (e.g., Mount & Barrick, 1995a; Ones, Schmidt, & Viswesvaran, 1994) have argued that this is an artifact that can be corrected, we believe that it is premature to estimate the validity of perfect constructs when there is no agreement regarding what they are. That is, scales on different personality measures that purportedly assess the same construct are nuanced and extend the boundaries of those constructs in directions beyond the central theme.

Results

Table 3 shows the sample-weighted criterion category intercorrelations. The diagonal in the matrix represents the average correlation between different scales classified into the same performance category. In general, Table 3 results support the convergent validity of the criterion categorizations. For example, criteria classified as getting along correlated more highly among themselves than with criteria from the remaining performance categories (e.g., Adjustment). The same pattern occurs for all performance categories, with the exception of getting ahead- and Ambition-based criteria. Other results in the off diagonals of the matrix, including generally strong correlations among the various criterion types (e.g., Likeability and Prudence), suggest that the criterion categories overlap more than we expected. The median intercorrelations between the criterion categories ranged from .47 to .72 with an average of .60.

Table 4 presents the results for the HPI scales when the criterion themes of getting along and getting ahead were combined as global measures of job performance. As seen in Table 4, the uncorrected sample-weighted validities and estimated true validities for HPI Adjustment, Ambition, and Prudence are .19 (.32), .13 (.22), and .14 (.24), respectively. The estimated validity of the Adjustment scale exceeds previously reported values for the Emotional Stability construct, which are .15 (Neuroticism; Tett et al., 1991) and .09 (Emotional Stability; Hurtz & Donovan, 2000; Salgado, 1997).

Table 3
Sample-Weighted Correlation Coefficients Among Criterion Classifications Across Studies

Theme/construct	1	2	3	4	5	6	7	8
1. Getting along	**.68** (3,065)							
2. Getting ahead	.54 (2,641)	**.69** (2,737)						
3. HPI Adjustment	.67 (1,479)	.66 (1,736)	**.70** (2,732)					
4. HPI Ambition	.65 (1,218)	.72 (1,820)	.65 (1,281)	**.79** (2,878)				
5. HPI Likeability	.67 (2,120)	.60 (1,303)	.61 (1,297)	.59 (985)	**.68** (2,899)			
6. HPI Prudence	.63 (1,875)	.62 (1,077)	.55 (1,002)	.60 (716)	.59 (1,851)	**.69** (1,858)		
7. HPI Intellectance	.64 (295)	.68 (659)	.55 (314)	.57 (260)	.64 (211)	.66 (211)	**.66** (1,731)	
8. HPI School Success	.54 (617)	.67 (874)	.58 (849)	.70 (874)	.48 (411)	.47 (337)		**.66** (944)

Note. All values reported in the table reflect sample-weighted average correlations among criteria classified into each performance category. The number of studies ranges from 3 (Hogan Personality Inventory [HPI] prudence and school success) to 20 (getting along and getting ahead). Sample sizes are presented in parentheses. Correlations in boldface type on the diagonal represent average correlations between scales classified in the same performance category.

Table 4
Meta-Analysis Results Across Getting Along and Getting Ahead Criteria Combined

Construct	*k*	*N*	avg *N*	r_{obs}	SD_r	ρ_v	ρ	SD_ρ	%VE	90% CV
Adjustment	43	5,242	122	.19	.147	.28	.32	.191	35	.08
Ambition	43	5,242	122	.13	.129	.20	.22	.153	48	.02
Sociability	43	5,242	122	.00	.122	.00	.01	.134	55	−.16
Likeability	43	5,242	122	.09	.128	.13	.17	.156	50	−.03
Prudence	43	5,242	122	.14	.132	.20	.24	.168	45	.03
Intellectance	43	5,242	122	.05	.101	.08	.08	.070	80	−.01
School Success	33	4,222	128	.09	.095	.12	.14	.061	85	.06

Note. *k* = number of studies; *N* = number of participants across *k* studies; avg *N* = average number of participants within each study; r_{obs} = mean observed validity; SD_r = *SD* of observed correlations; ρ_v = operational validity (corrected for range restriction and criterion unreliability only); ρ = true validity at scale level (corrected for range restriction and predictor–criterion reliability); SD_ρ = *SD* of true validity; %VE = percentage of variance explained; 90% CV = credibility value.

The Big Five Extraversion factor is represented by HPI Ambition and Sociability scales. Similar to results reported by Vinchur et al. (1998), Ambition, not Sociability (ρ = .01), predicted the criteria. In previous meta-analyses, the estimated true validity of Extraversion for predicting global performance ranged from .13 (Barrick & Mount, 1991) to .16 (Tett et al., 1991), but these analyses combine facets of ambition with sociability. The estimated true validity of HPI School Success is less than Tett et al's. (1991) finding for Openness (ρ = .27) but larger than the reported estimates from other omnibus meta-analyses. Moreover, the results for Sociability, Likeability, and Intellectance do not generalize on the basis of the 90% credibility values, which is consistent with results reported by Hurtz and Donovan (2000) and Tett et al. (1991). Table 4 validities represent the most global level of analysis.

Table 5 presents 14 meta-analyses using HPI scales to predict getting along or getting ahead criteria considered separately. As seen, between 22 (*N* = 2,553) and 42 (*N* = 5,017) studies were used in these analyses. Getting along criteria were best predicted by HPI Adjustment, Prudence, and Likeability, with uncorrected sample-weighted validities and estimated true validities of .19 (.34), .14 (.31), and .12 (.23), respectively. HPI Sociability and Intellectance scales were unrelated to criteria for getting along. Getting ahead criteria were best predicted by the HPI Ambition (r_{obs} = .15; ρ = .26), Adjustment (r_{obs} = .14; ρ = .22), and Prudence (r_{obs} = .12; ρ = .20) scales. Again, note that Ambition, not Sociability, predicted getting ahead. Validities and the credibility intervals for the HPI Sociability and Likeability scales indicated that they are not practically useful for predicting getting ahead criteria. Although the patterns of variances differ, the results in Table 5 suggest that the HPI Adjustment, Prudence, and Ambition scales are generally valid for predicting criteria that reflect getting along and getting ahead at work.

