SELECT
DEVELOP
LEAD

HOGAN*REPORTS*

HIGH POTENTIAL

CANDIDATE ASSESSMENT REPORT

TECHNICAL MANUAL

High Potential Candidate Assessment Report
Technical Manual

Hogan Assessment Systems
Tulsa, OK 74114, USA

2009

www.hoganpress.com

ISBN 978-0-9840969-2-3

HOGANPRESS

EXECUTIVE SUMMARY

This report summarizes the research procedures Hogan Assessment Systems (Hogan) used to create and validate the High Potential Candidate Assessment Report (HP-CAR). Organizations can use this report to predict competency-based requirements associated with future job performance for management recruits. This report details the methods Hogan used to (a) identify key requirements for management positions, (b) accumulate validity evidence, and (c) select scales to predict management-related competencies.

The research presented here began with a personality-based job analysis to collect data from individuals familiar with requirements for managerial jobs. Hogan aligned this information with predictor scales on the HPI, HDS, and MVPI.

The validation strategy proceeded in three steps. First, Hogan reviewed the job analysis results and, using meta-analysis procedures, examined relationships between personality constructs and overall performance for managerial jobs. Next, we reviewed existing research to identify relationships between personality constructs and management-related competencies. Finally, using existing archival data from similar jobs, we examined relationships between scales and overall job performance.

Using both empirical validation evidence and results from a detailed content validation, we created profiles to predict performance on management-related competencies. Next, we evaluated expected score frequency rates using four independent samples and conducted adverse impact analyses. Analyses using a simulated applicant pool and a subsample of actual applicants indicated that the recommended scales and score bands comprising each competency should not result in adverse impact based on race/ethnicity, gender, or age.

Hogan recommends the completion of a local validation study and accumulation of business utility data (when feasible) to evaluate the effectiveness of the HP-CAR for management-level jobs within specific organizations. Until sufficient company-specific assessment and performance data are available, we recommend that organizations use these results in conjunction with other applicant information to drive selection decisions.

CONTENTS

1 – INTRODUCTION **9**

1.1 Foundation 9

1.2 Overview 10

1.3 User, Location(s), and Dates of Study 10

1.4 Problem and Setting 11

2 – DESCRIPTION OF SELECTION PROCEDURES **12**

2.1 Approach and Rationale 12

2.2 What to Measure and Why 12

2.3 The Hogan Personality Inventory 14

2.4 Hogan Personality Inventory Description and Development 17

2.5 The Hogan Development Survey 19

2.6 Hogan Development Survey Description and Development 21

2.7 The Motives, Values, Preferences Inventory 23

2.8 Motives, Values, Preferences Inventory Description and Development 24

3 – JOB ANALYSIS **26**

3.1 Job Description 26

3.2 Job Analysis Survey 26

3.3 Performance Improvement Characteristics 26

3.4 Managerial PIC Results 28

3.5 Derailment Characteristics Questionnaire 29

3.6 Managerial DCQ Results 31

3.7 Motivational Improvement Characteristics 32

3.8 Managerial MIC Results 34

3.9 Competency Evaluation Tool (CET) 35

3.10 Managerial CET Results 36

3.11 Job Analysis Summary 38

4 – META-ANALYSIS RESULTS FOR EVALUATING VALIDITY GENERALIZATION OF PERSONALITY MEASURES 39

4.1 The Five-Factor Model and Job Performance 41

4.2 Personality-Based Validity Coefficient Benchmarking 44

4.3 Summary of Meta-Analysis Results for Generalizing Validity of Five-Factor Model Personality Measures 46

4.4 Meta-Analysis Evidence for Generalizing Validity of the HPI at the Job Family Level 46

4.5 Dysfunctional Personality Characteristics and Job Performance 48

4.6 Summary of Meta-Analysis Results for Generalizing Validity of HDS Scales 49

5 – TRANSPORTABILITY OF VALIDITY 50

5.1 Transportability of Validity Results 51

6 – SYNTHETIC/JOB COMPONENT VALIDITY 52

6.1 Critical Performance Dimensions 53

6.2 Validity of the HPI and HDS for Predicting Managerial Recruit Performance 54

7 – COMPETENCY ALGORITHM DEVELOPMENT 57

7.1 Strategic Reasoning. 57

7.2 Tactical Problem Solving. 58

7.3 Operational Excellence. 59

7.4 Results Orientation. 59

7.5 Talent Development. 60

7.6 Respect for People 61

7.7 Collaboration. 61

7.8 Strategic Self-Awareness 62

7.9 Tenacity. 63

7.10 Judgment. 63

8 - FINAL CALIBRATION OF THE PERSONALITY ASSESSMENT SCALES **65**

9 – RECOMMENDATIONS **71**

9.1 Uses and Applications 71

9.2 Accuracy and Completeness 71

REFERENCES **73**

APPENDIX A: The Job Evaluation Tool (JET) **86**

APPENDIX B: Simulated Pass Rates **92**

TABLES & FIGURES

Table 1.1 HP-CAR Competencies and Definitions 9

Table 1.1 HP-CAR Competencies and Definitions (Continued) 10

Table 2.1 Correlations between Goldberg's Big-Five Markers and the HPI Scales 15

Table 2.2 Correlations between the PCI Primary Scales and the HPI Scales 15

Table 2.3 Correlations between the Inventario de Personalidad de Cinco Factores (IP/5F) and the HPI Scales 16

Table 2.4 Correlations between the NEO-PI-R and the HPI Scales 16

Figure 2.1 Relations between FFM Inventories and the HPI Scales 17

Table 3.1 HPI and PIC Scale Definitions 27

Table 3.2 Raw Score PIC Means and Standard Deviations for Managerial JET Data 28

Figure 3.1 PIC Profile for Managerial JET Data 29

Table 3.3 HDS and DCQ Scale Definitions 30

Table 3.3 HDS and DCQ Scale Definitions (Continued) 31

Table 3.4 Raw Score DCQ Means and Standard Deviations for Managerial JET Data 31

Figure 3.2 DCQ Profile for Managerial JET Data 32

Table 3.5 MVPI and MIC Scale Definitions 33

Table 3.6 Raw Score MIC Means and Standard Deviations for Managerial JET Data 34

Figure 3.3 MIC Profile for Managerial JET Data 35

Table 3.7 Raw Score CET Means and Standard Deviations for Managerial JET Data 37

Table 4.1 FFM Meta-Analysis Results: Uncorrected Validity Estimates 42

Table 4.2 Meta-Analysis Results for HPI Scales with Construct-Aligned Criteria 43

Table 4.3 Comparative Validity of Assessments for Predicting Overall Job Performance 45

Table 4.4 Meta-Analysis Results from HPI-Performance Correlations for Managers and Executive Jobs 48

Table 4.5 HDS Scale Meta-Analysis Results for Aggregated Job Performance Rating Criteria 49

Table 6.1 Definitions of Critical Job Competencies for Managers 54

Table 6.2 HPI Scale Correlations with Critical Job Competencies for Managers 55

Table 6.3 HDS Scale Correlations with Critical Job Competencies for Managers 56

Table 7.1 Recommended Score Bands for Strategic Reasoning 58

Table 7.2 Recommended Score Bands for Tactical Problem Solving 59

Table 7.3 Recommended Score Bands for Operational Excellence 59

Table 7.4 Recommended Score Bands for Results Orientation 60

Table 7.5 Recommended Score Bands for Talent Development 60

Table 7. 6 Recommended Score Bands Respect for People 61

Table 7.7 Recommended Score Bands for Collaboration 62

Table 7.8 Recommended Score Bands for Strategic Self-Awareness 62

Table 7. 9 Recommended Score Bands for Tenacity 63

Table 7.10 Recommended Score Bands for Judgment 64

Table 8.1 Recommended Score Bands for Strategic Reasoning 65

Table 8.2 Recommended Score Bands for Tactical Problem Solving 66

Table 8.3 Recommended Score Bands for Operational Excellence 66

Table 8.4 Recommended Score Bands for Results Orientation..... 66

Table 8.5 Recommended Score Bands for Talent Development..... 66

Table 8.6 Recommended Score Bands for Respect for People 66

Table 8.7 Recommended Score Bands for Collaboration 67

Table 8.8 Recommended Score Bands for Strategic Self-Awareness 67

Table 8.9 Recommended Score Bands for Tenacity..... 67

Table 8.10 Recommended Score Bands for Judgment 67

Table 8.11 Competency Pass Rates 68

Table 8.12 Competency Pass Rates 70

1 – INTRODUCTION

1.1 Foundation. Across industry sectors, organizations can effectively select high potential candidates for managerial jobs by providing decision-makers with more detailed information through the inclusion of an inventory-based assessment. This report provides a technical summary of research conducted to evaluate the validity of the Hogan Personality Inventory (R. Hogan & J. Hogan, 2007; hereafter "HPI"), the Hogan Development Survey (R. Hogan & J. Hogan, 2009; hereafter "HDS"), and the Motives, Values, Preferences Inventory (J. Hogan & R. Hogan, 1996; hereafter "MVPI") for predicting performance on management-related competencies as presented in the High Potential Candidate Assessment Report (HP-CAR). Table 1.1 presents the names and definitions of these competencies.

Table 1.1 HP-CAR Competencies and Definitions

Competency Name	Definition
Strategic Reasoning	Combines the ideas of self and others to envision the possibilities and chart a course to an improved future-state.
Tactical Problem Solving	Synthesizes available data and facts into plausible courses of action that will result in the resolution of identified problems.
Operational Excellence	Manages business priorities and resources to ensure the efficient, timely, and cost effective achievement of business results.
Results Orientation	Establishes high performance standards for self and others and assumes personal ownership and accountability for achieving business results.
Talent Development	Pursues a personal course of development related to business acumen and uses that knowledge to hire, coach, and develop the performance of others.
Respect for People	Builds trust-base relationships with people by treating them with dignity, respect, and fairness, while valuing their diversity in background and views.
Collaboration	Develops positive working relationships that emphasize team accomplishment in conjunction with individual contribution.
Strategic Self-Awareness	Recognizes strengths and weaknesses and uses that information to guide personal growth and development.

Table 1.1 HP-CAR Competencies and Definitions (Continued)

Competency Name	Definition
Tenacity	Pursues the resolution of business challenges with urgency and determination to achieve positive outcomes.
Judgment	Initiates action only after evaluating the consequences of the action and determining that the benefits are likely to outweigh the costs.

1.2 Overview. This document is organized in the following sections:

- ***Introduction*** – project overview
- ***Description of Selection Procedures*** – review of predictors
- ***Job Analysis*** – review of job requirements
- ***Meta-Analysis Results for Evaluating Validity Generalization of Personality Measures*** – review of meta-analysis literature
- ***Transportability of Validity*** – research on similar jobs
- ***Synthetic/Job Component Validity*** – research on jobs with similar components
- ***Competency Algorithm Development*** – review of algorithm development
- ***Final Calibration of the Personality Assessment Scales*** – refinement of score bands
- ***Recommendations*** – application recommendations

1.3 User, Location(s), and Dates of Study. Hogan Assessment Systems (Hogan) conducted the research described in this report between August and November of 2008. The job analysis process relied on input collected from Subject Matter Experts (hereafter SMEs) – individuals highly familiar with the target job(s) and how they should *ideally* be performed – who provided information for over 50 job analysis studies conducted between 1995 and 2007.

This research conforms to standards outlined in the *Uniform Guidelines on Employee Selection Procedures* (Equal Employment Opportunity Commission,

1978; hereafter "*Uniform Guidelines*"), *The Principles for the Validation and Use of Personnel Selection Procedures* (Society for Industrial and Organizational Psychology, 2003; hereafter "*Principles*"), and the *Standards for Educational and Psychological Testing (*American Educational Research Association, 1999; hereafter "*Standards*"). In areas where the *Uniform Guidelines, Principles,* and/or *Standards* proved vague or inapplicable, the research approach relied on the broader scientific/professional literature for guidance.

1.4 Problem and Setting. Once applicants or incumbents have completed the HPI, HDS, and MVPI, organizations can use the assessment-driven competency-based report to assist in personnel selection and development initiatives. Hogan provides the HP-CAR for use in an advisory capacity to evaluate job recruits in lieu of local validation data. In addition, as the HP-CAR represents only one instrument in a multiple hurdle selection system, we recognize that organizations should use results from the assessment-driven report in conjunction with other selection procedures that have undergone local validation.

Given the wide and complex variety of responsibilities across managerial jobs, Hogan included a range of different organizations and management-level jobs in the validation research supporting the HP-CAR. Specifically, the research described in this document includes data from nearly 200 management-level jobs across 72 different organizations. This diversity ensures that the competency-based algorithms comprising the HP-CAR apply to the broad array of managerial jobs across all industry sectors.

2 – DESCRIPTION OF SELECTION PROCEDURES

2.1 Approach and Rationale. Validating selection instruments relies on accurate measurement. In accordance with Ghiselli, Campbell, and Zedeck (1981), we define measurement as any procedure that assigns numbers systematically to characteristic features of people according to explicit rules. Researchers and practitioners can use these numbers to make predictions or forecast future behavior(s).

Assigning numbers in a systematic fashion to characteristics is a critical, but not a wholly sufficient, requirement of any pre-employment selection tool. Every selection tool should also provide evidence to support (a) the reliability of the instrument and (b) the relations between scores on the instrument and job-relevant behaviors or outcomes (Equal Employment Opportunity Commission, 1978). At a minimum, the reliability of pre-employment assessments should be evaluated in terms of the degree to which (a) items or questions on a scale relate to one another (internal item consistency) and (b) results or scores remain stable over time (test-retest reliability).

The ability of a pre-employment instrument to predict job-relevant behaviors or outcomes should be documented in credible scientific sources. The supporting evidence should include significant and interpretable relations between scores on the pre-employment instrument and indices of job performance. Moreover, evidence should also demonstrate that scores on the pre-employment instrument predict job performance criteria critical to success in the job of interest.

Pre-employment instruments should be fair assessments, in that they should not discriminate unfairly based on race/ethnicity, gender or age (Equal Employment Opportunity Commission, 1978). Researchers must validate selection procedures that result in adverse impact in accordance with the *Uniform Guidelines*. Unfortunately, many instruments currently used in pre-employment screening processes fail to meet the criteria outlined above (R. Hogan, J. Hogan, & Trickey, 1999).

2.2 What to Measure and Why. Based on an organization's desire to evaluate the validity of personality inventories for assisting in management-level recruitment efforts, the following summary briefly describes measurement issues that influenced the current effort. The most important question in personality assessment is "*What should we measure?*" Historically, the answer depended on an author's personal interests (e.g., Locus of Control; Rotter, 1966), practical concerns (e.g., Minnesota Multiphasic Personality Inventory; Hathaway &

McKinley, 1943), or theory (e.g., Myers-Briggs Type Indicator; Briggs-Meyers, McCaulley, Quenk, & Hammer, 1998; Thematic Apperception Test; Morgan & Murray, 1935). Multi-dimensional personality inventories developed during the 1940s and 1950s measured traits, or hypothetical structures believed to underlie differences in social behavior (cf. Allport, 1937). Early approaches to personality inventory construction led to more advanced test development strategies and improved the quality and interpretability of the instruments.

Current thinking in personality assessment converges on the idea that most personality characteristics can be described in terms of five personality dimensions. The Five-Factor Model (FFM; cf. Digman, 1990; Goldberg, 1992; John, 1990, p. 72; McCrae & Costa, 1987), which emerged from fifty years of factor analytic research on the structure of observer ratings (cf. Norman, 1963; Thurstone, 1934; Tupes & Christal, 1961), suggests that we think about and describe others and ourselves (Goldberg, 1990) in terms of five themes:

I. ***Surgency/Extraversion*** - the degree to which a person is outgoing and talkative.

II. ***Agreeableness*** - the degree to which a person is rewarding to deal with and pleasant.

III. ***Conscientiousness*** - the degree to which a person complies with rules, norms, and standards.

IV. ***Emotional Stability*** - the degree to which a person appears calm and self-accepting.

V. ***Intellect/Openness to Experience*** - the degree to which a person seems creative and open-minded.

The FFM provides the starting point for several prominent personality inventories constructed within the last twenty years (e.g., NEO-PI: Costa & McCrae, 1992; HPI: R. Hogan & J. Hogan, 1995, 2007; Personality Characteristics Inventory: Mount & Barrick, 2001). The five dimensions provide a useful taxonomy for classifying individual differences in social behavior (i.e., reputation). Evidence suggests that all existing multidimensional personality inventories can be described, with little difficulty, in terms of these five dimensions (Wiggins & Pincus, 1992). Consequently, the FFM is the paradigm for current research in personality assessment (De Raad & Perugini, 2002; R. Hogan & J. Hogan, 1995, 2007).

Observer's descriptions of others serve as the foundation of the FFM. These descriptions form the basis of one's reputation (i.e., how people describe coworkers or peers) (R. Hogan, 1983). Reputations grow from social consensus regarding consistencies in a person's behavior, and develop from behavior during social and occupational interaction. These behaviors consist, at least in part, of actions designed to establish, defend, or enhance that person's identity (i.e., a person's view of him or herself) (cf. Goffman, 1958). Reputations are public, tell us about observable tendencies in others' behaviors, can be measured reliably, and can be used to forecast future behavior (cf. Emler, 1990). A person's reputation represents an invaluable source of information about work-related strengths and shortcomings and influences the direction of careers.

Personality assessment samples self-presentational behavior (i.e., how a person portrays him or herself to others on the job). An assessment instrument allows us to aggregate these behavioral samples, assign them numbers according to certain agreed-upon rules, and use these numbers or scores to make predictions about a person's future behavior. Research shows that personality is predictive of both work and non-work related outcomes, such as job performance, leadership, health related behaviors, life satisfaction, and job satisfaction (Hough & Oswald, 2008; Ozer & Benet-Martinez, 2005; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007).

2.3 The Hogan Personality Inventory. The HPI was the first measure of normal personality based on the FFM and designed to predict occupational performance. The measurement goal of the HPI is to predict real-world outcomes. As such, it is an original and well-known measure of the FFM and is considered a marker instrument, not only in English, but for personality measures in other languages as well. Tables 2.1 through 2.4 present correlations between the HPI and other assessments of the FFM. Figure 2.1 shows median correlation coefficients that summarize HPI relations with Goldberg's (1992) Big-Five Markers (R. Hogan & J. Hogan, 2007), the Personal Characteristics Inventory (Mount & Barrick, 1995), the Inventario de Personalidad de Cinco Factores (Salgado & Moscoso, 1999), and the NEO PI-R (Goldberg, 2000).

Table 2.1 Correlations between Goldberg's Big-Five Markers and the HPI Scales

Scale	ADJ	AMB	SOC	INP	PRU	INQ	LRN
Factor I – Surgency	.04	.55*	.44*	.31*	-.24*	.29*	-.03
Factor II – Agreeableness	.13	-.11	.02	.56*	.23*	-.12	-.17*
Factor III - Conscientiousness	.10	.24*	-.26*	-.07	.36*	-.17*	-.08
Factor IV - Emotional Stability	.70*	.39*	-.04	.27*	.01	.28*	.11
Factor V – Intellect	.05	.22*	-.04	-.01	.03	.33*	.35*

Note. *N* = 168. Table taken from the *HPI Manual* (R. Hogan & J. Hogan, 2007); ADJ = Adjustment; AMB = Ambition; SOC = Sociability; INP = Interpersonal Sensitivity; PRU = Prudence; INQ = Inquisitive; LRN = Learning Approach. *p < .05, one-tailed; directional relationships hypothesized a priori.

Table 2.2 Correlations between the PCI Primary Scales and the HPI Scales

Scale	ADJ	AMB	SOC	INP	PRU	INQ
Extraversion	.04	.39*	.64*	.26*	-.09	.18*
Agreeableness	.50*	.25*	.09	.61*	.21*	-.03
Conscientiousness	.24*	.39*	-.06	.17*	.59*	.08
Stability	.69*	.59*	-.02	.46*	.25*	.06
Openness	.12	.36*	.15	.17*	-.05	.57*

Note. *N* = 154. ADJ = Adjustment; AMB = Ambition; SOC = Sociability; INP = Interpersonal Sensitivity; PRU = Prudence; INQ = Inquisitive. *p < .05.