Table 6 presents validity results for HPI scales aligned by construct-classified criteria. Forty-two meta-analyses were computed; there were too few studies with criteria categorized as Sociability-related to compute meta-analyses for the HPI Socia-

Table 5
Meta-Analysis Results for Getting Along and Getting Ahead Criteria Separated

Theme and construct	*k*	*N*	avg *N*	r_{obs}	SD_r	ρ_v	ρ	SD_ρ	%VE	90% CV
Getting along										
Adjustment	26	2,949	113	.19	.093	.31	.34	.034	92	.30
Ambition	26	2,949	113	.10	.101	.15	.17	.060	89	.09
Sociability	26	2,949	113	.01	.099	.01	.01	.047	93	−.05
Likeability	26	2,949	113	.12	.088	.19	.23	.000	100	.23
Prudence	26	2,949	113	.14	.105	.21	.31	.106	72	.18
Intellectance	26	2,949	113	.02	.098	.03	.03	.038	95	−.02
School Success	22	2,553	116	.08	.096	.12	.12	.024	98	.09
Getting ahead										
Adjustment	42	5,017	129	.14	.138	.20	.22	.167	42	.01
Ambition	42	5,017	129	.15	.130	.23	.26	.155	47	.06
Sociability	42	5,017	129	.02	.123	.04	.04	.132	56	−.13
Likeability	42	5,017	129	.07	.127	.09	.11	.000	52	.11
Prudence	42	5,017	129	.12	.138	.17	.20	.177	43	−.03
Intellectance	42	5,017	129	.07	.105	.11	.12	.081	75	.02
School Success	32	4,211	132	.09	.095	.13	.15	.060	83	.07

Note. *k* = number of studies; *N* = total number of participants across *k* studies; avg *N* = average number of participants within each study; r_{obs} = mean observed validity; SD_r = *SD* of observed correlations; ρ_v = operational validity (corrected for range restriction and criterion reliability only); ρ = true validity at scale level (corrected for range restriction and predictor–criterion reliability); SD_ρ = *SD* of true validity; %VE = percentage of variance explained; 90% CV = credibility value.

Table 6
Meta-Analysis Results for Criteria Aligned by Personality Construct

Construct	*k*	*N*	avg *N*	r_{obs}	SD_r	ρ_v	ρ	SD_ρ	%VE	90% CV
Adjustment										
Adjustment	24	2,573	107	.25	.114	.37	.43	.117	62	.28
Ambition	24	2,573	107	.08	.153	.13	.16	.201	39	−.10
Sociability	24	2,573	107	−.06	.131	−.08	−.10	.151	53	−.29
Likeability	24	2,573	107	.09	.081	.13	.16	.000	100	.16
Prudence	24	2,573	107	.18	.114	.27	.32	.109	69	.18
Intellectance	24	2,573	107	−.00	.132	−.00	−.00	.150	51	−.19
School Success	21	2,311	110	.08	.091	.13	.14	.000	100	.14
Ambition										
Adjustment	28	3,698	132	.11	.115	.18	.20	.130	53	.03
Ambition	28	3,698	132	.20	.077	.31	.35	.000	100	.35
Sociability	28	3,698	132	.04	.106	.07	.08	.096	71	−.04
Likeability	28	3,698	132	.06	.069	.09	.10	.000	100	.10
Prudence	28	3,698	132	.10	.105	.15	.17	.112	63	.03
Intellectance	28	3,698	132	.07	.076	.11	.12	.000	100	.12
School Success	25	3,448	138	.09	.080	.14	.15	.000	100	.15
Likeability										
Adjustment	17	2,500	147	.16	.101	.23	.28	.114	59	.14
Ambition	17	2,500	147	.07	.095	.09	.11	.086	77	−.00
Sociability	17	2,500	147	.05	.081	.06	.08	.000	100	.08
Likeability	17	2,500	147	.18	.094	.25	.34	.100	68	.21
Prudence	17	2,500	147	.12	.087	.17	.21	.040	93	.16
Intellectance	17	2,500	147	−.00	.067	−.00	−.00	.000	100	−.00
School Success	15	2,399	150	.06	.237	.08	.10	.390	11	−.40
Prudence										
Adjustment	26	3,379	130	.18	.130	.24	.28	.158	41	.08
Ambition	26	3,379	130	.07	.133	.08	.10	.159	45	−.10
Sociability	26	3,379	130	−.04	.098	−.07	−.07	.062	84	−.15
Likeability	26	3,379	130	.09	.141	.12	.17	.184	40	−.07
Prudence	26	3,379	130	.22	.113	.31	.36	.125	55	.20
Intellectance	26	3,379	130	−.01	.120	−.03	−.02	.125	56	−.18
School Success	20	2,603	130	.07	.108	.09	.10	.096	69	−.02
Intellectance										
Adjustment	7	1,190	170	.05	.116	.07	.08	.150	44	−.11
Ambition	7	1,190	170	.13	.082	.20	.23	.046	90	.17
Sociability	7	1,190	170	.06	.132	.09	.11	.191	34	−.14
Likeability	7	1,190	170	−.02	.073	−.03	−.03	.000	100	−.03
Prudence	7	1,190	170	−.03	.078	−.04	−.05	.000	100	−.05
Intellectance	7	1,190	170	.20	.037	.29	.34	.000	100	.34
School Success	3	643	214	.10	.017	.14	.17	.000	100	.17
School Success										
Adjustment	9	1,366	152	.11	.103	.17	.20	.119	57	.05
Ambition	9	1,366	152	.14	.098	.22	.27	.110	63	.13
Sociability	9	1,366	152	.02	.102	.03	.03	.103	67	−.10
Likeability	9	1,366	152	.04	.076	.07	.07	.000	100	.07
Prudence	9	1,366	152	.09	.096	.14	.17	.107	65	.03
Intellectance	9	1,366	152	.03	.083	.05	.05	.000	100	.05
School Success	9	1,366	152	.15	.132	.22	.25	.184	34	.01

Note. *k* = number of studies; *N* = total number of participants across *k* studies; avg *N* = average number of participants within each study; r_{obs} = mean observed validity; SD_r = *SD* of observed correlations; ρ_v = operational validity (corrected for range restriction and criterion reliability only); ρ = true validity at scale level (corrected for range restriction and predictor–criterion reliability); SD_ρ = *SD* of true validity; %VE = percentage of variance explained; 90% CV = credibility value.

bility scale. However, there were sufficient studies available to compute meaningful analyses for the other scales. The sample-weighted mean correlations and the estimated true validities across scales were consistently larger than validities associated with the more global criteria of getting along and getting ahead. The estimated true validities ranged from .25 (HPI School Success, r_{obs} = .15) to .43 (HPI Adjustment, r_{obs} = .25). These findings support Campbell's (1990) strategy of organizing the predictor and criterion domains on the basis of their latent structure. In fact, aligning predictors and criteria increases the sample-weighted validities over the aggregate performance index, *M* = 43%, range = 24% (Adjustment) to 75% (Intellectance); getting along criteria, *M* = 47%, range = 24% (Adjustment) to 90% (Intellectance); and getting ahead criteria, *M* = 47%, range = 25% (Ambition) to 65% (Intellectance). The lower bound credibility intervals were all greater than .20, except for School Success, which suggests that

scale validity generalizes across samples when criteria are classified by construct. In every case, the credibility intervals supported the targeted validity coefficients.

Table 6 also shows the convergent and discriminant validity of the HPI scales. For each dimension, except for HPI School Success, the correlations were highest between personality scales and the aligned, construct-specific criterion variables, indicating convergence. The estimated true validity for HPI Adjustment (.43) is the largest in the table. Similarly, validity coefficients are smallest for the personality scales that are not aligned with specific constructs. For example, HPI Intellectance is unrelated to Adjustment, Likeability, and Prudence criteria; HPI Sociability predicts none of the construct-based criteria. This pattern of lower correlations for the off-diagonal scales supports discriminant validity. Another index of discriminant validity comes from the overlap of the credibility values among scales. Except for HPI School Success, no lower bound credibility values for construct-aligned measures overlap any other scale, which suggests independence. This pattern of findings further supports the discriminant validity of the predictor scales.

The off-diagonal correlations in Table 6 show the magnitude of relations between Adjustment, Prudence, and, to a lesser extent, Ambition with nonaligned performance criteria. Adjustment's estimated true validity met or exceeded .20 across 80% of the criterion dimensions, with the exception of the Intellectance-based criteria. Although the magnitude of the relations between Adjustment and nonaligned criteria exceeded previous estimates for the Emotional Stability construct, the generally consistent pattern corresponded to some previous results (cf. Hurtz & Donovan, 2000). The HPI Prudence scale was related to Adjustment (.32) and Likeability (.21) criteria. Prudence, Adjustment, and Likeability concerned interpersonal aspects of work (Hurtz & Donovan, 2000), which may have accounted for the circular predictive pattern among these scales. Finally, the Ambition scale predicted criteria classified into the Intellectance (.23) and School Success (.27) categories; this is sensible because the Intellectance criteria reflected intellectual striving, and the School Success criteria reflected academic achievement.

Discussion

This study extends previous personality meta-analyses in three ways. First, it used a theory of personality to organize the variables and to interpret the results. From this perspective, personality scale scores capture elements of individual reputation. Criterion ratings are observers' evaluations of an incumbent's reputation. Reputation provides the conceptual link between personality and job performance. This supports Guion and Gottier's (1965) advice to use theory to align personality and job-performance criteria.

Second, we eliminated the problem of classifying predictor scales into the correct Big Five dimensions by using a single inventory to assess personality. Although this is a methodological strength, it is also a potential limitation because, one might argue, the meta-analysis results concern a particular instrument and not construct measures. However, Figure 1 shows that the HPI scales and other Big Five measures converge; although not perfect, the correlations between many scales are sufficient to suggest that results from one construct measure will generalize to another of the same construct. Moreover, some influential meta-analyses are based on a single test. For example, Hunter's (1980; Hunter & Hunter, 1984) meta-analysis of cognitive ability and job performance is based entirely on the General Aptitude Test Battery and Mount, Barrick, and Stewart's (1998) meta-analysis of personality and performance in jobs requiring interpersonal skill is based entirely on the Personal Characteristics Inventory. Third, the reliability of the criterion classifications was determined empirically, and the classifications used multirater judgments as opposed to consensus based on a few (usually two) SMEs (e.g., Hurtz & Donovan, 2000; Tett et al., 1991).

This study provides insight into some persistent methodological questions. For example, these data strongly support the utility of Campbell's (1990) strategy of aligning predictors and criteria by using the underlying construct. Concerning the fidelity–bandwidth debate (see Spector, 1996), our results support the J. Hogan and Roberts (1996), Mount and Barrick (1995a), and Schneider, Hough, and Dunnette (1996) view that validity is enhanced when the bandwidth of predictors and criteria are matched—broadband predictors assess global criteria better than specific criteria and vice versa (also see Erez & Judge, 2001). Finally, if predictors and criteria are matched for construct and bandwidth, then personality measures (both predictors and criteria) should show convergent and discriminant validity. The results in Table 6 support this claim.

The results of this study also support our claim that the Big Five dimensions of Extraversion and Intellect–Openness to Experience are too broad. When developing the HPI, we believed that Extraversion and Ambition were components of the larger construct of Surgency. We knew lazy extraverts and ambitious introverts, and we consistently found that Ambition and Extraversion correlated only about .30 (R. Hogan & Hogan, 1995, p. 18). The current meta-analytic results show that it is the Ambition, not the Sociability, component of Surgency that predicts performance. This may account for the discrepancies between our results and those reported by Tett et al. (1991) and by Hurtz and Donovan (2000). Interestingly, several researchers have noted the inconsistent validity of Extraversion measures. Hough (1992) found that when Extraversion was split into potency and affiliation, only potency (r = .08) was related to teamwork. Barrick and Mount (1993) reported that Extraversion was uncorrelated with performance as a wholesale sales representative. Stewart and Carson (1995) found an inverse relation between Extraversion and performance in service jobs. Salgado (1997) reported that Extraversion was the only personality factor in his meta-analysis for which the unexplained variance was greater than the explained variance in overall job performance. Mount, Barrick, and Stewart (1998, pp. 150–151) concluded that Extraversion inconsistently predicted performance, even for jobs involving substantial interpersonal interaction. Finally, Vinchur et al. (1998) found that Big Five subdimensions of potency and achievement substantially outperformed the affiliation subdimension for predicting both objective and subjective sales criteria. The distinction between Ambition and Extraversion is conceptually and empirically important.