Table 2.3 Correlations between the Inventario de Personalidad de Cinco Factores (IP/5F) and the HPI Scales

Scale	ADJ	AMB	SOC	INP	PRU	INQ
Extraversion	.24*	.60*	.62*	.35*	.04	.41*
Agreeableness	.22*	-.12	-.10	.37*	.25*	-.10
Conscientiousness	.22*	.35*	.08	.30*	.49*	.19*
Stability	-.66*	-.50*	-.16*	-.31*	-.32*	-.26*
Openness	.11	.44*	.51*	.25*	-.15*	.69*

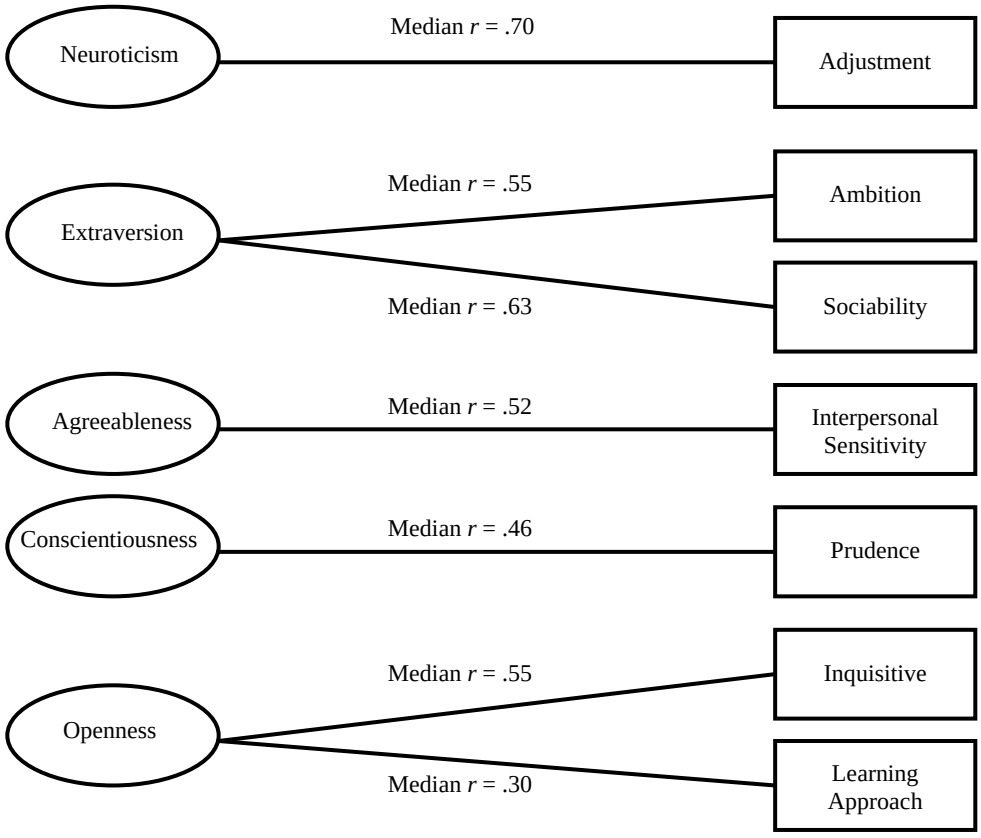
Note. $N = 200$. ADJ = Adjustment; AMB = Ambition; SOC = Sociability; INP = Interpersonal Sensitivity; PRU = Prudence; INQ = Inquisitive. *$p < .05$.

Table 2.4 Correlations between the NEO-PI-R and the HPI Scales

Scale	ADJ	AMB	SOC	INP	PRU	INQ	LRN
Extraversion	.16*	.54*	.63*	.44*	-.06	.22*	.08*
Agreeableness	.31*	-.12*	-.24*	.47*	.46*	-.20*	-.08*
Conscientiousness	.24*	.37*	-.05	.08	.42*	.05	.16*
Neuroticism	-.72*	-.53*	-.08*	-.27*	-.22*	-.15*	-.17*
Openness	.01	.20*	.38*	.19*	-.31*	.52*	.24*

Note. $N = 679$. ADJ = Adjustment; AMB = Ambition; SOC = Sociability; INP = Interpersonal Sensitivity; PRU = Prudence; INQ = Inquisitive; LRN = Learning Approach. *$p < .05$.

Figure 2.1 Relations between FFM Inventories and the HPI Scales



Note. Median correlation coefficients summarize HPI relations with the NEO PI-R (Goldberg, 2000), Goldberg's (1992) Big-Five Markers (R. Hogan & Hogan, 1995), Personal Characteristics Inventory (Mount & Barrick, 1995), and the Inventario de Personalidad de Cinco Factores (Salgado & Moscoso, 1999). The coefficient ranges are as follows: Adjustment/Emotional Stability/Neuroticism (.66 to .72); Ambition/Extraversion/Surgency (.39 to .60); Sociability/Extraversion/Surgency (.44 to .64); Interpersonal Sensitivity/Agreeableness (.37 to .61); Prudence/Conscientiousness (.36 to .59); Inquisitive/Openness/Intellect (.33 to .69); Learning Approach/Openness/Intellect (.24 to .35). Reprinted with permissions from the authors. All rights reserved.

2.4 Hogan Personality Inventory Description and Development.

HPI Facts

- 206 true/false items with no psychiatric content
- 7 personality scales, 1 validity scale, no item overlap
- 4th grade reading level
- 15-20 minute completion time

- Items carefully screened to minimize invasion of privacy
- Designed for ages 18 and above
- Designed for use in personnel selection
- Internet administration and reporting

HPI Description

- Development began in the late 1970's, based on the FFM, and constructed and validated in accordance with professional standards and the *Uniform Guidelines*. Favorable reviews of the HPI appear in the Buros Institute of Mental Measurements' *The Thirteenth Mental Measurements Yearbook* (Lobello, 1998) and the British Psychological Society's Psychological Testing Centre's "Test Reviews" (Creed & Shackleton, 2007).

- Norms are based on over 150,000 working adults and job applicants from a variety of industry sectors including healthcare, military services, transportation, protective services, retail, manufacturing, and hospitality. This sample is representative of 14 of the 23 US Department of Labor categories.

- The HPI has been used in over 450 validation studies to predict occupational performance across a range of jobs and industries. Jobs studied represent 95% of the industry coverage of the *Dictionary of Occupational Titles* (US Department of Labor, 1991).

- Meta-analyses of HPI scales indicate that the estimated true validities for the HPI scales for predicting job performance are as follows: Adjustment (.43), Ambition (.35), Interpersonal Sensitivity (.34), Prudence (.36), Inquisitive (.34), and Learning Approach (.25). These peer-reviewed results appear in the *Journal of Applied Psychology* (J. Hogan & Holland, 2003).

- To date, research indicates no adverse impact by race/ethnicity, gender, or age.

- The HPI incorporates the FFM with an internal factor structure supporting seven scales. The test-retest reliabilities range from .69 to .87. The third edition of the *Hogan Personality Inventory Manual* (R. Hogan & J. Hogan, 2007) documents the background, development, and psychometric properties of the inventory.

Constructs Measured

The HPI scales (and associated FFM constructs) are defined as follows:

Adjustment reflects the degree to which a person is steady in the face of pressure, or conversely, moody and self-critical (FFM: Emotional Stability).

Ambition concerns the degree to which a person seems leaderlike, status-seeking, and achievement-oriented (FFM: Extraversion).

Sociability concerns the degree to which a person needs and/or enjoys social interaction (FFM: Extraversion).

Interpersonal Sensitivity reflects social sensitivity, tact, and perceptiveness (FFM: Agreeableness).

Prudence concerns self-control and conscientiousness (FFM: Conscientiousness).

Inquisitive reflects the degree to which a person seems imaginative, adventurous, and analytical (FFM: Intellect/Openness).

Learning Approach reflects the degree to which a person enjoys academic activities and values education as an end in itself (FFM: Intellect/Openness).

In terms of instrument development, an initial pool of 420 items was refined using factor analysis and empirical validation procedures to assign 206 items to seven construct scales. The items form small composites (i.e., facets) that represent themes within the larger constructs. The number of composites per scale ranges from four (Learning Approach) to eight (Adjustment). Overall, HPI scales demonstrate adequate psychometric qualities (Lobello, 1998). Hogan retained items in the final battery based on their demonstrated ability to predict significant non-test behavior. There is no item overlap among the primary scales and the validity scale. Empirical validation research conducted over the last 20 years provides a firm understanding of construct validity and the nature and range of job performance prediction. The HPI is a well-validated instrument that predicts job performance across occupations and organizations (Axford, 1998; J. Hogan & Holland, 2003).

2.5 The Hogan Development Survey. Unlike the FFM, which evaluates normal, day-to-day personality, there are also personality scales that measure dysfunctional interpersonal themes (R. Hogan & J. Hogan, 2009). These dysfunctional dispositions represent flawed interpersonal strategies that (a) reflect one's distorted beliefs about others and (b) negatively influence careers

and life satisfaction (Bentz, 1985; R. Hogan & J. Hogan, 1997, 2009; Leslie & Van Velsor, 1996). These behavioral tendencies emerge when people encounter stressful or novel situations and when they let down their guard—or stop considering how their actions affect others. These deeply ingrained personality characteristics reflect maladaptive coping strategies that coexist with normal, day-to-day personality.

Dysfunctional personality characteristics reflect flawed interpersonal strategies people use to negotiate for status and acceptance. These tendencies develop during childhood as strategies for dealing with criticism or feelings of inadequacy. Horney (1950), in what may be the first taxonomy of flawed interpersonal outcomes, identified three major domains of flawed dispositions: (a) managing personal inadequacies by forming alliances (i.e., moving toward people), (b) managing personal insecurities by avoiding others (i.e., moving away from people), and (c) managing personal insecurities by dominating or intimidating others (i.e., moving against people). Over time, these behavioral strategies become associated with a person's reputation and can impede job performance and career success.

Researchers conceptualize poor employee performance in at least two mutually exclusive ways. One view argues that failure is synonymous with the absence of the requisite characteristics needed for success (Bray & Howard, 1983). A second view contends that failure has more to do with exhibiting undesirable qualities (i.e., derailing characteristics) than lacking the requisite ones (R. Hogan & J. Hogan, 2001). This second position is intriguing because it suggests a different perspective from which to understand causes of employee failure. The extant literature suggests that it is possible to predict the desirable qualities associated with occupational success. The Five-Factor Model (Wiggins, 1996) is a cross-section of personality at the competent end of the distribution. At the incompetent end, Harkness, McNulty, and Ben-Porath (1995) propose what they call the "PSY-5," where agreeableness turns into hostility and conscientiousness turns into delinquency. Finally, then, derailing characteristics can be seen as a cross-section in the middle of the distribution. They seem to occupy a psychological space halfway between the domain mapped by measures of normal personality, such as the California Psychological Inventory (CPI; Gough, 1987) or the HPI, and measures of abnormal personality used in the clinical realm. The HDS serves as a measure of these derailing characteristics—a region of dysfunctional interpersonal behavior not previously mapped by researchers.

The HDS assesses 11 dysfunctional dispositions that can impede job performance and lead to career difficulties. In the context of personnel selection, the HDS

identifies applicants whose behavior, over time, will erode relationships with others because of flawed interpersonal strategies. The HDS is based on interpersonal theory and began with Horney's (1950) list of "interpersonal needs" previously discussed. These dysfunctional dispositions lie at the intersection of normal personality and personality disorders. They are extensions of the FFM personality dimensions, where these tendencies define the ends of the various five dimensions. Although the scales of the HDS relate to the dimensions of the FFM, each HDS scale reflects a behavioral pattern with various related components, as will be seen in the scale definitions.

2.6 Hogan Development Survey Description and Development.

HDS Facts

- 168 agree/disagree items that have no psychiatric or mental health content
- 11 primary scales, 1 social desirability scale, no item overlap between scales
- 5th grade reading level
- 15-20 minute completion time
- Items are not interpretable in terms of medical or psychiatric disability
- Designed for ages 18 and above
- Internet administration and reporting

HDS Description

- Data from over 10,000 working adults and job applicants from a variety of organizations comprise the HDS norms. These data include supervisory and non-supervisory personnel. Descriptive statistics for HDS scales appear by race/ethnicity, gender, and age in the Hogan Development Survey Manual (R. Hogan & J. Hogan, 2009). To date, we have found no adverse impact with the HDS.
- Principal components analysis of the HDS yields three clearly defined factors that support interpreting the inventory in terms of Horney's (1950) taxonomy of flawed interpersonal characteristics (R. Hogan & J. Hogan, 1997, 2009).
- Alpha reliabilities for the scales range from .46 to .68 and short-term test-retest reliabilities, calculated using Pearson correlations, range from .66 to .75.

- Test-retest reliabilities using normalized Euclidean similarities range from .76 to .85. The 2009 HDS manual documents the development and psychometric properties in further detail.

- Construct validity evidence is reported in the test manual; scale correlates with non-test behavior and observer ratings appear in R. Hogan and J. Hogan (1997, 2009).

Constructs Measured

The HDS scales are defined as follows:

Excitable concerns being initially enthusiastic about people or projects, then later becoming disappointed with them. Result: seems to lack persistence.

Skeptical concerns being socially insightful, but cynical, mistrustful, and overly sensitive to criticism. Result: seems to lack trust.

Cautious concerns being overly worried about making mistakes and being criticized. Result: seems resistant to change and reluctant to take chances.

Reserved concerns seeming tough, remote, detached, and hard to reach. Result: seems to be a poor communicator.

Leisurely concerns being independent, ignoring others' requests, and becoming irritable if they persist. Result: seems stubborn, procrastinating, and uncooperative.

Bold concerns seeming entitled and having inflated views of one's competence and worth. Result: seems unable to admit mistakes or share credit.

Mischievous concerns being charming, but manipulative and ingratiating. Result: seems to have trouble maintaining relationships and learning from experience.

Colorful concerns being dramatic, engaging, and attention-seeking. Result: seems preoccupied with being noticed and may lack sustained focus.

Imaginative concerns thinking and acting in interesting, unusual, and even eccentric ways. Result: seems creative but often lacks good judgment.

Diligent concerns being conscientious, perfectionistic, and hard to please. Result: tends to disempower staff and subordinates.

Dutiful concerns being eager to please and reluctant to act independently. Result: tends to be pleasant and agreeable, but reluctant to support subordinates and co-workers.

In terms of instrument development, Dr. Robert Hogan wrote the items for the 11 HDS dimensions to reflect the core elements of each construct. This focus on the core of each construct is unique and contrasts with other existing inventories of personality disorders where items reflecting anxiety and depression appear on several scales simultaneously, making scale interpretation difficult. Six cycles of item writing, testing, analysis, and further revision took place over a three-year period. Hogan defined the current HDS item pool in 1995 based on item analyses, scale-level factor analyses, correlations between scale scores and other psychometric measures, and correlations with non-test behavior. Empirical validation research conducted over the last ten years provides a firm understanding of the construct validity and the nature and range of job performance outcomes predicted by the HDS scales.

It is important to note that the HDS is neither intended nor appropriate for diagnosing mental illness; rather, the HDS is a measure of personality characteristics that hinder the ability to build relationships and accomplish goals in organizational contexts. Because of this, a primary consideration shaping the development of the HDS concerned the actual content of the items. As the HDS is intended for use in employment contexts, as opposed to being used to make medical or mental health status evaluations, the items reflect themes from the world of work. That is, the item content revolves around how one is perceived at work, how one relates to supervisors and co-workers, one's attitudes about competition and success, etc. Further, the HDS was not validated against clinical diagnoses, but against descriptions provided by participants' close working associates (Fico, R. Hogan, & J. Hogan, 2000; R. Hogan & J. Hogan, 2009). In addition to these linear relations between the HDS and observers' ratings and descriptions, Benson and Campbell (2007) demonstrated curvilinear relations between HDS factors and observer evaluations of managers.

2.7 The Motives, Values, Preferences Inventory. The MVPI (J. Hogan & R. Hogan, 1996) serves two distinct purposes. First, it allows for an evaluation of fit between an individual and an organization. Person-organization fit is important because, no matter how talented and hard working a person may be, if the individual's values are incompatible with those of the larger culture, then he or she will not be as effective as his or her talent might predict. Second, the MVPI is a direct reflection of those areas that serve as motivators for an individual. Such information can be beneficial in a variety of organizational functions (e.g.,

placing individuals, building teams, designing reward systems, etc.). The MVPI is an untimed, 200-item, self-report measure that contains ten primary scales with twenty items per scale. The MVPI is organization-specific as a predictor of performance (J. Hogan & R. Hogan, 1996). The scales demonstrate adequate psychometric qualities with internal-consistency reliability coefficients ranging between .70 (Security) to .84 (Aesthetics), and test-retest reliability coefficients assessed over an eight-week period ranging from .69 (Power) to .88 (Recognition).

2.8 Motives, Values, Preferences Inventory Description and Development.

MVPI Facts

- 200 agree/uncertain/disagree items with no psychiatric or mental health content
- 10 primary scales, 5 themes, no item overlap between scales
- 3rd grade reading level
- 15-20 minute completion time
- Items are not interpretable in terms of medical or psychiatric disability
- Designed for ages 18 and above
- Internet administration and reporting

MVPI Description

- Data from 3,015 working adults and job applicants from a variety of organizations make up the MVPI norms. These data include supervisory and non-supervisory personnel. Descriptive statistics for MVPI scales appear by race/ethnicity, gender, and age in the Motives, Values, Preferences Inventory manual (J. Hogan & R. Hogan, 1996). To date, in decision-making applications, we have found no adverse impact with the MVPI.
- The average alpha reliabilities for the scales is .77 and test-retest reliabilities range from .69 to .88. The MVPI manual documents the development and psychometric properties in further detail.

- Construct validity evidence is reported in the MVPI manual; scale correlates with non-test behavior and observer ratings appear in J. Hogan and R. Hogan (1996).

Constructs Measured

The MVPI scales are defined as follows:

Aesthetics concerns valuing creative and artistic self-expression. Interests are in quality, product look and feel, and attractive surroundings.

Affiliation concerns valuing frequent and varied social interaction. Interests are in social networking and feeling a sense of belonging to a group or organization.

Altruistic concerns valuing actively helping others and improving society. Interests are in helping others, providing good customer service, and building a better workplace.

Commerce concerns valuing business activities, money, and financial gain. Interests are in earning money, realizing profits, finding business opportunities, and making investments.

Hedonism concerns valuing fun, good company, and good times. Interests are in pleasure, excitement, and variety.

Power concerns valuing competition, achievement, and being perceived as influential. Interests are in challenge, competition, and a lifestyle organized around worldly success.

Recognition concerns valuing fame, visibility, and publicity. Interests are in being known, recognized, visible, and famous.

Science concerns valuing ideas, technology, and rational problem solving. Interests are in new ideas, technology, an analytical approach to solving problems, and understanding how they work.

Security concerns valuing certainty, predictability, and risk free environments. Interests are in structure, order, predictability, and planning for the future.

Tradition concerns valuing similarity between the organization's and the employee's perspectives on tradition, history, and old-fashioned virtues.

3 – JOB ANALYSIS

The *Uniform Guidelines* emphasizes the importance of conducting a complete job analysis for all content and construct validation studies. The guidelines require documentation of (a) work behaviors and/or outcomes, (b) the criticality of work behaviors or outcomes, and if applicable, (c) the supporting evidence and rationale for grouping together two or more jobs [Section 15, B, (3)]. The remainder of this section describes the steps taken by Hogan to comply with these technical guidelines when collecting validity data from nearly 200 managerial jobs across 72 organizations. We then used results from these data to identify links between assessment results and the job performance dimensions outlined in the HP-CAR.

3.1 Job Description. When conducting location validation studies, Hogan researchers generally review job descriptions to determine (a) the degree to which personal characteristics are important for the job, (b) the Department of Labor (DOL) and Occupational Information Network (O*NET, http://online.onetcenter.org) job codes, and (c) the degree to which the job is similar to other jobs in the Hogan archive. We used job analysis information from numerous managerial jobs to develop and validate the HP-CAR.

3.2 Job Analysis Survey. For most local validation studies, Hogan uses a standardized paper and pencil job analysis survey to identify critical worker-oriented requirements in terms of the key personal characteristics and critical competencies necessary for effective performance. The Job Evaluation Tool (JET) consists of four components: (a) the Performance Improvement Characteristics (PIC) survey, (b) the Derailment Characteristics Questionnaire (DCQ), (c) the Motivational Improvement Characteristics (MIC) survey, and (d) the Competency Evaluation Tool (CET). A copy of the JET appears in Appendix A.

3.3 Performance Improvement Characteristics. The PIC job analysis identifies (a) the personal characteristics needed to successfully execute the requirements of a job and (b) the degree to which possession of these personal characteristics improves job performance (Foster, Gaddis, & J. Hogan, 2009; J. Hogan & Rybicki, 1998). SMEs rated PIC items using a scale ranging from "0" (*Does Not Improve Performance*) to "3" (*Substantially Improves Performance*).

The PIC is not a pre-employment decision-making tool. Instead, it helps identify the personal characteristics that are critical for success in a given job. Regardless, job analysis tools, such as the PIC, should provide documentation supporting the reliability and accuracy of scores. Results from the manual indicate that PIC

scales' internal consistency reliability estimates range between .76 (Adjustment) and .87 (Interpersonal Sensitivity); the average internal consistency is .83. Test-retest reliability estimates, based on at least a 1-month interval, range between .60 (Learning Approach) and .84 (Inquisitive); the average test-retest reliability is .71. Research indicates that the PIC differentiates between jobs, and scores on the PIC scales correspond to scales on the HPI that predict successful job performance (Foster, Gaddis, & J. Hogan, 2009; Meyer & Foster, 2007; Rybicki, 1997).

The 48 PIC items align conceptually and empirically with the Five-Factor Model and the HPI (refer to Table 3.1). Hogan computes scale scores on the PIC by (a) summing the item responses that correspond to each of the seven scales, (b) averaging the scores for each scale across raters, and (c) converting the average scale scores to a percentage of total possible points. The resulting percentile scores illustrate the characteristics the SME panel judged to be important for the job under evaluation.

Table 3.1 HPI and PIC Scale Definitions

Scale Name	**Definition**
	The degree to which a person seems….
Adjustment	calm and self-accepting
Ambition	self-confident and competitive
Sociability	to need or enjoy social interaction
Interpersonal Sensitivity	perceptive, tactful, and sensitive
Prudence	conscientious and conforming
Inquisitive	creative and interested in problems
Learning Approach	concerned with building job related knowledge

Because PIC scores identify personal characteristics important for success in a job, it is essential that scores on the PIC identify HPI scales that are predictive of job performance. Meyer, Foster, and Anderson (2006) evaluated the validity of the PIC using multiple samples from the Hogan archive. They found that HPI profiles created using PIC results were more effective at predicting performance for target jobs than for other jobs. This research indicates that the PIC differentiates between jobs, and scores on PIC scales identify the HPI scales that predict job performance.

Providing validation results for a job analysis technique surpasses the guidelines and requirements described in either the *Uniform Guidelines* or *Principles*. In fact,

the scientific literature contains virtually no discussion concerning empirical validation of a job analysis tool. A copy of the PIC appears as the Job Characteristics section of the JET in Appendix A.

3.4 Managerial PIC Results. SMEs (*N* = 4180) completed the PIC. Hogan conducted inter-rater reliability analyses to determine rater agreement. Including all raters yielded an inter-rater reliability coefficient of .99, indicating a high degree of agreement among raters.

The number of items on each scale varies according to the number of personality facets associated with that scale. There is one item for each facet and one overall item for each scale. As a result, the total possible score on each scale ranges from 15 (Learning Approach) to 27 (Adjustment). Table 3.2 presents raw score results for each scale. Figure 3.1 presents scores converted to a percentage of total possible.

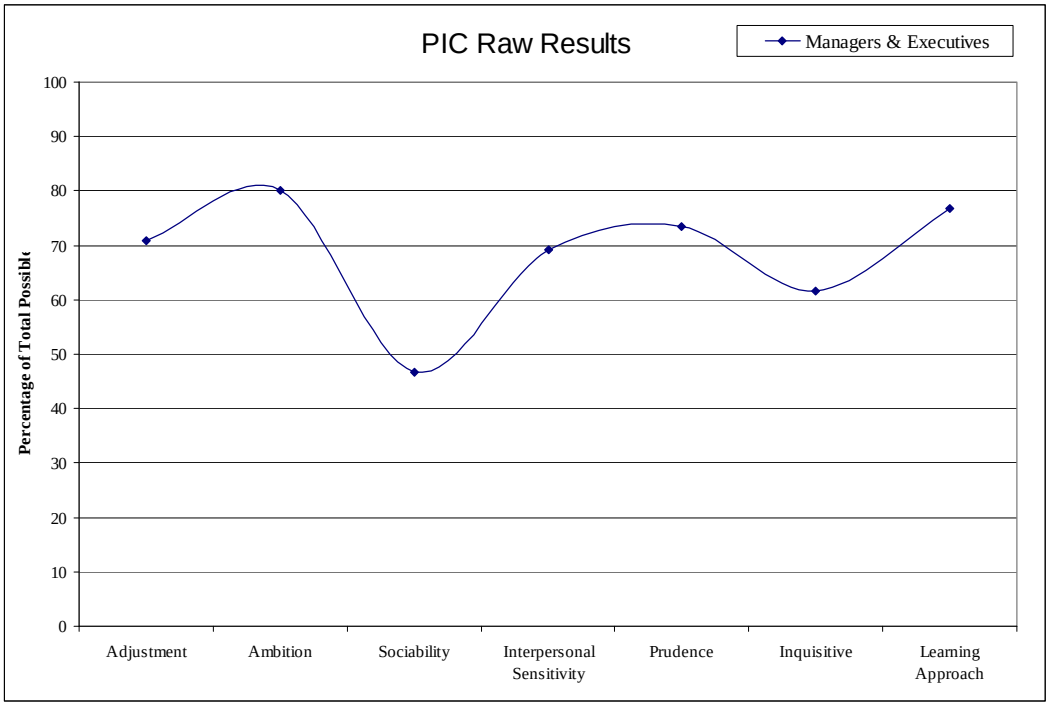
Results shown in Table 3.2 and Figure 3.1 reveal that characteristics associated with being energetic and goal-oriented (Ambition), concerned with building job-related knowledge (Learning Approach), conscientious (Prudence), and calm and even-tempered (Adjustment) are most critical for managerial job performance.

Table 3.2 Raw Score PIC Means and Standard Deviations for Managerial JET Data

PIC Scale	***M***	***Total Possible***	***SD***
Adjustment	19.13	27	3.99
Ambition	16.80	21	2.95
Sociability	8.40	18	3.58
Interpersonal Sensitivity	12.47	18	3.44
Prudence	17.64	24	3.26
Inquisitive	12.94	21	3.55
Learning Approach	11.50	15	2.51

Note. *N* = 4180. *M* = Mean; *SD* = Standard Deviation.

Figure 3.1 PIC Profile for Managerial JET Data



3.5 Derailment Characteristics Questionnaire. Almost 25 years ago, Bentz (1985) identified leadership styles associated with managerial derailment in the retail industry (e.g., playing politics, moodiness, and dishonesty). Researchers in several prominent U.S. consulting firms similarly concluded that others view managers who are technically competent, but who fail, as arrogant, vindictive, untrustworthy, selfish, emotional, compulsive, over-controlling, insensitive, abrasive, aloof, overly ambitious, or unable to delegate (Benson & Campbell, 2007; Dotlich & Cairo, 2003; McCall, Lombardo, & Morrison, 1988). Bentz's observations overlap substantially with those from other organizational psychologists; that individuals with leadership responsibilities who demonstrate dysfunctional dispositions leading to an inability to build a team will ultimately fail or become less than optimally effective in their roles.

To measure these constructs, the DCQ identifies personal characteristics that can inhibit performance in a job, and assesses the degree to which these personal characteristics degrade job performance. Although different attributes are associated with effectiveness across different jobs, some common attributes are associated with incompetence and derailment across jobs, particularly those that require teamwork and leadership (J. Hogan, R. Hogan & Kaiser, 2009). These

attributes coexist with good interpersonal skills and technical competence, and are difficult to detect in brief interactions, such as an interview. The DCQ asks SMEs to identify characteristics that inhibit performance and, therefore, constitute personality-based performance risk factors.

The DCQ contains 22 items across 11 dimensions. All items are rated using a scale ranging from "0" (*Does Not Degrade Performance*) to "3" (*Substantially Degrades Performance*), resulting in a total possible raw score of six for each dimension. Scoring includes: (a) summing the item responses that correspond to each of the 11 scales, (b) averaging the scores for each scale across raters, and (c) converting the average scale scores to a percentage of total possible points. In contrast to the PIC, the DCQ instructions ask SMEs to rate personal characteristics based on the extent to which they *impair* job performance. Thus, characteristics that receive high ratings on the DCQ are more likely to detract from or inhibit effective leadership-related job performance. The items align with the 11 HDS scales, as shown in Table 3.3. A copy of the DCQ appears as the Performance Barriers section of the JET in Appendix A.

Table 3.3 HDS and DCQ Scale Definitions

Scale Name	**Definition**
Excitable	Concerns seeming moody and hard to please, being enthusiastic about new persons or projects and then becoming disappointed with them
Skeptical	Concerns seeming cynical, mistrustful, and doubting the true intentions of others
Cautious	Concerns the tendency to be conservative, careful, worried about making mistakes, and reluctant to take initiative for fear of being criticized or embarrassed
Reserved	Concerns the tendency to keep to oneself, to dislike working in teams or meeting new people, and to be indifferent to the moods and feelings of others
Leisurely	Concerns seeming independent, refusing to be hurried, ignoring other peoples' requests, and becoming irritable if they persist
Bold	Concerns seeming unusually self-confident, having strong feelings of entitlement, and being unwilling to admit mistakes, listen to advice, or attend to feedback
Mischievous	Concerns seeming to enjoy taking risks and testing the limits, being easily bored, and seeking excitement
Colorful	Concerns seeming lively, expressive, dramatic, and wanting to be noticed
Imaginative	Concerns seeming to act and think in creative and sometimes unusual ways

Table 3.3 HDS and DCQ Scale Definitions (Continued)

Scale Name	Definition
Diligent	Concerns seeming meticulous, precise, and critical of the performance of others
Dutiful	Concerns seeming eager to please, ingratiating, and reluctant to take independent action or go against popular opinion

3.6 Managerial DCQ Results. SMEs (*N* = 3439) rated the 22 DCQ items. Including all raters in subsequent reliability analyses yielded an inter-rater reliability coefficient of .99, indicating a high degree of agreement among raters. Table 3.4 presents raw score results for each scale. Figure 3.2 presents scores converted to a percentage of total possible.

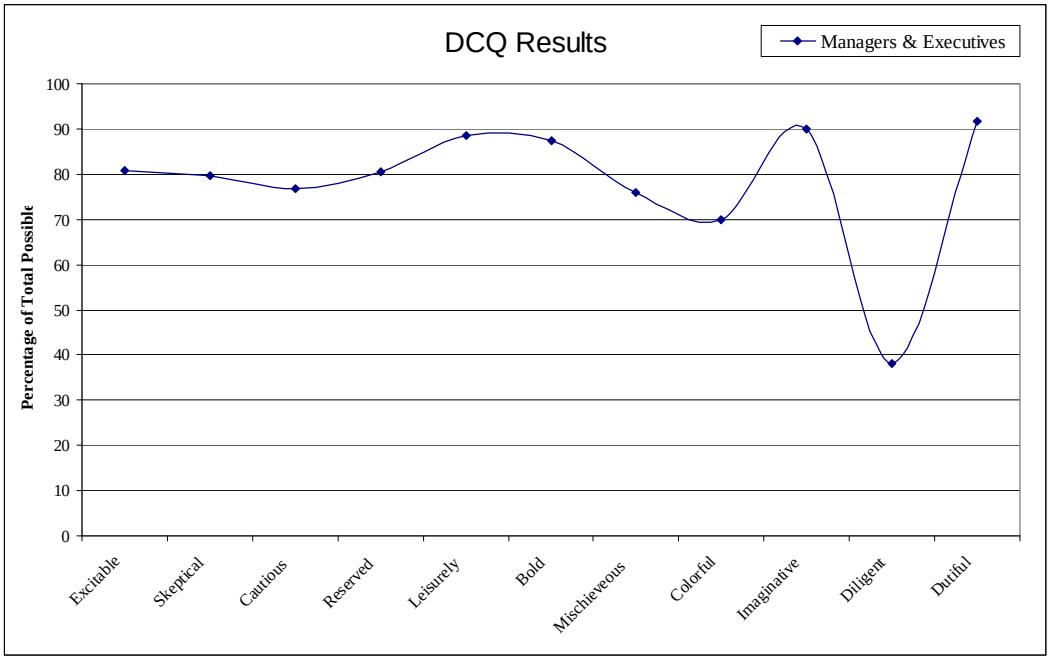
Table 3.4 Raw Score DCQ Means and Standard Deviations for Managerial JET Data

DCQ Scales	*M*	*SD*
Excitable	4.85	1.19
Skeptical	4.79	1.19
Cautious	4.61	1.11
Reserved	4.83	1.16
Leisurely	5.31	0.95
Bold	5.24	1.05
Mischievous	4.55	1.28
Colorful	4.19	1.35
Imaginative	5.39	0.97
Diligent	2.29	1.59
Dutiful	5.51	0.92

Note. *N* = 3439. *M* = Mean; *SD* = Standard Deviation.

As shown in Table 3.4 and Figure 3.2, SMEs rated being reluctant to take independent action (Dutiful), distractible and unconventional (Imaginative), stubborn and resistant to authority (Leisurely), and arrogant and unresponsive to feedback (Bold) as the most detrimental personality characteristics for management jobs. Again, note that DCQ instructions ask SMEs to rate personal characteristics based on the extent to which they *impair* job performance. Thus, characteristics that have higher ratings in Figure 3.2 are likely to detract from or inhibit effective performance in management-level jobs.

Figure 3.2 DCQ Profile for Managerial JET Data



3.7 Motivational Improvement Characteristics. Over the last 30 years, researchers (cf. Holland, 1973, 1985, 1997; Schneider, 1987) proposed that, to understand organizational behavior, it is necessary to understand the values, interests, and personalities of an organization's members. Holland argues, "The character of an environment reflects the typical characteristics of its members. If we know what kind of people make up a group, we can infer the climate the group creates" (1985, p. 35). Similarly, Schneider argues that organizations attract, select, and retain particular kinds of people, and the climate of an organization is a function of the kind of people it retains. Both Holland and Schneider define the climate of an organization in terms of the members' characteristics rather than their requisite tasks. As such, taxonomies of work environments based on worker characteristics may predict work outcomes better than taxonomies based on task characteristics. Put another way, a person-centered analysis should be more predictive of person-job fit than a task analysis of work requirements.

The MIC section of the JET assesses the environment in which an employee works and the values that help define the ideal workgroup climate. These values include interests such as work quality, social interaction, helping others, profitability, enjoyment, accomplishment, recognition, technology, predictability,

and adherence to conservative management values. The MIC provides a taxonomy that defines the organization's or the workgroup's occupational environment.

The MIC contains 40 items across 10 dimensions that are rated using a scale ranging from "0" (*Does Not Describe the Work Group*) to "3" (*Substantially Describes the Work Group*), resulting in a total possible raw score of 12 for each dimension. The names and descriptions of the scales comprising the MIC appear in Table 3.5. Scoring includes: (a) summing the item responses that correspond to each of the ten scales, (b) averaging the scores for each scale across raters, and (c) converting the average scale scores to a percentage of total possible points. A copy of the MIC appears as the Work Preferences section of the JET in Appendix A.

Table 3.5 MVPI and MIC Scale Definitions

Scale Name	**Definition**
	Motives are associated with….
Aesthetics	an interest in art, literature, music, and humanities
Affiliation	a desire for and enjoyment of social interaction
Altruistic	involving concerns about others' welfare
Commerce	an interest in business and Finance gains
Hedonism	producing an orientation for fun and pleasure
Power	a desire for success, accomplishment, and status
Recognition	a need to be recognized
Science	a value of analysis and the pursuit of knowledge
Security	a desire for certainty and predictability in life
Tradition	a dedication to ritual and old-fashioned virtues

3.8 Managerial MIC Results. SMEs (*N* = 2139) rated the 40 MIC items. Including all raters in subsequent reliability analyses yielded an inter-rater reliability coefficient of .98, indicating a high degree of agreement among raters. Table 3.6 presents raw score results for each scale. Figure 3.3 presents scores converted to a percentage of total possible.

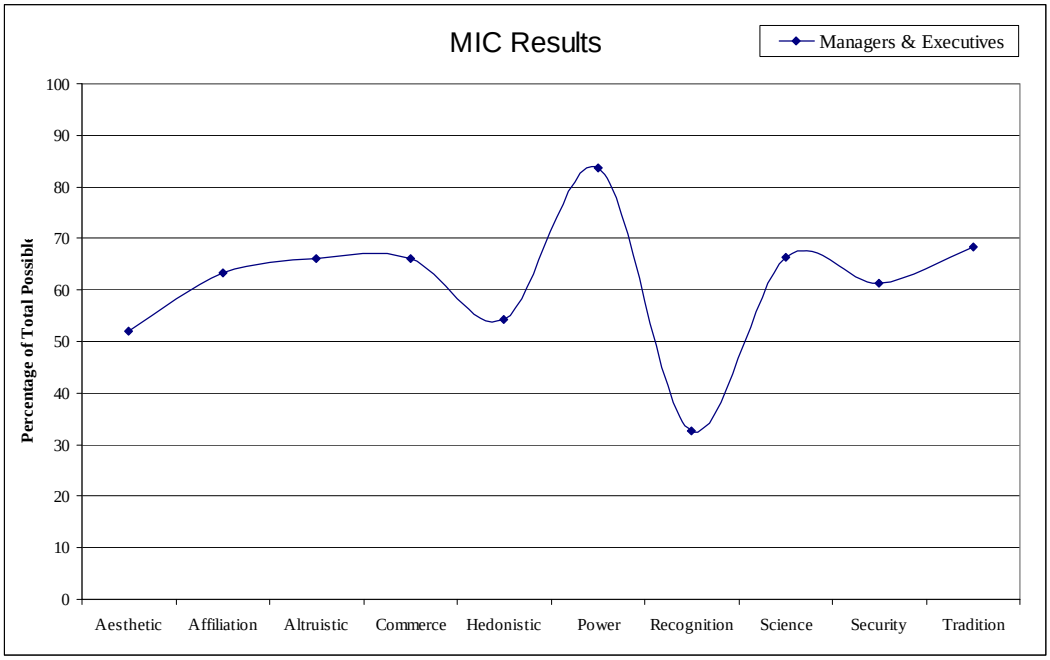
Table 3.6 Raw Score MIC Means and Standard Deviations for Managerial JET Data

MIC Scales	***M***	***SD***
Aesthetics	6.24	3.11
Affiliation	7.59	2.37
Altruistic	7.93	2.30
Commerce	7.92	2.99
Hedonism	6.53	2.63
Power	10.04	1.99
Recognition	3.92	2.58
Science	7.95	2.81
Security	7.37	2.06
Tradition	8.19	2.19

Note. *N* = 2139. *M* = Mean; *SD* = Standard Deviation.

As shown in Table 3.6 and Figure 3.3, SMEs rated values associated with Power, Tradition, Science, Altruism, Commerce, and Affiliation as defining ideal environmental characteristics. This pattern of scores suggests a managerial environment characterized by an interest in achievement (Power), adherence to established rules and standards (Tradition), the pursuit of knowledge (Science), helping and encouraging others (Altruism), financial gains (Commerce), and building relationships (Affiliation).

Figure 3.3 MIC Profile for Managerial JET Data



3.9 Competency Evaluation Tool (CET). McClelland (1973) and his colleagues (e.g., Boyatzis, 1982) introduced the concept of *competency*, which they defined as performance capabilities that distinguish effective from ineffective personnel. McClelland defined competencies empirically in terms of the requirements of particular jobs in particular contexts. This rigorous approach is rare in a field characterized by ad hoc competency models. The *Principles* recognize that many organizations use competency modeling as a means for describing broad requirements for a wide range of jobs. Furthermore, researchers can organize every existing competency model in terms of a "domain model" first proposed by Warrenfeltz (1995). The model includes four domains: (a) Intrapersonal skills, (b) Interpersonal skills, (c) Technical skills, and (d) Leadership skills. Hogan and Warrenfeltz (2003) argued that these four domains form a natural, overlapping developmental sequence, with development of the later skills depending on the appropriate development of the earlier skills. These domains also form a hierarchy of trainability, in which the earlier skills are harder to train than the later skills.

Bartram (2005) analyzed the structure of the universe of competencies, which he defined as "sets of behaviors that are instrumental to the delivery of desired results" (Bartram, Robertson, & Callinan, 2002, p. 7). He began with two

metaconcepts that corresponded with "getting along" and "getting ahead." He expanded the metaconcepts to include eight broad competency factors—the "Great Eight." Competencies that promote getting along include Supporting and Cooperating, Interacting and Presenting, Organizing and Executing, and Adapting and Coping; competencies that promote getting ahead included Leading and Deciding, Analyzing and Interpreting, Creating and Conceptualizing, and Enterprising and Performing. Bartram's competencies overlap with the generalized work activities that Jeanneret, Borman, Kubisiak, and Hanson (1999) proposed as a comprehensive taxonomy of work behaviors required in the U.S. economy.

The CET is a comprehensive list of competencies that appear in (or can be translated from) the major taxonomic sources, including the Great Eight. The CET asks SMEs to indicate the degree to which each of 56 listed competencies relates to successful performance in the job or job family under study. Definitions accompany each competency label. Directions ask raters to evaluate each competency using a five-point scale ranging from "0" (*Not associated with job performance*) to "4" (*Critical to job performance*). Generally, competencies considered critical are those that receive mean ratings greater than "3," where the scale anchor is labeled "Important to performance." The SME ratings provide a basis for structural models to examine comparability of job domains and their competencies across jobs within and across families (J. Hogan, Davies, & R. Hogan, 2007).

3.10 Managerial CET Results. SMEs (N = 3221) rated the 56 CET competencies. Including all raters in subsequent reliability analyses yielded an inter-rater reliability coefficient of .91, indicating an acceptable degree of agreement among raters. A copy of the CET appears as the Job Competencies section of the JET in Appendix A.

CET results based on SME ratings appear in Table 3.7. We identify competencies with mean ratings of at least one standard deviation above the mean, across the 56 competencies, as critical for performance. As seen in this table, the competencies rated as critical by SMEs in management-level jobs include Trustworthiness, Decision Making, Leadership, Integrity, Work Attitude, Problem Solving, Achievement Orientation, Initiative, Judgment, Dependability, Adaptability, Teamwork, and Stress Tolerance.