Similarly, the Big Five Intellect–Openness to Experience factor combines creativity, curiosity, cultural taste, achievement orientation, and desire for knowledge. In developing the HPI, this factor split into an intellect component and a component defined by interest in learning and achievement. We called the former component *Intellectance* and the latter *School Success.* Except for the results presented by Tett et al. (1991), the meta-analytic validities

for the Intellect–Openness to Experience are weak. Although some researchers consider Intellect–Openness to Experience as the Big Five dimension that is the least important for predicting occupational outcomes, we disagree. Again, the results in Table 6 show the predictive utility of separating Intellectance from School Success. Judge and Bono (2000) showed that Intellect–Openness predicted ratings for transformational leadership, which, in turn, predicted effectiveness, at $r = .20$. When the criteria are appropriate, HPI Intellectance and School Success scales yield zero-order correlations in the .30 range (Driskell, Hogan, Salas, & Hoskins, 1994; Gregory, 1992). The need to predict criteria involving continuous learning may provide the test bed for new performance models that include both cognitive ability and personality components.

The foregoing observations concern methodological issues. We believe this article makes three useful conceptual contributions. The first concerns the fact that raters can reliably sort performance criteria in terms of personality constructs, including getting along and getting ahead, the dimensions of the Big Five model, or the seven scales of the HPI. Sorting criteria in terms of the underlying personality constructs represents a methodological advance that should inform and improve subsequent research in this area.

Second, correlations between predictor variables and criterion data steadily increase as the criterion data become more specific, moving from ratings for overall performance, to ratings for getting along and getting ahead, to ratings defined in terms of more specific, job-relevant personality constructs. This finding should also inform subsequent research on this topic.

Third, these analyses suggest that measures of Emotional Stability—for example, the HPI Adjustment scale—are much more potent and general predictors of occupational performance than previously realized. Judge and his colleagues (Erez & Judge, 2001; Judge & Bono, 2001; Judge, Locke, Durham, & Kluger, 1998) made precisely this argument with regard to what they call *core self-evaluations,* a construct that seems quite similar to the construct underlying the HPI Adjustment scale. Consistent with our findings, Erez and Judge (2001) reported a correlation of .42 between core self-evaluations and a composite measure of job performance. These findings are an important qualification to the view (cf. Schmidt & Hunter, 1992) that conscientiousness is the personality variable of greatest practical importance in applied psychology. The broad domain of neuroticism, widely studied in clinical psychology, may also prove useful for understanding such occupational outcomes as job satisfaction, commitment, and productivity.

In closing, it is important to note what we are not saying. We are not saying that all motivation or personality may be represented by two factors, getting along and getting ahead, nor are we saying that all performance may be represented by these two factors. Factors such as interests, values, mental ability, hand–eye coordination, health, and opportunity are also obviously important determinants of occupational performance, but measures of personality, in general, and the Emotional Stability construct, in particular, are important predictors of a surprising variety of outcomes.

References

*References marked with an asterisk indicate studies used in the meta-analysis.

*Abalos, A., McDaniel, S., & Shelton, D. (2000). *Validity of the Hogan Personality Inventory for selecting bus operators* (Tech. Rep. No. 203). Tulsa, OK: Hogan Assessment Systems.

Adler, A. (1939). *Social interest.* New York: Putnam.

Altman, D. (1991). *Practical statistics for medical research.* New York: Chapman and Hall.

Ashton, M. C. (1998). Personality and job performance: The importance of narrow traits. *Journal of Organizational Behavior, 19,* 289–303.

Bakan, D. (1966). *The duality of human existence: Isolation and communion in Western man.* Boston: Allyn & Bacon.

Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology, 44,* 1–26.

Barrick, M. R., & Mount, M. K. (1993). Autonomy as a moderator of the relationships between the Big Five personality dimensions and job performance. *Journal of Applied Psychology, 78,* 111–118.

Barrick, M. R., Stewart, G. L., & Piotrowski, M. (2000, April). *Personality and sales performance: Test of the mediating effects of motivation.* Paper presented at the fifteenth annual meeting of the Society for Industrial–Organizational Psychology, Inc., New Orleans, LA.

Bass, B. M. (1990). *Bass & Stogdill's handbook of leadership: Theory, research, and managerial applications.* New York: Free Press.

Borman, W. C., & Motowidlo, S. J. (1993). Expanding the criterion domain to include elements of contextual performance. In N. Schmitt, W. C. Borman, & Associates (Eds.), *Personnel selection in organizations* (pp. 71–98). San Francisco: Jossey-Bass.

*Brinkmeyer, K. (1999). *Customer service employee profiling and validity study using the Hogan Personality Inventory, the Hogan Development Survey, and the Motives, Values, Preferences Inventory* (Tech. Rep. No. 164). Tulsa, OK: CDR Assessment Group.

*Brinkmeyer, K., & Hogan, J. (1995). *Validity of the Hogan Personality Inventory for selecting police communications operators* (Tech. Rep. No. 72). Tulsa, OK: Hogan Assessment Systems.

*Brinkmeyer, K., & Hogan, R. (1997). *Validity of the Hogan Personality Inventory for selecting field representatives* (Tech. Rep. No. 107). Tulsa, OK: Hogan Assessment Systems.

*Brinkmeyer, K., Hogan, R., & Heidelberg, H. (1997). *Preemployment screening preliminary report for manufacturing workers* (Tech. Rep. No. 136). Tulsa, OK: Hogan Assessment Systems.

Campbell, J. P. (1990). Modeling the performance prediction problem in industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., Vol. 1, pp. 39–74). Palo Alto, CA: Consulting Psychologists Press.