Table 3.7 Raw Score CET Means and Standard Deviations for Managerial JET Data

Competency	*M*	*SD*	Competency	*M*	*SD*
Trustworthiness	3.75	0.49	Detail Orientation	3.15	0.77
Decision Making	3.62	0.56	Negotiation	3.14	0.79
Leadership	3.57	0.72	Follow-Up	3.14	0.84
Integrity	3.56	0.69	Written Communication	3.13	0.73
Work Attitude	3.55	0.59	Facilitating Change	3.12	0.78
Problem Solving	3.50	0.61	Formal Presentation	3.11	0.79
Achievement Orientation	3.49	0.62	Innovation	3.11	0.75
Initiative	3.49	0.63	Citizenship	3.10	0.94
Judgment	3.49	0.67	Industry Knowledge	3.09	0.82
Dependability	3.48	0.61	Delegation	3.08	0.92
Adaptability	3.47	0.64	Impact	3.06	0.78
Teamwork	3.46	0.66	Teaching Others	3.03	0.87
Stress Tolerance	3.44	0.66	Employee Development	2.99	0.93
Oral Communication	3.41	0.61	Meeting Leadership	2.98	0.84
Flexibility	3.40	0.63	Verbal Direction	2.97	0.82
Interpersonal Skills	3.40	0.67	Information Monitoring	2.93	0.83
Planning/Organizing	3.39	0.69	Continuous Learning	2.92	0.80
Management Performance	3.37	0.75	Meeting Participation	2.89	0.76
Job Knowledge	3.35	0.68	Technical Knowledge	2.87	0.82
Organizational Commitment	3.34	0.75	Risk Taking	2.64	0.96
Build Strategic Work Relationships	3.33	0.72	Safety	2.58	1.32
Building Teams	3.27	0.83	Training Performance	2.53	0.90
Conflict Resolution	3.27	0.73	Math Skills	2.44	0.98
Customer Service	3.26	0.82	Vigilance	2.41	1.16
Strategic Vision	3.24	0.84	Sales Ability	2.34	1.32
Influence	3.22	0.71	Consultative Sales	2.32	1.31
Building Partnerships	3.17	0.89	Data Entry	2.14	1.25
Gaining Commitment	3.16	0.72	Facilitative Sales	1.94	1.37

Note. N = 3221. M = Mean; SD = Standard Deviation.

3.11 Job Analysis Summary. Job analysis evidence indicates that attributes assessed by the HPI, HDS and MVPI are important for performance in managerial jobs.

- PIC results emphasized the importance of characteristics associated with being energetic and goal-oriented (Ambition), concerned with building job-related knowledge (Learning Approach), conscientious (Prudence), and calm and even-tempered (Adjustment).

- DCQ results emphasized the importance of *not* being reluctant to take independent action (Dutiful), distractible and unconventional (Imaginative), stubborn and resistant to authority (Leisurely), and arrogant and unresponsive to feedback (Bold).

- MIC results helped define the ideal environment for managers. Research indicated successful managers value environments where achievement (Power), established rules and standards (Tradition), the pursuit of knowledge (Science), helping and encouraging others (Altruism), financial gains (Commerce), and building relationships (Affiliation) are emphasized and encouraged.

- CET results supported the importance of competencies for Trustworthiness, Decision Making, Leadership, Integrity, Work Attitude, Problem Solving, Achievement Orientation, Initiative, Judgment, Dependability, Adaptability, Teamwork, and Stress Tolerance.

The close correspondence between JET components provides support for using predictor measures capable of identifying likely candidate strengths and weaknesses.

4 – META-ANALYSIS RESULTS FOR EVALUATING VALIDITY GENERALIZATION OF PERSONALITY MEASURES

Prior to 1977, criterion-related validity research involved testing the hypothesis that a particular predictor variable (e.g., a cognitive ability measure) covaried reliably with a particular criterion variable (e.g., performance in training). Researchers repeated this test using different samples, predictors, and criterion measures. Not surprisingly, results from these studies often differed between locations with similar jobs, and this variability made firm generalizations difficult. More importantly, this variability challenged the scientific integrity of the entire enterprise of personnel selection.

Researchers often explained the differences in study results in terms of: (a) situational specificity, (b) the view that the validity of a measure is specific to the contexts, and (c) jobs under study (Gatewood & Feild, 1994; Ghiselli, 1966; Ghiselli & Brown, 1955); these differences required conducting separate validation studies for each organization, job, or group of employees. Using a large database, Schmidt and Hunter (1977) presented evidence showing that the variability in validity coefficients in single-location studies was due to statistical and procedural factors (Guion, 1998, p. 368) (i.e., idiosyncratic factors that could be ignored or statistically corrected).

Many psychologists now agree that "validity" is a unitary concept, not a type of method or an attribute of a assessment. Guion and Highouse (2006, p. 134) define validity as "a property of the inferences drawn from test scores." In addition, many psychologists now agree that more ways exist to assess the validity of inferences from assessment scores than a specific local study of their relationship with job relevant criteria (McPhail, 2007). When available, researchers may use Validity Generalization (VG) evidence in place of local validation studies to support the use of a selection procedure (Gatewood & Feild, 1994; Society for Industrial and Organizational Psychology, 2003). As indicated by the *Principles*:

> *At times, sufficient accumulated validity evidence is available for a selection procedure to justify its use in a new situation without conducting a local validation research study. In these instances, use of the selection procedure may be based on demonstration of the generalized validity inferences from that selection procedure, coupled with a compelling argument for its applicability to the current situation. Although neither mutually exclusive nor exhaustive, several strategies*

> *for generalizing validity evidence have been delineated: (a) transportability, (b) synthetic validity/job component validity, and (c) meta-analytic validity generalization.* (p. 27)

Schmidt and Hunter (1977) introduced meta-analysis to psychometric research; meta-analysis is a methodology for aggregating correlation coefficients from independent studies testing the same hypothesis. They argued that differences in an assessment's validity across studies reflect statistical artifacts (e.g., sampling deficiency) and measurement problems (e.g., predictor/criterion unreliability, range restriction) and not unique jobs or situations. Subsequent research suggests that the correlations between performance measures and cognitive ability tests (Hunter, 1980; Schmidt & Hunter, 1977), biographical data inventories (Schmidt & Rothstein, 1994), personality inventories (Barrick & Mount, 1991; Barrick, Mount, & Gupta, 2003; Berry, Ones, & Sackett, 2007; Dudley, Orvis, Lebiecki, & Cortina, 2006; J. Hogan & Holland, 2003; Hough, 1992; Judge, Bono, Ilies, & Gerhardt, 2002; Salgado, 1997, 1998; Tett, Jackson, & Rothstein, 1991), assessment center exercises (Arthur, Day, McNelly, & Edens, 2003; Gaugler, Rosenthal, Thornton, & Benson, 1987; Meriac, Hoffman, Woehr, & Fleisher, 2008), and situational judgment tests (McDaniel, Morgeson, Finnegan, Campion, & Braverman, 2001) generalize across studies. The *Principles* recognize meta-analysis as a method:

> *that can be used to determine the degree to which predictor-criterion relationships are specific to the situations in which the validity data have been gathered or are generalizable to other situations, as well as to determine the sources of cross-situation variability.* (Aguinis & Pierce, 1998, p. 28)

Of the three VG methods, meta-analysis provides the most generalizable results, but relies exclusively on criterion-related validity studies. Transportability and synthetic/job component validity research is less generalizable, but can use either content or criterion-related research as source data. J. Hogan, Davies, and R. Hogan (2007) demonstrate the use of all three methods in combination.

Meta-analysis averages findings from multiple studies of the same relationship to provide a best estimate of ρ (i.e., the population correlation) by controlling for error due to sampling, measurement range restriction, and unreliability in predictor and criterion measures (Smith & Glass, 1977). In addition, meta-analyses include carefully developed criteria for deciding what studies to include, what variables to code, effect size comparisons, and moderator identification. Ideally, a meta-analysis includes all relevant studies. However,

this is often impossible because researchers are less likely to publish studies with insignificant results. Rosenthal (1979) notes that such omissions are problematic for meta-analysis research as they produce results that are based on too few studies, small sample sizes, and an atheoretical base.

According to the *Principles*, "reliance on meta-analysis results is more straightforward when they are organized around a construct or set of constructs" (p. 30). Schmidt and Hunter (1977) used a construct orientation in their well-known meta-analysis of cognitive ability measures. J. Hogan and Holland (2003) did the same using a domain skills model as the basis for a meta-analysis of the validity of personality predictors (see Table 4.2). A construct driven approach has two advantages. First, theory drives professional judgment, which is unavoidable when compiling data from multiple studies. Second, a theory-driven approach provides a framework for interpreting the results.

The next section reviews evidence accumulated from large-scale meta-analyses and empirical studies that support the proposition that personality measures are valid predictors of job performance across occupational groups.

4.1 The Five-Factor Model and Job Performance. Table 4.1 presents the results of six, large-scale meta-analyses summarizing relations between the FFM scales and job performance in general. Note that the correlations presented in the table are *uncorrected* estimates. Across studies, the Conscientiousness/Prudence scale appears to be the most consistent predictor of job performance. The Emotional Stability/Adjustment and Agreeableness/Interpersonal Sensitivity scales also predict performance across studies, although the magnitudes of the correlation coefficients are generally smaller than those of the Conscientiousness/Prudence scale.

Table 4.1 FFM Meta-Analysis Results: Uncorrected Validity Estimates

	FFM Scales						
Study	**1**	**2**	**3**	**4**	**5**	**6**	**7**
A.	.15	.10	.10	.22	.12	.18	.18
B.	.05	.01	.01	.04	.12	.01	.01
C.	.09	.05	.05	.01	.10	.04	.04
D.	.09	.06	.06	.07	.14	.04	.04
E.	.25	.20	NA	.18	.22	.20	.15
F.	.17	.22	.22	.06	.20	.16	.16

Note. 1 = Emotional Stability/Adjustment; 2 = Ambition/Extraversion; 3 = Extraversion/Sociability; 4 = Interpersonal Sensitivity/Agreeableness; 5 = Conscientiousness/Prudence; 6 = Openness/Inquisitive; 7 = Openness/Learning Approach. A = Tett, Jackson, & Rothstein (1991). Sample sizes = 280 (Agreeableness) to 2,302 (Extraversion). B = Barrick & Mount (1991). Sample sizes = 3,694 (Emotional Stability) to 4,588 (Conscientiousness). C = Salgado (1997). Sample sizes = 2,722 (Openness) to 3,877 (Emotional Stability). D = Hurtz & Donovan (2000). Sample sizes = 5,525 (Openness) to 8,083 (Conscientiousness). E = J. Hogan & Holland (2003). Sample sizes = 1,190 (Inquisitive) to 3,698 (Ambition). F = Judge, Bono, Ilies, & Gerhardt (2002). Sample sizes = 7,221 (Openness) to 11,705 (Extraversion).

Unlike earlier meta-analyses, which evaluated the validity of the FFM in relation to indices of overall performance, J. Hogan and Holland (2003) aligned the FFM scales with performance criteria. Prompted by earlier calls for research (Ashton, 1998; J. Hogan & Roberts, 1996; Paunonen, Rothstein, & Jackson, 1999), J. Hogan and Holland meta-analyzed 43 independent samples (N = 5,242) included in studies using the HPI. For this analysis, J. Hogan and Holland aligned HPI scales with criterion measures reflecting FFM themes. The relations between HPI scales and overall performance ratings proved stronger than previous FFM research. Results indicated the following operational validities: Adjustment = .37, Ambition = .31, Interpersonal Sensitivity = .25, Prudence = .31, Inquisitive = .29, Learning Approach = .22. As shown in Table 4.2, the fully corrected correlation coefficients ranged from .25 (HPI Learning Approach) to .43 (HPI Adjustment).

Table 4.2 Meta-Analysis Results for HPI Scales with Construct-Aligned Criteria

HPI Scale	*N*	*K*	r_{obs}	ρ_v	ρ
Adjustment	2,573	24	.25	.37	.43
Ambition	3,698	28	.20	.31	.35
Sociability	N/A	N/A	N/A	N/A	N/A
Interpersonal Sensitivity	2,500	17	.18	.25	.34
Prudence	3,379	26	.22	.31	.36
Inquisitive	1,190	7	.20	.29	.34
Learning Approach	1,366	9	.15	.22	.25

Note. *N* = number of participants across *K* studies; *K* = number of studies; r_{obs} = mean observed validity; ρ_v = operational validity corrected for range restriction and criterion unreliability; ρ = true validity at scale level corrected for range restriction and predictor-criterion unreliability; N/A indicates insufficient data to compute meta-analysis. All observed correlations are statistically significant at $p < .05$.

In application, organizations should use multiple personality scales to screen job applicants. The rationale for using multiple scales is to account for the various personal characteristics necessary for success, as any one scale is unlikely to map the entire performance domain of any job. J. Hogan and Holland (2003) illustrate the value of using multiple scales. For example, to predict criteria concerning the ability to tolerate stress, the HPI Adjustment scale is the best single predictor. However, to predict resourceful problem solving or the ability to generate creative solutions, the HPI Inquisitive scale yields the largest validity coefficient. In addition to using multiple personality scales to predict performance, Schmidt and Hunter (1998) provided evidence supporting incremental validity of personality measures over General Mental Ability (GMA), or "g." In reviewing over 85 years of selection research, Schmidt and Hunter showed that adding a measure of Conscientiousness to GMA tests improved validity by 18%. Furthermore, the addition of an integrity measure to GMA improved validity by 27%, the largest increment across 18 other selection measures (e.g., work sample tests, interviews, job knowledge, biographical data, and assessment centers).

Across studies represented in Tables 4.1 and 4.2, the meta-analysis results support the generalizability of the Conscientiousness/Prudence, Emotional Stability/Adjustment, and Agreeableness/Interpersonal Sensitivity measures across occupations and industries. Moreover, the results from J. Hogan and Holland (2003) support the generalizability of every scale on the HPI except Sociability for predicting personality-saturated criteria. Empirical evidence supports validity generalization of three FFM measures (Conscientiousness, Emotional Stability, and Agreeableness) in general, and six of the seven HPI scales in particular.

4.2 Personality-Based Validity Coefficient Benchmarking. Criteria used to designate a "meaningful" predictor-criterion correlation remain poorly defined. Consequently, researchers define the meaningfulness of a correlation solely on its magnitude, which is reasonable but not sufficient. Interpreting the usefulness of a correlation coefficient based solely on magnitude is one strategy, since the percentage of variance accounted for in the criterion increases with the magnitude of the correlation. However, at what point does the magnitude of a correlation become "meaningful?" Is it .10, .20, .30, or .70? Rather than focus exclusively on the magnitude of observed correlation coefficients, a benchmarking strategy is more appropriate.

The assessment literature includes many studies that evaluate the validity of the FFM personality measures across jobs, organizations, and industry types. Hough and Oswald (2008) summarize some of the major findings. These studies reflect the appropriate benchmark from which to evaluate the validity of the FFM scales. By comparing validity coefficients found in this technical report to the validity coefficients reported in the peer-reviewed literature, it is possible to derive some general conclusions about the validity and utility of potential personality predictors of job performance.

To establish a benchmark from which to compare the generalized validity coefficients presented in this report, Table 4.3 summarizes the sample-weighted validity coefficients of various predictors reported in the scientific literature. The sample-weighted validity of GMA tests, which are widely regarded as the "best" predictors of job performance, is only r = .21. Relative to the sample-weighted validity coefficients reported by J. Hogan and Holland (2003), the validity of GMA appears less predictive of construct-oriented criteria (not overall supervisory ratings of job performance) than the HPI Adjustment and Prudence scales.

Table 4.3 Comparative Validity of Assessments for Predicting Overall Job Performance

Study	Predictor	r_{obs}
A.	Conscientiousness Tests	.18
B.	Integrity Tests	.21
C.	Structured Interviews	.18
D.	Unstructured Interviews	.11
E.	Situational Judgment Tests	.20
F.	Biographical Data	.22
G.	General Mental Ability	.21
H.	Assessment Centers	.28

Note. r_{obs} = mean observed validity; A = Mount & Barrick (2001). B = Ones, Viswesvaran, & Schmidt (1993). C & D = McDaniel, Whetzel, Schmidt, & Mauer (1994). E = McDaniel, Hartman, Whetzel, & Grubb (2007). F = Bliesener (1996). G = Pearlman, Schmidt, & Hunter (1980). H = Arthur, Day, McNelly, & Edens (2003).

Also noteworthy are the validity coefficients of FFM scales reported in five other meta-analyses (see Table 4.1). Excluding J. Hogan and Holland's (2003) results, the validity of FFM Emotional Stability measures ranges between .05 (Barrick & Mount, 1991) and .17 (Judge et al., 2002). A similar pattern exists for Conscientiousness measures, with validity coefficients ranging between .10 (Salgado, 1997) and .20 (Judge et al.). For the remaining FFM scales, only Tett et al. (1991) and Judge et al. report validity coefficients at or above .10.

J. Hogan and Holland (2003) present validity coefficients (see Table 4.2) that are, on average, 24% larger in magnitude than the highest correlation coefficients reported in previous personality-based meta-analyses. There are three important differences between the J. Hogan and Holland study and other studies. First, they aligned predictors with indices of job performance. J. Hogan and Holland reasoned that personality scales are not designed to be omnibus predictors of job performance, but rather to predict *facets* of job performance. By matching predictors and performance criteria, the observed validities increased. Campbell (1990) articulated this construct alignment strategy, although it is seldom used. Second, most early studies evaluating the validity of FFM personality scales relied on classification schemes to translate scales from non-FFM instruments (e.g., California Psychological Inventory) into the FFM domains. During the classification process, raters misclassified scales into FFM dimensions. When errors like this occur, validity decreases. Finally, J. Hogan and Holland relied on a single personality tool (HPI), which eliminated the possibility of coding or classification errors. Together these three factors help untangle the personality

literature and establish the appropriate benchmark from which to evaluate the validity of personality scales in occupational settings.

4.3 Summary of Meta-Analysis Results for Generalizing Validity of Five-Factor Model Personality Measures. Researchers are skeptical about the merits of some procedures used in meta-analyses. In particular, they believe corrections can be used inappropriately to overestimate predictor-criterion relationships. Nonetheless, the meta-analyses described above provide lower bound estimates of the validity of personality measures for predicting job performance. In summary, reviewing the research on meta-analysis evidence permits certain conclusions. First, meta-analysis results strongly support the validity of Conscientiousness measures for predicting various job criteria, including overall job performance. Second, evidence to support the generalized validity of Emotional Stability and Agreeableness for job performance is moderate to strong, particularly as the criterion becomes more saturated with requirements for interpersonal skill(s). Lastly, the validity coefficients for Extraversion/Surgency measures (particularly the HPI Ambition scale) are strong for predicting criteria associated with achieving results and leading others. The remaining Five Factor dimension, Intellect/Openness to Experience, is not as generalizable as the others because it is relevant for a smaller range of jobs and criteria.

Based on meta-analysis results for personality measures, we conclude that an assessment of Conscientiousness, Emotional Stability, and Agreeableness should generalize and predict performance for managerial jobs. The next section reviews evidence accumulated from a meta-analysis conducted at the job family level based on the Hogan archive.

4.4 Meta-Analysis Evidence for Generalizing Validity of the HPI at the Job Family Level. The Hogan archive contains hundreds of studies examining jobs classified into seven job families. Based on studies within each job family, we meta-analyzed validity coefficients for each HPI scale. Hogan used the procedures specified by Hunter and Schmidt (1990) to accumulate results across studies and assess effect sizes. All studies used zero-order product-moment correlations, which eliminated the need to convert alternative statistics to values of *r*. We report operational validities, which we have corrected for sampling error, unreliability in the criterion measure, and range restriction. We did not correct correlation coefficients for predictor unreliability to estimate validity at the construct level. Although some (e.g., Mount & Barrick, 1995; Ones, Viswesvaran, & Schmidt, 1993) argue this is a relevant artifact that can be corrected, Hogan believes it is premature to estimate the validity of a perfect construct when there is no firm agreement on the definition of the construct

itself. Results, therefore, represent relationships between HPI scales and job performance.

Hunter and Schmidt (1990) argue that samples should contribute the same number of correlations to meta-analysis results to avoid bias. Hogan averaged correlations within studies so that each sample contributed only one point estimate per predictor scale. For example, if more than one criterion was available for any study, we averaged the correlations between each predictor scale and those criteria 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).

Hogan also computed a range restriction index for HPI scales. Following procedures described by Hunter and Schmidt (1990), Hogan divided each HPI scale's within-study standard deviation by the standard deviation reported by R. Hogan and J. Hogan (1995). This procedure produced an index of range restriction for each HPI scale for each study. We used mean replacement within job family to estimate range restriction correction factors when within study standard deviation was unavailable.

Although some researchers (e.g., Murphy & De Shon, 2000) argue against the use of rater-based reliability estimates, Hogan followed procedures outlined by Barrick and Mount (1991) and Tett et al. (1991), and used the .508 reliability coefficient proposed by Rothstein, Schmidt, Erwin, Owens, and Sparks (1990) to estimate the reliability of supervisory ratings of job performance.