Campbell, J. P., McCloy, R. A., Oppler, S. H., & Sager, C. E. (1993). A theory of performance. In N. Schmitt, W. C. Borman, & Associates (Eds.), *Personnel selection in organizations* (pp. 35–70). San Francisco: Jossey-Bass.

Campbell, J. P., McHenry, J. J., & Wise, L. L. (1990). Modeling job performance in a population of jobs. *Personnel Psychology, 43,* 313–333.

Carson, R. C. (1969). *Interaction concepts of personality.* Chicago: Aldine.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 1,* 37–46.

*Connolly, P. M. (1996). *Relations between Overseas Assignment Inventory ratings and Hogan Personality Inventory scores* (Tech. Rep. No. 193). Old Saybrook, CT: Performance Programs.

Conway, J. M. (1999). Distinguishing contextual performance from task performance for managerial jobs. *Journal of Applied Psychology, 84,* 3–13.

Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five Factor Inventory (NEO-FFI) professional manual.* Odessa, FL: Psychological Assessment Resources.

Costa, P. T., Jr., & McCrae, R. R. (1995). Domains and facets: Hierarchical

personality assessment using the Revised NEO Personality Inventory. *Journal of Personality Assessment, 64,* 21–50.

Digman, J. M. (1990). Personality structure: Emergence of the five factor model. *Annual Review of Psychology, 41,* 417–440.

Digman, J. M. (1997). Higher order factors of the Big Five. *Journal of Personality and Social Psychology, 73,* 1246–1256.

Driskell, J., Hogan, J., Salas, E., & Hoskins, B. (1994). Noncognitive predictors of training performance in basic electronics and electricity. *Journal of Military Psychology, 6,* 31–46.

Erez, A., & Judge, T. A. (2001). Relationship of core self-evaluations to goal setting, motivation, and performance. *Journal of Applied Psychology, 86,* 1270–1279.

Fiedler, F. E. (1967). *A theory of leadership effectiveness.* New York: McGraw-Hill.

Flanagan, J. C. (1954). The critical incident technique. *Psychological Bulletin, 51,* 327–358.

Fleishman, E. A. (1953). The measurement of leadership attitudes in industry. *Journal of Applied Psychology, 37,* 153–158.

Fleiss, J. (1981). *Statistics methods for rates and proportions.* New York: Wiley.

Foa, E. B., & Foa, U. G. (1980). Resource theory. In K. J. Gergen, M. S. Greenberg, & R. H. Willis (Eds.), *Social exchange: Advances in theory and research* (pp. 77–94). New York: Plenum Press.

Foa, U. G., & Foa, E. B. (1974). *Societal structures of the mind.* Springfield, IL: Thomas.

Frei, R. L., & McDaniel, M. A. (1998). Validity of customer service measures in personnel selection: A review of criterion and construct evidence. *Human Performance, 11,* 1–27.

George, J. M. (1990). Personality, affect, and behavior in groups. *Journal of Applied Psychology, 80,* 500–509.

Goldberg, L. R. (1981). Language and individual differences: The search for universals in personality lexicons. In L. W. Wheeler (Ed.), *Review of personality and social psychology* (Vol. 2, pp. 141–165). Beverly Hills, CA: Sage.

Goldberg, L. R. (1992). The development of markers of the Big Five factor structure. *Psychological Assessment, 4,* 26–42.

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist, 48,* 26–34.

Goldberg, L. R. (1999). A broad-bandwidth, public-domain, personality inventory measuring the lower level facets of several five factor models. In I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendort (Eds.), *Personality psychology in Europe: Vol. 7* (pp. 7–28). Tilburg, the Netherlands: Tilburg University Press.

Goldberg, L. R. (2000). [Hogan Personality Inventory and NEO PI-R correlation coefficients]. Unpublished raw data based on International Personality Item Pool Project.

Goldstein, I. L., Zedeck, S., & Schneider, B. (1993). An exploration of the job analysis-content validity process. In N. Schmitt, W. Borman, & Associates (Eds.), *Personnel selection in organizations* (pp. 3–34). San Francisco: Jossey-Bass.

Gottfredson, G. D., & Holland, J. L. (1989). *Dictionary of Holland occupational codes* (2nd ed.). Odessa, FL: Psychological Assessment Resources.

Gottfredson, G. D., & Holland, J. L. (1996). *Dictionary of Holland occupational codes* (3rd ed.). Odessa, FL: Psychological Assessment Resources.

Gough, H. G. (1990). Testing for leadership with the California Psychological Inventory. In K. E. Clark & M. B. Clark (Eds.), *Measures of leadership* (pp. 355–379). West Orange, NJ: Leadership Library of America.

Gregory, S. (1992, May). *Noncognitive measures for Army technical training placement.* Paper presented at the seventh annual meeting of the Society for Industrial–Organizational Psychology, Inc., Montreal, Quebec, Canada.

Guion, R. M., & Gottier, R. F. (1965). Validity of personality measures in personnel selection. *Personnel Psychology, 18,* 135–164.

*Hayes, T. L., Roehm, H. A., & Castellano, J. P. (1994). Personality correlates of success in total quality manufacturing. *Journal of Business and Psychology, 8,* 397–411.

*Hogan, J., & Hogan, R. (1984). *Development and validation of a sales representative selection inventory* (Tech. Rep. No. 7). Tulsa, OK: Hogan Assessment Systems.

*Hogan, J., & Hogan, R. (1993). *Validity of Hogan Inventory for selecting drivers in transportation industry* (Tech. Rep. No. 56). Tulsa, OK: Hogan Assessment Systems.

*Hogan, J., Hogan, R., & Briggs, S. (1984). *Psychological and physical performance factors associated with attrition in explosive ordnance disposal training* (Tech. Rep. No.3). Tulsa, OK: Hogan Assessment Systems.

*Hogan, J., Hogan, R., & Busch, C. (1981). *Development and validation of the Nursing Aide Inventory* (Tech. Rep. No. 2). Tulsa, OK: Hogan Assessment Systems.

*Hogan, J., Hogan, R., & Klippel, D. (2000). *Validity of the Hogan Personality Inventory for selecting locomotive engineer trainees in the transportation industry* (Tech. Rep. No. 185). Tulsa, OK: Hogan Assessment Systems.

Hogan, J., & Lesser, M. (1996). Selecting personnel for hazardous performance. In J. Driskell & E. Salas (Eds.), *Stress and human performance* (pp. 195–222). Mahwah, NJ: Erlbaum.

*Hogan, J., Michel, R., & Hogan, R. (1997). *Validity of personality measures for entry-level jobs: Final report* (Tech. Rep. No. 137). Tulsa, OK: Hogan Assessment Systems.

*Hogan, J., Najar, M., & Holland, B. (1999). *Validity of the Hogan Personality Inventory of selecting managers in construction supply industry* (Tech. Rep. No. 158). Tulsa, OK: Hogan Assessment Systems.

Hogan, J., & Roberts, B. W. (1996). Issues and non-issues in the fidelity-bandwidth trade-off. *Journal of Organizational Behavior, 17,* 627–637.

*Hogan, J., & Rybicki, S. (1997). *Validity of correctional officer selection procedures* (Tech. Rep. No. 119). Tulsa, OK: Hogan Assessment Systems.

Hogan, J., & Rybicki, S. (1998). *Performance improvement characteristics job analysis manual.* Tulsa, OK: Hogan Assessment Systems.

*Hogan, J., Rybicki, S., Heidelberg, H., & Shelton, D. (1997). *Validity of the Hogan Personality Inventory for selecting offshore anchor handlers* (Tech. Rep. No. 126). Tulsa, OK: Hogan Assessment Systems.

Hogan, R. (1983). A socioanalytic theory of personality. In M. M. Page (Ed.), *1982 Nebraska Symposium on Motivation* (pp. 55–89). Lincoln: University of Nebraska Press.

Hogan, R. (1991). Personality and personality measurement. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (Vol. 2, 2nd ed., pp. 327– 396). Palo Alto, CA: Consulting Psychologists Press.

Hogan, R. (1996). A socioanalytic perspective on the five-factor model. In J. S. Wiggins (Ed.), *The five-factor model of personality* (pp. 163–179). New York: Guilford Press.

*Hogan, R., & Brinkmeyer, K. (1996). *Preemployment screening for drivers* (Tech. Rep. No. 96). Tulsa, OK: Hogan Assessment Systems.

Hogan, R., Curphy, G. J., & Hogan, J. (1994). What we know about leadership. *American Psychologist, 49,* 493–504.

*Hogan, R., & Gerhold, C. (1995). *Validity of the Hogan Personality Inventory for selecting financial consultants.* (Tech. Rep. No. 66). Tulsa, OK: Hogan Assessment Systems.

*Hogan, R., & Gerhold, C. (1995). *Validity of the Hogan Personality Inventory for selecting managers and assistant managers* (Tech. Rep. No. 67). Tulsa, OK: Hogan Assessment Systems.

Hogan, R., & Hogan, J. (1995). *The Hogan Personality Inventory manual* (2nd ed.). Tulsa, OK: Hogan Assessment Systems.

Hogan, R., Hogan, J., & Busch, C. (1984). How to measure service orientation. *Journal of Applied Psychology, 69,* 157–163.

*Hogan, R., Hogan, J., Lock, J., & Brinkmeyer, K. (1994). *Validity of the Hogan Personality Inventory for selecting managers* (Tech. Rep. No. 61). Tulsa, OK: Hogan Assessment Systems.

*Hogan, R., Hogan, J., & Stovall, D. (1995). *Validity of the Hogan Personality Inventory for selecting drivers* (Tech. Rep. No. 76). Tulsa, OK: Hogan Assessment Systems.

*Holland, B., & Hogan, J. (1999). *Validity of the Hogan Personality Inventory for selecting clerical support aides II and III* (Tech. Rep. No. 167). Tulsa, OK: Hogan Assessment Systems.

*Holland, B., Shin, H., & Hogan, J. (2000). *Selecting project managers, superintendents, and estimators using the Hogan Personality Inventory, Hogan Development Survey, and Motives, Values, Preferences Inventory* (Tech. Rep. No. 182). Tulsa, OK: Hogan Assessment Systems.

Holland, J. L. (1985). *Making vocational choices: A theory of careers.* Englewood Cliffs, NJ: Prentice Hall.

Hough, L. M. (1992). The "Big Five" personality variables—construct confusion: Description versus prediction. *Human Performance, 5,* 139–156.

Hough, L. M., & Ones, D. S. (2001). The structure, measurement, validity, and use of personality variables in industrial, work, and organizational psychology. In N R. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of work psychology* (pp. 233–377). New York: Sage.

Hubert, L. (1977). Kappa revisited. *Psychological Bulletin, 84,* 289–297.

Hunt, S. T. (1996). Generic work behavior: An investigation into the dimensions of entry-level, hourly job performance. *Personnel Psychology, 49,* 51–83.

Hunter, J. E. (1980). *Validity generalization for 12,000 jobs: An application of synthetic validity and validity generalization to the General Aptitude Test Battery (GATB).* Washington, DC: U.S. Department of Labor, Employment Service.

Hunter, J. E., & Hunter, R. F. (1984). Validity and utility of alternative predictors of job performance. *Psychological Bulletin, 96,* 72–98.

Hunter, J. E., & Schmidt, F. L. (1990). *Methods of meta-analysis.* Newbury Park, CA: Sage.

Hunter, J. E., & Schmidt, F. L., & Judiesch, M. K. (1990). Individual differences in output variability as a function of job complexity. *Journal of Applied Psychology, 75,* 28–42.

Hurtz, G. M., & Donovan, J. J. (2000). Personality and job performance: The Big Five revisited. *Journal of Applied Psychology, 85,* 869–879.

John, O. P. (1990). The "Big-Five" factor taxonomy: Dimensions of personality in the natural language and in questionnaires. In L. A. Pervin (Ed.), *Handbook of personality and research* (pp. 66–100). New York: Guilford Press.

Judge, T. A., & Bono, J. E. (2000). Five-factor model of personality and transformational leadership. *Journal of Applied Psychology, 85,* 751–765.

Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology, 86,* 80–92.

Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on jobs and life satisfaction: The role of core evaluations. *Journal of Applied psychology, 83,* 17–34.

Landis, J., & Koch, G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33,* 159–174.

*Landy, F. (1994). *Validity of the Hogan Personality Inventory for selecting police officers* (Correlation matrices only; Tech. Rep. No. 81). University Park, PA: Landy, Jacobs & Associates.

Leary, T. (1957). *Interpersonal diagnosis of personality.* New York: Ronald Press.

*Lock, J. (1995). *Using Hogan Personality Inventory for selecting customer and policy service representatives, data entry operators, and document processors* (Tech. Rep. No. 138). Tulsa, OK: Hogan Assessment Systems.

Locke, E. A., & Hulin, C. L. (1962). A review and evaluation of the validity studies of activity vector analysis. *Personnel Psychology, 15,* 25–42.

McAdams, D. P. (1985). *Power, intimacy, and the life story: Psychological inquiries into identity.* Homewood, IL: Dow-Jones-Irwin.

McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1953). *The achievement motive.* New York: Appleton-Century-Crofts.

McCrae, R. R., & Costa, P. T., Jr. (1997). Conceptions and correlates of openness to experience. In R. Hogan, J. A. Johnson, & S. R. Briggs (Eds.), *Handbook of personality psychology* (pp. 825–847). San Diego, CA: Academic Press.

*McDaniel, S., & Hogan, J. (1997). *Validity of the Hogan Personality Inventory Form-S for selecting correctional deputy sheriffs* (Tech. Rep. No. 120). Tulsa, OK: Hogan Assessment Systems.

Moon, H. (2001). The two faces of Conscientiousness: Duty and achievement-striving within evaluation of commitment dilemmas. *Journal of Applied Psychology, 86,* 533–540.

Motowidlo, S. J., Borman, W. C., & Schmit, M. J. (1997). A theory of individual differences in task and contextual performance. *Human Performance, 10,* 71–83.

Mount, M. K., & Barrick, M. R. (1995a). The Big Five personality dimensions: Implications for research and practice in human resource management. *Research in Personnel and Human Resource Management, 13,* 153–200.

Mount, M. K., & Barrick, M. R. (1995b). *The Personal Characteristics Inventory manual.* Unpublished manuscript.

Mount, M. K., Barrick, M. R., & Stewart, G. L. (1998). Five-factor model of personality and performance in jobs involving interpersonal interactions. *Human Performance, 11,* 145–165.

*Muchinsky, P. (1987a). *Development and validation of a service operations dispatcher selection inventory* (Tech. Rep. No. 20). Tulsa, OK: Hogan Assessment Systems.

*Muchinsky, P. (1987b). *Validation documentation for the development of personnel selection test batteries for telecommunications service jobs* (Tech. Rep. No. 20). Ames: Iowa State University.

*Muchinsky, P. M. (1993). Validation of personality constructs for the selection of insurance industry employees. *Journal of Business and Psychology, 7,* 475–482.

Murphy, K. R., & De Shon, R. (2000). Interrater reliability correlations do not estimate the reliability of job performance ratings. *Personnel Psychology, 53,* 873–900.

Ones, D. S., Hough, L. M., & Viswesvaran, C. (1998). *Validity and adverse impact of personality-based managerial potential scales.* Paper presented at the thirteenth annual meeting of the Society for Industrial–Organizational Psychology, Inc., Dallas, TX.

Ones, D. S., Schmidt, F. L., & Viswesvaran, C. (1994, April). *Examination of construct validity with linear composites and generalizability coefficient corrected correlations.* Paper presented at the annual conference of the Society for Industrial–Organizational Psychology, Nashville, TN.

Ones, D. S., & Viswesvaran, C. (2000, August). *Personality-based stress tolerance scales used in personnel selection.* Paper presented at the 108th Annual Convention of the American Psychological Association, Washington, DC.

Ones, D. S. Viswesvaran, C., & Schmidt, F. L. (1993). Comprehensive meta-analysis of integrity test validation: Findings and implications for personnel selection and theories of job performance. *Journal of Applied Psychology, 78,* 679–703.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1986). *Servqual: A multiple-item scale for measuring consumer perceptions of service quality.* Cambridge, MA: Marketing Science Institute.

Paunonen, S. V., Rothstein, M. G., & Jackson, D. N. (1999). Narrow

reasoning about the use of broad measures for personnel selection. *Journal of Organizational Behavior, 17,* 639–655.

*Piotrowski, M. (1996). *Validity of the Hogan Personality Inventory for selecting customer service representatives* (Tech. Rep. No. 171). Tulsa, OK: Hogan Assessment Systems.

Rank, O. (1945). *Will therapy and truth and reality.* New York: Knopf.

Raymark, P. H., Schmit, M. J., & Guion, R. M. (1997). Identifying potentially useful personality constructs for employee selection. *Personnel Psychology, 50,* 723–735.

Robertson, I. T., & Kinder, A. (1993). Personality and job competencies: The criterion-related validity of some personality variables. *Journal of Occupational and Organizational Psychology, 59,* 45–57.

*Ross, R. (2000). *Hogan Personality Inventory correlations for managers and food sales representatives* (Correlation matrices only; Tech. Rep. No. 219). Tulsa, OK: Hogan Assessment Systems.

*Ross, R., Rybicki, S., & Hogan, J. (1997). *Validity of the Hogan Personality Inventory for selecting office clerks and office managers* (Tech. Rep. No. 142). Tulsa, OK: Hogan Assessment Systems.

Rothstein, H. R. (1990). Interrater reliability of job performance ratings: Growth to asymptote level with increasing opportunity to observe. *Journal of Applied Psychology, 75,* 322–327.

*Ryan, A. M., & Ployhart, R. E. (1997). *A criterion-related validation study of the Hogan Personality Inventory for police officers* (Tech. Rep. No. 194). Perrysburg, OH: AMR.

*Rybicki, S., Brinkmeyer, K., & Hogan, R. (1997). *Validity of the Hogan Personality Inventory for selecting customer service representatives, drivers, and delivery and installation/service* (Tech. Rep. No. 102). Tulsa, OK: Hogan Assessment Systems.