Managerial jobs require individuals to have administrative or managerial authority over the human, physical, and financial resources of an organization. Hogan identified 35 relevant criterion-related studies in the Hogan archive that served as a foundation for establishing meta-analysis evidence of the validity of the HPI for predicting job performance. Table 4.4 contains the operational validities between overall performance and each HPI scale. Consistent with previous research (see section 4.3), the HPI Adjustment, Ambition, Interpersonal Sensitivity, and Prudence (FFM Emotional Stability, Extraversion, Agreeableness, and Conscientiousness) best predict overall performance. Sociability, Inquisitive, and Learning Approach (FFM Extraversion [in part] and Openness) may also predict performance for some Managerial and Executive jobs.

Table 4.4 Meta-Analysis Results from HPI-Performance Correlations for Managers and Executive Jobs

	K	*N*	ADJ	AMB	SOC	INP	PRU	INQ	LRN
Overall Performance	35	3,751	.20*	.29*	.07*	.13*	.11*	.07*	.09*

Note. Results presented in the table are operational validities; * = 95% confidence interval did not include 0; *K* = number of studies; *N* = number of participants across K studies; ADJ = Adjustment; AMB = Ambition; SOC = Sociability; INP = Interpersonal Sensitivity; PRU = Prudence; INQ = Inquisitive; LRN = Learning Approach.

4.5 Dysfunctional Personality Characteristics and Job Performance. To determine the relationships between dysfunctional personality characteristics and job performance, Fleming and Holland (2002) meta-analyzed correlations between the 11 HDS scales and aggregated supervisory ratings of job performance. Table 4.5 presents results for six independent samples (*N* = 810) from publications, conference presentations, technical reports, chapters, and dissertations published between 1995 and 2001. All studies included the HDS and productivity/personnel criteria or supervisory evaluations of job performance. They used Hunter and Schmidt's (1990) meta-analytic procedures and again report operation validities, which they corrected for sampling error, unreliability in the criterion measure, and range restriction. They averaged correlations within studies so that each sample contributed only one point estimate per predictor scale. This procedure used both negative and positive correlations rather than mean absolute values for averaging correlations. As seen in Table 4.5, the HDS Cautious, Reserved, Excitable, and Skeptical scales best predicted job performance criteria, with observed validities of -.32, -.31, -.25, and -.25, respectively. Overall, 82% of HDS scales generalized based on 90% credibility values, indicating that dysfunctional characteristics reflect negatively on work performance across jobs and organizations studied.

Table 4.5 HDS Scale Meta-Analysis Results for Aggregated Job Performance Rating Criteria

	K	*N*	EXC	SKE	CAU	RES	LEI	BOL	MIS	COL	IMA	DIL	DUT
Overall Performance	6	810	-.25*	-.25*	-.32*	-.31*	-.13*	-.10*	-.11*	.21*	-.03	-.15*	-.10*

Note. Results presented in the table are operational validities; * = 95% confidence interval did not include 0; *K* = number of studies; *N* = number of participants across K studies; EXC = Excitable; SKE = Skeptical; CAU = Cautious; RES = Reserved; LEI = Leisurely; BOL = Bold; MIS = Mischievous; COL = Colorful; IMG = Imaginative; DIL = Diligent; DUT = Dutiful.

4.6 Summary of Meta-Analysis Results for Generalizing Validity of HDS Scales. Fleming and Holland's (2002) research represents the first attempt to evaluate the validity of dysfunctional personality characteristics in an applied setting, and their results suggest that the majority of the dysfunctional characteristics measured by the HDS predict performance across jobs and organizations. Similar to recent research demonstrating the generalizability of normal personality measures for predicting performance across occupations and criteria (e.g., J. Hogan & Holland, 2003), this research shows that dysfunctional personality measures are negatively related to job performance. That is, higher scores for HDS dysfunctional characteristics are associated with lower evaluations of job performance. Although the small number of studies and small sample sizes limit the generalizability of this research, the results discussed in this section show preliminary evidence that measures of dysfunctional characteristics predict managerial performance.

5 – TRANSPORTABILITY OF VALIDITY

The next step in the validity generalization process involves transporting validity evidence established for one job and using it as a foundation for candidate screening in a similar job. The *Uniform Guidelines* supports transportability of validity and is the primary reference for determining when it is appropriate to transport validity evidence from one job to another. In addition, Hoffman, McPhail, and colleagues (Hoffman & McPhail, 1998; Tippins, McPhail, Hoffman, & Gibson, 1999) discuss the technical requirements that should be satisfied before transporting validity evidence in situations that preclude local validation. Finally, Johnson and Jolly (2000) provide an empirical demonstration of the method and note the lack of guidance for its appropriate use.

The *Principles* considers transportability of validity as one of three VG strategies capable of justifying the appropriateness and applicability of a selection procedure. This assumes that the original validation study is technically sound and the target and referent jobs can be described as "closely related" (*Bernard v. Gulf Oil Corp.,* 1981). Situations where transportability might apply include those in which organizations must choose a selection procedure for the same job across multiple locations and different companies or for different jobs with similar requirements. It might also be a useful strategy for validating screening guidelines for different job titles within a single job family (see Gibson & Caplinger, 2007).

The *Uniform Guidelines*, the *Standards*, and the *Principles* all recognize transportability of selection procedures (cf. Tippins, 2003). Although employment discrimination experts distinguish between these three documents, Hogan focuses on their common themes. For example, all three require that the original research be technically adequate. The *Uniform Guidelines* emphasize the need for evidence regarding fairness, validity, and job similarity as criteria for transportability. Personality-based selection procedures typically yield no adverse impact, satisfying requirements set by the *Uniform Guidelines* and precedents set in many courts (Lindemann & Grossman, 1996). However, fairness is considered a social rather than a psychometric issue.

The *Standards* emphasize the need for good cumulative research (e.g., meta-analysis) and discourage reliance on a single local validation study as a foundation for transportability of validity unless the referent study is "exceptionally sound." Interestingly, the original design for transportability of a selection procedure relies on a single referent validation study. The *Principles* emphasize the importance of establishing similarity between the original

(referent) and target jobs. Researchers can establish evidence of similarity based on job requirements, job context, and job applicants. For personality-based selection systems, demonstrating job similarity has been challenging because few personality-related job analysis methods were available. Notable exceptions are Raymark, Schmit, and Guion (1997) and Hogan's JET methodology (Foster, Gaddis, & J. Hogan, 2009). Hogan estimates similarity using converging evidence and professional judgment.

5.1 Transportability of Validity Results. In the present study, Hogan did not identify a specific job in the Hogan archive that met the stringent requirements of single-study transportability. Alternatively, Hogan could nominate jobs in the archive that are similar enough to the target job to be used as a hybrid form of transportability validity evidence (i.e., very similar in respect to the tasks and responsibilities associated with performing the job, but not close enough for single-study transportability). However, in the present case, because of the number and complexity of the jobs associated with this study, we defer to the meta-analysis results in section 4 and the synthetic/job component validation results discussed next in section 6.

6 – SYNTHETIC/JOB COMPONENT VALIDITY

The most specific validity generalizability evidence results from synthetic validity/job component validity research. Mossholder and Arvey (1984) noted that, where meta-analysis relies on global evaluations of job similarity, synthetic validity requires a more detailed examination of the work. The strategy is criterion driven and involves finding the best set of predictors comprehensively representative of the criterion space.

Lawshe (1952) introduced synthetic validity over 50 years ago. With a few notable exceptions (e.g., Guion, 1965; McCormick, DeNisi, & Shaw, 1979; Primoff, 1959), early researchers largely ignored the approach because they believed that assessment validity was specific to situations. The interpretive review and demonstration by Mossholder and Arvey (1984) is a rare exception. Mossholder and Arvey defined synthetic validity as "the logical process of inferring test-battery validity from predetermined validities of the tests for basic work components" (p. 323). If we know the key components of a job, we can review prior criterion-related studies predicting those components. We then "synthesize" the valid predictors of the key job components into an assessment battery for the new job (Balma, 1959; Lawshe, 1952). Brannick and Levine (2002) point out that synthetic validity approaches allow us to build up validity evidence from small samples with common job components. Although not popular at its inception, synthetic validity research has become increasing more studied (e.g., Hoffman, Holden, & Gale, 2000; Jeanneret & Strong, 2003; Johnson, Carter, Davison, & Oliver, 2001; McCloy, 1994, 2001; Scherbaum, 2005).

The *Uniform Guidelines* are vague about technical requirements and documentation for synthetic/job component validity, but the *Principles* explicitly include this strategy. Synthetic validation involves: (a) identifying the important components of a job or jobs comprising a job family, (b) reviewing prior research on the prediction of each component, and (c) aggregating correlations across multiple studies for each component of the job to form a test battery (Scherbaum, 2005). Mossholder and Arvey (1984) summarized these requirements as follows:

> *When test battery validity is inferred from evidence showing that tests measure broad characteristics necessary for job performance, the process resembles a construct validation strategy. When scores are correlated with component performance measures, the process involves criterion-related validation. The nature of the tests used in the process (e.g., work sample vs. aptitude) may determine in part the appropriate validational strategy.* (p. 323)

Job Component Validity (JCV: McCormick, DeNisi, & Shaw, 1979) is one type of synthetic validity. Jeanneret (1992) described JCV as falling "within the rubric of construct validity" (p. 84). Researchers have primarily used JCV to study the cognitive demands of jobs by correlating job dimensions using PAQ data (Jeanneret, 1992; Hoffman, Rashkovsky, & D'Egidio, 2007). Hoffman and McPhail (1998) examined the accuracy of JCV for predicting the observed validity of cognitive tests in clerical jobs. Few similar analyses are available for personality predictors, although Mecham (1985) and D'Egidio (2001) provide notable exceptions.

This section describes the job performance criteria (job components) and the validity of the HPI scales for predicting performance criteria across jobs. Because the concept of synthetic validity has evolved over 50 years, Hogan uses interchangeably the terms criteria, performance dimensions, job components, work components, competencies, and domains of work. Hogan used meta-analysis methods described in section 4.4 to calculate synthetic validities.

6.1 Critical Performance Dimensions. The first step in synthetic validation is conducting a job analysis to determine the important components of the job. For the current study, job analysis results from 3221 SMEs providing CET ratings for managerial jobs defined the critical performance components (refer to Table 3.7). Table 6.1 presents definitions for these competencies. As shown in this table, there is significant overlap between the competencies more frequently rated as important to SMEs and those presented in the HP-CAR. In general, both the CET results and HP-CAR competencies involve (a) being driven and motivated; (b) working well with and showing respect for others; and (c) making good decisions.

Table 6.1 Definitions of Critical Job Competencies for Managers

CET Dimension	Definition
Trustworthiness	Is honest and trustworthy
Decision Making	Evaluates issues and uses sound reasoning to make decisions
Leadership	Provides direction and motivates others to work for a common goal
Integrity	Follows rules and is a good organizational citizen
Work Attitude	Has a positive attitude toward work
Problem Solving	Identifies and implements effective solutions to problems
Achievement Orientation	Strives to meet and exceed goals for self and others
Initiative	Takes action before being told what to do
Judgment	Uses and synthesizes information to solve problems, make evaluations, and draw sound conclusions
Dependability	Performs work in a consistent and timely manner
Adaptability	Is able to change directions quickly and work without explicit guidance
Teamwork	Works well in groups and is a good team player
Stress Tolerance	Handles pressure without getting upset, moody, or anxious

6.2 Validity of the HPI and HDS for Predicting Managerial Recruit Performance. The Hogan archive provides a means to identify the best predictor(s) of each competency listed in the CET section of the JET. Foster and J. Hogan (2005) mapped each of the criteria from over 200 criterion-related validity studies in the Hogan archive onto the CET dimensions and conducted a meta-analysis for each scale-by-competency relationship. These meta-analyses provide stable estimates of the relationships between the seven HPI scales and the critical competencies as rated by SMEs. They report operational validities, which they corrected for sampling error, unreliability in the criterion measure, and range restriction. Table 6.2 presents this information.

Table 6.2 HPI Scale Correlations with Critical Job Competencies for Managers

CET Dimension	*K*	*N*	ADJ	AMB	SOC	INP	PRU	INQ	LRN
Trustworthiness/Integrity	36	3,660	0.16*	0.02	-0.04	0.11*	0.21*	-0.03	0.03
Decision Making/Judgment	8	1,105	0.12*	0.19*	0.10*	0.05	-0.01	0.18*	0.13*
Leadership	24	3,205	0.15*	0.29*	0.12*	0.04	0.08*	0.10*	0.07*
Work Attitude	36	3,660	0.16*	0.02	-0.04	0.11*	0.21*	-0.03	0.03
Problem Solving	15	1,820	0.34*	0.14*	-0.10*	0.10*	0.20*	-0.03	0.11*
Achievement Orientation	51	5,940	0.13*	0.11*	-0.03	0.02	0.07*	0.04	0.06*
Initiative	48	4,496	0.08*	0.19*	0.00	0.02	0.06*	0.02	0.03
Dependability	26	3,947	0.16*	0.29*	0.09*	0.07*	0.12*	0.13*	0.11*
Adaptability	8	1,105	0.12*	0.19*	0.10*	0.05	-0.01	0.18*	0.13*
Teamwork	44	4,907	0.16*	0.05*	-0.06*	0.05*	0.13*	-0.03	0.02
Stress Tolerance	36	4,417	0.18*	0.05*	-0.03	0.11*	0.18*	-0.03	0.04
Average			0.16	0.14	0.01	0.07	0.11	0.05	0.07

Note. Results presented in the table are operational validities; * = 95% confidence interval did not include 0; *K* = number of studies; *N* = number of participants across *K* studies; ADJ = Adjustment; AMB = Ambition; SOC = Sociability; INP = Interpersonal Sensitivity; PRU = Prudence; INQ = Inquisitive; LRN = Learning Approach.

The correlations presented in Table 6.2, averaged for each of the seven HPI scales across the critical competencies, show that the Adjustment (.16), Ambition (.14), Prudence (.11), and Interpersonal Sensitivity and Learning Approach (.07) scales provide stable predictors of the most important competencies associated with effective management performance. Note that these scales more effectively predict those performance dimensions with a common underlying construct (e.g., Problem Solving and Adjustment, Leadership and Ambition, Trustworthiness and Prudence, Work Attitude and Interpersonal Sensitivity, Adaptability and Learning Approach). This finding is important because it underscores (a) the usefulness of aligning predictors and criteria and (b) the importance of using job components rather than overall ratings of performance as criterion measures.

Table 6.3 HDS Scale Correlations with Critical Job Competencies for Managers

CET Dimension	*K*	*N*	EXC	SKE	CAU	RES	LEI	BOL	MIS	COL	IMA	DIL	DUT
Trustworthiness/ Integrity	9	818	-.02	-.06	.00	.08	.01	-.22	-.20	-.23	-.13	.02	.10
Decision Making /Judgment	6	475	.12	.06	.08	.15	.15	.07	.08	-.02	-.09	-.13	.05
Leadership	6	349	.08	-.15	-.01	.08	-.05	-.09	-.13	-.03	-.22	-.09	.12
Work Attitude	5	520	-.27	-.20	-.12	-.11	-.14	-.07	-.17	-.03	-.26	-.13	.07
Problem Solving	5	576	-.11	-.13	-.15	.04	-.14	.02	-.12	-.06	-.27	.09	.00
Achievement Orientation	7	498	-.02	-.04	-.05	.05	.07	-.08	.01	.00	-.04	.00	.06
Initiative	7	714	-.10	-.09	-.13	.08	-.06	.04	-.12	-.05	-.06	.06	.11
Dependability	7	711	-.14	-.18	-.11	.03	-.09	-.15	-.30	-.13	-.25	.01	.09
Adaptability	5	589	-.18	-.03	-.24	-.05	-.09	.04	-.05	.03	-.10	.09	.15
Teamwork	8	817	-.23	-.16	-.09	.03	-.08	-.13	-.14	-.13	-.23	-.02	.18
Stress Tolerance	7	711	-.14	-.18	-.11	.03	-.09	-.15	-.30	-.13	-.25	.01	.09
Average			-.09	-.11	-.08	.04	-.05	-.07	-.13	-.07	-.17	-.01	.09

Note. Results presented in the table are operational validities; * = 95% confidence interval did not include 0; *K* = number of studies; *N* = number of participants across *K* studies; EXC = Excitable; SKE = Skeptical; CAU = Cautious; RES = Reserved; LEI = Leisurely; BOL = Bold; MIS = Mischievous; COL = Colorful; IMG = Imaginative; DIL = Diligent; DUT = Dutiful.

Table 6.3 presents synthetic validity evidence for the HDS. The correlations, averaged for each of the 11 HDS scales across the 11 competencies, show that the Mischievous (-.13), Skeptical (-.11), and Excitable (-.09) scales provide stable predictors of the important dimensions of managerial performance. As with the HPI, note that these scales more effectively predict those performance dimensions with a common underlying construct (e.g., Dependability and Mischievous, Work Attitude and Skeptical, Teamwork and Excitable).

7 – COMPETENCY ALGORITHM DEVELOPMENT

Combinations of personality variables are more predictive of many work-related outcomes (e.g., competencies) than are single personality scales (Ones, Dilchert, Viswesvaran, & Judge, 2007; Tett & Christiansen, 2007). Consistent with this idea, personality profiles combine multiple personality scales to maximize the prediction of specific competencies. Therefore, Hogan created personality-based predictor algorithms for each competency outlined in the HP-CAR report.

The SME for this study was Dr. Rodney Warrenfeltz. As a managing partner with Hogan, Dr. Warrenfeltz has more than 20 years of experience in executive assessment and development. Prior to joining Hogan, Dr. Warrenfeltz served as a Vice President at Development Dimensions International, (DDI) where he was responsible for establishing a worldwide consulting team that included 45 professionals working throughout Europe, Asia, Australia, and the United States. At DDI, he designed and implemented a wide range of consulting projects, including General Motors's global leadership development program, Whirlpool's succession management system (Protégé), and PPG's high-potential development process.

As part of this project's content validation process, Dr. Warrenfeltz reviewed empirical evidence and information presented in: (a) the "Hogan Personality Inventory manual" (R. Hogan & J. Hogan, 2007), (b) the "Hogan Development Survey manual" (R. Hogan & J. Hogan, 1997), (c) the "Motives Values, Preferences Inventory manual" (J. Hogan & R. Hogan, 1996), and (d) the *Hogan Guide: Interpretation and Use of the Hogan Inventories* (R. Hogan, J. Hogan, & Warrenfeltz, 2007).

Based on the definition of each competency, job analysis results, empirical evidence, and content validity evidence, Dr. Warrenfeltz identified suitable scales for each competency. Next, researchers at Hogan created score bands for each assessment scale. Hogan estimated pass rates by applying these score bands to four independent samples from the Hogan archive (see Appendix B).

7.1 Strategic Reasoning. We define Strategic Reasoning as combining the ideas of self and others to envision the possibilities and chart a course to an improved future-state. To assess these characteristics, we used the HPI Ambition and Inquisitive scales. The HPI Ambition scale measures the degree to which a person seems leader-like, driven, and competitive. The HPI Inquisitive scale measures the degree to which a person appears creative, interested in intellectual matters, and strategic about business.

Together, these scales contribute to the identification of individuals who set high expectations, are goal- and results-driven (High Ambition), and are likely to support strategic change (High Inquisitive) as defined by the Strategic Reasoning competency. Table 7.1 displays the recommended score bands for each scale. Appendix B presents the expected pass rates resulting from the application of these score bands to four independent samples.

Table 7.1 Recommended Score Bands for Strategic Reasoning

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Ambition	Fails to Satisfy **Meets Requirements** Scores	≥ 24%	≥ 60%
HPI Inquisitive		≥ 22%	≥ 62%

7.2 Tactical Problem Solving. We define Tactical Problem Solving as synthesizing available data and facts into plausible courses of action that will result in the resolution of identified problems. To assess these characteristics, we used the HPI Inquisitive, HDS Imaginative, and MVPI Science scales. The HPI Inquisitive scale measures the degree to which a person appears bright, creative, interested in intellectual matters, and takes a strategic "outside the box" approach. The HDS Imaginative scale measures the degree to which an individual is perceived as innovative but also unconventional, eccentric, and unaware of how their actions affect others. Finally, the MVPI Science scale measures the degree to which an individual values learning, new ideas, technology, and solving problems.

Together, these scales contribute to the identification of individuals who are innovative and comfortable with change (High Inquisitive), have the potential for creativity but not impracticality (Moderate Imaginative) and value opportunities to learn about and develop new approaches (High Science) as defined by the Tactical Problem Solving competency. Table 7.2 displays recommended score bands for each scale. Appendix B presents the expected pass rates resulting from the application of these score bands to four independent samples.

Table 7.2 Recommended Score Bands for Tactical Problem Solving

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Inquisitive	Fails to Satisfy **Meets Requirements** Scores	≥ 22%	≥ 62%
HDS Imaginative		≥ 10% & ≤ 98%	≥ 29% & ≤ 82%
MVPI Science			≥ 45%

7.3 Operational Excellence. We define Operational Excellence as managing business priorities and resources to ensure the efficient, timely, and cost effective achievement of business results. To assess these characteristics, we used the HPI Prudence, HDS Diligent, and MVPI Commerce scales. The HPI Prudence Scale measures the degree to which a person seems conscientious, conforming, and dependable. The HDS Diligent scale measures the degree to which a person is perceived as resistant to change, overly critical, slow to make decisions, and likely to micromanage. Finally, the MVPI Commerce scale provides insight into the extent to which an individual values business activities and financial gain.