*Rybicki, S., & Hogan, R. (1996). *Validity of the Hogan Personality Inventory for selecting salespersons* (Tech. Rep. No. 99). Tulsa, OK: Hogan Assessment Systems.

*Rybicki, S., & Hogan, R. (1997). *Validity of the Hogan Personality Inventory for selecting facility administrators* (Tech. Rep. No. 118). Tulsa, OK: Hogan Assessment Systems.

Salgado, J. F. (1997). The five factor model of personality and job performance in the European community. *Journal of Applied Psychology, 82,* 36–43.

Salgado, J. F. (1998a). Big Five personality dimensions and job performance in army and civil occupations: A European perspective. *Human Performance, 11,* 271–288.

Salgado, J. F. (1998b). *Manual tecnico del Inventario de Personalidad de Cinco Factores (IP/5F)* [Technical manual for the Personality Inventory of Five Factors (IP/5F)]. Santiago de Compostela, Spain: Torculo.

Salgado, J. F. (1999, May). *Predicting job performance using personality measures based explicitly on the five-factor model.* Paper presented at the fourteenth annual meeting of the Society for Industrial–Organizational Psychology, Inc., Atlanta, GA.

Salgado, J. F., & Moscoso, S. (1999, May). *Construct validity of two personality inventories based upon the five-factor model (FFM).* Paper presented at the fourteenth annual meeting of the Society for Industrial–Organizational Psychology, Inc., Atlanta, GA.

Saucier, G., & Goldberg, L. R. (1996). The language of personality: Lexical perspectives on the five-factor model. In J. S. Wiggins (Ed.), *The five-factor model of personality* (pp. 21–50). New York: Guilford Press.

Saucier, G., & Goldberg, L. R. (in press). The structure of personality attributes. In M. Barrick & A. M. Ryan (Eds.), *Personality and work.* New York: Jossey-Bass-Pfeiffer.

Schmidt, F. L., & Hunter, J. E. (1992). Development of a causal model of processes determining job performance. *Current Directions in Psychological Science, 1,* 89–92.

Schneider, R. J., Hough, L. M., & Dunnette, M. D. (1996). Broadsided by broad traits: How to sink science in five dimensions or less. *Journal of Organizational Behavior, 17,* 639–655.

*Shelton, D., Holland, B., & Hogan, J. (1999). *Selecting terminal managers using the Hogan Personality Inventory, Hogan Development Survey, and Motives, Values, Preferences Inventory* (Tech. Rep. No. 200). Tulsa, OK: Hogan Assessment Systems.

*Shelton, D., Holland, B., & Hogan, J. (2000). *Validity of the Hogan Personality Inventory for selecting managers* (Tech. Rep. No. 192). Tulsa, OK: Hogan Assessment Systems.

*Sinangil, H. K., Ones, D. S., & Cemalcilar, Z. (1997). *Personality characteristics of expatriate managers working in Turkey* (Tech. Rep. No. 122). Minneapolis: University of Minnesota.

*Society for Industrial–Organizational Psychology, Inc. (1987). *Principles for the validation and use of personnel selection procedures* (3rd ed.). Washington, DC: Author.

Spector, P. E. (1996). Point/counterpoint introduction. *Journal of Organizational Behavior, 17,* 607.

Staw, B. M., Sutton, R. I., & Pelled, L. H. (1994). Employee positive emotion and favorable outcomes at the workplace. *Organizational Science, 5,* 51–71.

Stewart, G. L., & Carson, K. P. (1995). Personality dimensions and domains of service performance: A field investigation. *Journal of Business and Psychology, 9,* 365–378.

Stogdill, R. M. (1948). Personal factors associated with leadership: A survey of the literature. *Journal of Personality, 25,* 35–71.

*Stovall, D., Rybicki, S., Hogan, R., & Hauxwell, R. (1997). *Validity of Hogan Personality Inventory for selecting cashiers* (Tech. Rep. No. 103). Tulsa, OK: Hogan Assessment Systems.

Sullivan, H. S. (1953). *The interpersonal theory of psychiatry.* New York: Norton.

Tellegen, A., & Waller, N.G. (1987). *Re-examining basic dimensions of natural language trait descriptors.* Paper presented at the 95th annual convention of the American Psychological Association, New York.

Tett, R. P., Guterman, H. A., Bleier, A., & Murphy, P. J. (2000). Development and content validation of a "hyperdimensional" taxonomy of managerial competence. *Human Performance, 13,* 205–251.

Tett, R. P., Jackson, D. N., & Rothstein, M. (1991). Personality measures as predictors of job performance: A meta-analytic review. *Personnel Psychology, 44,* 703–742.

Thurstone, L. L. (1934). The vectors of the mind. *Psychological Review, 41,* 1–32.

Tupes, E. C., & Christal, R. E. (1961). *Recurrent personality factors based on trait ratings (ASD-TR-61-97).* Lackland Air Force Base, TX: Aeronautical Systems Division, Personnel Laboratory.

Vinchur, A. J., Schippmann, J. S., Switzer, F. S., III, & Roth, P. L. (1998). A meta-analytic review of predictors of job performance for salespeople. *Journal of Applied Psychology, 83,* 586–597.

Viswesvaran, C., & Ones, D. S. (2000, August). *Personality-based customer service scales used in personnel selection.* Paper presented at the 108th Annual Convention of the American Psychological Association, Washington, DC.

Warr, P., & Conner, M. (1992). Job competencies and cognition. In L. Cummings & A. Staub (Eds.), *Research in organizational behavior* (Vol. 14, pp. 91–127). New York: JAI Press.

Wiggins, J. S. (1979). A psychological taxonomy of trait-descriptive terms: The interpersonal domain. *Journal of Personality and Social Psychology, 37,* 395–412.

Wiggins, J. S. (1991). *Manual for the Interpersonal Adjective Scales.* Odessa, FL: Psychological Assessment Resources.

Wiggins, J. S., & Trapnell, P. D. (1996). A dyadic-interactional perspective on the five-factor model. In J. S. Wiggins (Ed.), *The five-factor model of personality* (pp. 88–162). New York: Guilford Press.

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