Together, these scales contribute to the identification of individuals who are conscientious (Moderate Prudence), can prioritize and delegate (Moderate Diligence), and appear concerned with how their work affects the company's success (High Commerce) as defined by the Operational Excellence competency. Table 7.3 displays the recommended score bands for each scale. Appendix B presents the expected pass rates resulting from the application of these score bands to four independent samples.

Table 7.3 Recommended Score Bands for Operational Excellence

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Prudence	Fails to Satisfy **Meets Requirements** Scores	≥ 15% & ≤ 98%	≥ 34% & ≤ 80%
HDS Diligence		≥ 10% & ≤ 98%	≥ 29% & ≤ 63%
MVPI Commerce			≥ 25%

7.4 Results Orientation. We define the Results Orientation competency as establishing high performance standards for self and others and assuming personal ownership and accountability for achieving business results. To assess these characteristics, we used the HPI Ambition and MVPI Power scales. The HPI Ambition scale measures the degree to which a person seems leader-like, competitive, driven, and energetic. The MVPI Power scale measures the degree to which a person values achievement-oriented and results-based business cultures.

Together, these scales contribute to the identification of individuals who are goal-oriented and driven (High Ambition) and place a premium on producing results (High Power) as defined by the Results Orientation competency. Table 7.4 displays the recommended score bands for each scale. Appendix B presents the expected pass rates resulting from the application of these score bands to four independent samples.

Table 7.4 Recommended Score Bands for Results Orientation

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Ambition	Fails to Satisfy **Meets Requirements** Scores	≥ 24%	≥ 60%
MVPI Power		≥ 20%	≥ 70%

7.5 Talent Development. We define Talent Development as pursuing a personal course of development related to business acumen and using that knowledge to hire, coach, and develop the performance of others. To assess these characteristics, we used the HPI Ambition, HPI Learning Approach, and MVPI Altruistic scales. The HPI Ambition scale measures the degree to which a person seems leader-like, driven, competitive, and energetic. The HPI Learning Approach scale measures the degree to which a person seems concerned with building job-related knowledge by staying up-to-date on emerging business and technical issues. Finally, the MVPI Altruistic scale provides insight concerning the likelihood individuals value an environment that places an emphasis on helping others.

Together, these scales contribute to the identification of individuals who set high expectations for themselves and others (High Ambition), push for learning and training opportunities (High Learning Approach), and value opportunities to help others enhance their careers (High Altruistic) as defined by the Talent Development competency. Table 7.5 displays the recommended band scores for each scale. Appendix B presents the expected pass rates resulting from the application of these score bands to four independent samples.

Table 7.5 Recommended Score Bands for Talent Development

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Ambition	Fails to Satisfy **Meets Requirements** Scores	≥ 24%	≥ 60%
HPI Learning Approach		≥ 13%	≥ 40%
MVPI Altruistic		≥ 10%	≥ 29%

7.6 Respect for People. We define the Respect for People competency as building trust-based relationships with people by treating them with dignity, respect, and fairness, while valuing their diversity in background and views. To assess these characteristics, we used the HPI Interpersonal Sensitivity, HDS Reserved, and MVPI Tradition scales. The HPI Interpersonal Sensitivity scale measures the degree to which a person seems perceptive, tactful, and socially sensitive. The HDS Reserved scale measures the extent to which a person is perceived as insensitive, withdrawn and aloof. Finally, the MVPI Tradition scale measures the extent to which a person values rules, standards, and stable work environments.

Together, these scales contribute to the identification of kind and considerate individuals who likely will foster trust and respect (High Interpersonal Sensitivity), are socially self-confident but still concerned with others (Moderate Reserved), and will appreciate following a set of values (High Tradition) as defined by the Respect for People competency. Table 7.6 displays the recommended score bands for each scale. Appendix B presents the expected pass rates resulting from the application of these scores to four independent samples.

Table 7. 6 Recommended Score Bands Respect for People

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Interpersonal Sensitivity	Fails to Satisfy **Meets Requirements** Scores	≥ 10%	≥ 39%
HDS Reserved		≥ 6% & ≤ 98%	≥ 29% & ≤ 70%
MVPI Tradition			≥ 55%

7.7 Collaboration. We define Collaboration as developing positive working relationships that emphasize team accomplishment in conjunction with individual contribution. To assess these characteristics, we used the HPI Interpersonal Sensitivity, HPI Sociability, and MVPI Affiliation scales. The HPI Interpersonal Sensitivity scale measures the degree to which a person seems perceptive, tactful, and socially sensitive. The HPI Sociability scale measures the degree to which a person is perceived as approachable, gregarious, outgoing, and talkative. Finally, the MVPI Affiliation scale measures the extent to which a person values social interaction and working with others.

Together, these scales contribute to the identification of individuals who are socially sensitive when interacting in a team atmosphere (High Interpersonal Sensitivity), socially proactive and seem comfortable in high-profile positions

(Moderate Sociability), and value working with others, social interaction, and creating a sense of commitment to tasks or groups (High Affiliation), which is consistent with the Collaboration competency. Table 7.7 displays the recommended score bands for each scale. Appendix B presents the expected pass rates resulting from the application of these score bands to four independent samples.

Table 7.7 Recommended Score Bands for Collaboration

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Interpersonal Sensitivity	Fails to Satisfy **Meets Requirements** Scores	≥ 10%	≥ 39%
HPI Sociability		≥ 10% & ≤ 98%	≥ 52% & ≤ 79%
MVPI Affiliation			≥ 56%

7.8 Strategic Self-Awareness. We define the Strategic Self-Awareness competency as recognizing strengths and weaknesses and using that information to guide personal growth and development. To assess these characteristics, we used the HPI Adjustment and HDS Bold scales. The HPI Adjustment scale measures the extent to which a person remains calm under pressure, avoids overreacting, and positively adjusts to fast-paced environments. The HDS Bold scale measures the extent to which a person is perceived as resistant to feedback, overly self-promoting, and having an inflated view of his/her competency and self-worth.

Together, these scales contribute to the identification of individuals who are perceived as resilient and optimistic (Moderate Adjustment) and take initiative without exhibiting arrogance or unresponsiveness to feedback (Moderate Bold) as defined by the Strategic Self-Awareness competency. Table 7.8 displays the recommended score bands for each scale. Appendix B presents the expected pass rates resulting from the application of these score bands to four independent samples.

Table 7.8 Recommended Score Bands for Strategic Self-Awareness

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Adjustment	Fails to Satisfy **Meets Requirements** Scores	≥ 26% & ≤ 98%	≥ 50% & ≤ 80%
HDS Bold		≥ 10% & ≤ 98%	≥ 29% & ≤ 87%

7.9 Tenacity. We define the Tenacity competency as pursuing the resolution of business challenges with urgency and determination to achieve positive outcomes. We used the HPI Adjustment, HDS Excitable, and HDS Leisurely scales to identify individuals with Tenacity. The HPI Adjustment scale measures the degree to which a person remains calm under pressure, avoids overreacting, and adjusts to fast-paced environments. The HDS Excitable scale measures the extent to which, when faced with challenges, a person is perceived as temperamental, prone to emotional outbursts, and easily upset with people and projects. The HDS Leisurely scale measures the extent to which an individual seems to procrastinate, work poorly with teams, and lack follow through on commitments.

Together, these scales contribute to the identification of individuals who appear balanced and calm but also can anticipate potential negative outcomes (Moderate Adjustment), take positive action in difficult situations (Moderate Excitable), demonstrate receptiveness to constructive criticism, and are unlikely to procrastinate (Moderate Leisurely) as defined by the Tenacity competency. Table 7.9 displays the recommended score bands for each scale. Appendix B presents the expected pass rates resulting from the application of these score bands to four independent samples.

Table 7. 9 Recommended Score Bands for Tenacity

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Adjustment	Fails to Satisfy **Meets Requirements** Scores	≥ 26% & ≤ 98%	≥ 50% & ≤ 80%
HDS Excitable		≥ 10% & ≤ 98%	≥ 29% & ≤ 80%
HDS Leisurely		≥ 10% & ≤ 98%	≥ 10% & ≤ 85%

7.10 Judgment. We define the Judgment competency as initiating action only after evaluating the consequences of the action and determining that the benefits are likely to outweigh the costs. To assess these characteristics, we used the HPI Prudence, HDS Cautious, and HDS Mischievous scales. The HPI Prudence Scale measures the degree to which a person seems conscientious, conforming, and dependable. The HDS Cautious scale measures the extent to which a person seems self-doubting, conservative, and unassertive. Finally, the HDS Mischievous scale measures the extent to which a person seems to enjoy testing the limits and is perceived as careless.

Together, these scales contribute to the identification of individuals who are appropriately attentive to details and likely to make informed decisions, yet also

are willing to apply an innovative approach to problem solving if tried-and-true methods are no longer maximally effective (Moderate Prudence), seem active and confident (Moderate Cautious), and consider the consequences of actions (Moderate Mischievous) as defined by the Judgment competency. Table 7.10 displays the recommended score bands for each scale. Appendix B presents the expected pass rates resulting from the application of these score bands to four independent samples.

Table 7.10 Recommended Score Bands for Judgment

Scale	**Below Requirements**	**Meets Requirements**	**Exceeds Requirements**
HPI Prudence	Fails to Satisfy **Meets Requirements** Scores	≥ 15% & ≤ 98%	≥ 34% & ≤ 80%
HDS Cautious		≥ 10% & ≤ 95%	≥ 29% & ≤ 85%
HDS Mischievous		≥ 10% & ≤ 95%	≥ 29% & ≤ 85%

8 - FINAL CALIBRATION OF THE PERSONALITY ASSESSMENT SCALES

In November 2008, we reviewed data from a sample of 246 management-level recruits who took the HPI, HDS, and MVPI. Although Hogan benchmarked the assessment report using data from over 20,000 individuals, it is important to examine data from actual job applicants once a sufficient number have completed the assessment. Therefore, Hogan monitored assessment results to determine score distributions from this research sample. Initial analyses indicated a need to make incremental score band adjustments.

Using a cross-validation approach, we calibrated the score bands for each competency based on 173 applicants and tested the revised score bands on the remaining 73 individuals.

In general, calibrations required more rigorous score bands than were initially specified. However, based on the expert judgment of Drs. Rodney Warrenfeltz and Joyce Hogan, we also added scales to the algorithms used to predict two competencies. First, we included the HDS Imaginative scale for the Strategic Reasoning competency to eliminate individuals who are unrealistic in their visions and lack follow through. Second, we included the MVPI Security scale for the Strategic Self-Awareness competency to remove individuals who are motivated by risk-free environments and uncomfortable with ambiguity. Tables 8.1 through 8.10 provide the modified score bands for each competency.

Table 8.1 Recommended Score Bands for Strategic Reasoning

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Ambition	Fails to Satisfy **Meets Requirements** Scores	≥ 50%	≥ 85%
HPI Inquisitive		≥ 22%	≥ 62%
HDS Imaginative		≥ 10% & ≤ 90%	≥ 30% & ≤ 70%

Table 8.2 Recommended Score Bands for Tactical Problem Solving

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Inquisitive	Fails to Satisfy **Meets Requirements** Scores	≥ 22%	≥ 62%
HDS Imaginative		≥ 10% & ≤ 90%	≥ 30% & ≤ 70%
MVPI Science			≥ 70%

Table 8.3 Recommended Score Bands for Operational Excellence

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Prudence	Fails to Satisfy **Meets Requirements** Scores	≥ 15% & ≤ 98%	≥ 34% & ≤ 80%
HDS Diligence		≥ 15% & ≤ 98%	≥ 29% & ≤ 63%
MVPI Commerce			≥ 40%

Table 8.4 Recommended Score Bands for Results Orientation

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Ambition	Fails to Satisfy **Meets Requirements** Scores	≥ 50%	≥ 85%
MVPI Power		≥ 25%	≥ 70%

Table 8.5 Recommended Score Bands for Talent Development

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Ambition	Fails to Satisfy **Meets Requirements** Scores	≥ 50%	≥ 85%
HPI Learning Approach		≥ 30%	≥ 75%
MVPI Altruistic		≥ 30%	≥ 70%

Table 8.6 Recommended Score Bands for Respect for People

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Interpersonal Sensitivity	Fails to Satisfy **Meets Requirements** Scores	≥ 39%	≥ 50%
HDS Reserved		≥ 15% & ≤ 90%	≥ 29% & ≤ 70%
MVPI Tradition			≥ 50%

Table 8.7 Recommended Score Bands for Collaboration

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Interpersonal Sensitivity	Fails to Satisfy **Meets Requirements** Scores	≥ 39%	≥ 50%
HPI Sociability		≥ 10% & ≤ 95%	≥ 52% & ≤ 79%
MVPI Affiliation		≥ 30%	≥ 70%

Table 8.8 Recommended Score Bands for Strategic Self-Awareness

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Adjustment	Fails to Satisfy **Meets Requirements** Scores	≥ 26% & ≤ 98%	≥ 50% & ≤ 80%
HDS Bold		≥ 15% & ≤ 95%	≥ 29% & ≤ 90%
MVPI Security		≤ 95%	≤ 90%

Table 8.9 Recommended Score Bands for Tenacity

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Adjustment	Fails to Satisfy **Meets Requirements** Scores	≥ 26% & ≤ 98%	≥ 50% & ≤ 80%
HDS Excitable		≥ 10% & ≤ 90%	≥ 29% & ≤ 80%
HDS Leisurely		≥ 15% & ≤ 95%	≥ 15% & ≤ 85%

Table 8.10 Recommended Score Bands for Judgment

Scale	Below Requirements	Meets Requirements	Exceeds Requirements
HPI Prudence	Fails to Satisfy **Meets Requirements** Scores	≥ 15% & ≤ 98%	≥ 34% & ≤ 80%
HDS Cautious		≥ 10% & ≤ 90%	≥ 29% & ≤ 80%
HDS Mischievous		≥ 15% & ≤ 95%	≥ 29% & ≤ 80%

Next, Hogan examined the pass rates for the current sample for each competency, as shown in table 8.11. Note that, due to rounding error, results for some competencies do not add to 100.0%.

Table 8.11 Competency Pass Rates

Competency	Level	Research Sample
		N = 246
Strategic Reasoning	Below Requirements	30.1%
	Meets Requirements	50.8%
	Exceeds Requirements	19.1%
Tactical Problem Solving	Below Requirements	24.4%
	Meets Requirements	56.5%
	Exceeds Requirements	19.1%
Operational Excellence	Below Requirements	15.0%
	Meets Requirements	62.6%
	Exceeds Requirements	22.4%
Results Orientation	Below Requirements	26.0%
	Meets Requirements	46.3%
	Exceeds Requirements	27.6%
Talent Development	Below Requirements	20.7%
	Meets Requirements	56.9%
	Exceeds Requirements	22.4%
Respect for People	Below Requirements	22.0%
	Meets Requirements	49.2%
	Exceeds Requirements	28.9%
Collaboration	Below Requirements	18.7%
	Meets Requirements	58.5%
	Exceeds Requirements	22.8%
Strategic Self-Awareness	Below Requirements	24.8%
	Meets Requirements	50.8%
	Exceeds Requirements	24.4%
Tenacity	Below Requirements	19.5%
	Meets Requirements	58.9%
	Exceeds Requirements	21.5%
Judgment	Below Requirements	18.7%
	Meets Requirements	61.4%
	Exceeds Requirements	19.9%

Finally, Hogan examined the potential for Adverse Impact (AI) in an independent sample of management-level applicants (N = 3,974). We computed AI by comparing the percentage of individuals falling within the Below Expectations score band to those falling in both the Meets Expectations and Exceeds Expectations bands. For these analyses, Hogan used males whites, and individuals over the age of 40 as majority groups.

To examine AI, Hogan used the 4/5ths rule, as outlined in the *Uniform Guidelines* (Equal Employment Opportunity Commission, 1978). The *Uniform Guidelines* state:

> A selection rate for any race, sex, or ethnic group which is less than 4/5ths (4/5, or 80%) of the rate for the group with the highest rate will generally be regarded by Federal enforcement agencies as evidence of adverse impact… (Section 4D, p.38297)

Since 1978, the 4/5ths rule has stood as the acceptable guideline in the U.S. for examining AI based on group selection rate differences (e.g., Bobko, Roth, & Potosky, 1999; Reily & Chao, 1982; Reilly & Warech 1993; Schmitt, Rogers, Chan, Sheppard & Jennings, 1997). Some researchers are critical of the 4/5ths rule, arguing instead for significance testing (Roth, Bobko, & Switzer, 2006; Morris & Lobsenz, 2000; Shoben, 1978). However, a review of the *Uniform Guidelines* by Cascio and Aguinis (2001) outlined the controversies of significance testing. They state:

> The controversies surrounding significance testing seem to be due mainly to how significance testing is used. Stated differently, many researchers have noted that significance testing is abused and misused (e.g., Cohen, 1994; Schmidt, 1996). Significance testing allows us to infer whether the null hypothesis that selection rates are equal in the population is likely to be false. On the other hand, significance testing is incorrectly used when: (a) conclusions are made regarding the magnitude of selection rate differences across subgroups (e.g., a statistically significant result at the .01 level is interpreted as a larger difference than a result at the .05 level), and (b) failure to reject the null hypothesis is interpreted as evidence of lack of differences in selection rates in the population (i.e., not detecting differences in the sample may be due to insufficient statistical power). (p. 204)

Cascio and Aguinis (2001) continue by stating that, since the *Uniform Guidelines'* inception in 1978, the Equal Employment Opportunity Commission (EEOC) has provided no supplemental information regarding appropriate statistical power, methodology, or significance testing levels for determining AI. Although some researchers argue for the use of significance tests to examine AI, the appropriate use of such analyses remains undefined by the EEOC. As a result, Hogan continues to use the EEOC's recommendation of the 4/5ths rule.

Calculations using the 4/5ths rule produce a ratio where (a) numbers greater than 1.00 indicate that results for minority group applicants fall within acceptable ranges more frequently than results for the majority group and (b) ratios below 1.00 indicate that results for minority group applicants fall within acceptable ranges less frequently than results for the majority group. According to the 4/5ths rule, evidence of AI exists when this ratio is less than .80. Table 8.12 present AI ratios for each competency.

Table 8.12 Competency Pass Rates

Demographic Group		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Gender	Men	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Women	.84	.94	1.05	.81	.90	1.10	.96	1.06	1.00	1.01
Age	< 40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	> 40	.96	.99	1.00	.86	.89	1.03	.98	1.00	.99	1.00
Race/ Ethnicity	Black	1.07	.99	.92	1.20	1.22	.93	.94	.98	1.08	1.00
	Hispanic	1.03	.99	1.00	1.16	1.04	.92	1.04	.96	.99	1.05
	Asian American /P.I.	.92	.94	.90	1.16	1.05	.90	.97	1.04	1.06	1.02
	White	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note. NA = Not Applicable. 1 = Strategic Reasoning; 2 = Tactical Problem Solving; 3 = Operational Excellence; 4 = Results Orientation; 5 = Talent Development; 6 = Respect for People; 7 = Collaboration; 8 = Strategic Self-Awareness; 9 = Tenacity; 10 = Judgment.

9 – RECOMMENDATIONS

9.1 Uses and Applications. Hogan recommends that organizations use the assessment-driven competency-based report to assist in selecting and developing management-level job applicants. Although the HP-CAR competency report may be only one component of a multi-method process, it is intended for use in an advisory capacity to evaluate job recruits in lieu of local validation data. When feasible, Hogan recommends a follow-up local validation study to evaluate the validity of the report for selection decisions as well as to determine utility. Until a more rigorous local validation study is completed, results from the information contained in the assessment-driven report should not supersede other selection procedures that have undergone local validation. Should organizations use the Hogan inventories for standardized selection, our analyses indicate no adverse impact should result.

It is also worth noting that differences in competency ratings indicate that some competencies may be more important for some managerial jobs than others. As such, organizational users of the HP-CAR should determine which of the report's competencies are most critical to a particular job. In implementing the HP-CAR with applicants for that job, organizations should then pay closest attention to those key competencies during recruitment and selection efforts.

For further information concerning this research or the results provided, please contact:

Hogan Assessment Systems
P.O. Box 521176
Tulsa, Oklahoma 74152
(918) 749-0632

9.2 Accuracy and Completeness. Hogan attests to the accuracy of the data collection, analysis, and reporting procedures used in this validity study. Hogan entered the job analysis data into a database and computed results using SPSS/V.12.0 statistical software.

The process of establishing synthetic validity proceeded from a review of CET results to a review of the Hogan archive. Hogan searched the archive for studies including the CET dimensions deemed critical by SMEs. Once identified, Hogan extracted the validity coefficient(s) and sample size(s) from each study and entered those data into an Excel spreadsheet. Hogan then computed the sample-weighted validity coefficients shown in this report.

Hogan completed all procedures within the requirements of the *Uniform Guidelines, Principles,* and *Standards*. Hogan derived results strictly from data and archived study results and did not embellish, falsify, or alter results in any manner.

REFERENCES

Aguinis, H., & Pierce, C. A. (1998). Testing moderator variable hypotheses meta-analytically. *Journal of Management, 24,* 577–592.

Allport, G. W. (1937). *Personality: A psychological interpretation*. New York: Holt.

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (1999). *Standards for Educational and Psychological Testing*. Washington, DC: American Psychological Association.

Arthur, W., Jr., Day, E. A., McNelly, T. L., & Edens, P. S. (2003). A meta-analysis of the criterion-related validity of assessment center dimensions. *Personnel Psychology, 56,* 125-154.

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

Axford, S. N. (1998). Review of the Hogan Personality Inventory (Revised). In J. C. Impara & B. S. Plake (Eds.), *The thirteenth Mental Measurements Yearbook*. Lincoln, NE: Buros Institute of Mental Measurements.

Balma, M. J. (1959). The development of processes for indirect or synthetic validity. *Personnel Psychology, 12,* 395-396.

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., & Gupta, R. (2003). Meta-analysis of the relationship between the Five-Factor Model of personality and Holland's occupational types. *Personnel Psychology, 56,* 45-74.

Bartram, D. (2005). The great eight competencies: A criterion-centric approach to validation. *Journal of Applied Psychology, 90,* 1185-1203.

Bartram, D., Robertson, I. T., & Callinan, M. (2002). Introduction: A framework for examining organizational effectiveness. In I. T. Robertson, M. Callinan, & D. Bartram (Eds.), *Organizational effectiveness: The role of psychology* (pp. 1-10). Chichester, UK: Wiley.

Benson, M. J., & Campbell, J. P. (2007). To be, or not to be, linear: An expanded representation of personality and its relationship to leadership performance. *International Journal of Selection and Assessment, 15*, 132-149.

Bentz, V. (1985, August). *A view from the top: A thirty year perspective of research devoted to the discovery, description, and prediction of executive behavior.* Paper presented at the 92nd Annual Convention of the American Psychological Association, Los Angeles.

Bernard v. Gulf Oil Co., 619 F.2d 495, 470 (5th Cir. 1980), aff _d, 452 U.S. 89 (1981).

Berry, C. M., Ones, D. S., & Sackett, P. R. (2007). Interpersonal deviance, organizational deviance, and their common correlates. *Journal of Applied Psychology, 92,* 410-424.

Bliesener, T. (1996). Methodological moderators in validating biographical data in personnel selection. *Journal of Occupational and Organizational Psychology, 69*, 107-120.

Boyatzis, R. E. (1982). *The competent manager: A model for effective performance.* New York: Wiley.

Brannick, M. T., & Levine, E. L. (2002). Doing a job analysis study. In *Job analysis: Methods, research, and applications for human resource management in the new millennium* (pp. 265-294). Thousand Oaks, CA: Sage.

Bray, D., & Howard, A. (1983). The AT&T longitudinal study of managers. In K. W. Schaie (Ed.), *Longitudinal studies of adult psychological development* (pp. 112-146). New York: Guilford.

Briggs-Meyers, I., McCaulley, M. H., Quenk, N. L., & Hammer, A. L. (1998). *MBTI manual*. Palo Alto, CA: Consulting Psychologists Press.

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* (Vol. 1, 2nd ed., pp. 39-74). Palo Alto, CA: Consulting Psychologists Press.

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.

Creed, P., & Shackleton, V. (2007). Hogan Personality Inventory (HPI). In P. A. Lindley (Ed.), *British Psychological Society Psychological Testing Centre test reviews.* London: British Psychological Society.

D'Egidio, E. L. (2001). *Building a job component validity model using job analysis data from the Occupational Information Network*. Unpublished doctoral dissertation. University of Houston, Houston, TX.

De Raad, B., & Perugini, M. (Eds.) (2002). *Big Five Assessment*. Cambridge, MA: Hogrefe & Huber Publishing.

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

Dotlich, D. L., & Cairo, P. C. (2003). *Why CEOs fail.* San Francisco: Jossey-Bass.

Dudley, N. M., Orvis, K. A., Lebiecki, J. E., & Cortina, J. M. (2006). A meta-analytic investigation of Conscientiousness in the prediction of job performance: Examining the intercorrelations and the incremental validity of narrow traits. *Journal of Applied Psychology, 91*, 40-57.

Emler, N. P. (1990). A social psychology of reputation. *European Review of Social Psychology, 1,* 173-193.

Equal Employment Opportunity Commission (1978). Uniform guidelines on employee selection procedures. *Federal Register, 43*, 38,290-38,315.

Fico, J. M., Hogan, R., & Hogan, J. (2000). *Interpersonal Compass manual and interpretation guide.* Tulsa, OK: Hogan Assessment Systems.

Fleming, B., & Holland, B. (April 2002). *How dark side personality factors impact performance ratings: A meta-analysis*. Paper presented at the 17th Annual Conference of the Society for Industrial and Organizational Psychology, Toronto, Ontario, Canada.

Foster, J., Gaddis, B., & Hogan, J. (2009). Personality-based job analysis. In M. A. Wilson, R. J. Harvey, G. Alliger, & W. Bennett, Jr. (Eds.), *Handbook of work analysis.* London: Taylor & Francis.

Foster, J., & Hogan, J. (2005). *Validity of the Hogan Personality Inventory for job family profiles.* Technical Report. Tulsa, OK: Hogan Assessment Systems.

Gatewood, R. D., & Feild, H. S. (1994). *Human resource selection* (3rd Ed.). Orlando, FL: The Dryden Press.

Gaugler, B. B., Rosenthal, D. B., Thornton, G. C., & Benson, C. (1987). Meta-analysis of assessment center validity. *Journal of Applied Psychology, 72,* 493-511.

Ghiselli, E. E. (1966). *The validity of occupational aptitude tests.* New York: Wiley.

Ghiselli, E. E., & Brown, C. H. (1955). *Personnel and industrial psychology* (2nd ed.). New York: McGraw-Hill.

Ghiselli, E. E., Campbell, J. P., & Zedeck, S. (1981). *Measurement theory for the behavioral sciences*. San Francisco: W. H. Freeman.

Gibson, W. M., & Caplinger, J. A. (2007) Transportation of validation risks. In S. M. McPhail (Ed.), *Alternative validation strategies* (pp. 29-81). San Francisco: Jossey-Bass.

Goffman, E. (1958). *The presentation of self in everyday life*. New York: Doubleday.

Goldberg, L. R. (1990). An alternative "description of personality": The Big-Five factor structure. *Journal of Personality and Social Psychology, 59*, 1216-1229.

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

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

Gough, H. G. (1987) *Manual for the California Psychological Inventory.* Palo Alto, CA: Consulting Psychologists Press.

Guion, R. M. (1965). Synthetic validity in a small company: A demonstration. *Personnel Psychology, 18,* 40-63.

Guion, R. M. (1998). *Assessment, measurement, and prediction for personnel decisions.* Mahwah, NJ: Lawrence Erlbaum.

Guion, R. M., & Highouse, S. (2006). *Essentials of personnel assessment and selection.* Mahwah, NJ: Lawrence Erlbaum.

Harkness, A. R., McNulty, J. L., & Ben-Porath, Y. S. (1995). The personality psychopathology five (PSY-5): Construct and MMPI-2 scales. *Psychological Assessment, 7,* 104-114.

Hathaway, S. R., & McKinley, J. C. (1943). *Manual for the Minnesota Multiphasic Personality Inventory.* New York: Psychological Corporation.

Hoffman, C. C., Holden, L. M., & Gale, E. (2000). So many jobs, so little "n": Applying expanded validation models to support generalization of cognitive ability. *Personnel Psychology, 53,* 955–991.

Hoffman, C. C., & McPhail S. M. (1998). Exploring options for supporting test use in situations precluding local validation. *Personnel Psychology, 51*, 987–1003.

Hoffman, C. C., Rashkovsky, B., & D'Egidio, E. (2007). Job component validity: Background, current research, and applications. In S. M. McPhail (Ed.), *Alternative validation strategies* (pp. 82-121). San Francisco: Jossey-Bass.

Hogan, J., Davies, S., & Hogan, R. (2007). Generalizing personality-based validity evidence. In S. M. McPhail (Ed.), *Alternative validation strategies* (pp. 181-229). San Francisco: Jossey-Bass.

Hogan, J., & Hogan, R. (1996). *Motives, Values, Preferences Inventory manual.* Tulsa, OK: Hogan Assessment Systems.

Hogan, J., Hogan, R., & Kaiser, R. B. (2009). Management derailment: Personality assessment and mitigation. In S. Zedeck (Ed.), *American Psychological Association handbook of industrial and organizational psychology*. Washington, DC: American Psychological Association.

Hogan, J., & Holland, B. (2003). Using theory to evaluate personality and job-performance relations: A Socioanalytic perspective. *Journal of Applied Psychology, 88,* 100-112.

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. (1998). *Performance Improvement Characteristics job analysis manual.* 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, NE: University of Nebraska Press.

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

Hogan, R., & Hogan, J. (1997). *Hogan Development Survey manual*. Tulsa, OK: Hogan Assessment Systems.

Hogan, R., & Hogan, J. (2001). Assessing leadership: A view from the dark side. *International Journal of Selection and Assessment, 9*, 40-51.

Hogan, R., & Hogan, J. (2007). *Hogan Personality Inventory manual* (3rd ed.). Tulsa, OK: Hogan Assessment Systems.

Hogan, R., & Hogan, J. (2009). *Hogan Development Survey manual* (2nd ed.). Tulsa, OK: Hogan Press.

Hogan, R., Hogan, J., & Trickey, J. (1999). Goodbye mumbo jumbo: The transcendental beauty of a validity coefficient. *Selection Development Review, 15*, 3-9.

Hogan, R., Hogan, J., & Warrenfeltz, R. (2007). *The Hogan guide: Interpretation and use of Hogan inventories*. Tulsa, OK: Hogan Assessment Systems.

Hogan, R., & Warrenfeltz, W. (2003). Educating the modern manager. *Academy of Management Learning and Education, 2*, 74-84.

Holland, J. (1973). *Making vocational choices: A theory of careers.* Englewood Cliffs, NJ: Prentice-Hall.

Holland, J. (1985). *Making vocational choices: A theory of vocational personalities and work environments* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Holland, J. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Odessa, FL: Psychological Assessment Resources.

Horney, K. (1950). *Neurosis and human growth*. New York: Norton.

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

Hough, L. M., & Oswald, F. L. (2008). Personality testing and industrial-organizational psychology: Reflections, progress, and prospects. *Industrial Organizational Psychologist, 1,* 272-290.

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

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

Jeanneret, P. R. (1992). Applications of job component/synthetic validity to construct validity. *Human Performance, 5,* 81-96.

Jeanneret, P. R., Borman, W. C., Kubisiak, U. C., & Hanson, M. A. (1999). Generalized work activities. In N. G. Peterson, M. D. Mumford, W. C. Borman, P. R. Jeanneret, & E. A. Fleishman (Eds.), *An occupational information system for the 21st century: The development of the O*NET* (pp. 105-125). Washington, DC: American Psychological Association.

Jeanneret, P. R., & Strong, M. H. (2003). Linking O*NET job analysis information to job requirement predictors: An O*NET application. *Personnel Psychology, 56,* 465-492.

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 theory and research* (pp. 66-100). New York: Guilford.

Johnson, J. W., Carter, G. W., Davison, H. K., & Oliver, D. H. (2001). A synthetic validity approach to testing differential prediction hypotheses. *Journal of Applied Psychology, 86,* 774-780.

Johnson, M. A., & Jolly, J. P. (2000). Extending test validation results from one plant location to another: Application of transportability evidence. *Journal of Behavioral and Applied Management, 1,* 127–136.

Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology, 87,* 765-780.

Lawshe, C. H. (1952). What can industrial psychology do for small business? (A symposium). *Personnel Psychology, 5,* 31-34.

Leslie, J., & Van Velsor, E. (1996). *A look at derailment today: North America and Europe.* Greensboro, NC: Center for Creative Leadership.

Lindemann, B., & Grossman, P. (1996). *Employment discrimination law* (3rd ed.). Washington, DC: American Bar Association.

Lobello, S. G. (1998). Review of the Hogan Personality Inventory (Revised). In J. C. Impara & B. S. Plake (Eds.), *The thirteenth Mental Measurements Yearbook*. Lincoln, NE: Buros Institute of Mental Measurements.

McCall, M. W., Lombardo, M. M., & Morrison, A. M. (1988). *Lessons of experience: How successful executives develop on the job.* Lexington, MA: Lexington.

McClelland, D. C. (1973). Testing for competencies rather than for "intelligence." *American Psychologist, 28*, 1-14.

McCloy, R. A. (1994). Predicting job performance scores without performance data. In B. F. Green & A. S. Mavor (Eds.), *Modeling cost and performance for military enlistment: Report of a workshop.* Washington, DC: National Academy Press.

McCloy, R. A. (2001, April). Predicting job performance scores in jobs lacking criterion data. In J. Johnson & G. Carter (Chairs), *Advances in the application of synthetic validity*. Symposium conducted at the 16th Annual Conference of the Society for Industrial and Organizational Psychology, San Diego, CA.

McCormick, E. J., DeNisi, A. S., & Shaw, J. B. (1979). Use of the Position Analysis Questionnaire for establishing the job component validity of tests. *Journal of Applied Psychology, 64,* 51-56.

McCrae, R. R., & Costa, P. T., Jr. (1987). Validity of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52,* 81-9.

McDaniel, M. A., Hartman, N. S., Whetzel, D. L., & Grubb, W. L. (2007). Situational judgment test, response instructions, and validity: A meta-analysis. *Personnel Psychology, 60*, 63-91.

McDaniel, M. A., Morgeson, F. P., Finnegan, E. B., Campion, M. A., & Braverman, E. P. (2001). Use of situational judgment tests to predict job performance: A clarification of the literature. *Journal of Applied Psychology, 84,* 730-740.

McDaniel, M. A., Whetzel, D. L., Schmidt, F. L., & Maurer, S. D. (1994). The validity of employment interviews: A comprehensive review and meta-analysis. *Journal of Applied Psychology, 79,* 599-616.

McPhail, S. M. (2007). *Alternative validation strategies*. San Francisco: Jossey-Bass.

Mecham, R. C. (1985, August). Comparative effectiveness of situational, generalized, and job component validation methods. In P. R. Jeanneret (Chair), *Job component validity: Job requirements, estimates, and validity generalization comparisons.* Symposium conducted at the 92nd Annual Convention of the American Psychological Association, Los Angeles.

Meriac, J. P., Hoffman, B. J., Woehr, D. J., & Fleisher, M. S. (2008). Further evidence for the validity of assessment center dimensions: A meta-analysis of the incremental criterion-related validity of dimension ratings. *Journal of Applied Psychology, 93,* 1042-1052.

Meyer, K. D., & Foster, J. (2007, April). Exploring the utility of three approaches to validating a job analysis tool. In M. Anderson (Chair), *Worker-oriented job analysis tools: Development and validation.* Symposium conducted at the 22nd Annual Meeting of the Society for Industrial and Organizational Psychology, New York.

Meyer, K. D., Foster, J., & Anderson, M. G. (2006, May). Assessing the predictive validity of the Performance Improvement Characteristics job analysis tool. In J. Foster (Chair), *Standardized job analysis tools: State of the science.* Symposium conducted at the 21st Annual Meeting of the Society for Industrial and Organizational Psychology, Dallas, Texas.

Morgan, C. D., & Murray, H. A. (1935). A method for investigating fantasies: The Thematic Apperception Test. *Archives of Neurology and Psychiatry, 34,* 289-306.

Mossholder, K. W., & Arvey, R. D. (1984). Synthetic validity: A conceptual and comparative review. *Journal of Applied Psychology, 69,* 322-333.

Mount, M. K., & Barrick, M. R. (1995). The big five personality dimensions: Implications for research and practice in human resources management. In G. R. Ferris (Ed.), *Research in Personnel and Human Resources Management, 13,* 153-200.

Mount, M. K., & Barrick, M. R. (2001). *Personal Characteristics Inventory manual.* Libertyville, IL: Wonderlic.

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

Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology, 66,* 574-583.

Ones, D. S., Dilchert, S., Viswesvaran, C., & Judge, T. A. (2007). In Support of personality assessment in organizational settings. *Personnel Psychology, 60,* 995-1027.

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.

Ozer, D. J., & Benet-Martinez, V. (2005). Personality and the prediction of consequential outcomes. *Annual Review of Psychology, 57,* 8.1-8.21.

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.

Pearlman, K., Schmidt, F. L, & Hunter, J. E. (1980). Validity generalization results for tests used to predict job proficiency and training success in clerical occupations. *Journal of Applied Psychology, 65,* 373-406.

Primoff, E. S. (1959) Empirical validation of the J-coefficient. *Personnel Psychology, 12,* 413-418.

Raymark, P. H., Schmit, M. J., & Guion, R. M. (1997). Identifying potentially useful personality constructs for employee selection. *Personnel Psychology, 50,* 723-736.

Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspectives on Psychological Science, 2,* 313-345.

Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin, 86*, 638-641.

Rothstein, H. R., Schmidt, F. L., Erwin, F. W., Owens, W. A., & Sparks, C. P. (1990). Biographical data in employment selection: Can validities be made generalizable? *Journal of Applied Psychology, 75,* 175-184.

Rotter, J. (1966). Generalized expectancies for internal vs. external control of reinforcement. *Psychological Monographs. 80* (Whole No. 609).

Rybicki, S. (1997). *Validity of personality measures for entry level jobs*. Technical Report. 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,* 30-43.

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

Salgado, J. F., & Moscoso, S. (1999, May). *Construct validity of two personality inventories based upon the five-factor model (FFM)*. Paper presented at the 14th Annual Meeting of the Society for Industrial and Organizational Psychology, Atlanta, GA.

Scherbaum, C. A. (2005). Synthetic validity: Past, present, and future. *Personnel Psychology, 58,* 481-515.

Schmidt, F. L., & Hunter, J. E. (1977). Development of a general solution to the problem of validity generalization. *Journal of Applied Psychology, 62,* 529-54.

Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research. *Psychological Bulletin, 124,* 262-274.

Schmidt, F. L., & Rothstein, H. R. (1994). Applications of validity generalization methods of meta-analysis to biographical data scores in employees' selection. In G. S. Stokes, M. D. Mumford, & W. A. Owens (Eds.), *The biodata handbook: Theory, research, and applications* (pp. 237-260). Palo Alto, CA: Consulting Psychologists Press.

Schneider, B. (1987). The people make the place. *Personnel Psychology, 40*, 437-453.

Smith, M. L., & Glass, G. V. (1977). Meta-analysis of psychotherapy outcome studies. *American Psychologist, 32*, 752-760.

Society for Industrial and Organizational Psychology (2003). *Principles for the validation and use of personnel selection procedures* (4th ed.). Bowling Green, OH: Author.

Tett, R. P., & Chistiansen, N. D. (2007). Personality tests at the crossroads: A response to Morgeson, Campion, Dipboye, Hollenbeck, Murphy, and Schmitt. *Personnel Psychology, 60,* 967-993.

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 mind. *Psychological Review, 41*, 1-32.

Tippins, N. T. (2003, October). *Transporting the validity of assessments.* Presentation at the annual meeting of International Assessment Congress, Atlanta, GA.

Tippins, N. T., McPhail, S. M., Hoffman, C., & Gibson, W. (1999, April). *Transporting validity in the real world*. Continuing Education Workshop presented at the 14th Annual Conference of the Society of Industrial and Organizational Psychology, Atlanta, GA.

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.

US Department of Labor (1991). *Dictionary of occupational titles*. Washington, DC: U.S. Government Printing Office.

Warrenfeltz, R. B. (1995, May). *An executive-level validation of the Borman and Brush taxonomy.* Paper presented at the 10th Annual Conference of the Society for Industrial and Organizational Psychology, Orlando, FL.

Wiggins, J. S., & Pincus, A. L. (1992). Personality structure and assessment. *Annual Review of Psychology, 43,* 473-504.

Wiggins, J. S. (1996). *The five-factor model of personality.* New York: Guilford.

APPENDIX A: The Job Evaluation Tool (JET)

Introduction

The Job Evaluation Tool (JET) is a job analysis system designed to identify personal characteristics and competencies required by jobs. Different jobs require different personality characteristics, work preferences, and competencies for successful performance. The JET provides a systematic way for job experts to describe a job and to compare it to other jobs. The four sections of this job analysis are worker-based with a focus on identifying specific personality, motivational, and behavioral competencies necessary for job success. Results from the JET are used for a variety of human resource purposes including identifying and developing job-related assessments, matching people to jobs and work groups, and defining the personal characteristics needed for jobs of the future.

Subject Matter Expert Qualifications

Please provide the information requested below. Your qualifications and responses are confidential. All data are for research purposes only. Your responses will be combined with other experts' responses to create an overall job profile for the job in question.

About your organization:

1. TITLE OF THE JOB YOU ARE EVALUATING:_____
2. Your organization's name: _____

About you:

1. Your current job title: _____
2. Your name: _____
3. ID number: _____
4. Race/Ethnicity: __White __African American __Hispanic__Other (specify)____
5. Gender: _____Male _____Female
6. Have you worked in the job you are evaluating as a(n):

Position	Yes/No	Years of Experience
Incumbent	_____	_____
Supervisor/Manager	_____	_____
Trainer	_____	_____
Recruiter	_____	_____
HR Specialist	_____	_____
Other (specify) _____	_____	_____

7. How confident are you in the level of knowledge you have about the job you are evaluating?
   ___Not at all_____Not very_____Somewhat _____Very _____Extremely

JOB CHARACTERISTICS

INSTRUCTIONS

Below is a list of behavioral characteristics. Please rate the extent to which each characteristic would **IMPROVE** the performance of a _____. Try to work quickly. Do not spend too much time thinking about any single item. Please mark your responses in the bubbles provided.

Does **Not** Improve Performance	**Minimally** Improves Performance	**Moderately** Improves Performance	**Substantially** Improves Performance
0	**1**	**2**	**3**

Would job performance IMPROVE if a_____……?

		Rating						Rating
1.	Is steady under pressure	⓪	①	②	③	25. Is kind and considerate	⓪	①	②	③
2.	Is not easily irritated by others	⓪	①	②	③	26. Understands others' moods	⓪	①	②	③
3.	Is relaxed and easy-going	⓪	①	②	③	27. Likes being around other people	⓪	①	②	③
4.	Doesn't worry about his/her past mistakes	⓪	①	②	③	28. Is good-natured - not hostile	⓪	①	②	③
5.	Stays calm in a crisis	⓪	①	②	③	29. Is self-controlled and conscientious	⓪	①	②	③
6.	Rarely loses his/her temper	⓪	①	②	③	30. Supports the organization's values	⓪	①	②	③
7.	Doesn't complain about problems	⓪	①	②	③	31. Is hard-working	⓪	①	②	③
8.	Trusts others – is not suspicious	⓪	①	②	③	32. Does as good a job as possible	⓪	①	②	③
9.	Gets along well with supervisors and authority figures	⓪	①	②	③	33. Pays attention to feedback	⓪	①	②	③
10.	Takes initiative – solves problems on his/her own	⓪	①	②	③	34. Likes predictability at work	⓪	①	②	③
11.	Is competitive	⓪	①	②	③	35. Rarely deviates from standard procedures	⓪	①	②	③
12.	Is self-confident	⓪	①	②	③	36. Respects authority	⓪	①	②	③
13.	Is positive	⓪	①	②	③	37. Is imaginative and open-minded	⓪	①	②	③
14.	Takes charge of situations	⓪	①	②	③	38. Is interested in science	⓪	①	②	③
15.	Has clear career goals	⓪	①	②	③	39. Is curious about how things work	⓪	①	②	③
16.	Enjoys speaking in front of groups	⓪	①	②	③	40. Likes excitement	⓪	①	②	③
17.	Seems to enjoy social interaction	⓪	①	②	③	41. Enjoys solving problems and puzzles	⓪	①	②	③
18.	Likes social gatherings	⓪	①	②	③	42. Generates good ideas and solutions to problems	⓪	①	②	③
19.	Likes meeting strangers	⓪	①	②	③	43. Likes cultural activities	⓪	①	②	③
20.	Needs variety at work	⓪	①	②	③	44. Keeps up on advances in their profession	⓪	①	②	③
21.	Wants to be the center of attention	⓪	①	②	③	45. Likes to learn new things–enjoys training	⓪	①	②	③
22.	Is witty and entertaining	⓪	①	②	③	46. Is good with numbers	⓪	①	②	③
23.	Is warm and friendly	⓪	①	②	③	47. Remembers details	⓪	①	②	③
24.	Is tolerant (not critical or judgmental)	⓪	①	②	③	48. Reads in order to stay informed	⓪	①	②	③

PERFORMANCE BARRIERS

INSTRUCTIONS

Below is a list of behavioral characteristics. Please rate the extent to which each characteristic would **IMPEDE** or **DEGRADE** the performance of a _____. Try to work quickly. Do not spend too much time thinking about any single item. Please mark your responses in the bubbles provided.

Does **Not** Degrade Performance	**Minimally** Degrades Performance	**Moderately** Degrades Performance	**Substantially** Degrades Performance
0	**1**	**2**	**3**

Would job performance DECLINE if a _____….?

		Rating
1.	Becomes emotional when dealing with difficult people	⓪ ① ② ③
2.	Becomes irritable when frustrated	⓪ ① ② ③
3.	Mistrusts others and questions their motives	⓪ ① ② ③
4.	Resents criticism and takes it personally	⓪ ① ② ③
5.	Resists needed changes in job procedures	⓪ ① ② ③
6.	Avoids taking any risks	⓪ ① ② ③
7.	Makes decisions without consulting or informing others	⓪ ① ② ③
8.	Is typically silent and uncommunicative	⓪ ① ② ③
9.	Ignores any feedback about performance	⓪ ① ② ③
10.	Is deliberately slow finishing tasks	⓪ ① ② ③
11.	Won't share credit for success with other team members	⓪ ① ② ③
12.	Treats others disrespectfully	⓪ ① ② ③
13.	Pushes the limits by bending the rules	⓪ ① ② ③
14.	Acts impulsively	⓪ ① ② ③
15.	Shows off at work	⓪ ① ② ③
16.	Interrupts others when they are speaking	⓪ ① ② ③
17.	Lacks common sense	⓪ ① ② ③
18.	Has trouble solving practical problems	⓪ ① ② ③
19.	Is extremely meticulous and precise	⓪ ① ② ③
20.	Is a perfectionist	⓪ ① ② ③
21.	Won't take initiative to solve problems	⓪ ① ② ③
22.	Won't make decisions when problems occur	⓪ ① ② ③

WORK PREFERENCES

INSTRUCTIONS

Below is a list of work preferences. Please rate the extent to which each characteristic listed below **DESCRIBES** the _____ work group (s) in your organization. The work group consists of those individuals who hold positions with the specified job title and their immediate supervisor, all of whom work together. Try to work quickly. Do not spend too much time thinking about any single item. Please mark your responses in the bubbles provided.

Does **Not** Describe the Work Group	**Minimally** Describes the Work Group	**Moderately** Describes the Work Group	**Substantially** Describes the Work Group
0	**1**	**2**	**3**

The _____ work group(s) in our organization…

1. Focus on bottom-line results _____ ⓪ ① ② ③
2. Monitor budgets and spending closely _____ ⓪ ① ② ③
3. Set clear financial goals for the work group_____ ⓪ ① ② ③
4. Evaluate staff needs in financial terms _____ ⓪ ① ② ③
5. Do things to improve the appearance of offices and facilities _____ ⓪ ① ② ③
6. Care about the appearance of company work products and work spaces _____ ⓪ ① ② ③
7. Work to improve the appearance of our marketing and advertising material _____ ⓪ ① ② ③
8. Insist that equipment is clean and attractive_____ ⓪ ① ② ③
9. Look for ways to apply new technology in the workplace_____ ⓪ ① ② ③
10. Use data to forecast business trends_____ ⓪ ① ② ③
11. Use data to evaluate financial performance _____ ⓪ ① ② ③
12. Troubleshoot systems and business processes ___ ⓪ ① ② ③
13. Encourage and support poor performers _____ ⓪ ① ② ③
14. Show sympathy for those with personal problems_____ ⓪ ① ② ③
15. Believe everyone should have an equal opportunity for advancement _____ ⓪ ① ② ③
16. Put the needs of others above their own _____ ⓪ ① ② ③
17. Are strict about matters of right and wrong _____ ⓪ ① ② ③
18. Support family values _____ ⓪ ① ② ③
19. Are concerned about moral and ethical matters _ ⓪ ① ② ③
20. Seem to have old-fashioned, "old school" values ⓪ ① ② ③
21. Avoid taking risky actions_____ ⓪ ① ② ③
22. Analyze the risk involved before making a decision_____ ⓪ ① ② ③
23. Seem concerned about job security _____ ⓪ ① ② ③
24. Hate making mistakes _____ ⓪ ① ② ③
25. Enjoy meeting new people _____ ⓪ ① ② ③
26. Enjoy social interaction at work _____ ⓪ ① ② ③
27. Enjoy holding meetings _____ ⓪ ① ② ③
28. Enjoy spending time with the staff _____ ⓪ ① ② ③
29. Like being the center of attention _____ ⓪ ① ② ③
30. Talk about their achievements _____ ⓪ ① ② ③
31. Try to impress others _____ ⓪ ① ② ③
32. Tend to show off _____ ⓪ ① ② ③
33. Want to beat the competition _____ ⓪ ① ② ③
34. Are persistent in achieving goals _____ ⓪ ① ② ③
35. Take the initiative to solve problems _____ ⓪ ① ② ③
36. Establish high standards for performance ___ ⓪ ① ② ③
37. Enjoy having a good time _____ ⓪ ① ② ③
38. Like to entertain clients and customers _____ ⓪ ① ② ③
39. Make the workplace fun _____ ⓪ ① ② ③
40. Organize special events and holiday parties _ ⓪ ① ② ③

JOB COMPETENCIES

INSTRUCTIONS

Below is a list of competencies associated with successful job performance across many jobs. Please rate the extent to which each competency **IMPROVES** job performance in the _____ job. Please evaluate every competency. Try to work quickly. Do not spend too much time thinking about any single competency.

Not Associated with Job Performance	**Minimally** Concerned with Job Performance	**Helpful** for Job Performance	**Important** for Job Performance	**Critical** for Job Performance
0	**1**	**2**	**3**	**4**

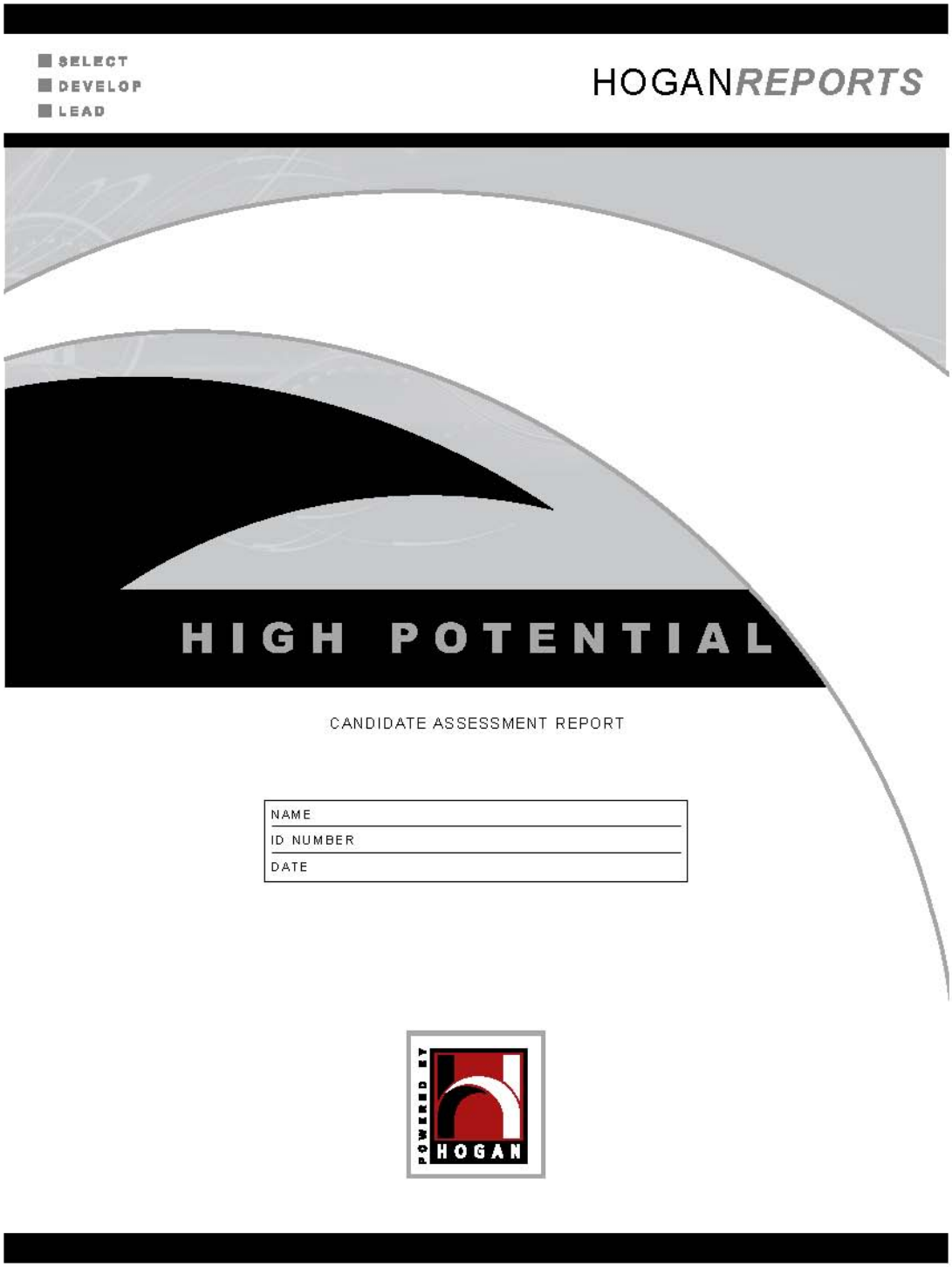
Competency	**Definition**	**Rating**
1. Stress Tolerance	Handles pressure without getting upset, moody, or anxious _____	⓪ ① ② ③ ④
2. Work Attitude	Has a positive attitude toward work_____	⓪ ① ② ③ ④
3. Achievement Orientation	Strives to meet and exceed goals for self and others _____	⓪ ① ② ③ ④
4. Initiative	Takes action before being told what to do _____	⓪ ① ② ③ ④
5. Leadership	Provides direction and motivates others to work for a common goal _____	⓪ ① ② ③ ④
6. Customer Service	Provides courteous and helpful service to customers and associates_____	⓪ ① ② ③ ④
7. Interpersonal Skills	Gets along well with others, is tactful, and behaves appropriately in social situations_____	⓪ ① ② ③ ④
8. Teamwork	Works well in groups and is a good team player _____	⓪ ① ② ③ ④
9. Integrity	Follows rules and is a good organizational citizen _____	⓪ ① ② ③ ④
10. Trustworthiness	Is honest and trustworthy_____	⓪ ① ② ③ ④
11. Detail Orientation	Performs work with great care and accuracy over a period of time_____	⓪ ① ② ③ ④
12. Safety	Follows safety precautions and displays safe on-the-job behavior _____	⓪ ① ② ③ ④
13. Planning/Organizing	Plans work to maximize efficiency (in time and resources) and minimize downtime _____	⓪ ① ② ③ ④
14. Dependability	Performs work in a consistent and timely manner_____	⓪ ① ② ③ ④
15. Decision Making	Evaluates issues and uses sound reasoning to make decisions _____	⓪ ① ② ③ ④
16. Problem Solving	Identifies and implements effective solutions to problems _____	⓪ ① ② ③ ④
17. Teaching Others	Provides training for others _____	⓪ ① ② ③ ④
18. Math Skills	Uses mathematics appropriately to answer questions or solve problems ____	⓪ ① ② ③ ④
19. Job Knowledge	Understands all aspects of the job _____	⓪ ① ② ③ ④
20. Training Performance	Performs well in job training sessions or courses _____	⓪ ① ② ③ ④
21. Conflict Resolution	Resolves interpersonal problems and disputes with tact and decisiveness ___	⓪ ① ② ③ ④
22. Organizational Commitment	Shows dedication and loyalty to his/her company _____	⓪ ① ② ③ ④
23. Citizenship	Represents the company favorably to outsiders _____	⓪ ① ② ③ ④

24. Flexibility	Adapts quickly to changing circumstances and is willing to try new methods	⓪ ① ② ③ ④
25. Management Performance	Coordinates resources to maximize productivity and efficiency	⓪ ① ② ③ ④
26. Industry Knowledge	Understands the industry and its emerging trends	⓪ ① ② ③ ④
27. Influence	Provides effective rationale to support own opinion and ideas	⓪ ① ② ③ ④
28. Employee Development	Provides support and career direction to peers and subordinates	⓪ ① ② ③ ④
29. Strategic Vision	Understands and talks about the big picture	⓪ ① ② ③ ④
30. Judgment	Uses and synthesizes information to solve problems, make evaluations, and draw sound conclusions based on subjective and/or objective criteria	⓪ ① ② ③ ④
31. Oral Communication	Conveys information clearly and expresses self well in conversations	⓪ ① ② ③ ④
32. Written Communication	Writes clearly and concisely	⓪ ① ② ③ ④
33. Technical Knowledge	Uses existing technology and considers the use of new technology to increase productivity	⓪ ① ② ③ ④
34. Adaptability	Is able to change directions quickly and work without explicit guidance	⓪ ① ② ③ ④
35. Delegation	Assigns work to others based on their skills and future development needs	⓪ ① ② ③ ④
36. Negotiation	Explores alternatives to reach outcomes acceptable to all parties	⓪ ① ② ③ ④
37. Impact	Creates a good first impression and commands attention and respect	⓪ ① ② ③ ④
38. Information Monitoring	Sets up procedures to collect information needed to manage activities	⓪ ① ② ③ ④
39. Building Strategic Work Relationships	Develops collaborative relationships to facilitate the accomplishment of work goals	⓪ ① ② ③ ④
40. Innovation	Finds innovative solutions to problems at work	⓪ ① ② ③ ④
41. Gaining Commitment	Uses appropriate methods to gain acceptance of ideas or plans	⓪ ① ② ③ ④
42. Facilitating Change	Encourages others to find or adopt innovative solutions	⓪ ① ② ③ ④
43. Risk Taking	Takes chances to achieve goals while considering possible negative consequences	⓪ ① ② ③ ④
44. Verbal Direction	Listens to and follows verbal directions from others	⓪ ① ② ③ ④
45. Data Entry	Ensures high quality data entry by balancing the needs for speed and accuracy	⓪ ① ② ③ ④
46. Vigilance	Remains watchful and alert while performing monotonous tasks	⓪ ① ② ③ ④
47. Consultative Sales	Develops understanding of client history and goals in order to offer needed services	⓪ ① ② ③ ④
48. Facilitative Sales	Uses detailed product knowledge to facilitate the sale of products and services	⓪ ① ② ③ ④
49. Building Partnerships	Builds strategic relationships to help achieve business goals	⓪ ① ② ③ ④
50. Building Teams	Uses appropriate methods to build a cohesive team	⓪ ① ② ③ ④
51. Formal Presentation	Presents ideas effectively to individuals or groups	⓪ ① ② ③ ④
52. Sales Ability	Uses appropriate interpersonal styles and communication methods to sell products or services	⓪ ① ② ③ ④
53. Continuous Learning	Actively identifies new areas for personal learning	⓪ ① ② ③ ④
54. Follow-Up	Monitors the results of work assigned to others	⓪ ① ② ③ ④
55. Meeting Participation	Is an active participant during meetings	⓪ ① ② ③ ④
56. Meeting Leadership	Ensures that meetings accomplish their business objectives	⓪ ① ② ③ ④

APPENDIX B: Simulated Pass Rates

Competency	Level	Sample 1	Sample 2	Sample 3	Sample 4
		N = 20,407	*N* = 1,148	*N* = 117	*N* = 38
Strategic Reasoning	Below Requirements	17.00	16.40	20.50	13.20
	Meets Requirements	49.10	51.90	49.60	57.90
	Exceeds Requirements	33.90	31.70	29.90	28.90
Tactical Problem Solving	Below Requirements	16.80	18.20	16.20	15.80
	Meets Requirements	59.30	62.20	54.70	47.40
	Exceeds Requirements	23.90	19.60	29.10	36.80
Operational Excellence	Below Requirements	20.10	19.30	26.50	18.40
	Meets Requirements	59.50	59.10	48.70	65.80
	Exceeds Requirements	20.50	21.60	24.80	15.80
Results Orientation	Below Requirements	21.70	17.20	15.40	26.30
	Meets Requirements	52.50	57.80	58.10	52.60
	Exceeds Requirements	25.80	25.10	26.50	21.10
Talent Development	Below Requirements	21.90	16.30	16.20	10.50
	Meets Requirements	46.70	50.90	51.30	57.90
	Exceeds Requirements	31.40	32.80	32.50	31.60
Respect for People	Below Requirements	12.70	13.90	12.80	10.50
	Meets Requirements	72.40	71.30	67.50	65.80
	Exceeds Requirements	14.90	14.90	19.70	23.70
Collaboration	Below Requirements	14.70	13.90	16.20	15.80
	Meets Requirements	65.70	65.90	59.80	71.10
	Exceeds Requirements	19.60	20.30	23.90	13.20
Strategic Self-Awareness	Below Requirements	23.60	20.60	23.90	31.60
	Meets Requirements	54.30	57.00	48.70	50.00
	Exceeds Requirements	22.10	22.50	27.40	18.40
Tenacity	Below Requirements	25.10	24.40	26.50	26.3
	Meets Requirements	55.00	53.90	56.40	57.9
	Exceeds Requirements	20.00	21.70	17.10	15.8
Judgment	Below Requirements	25.30	18.60	29.90	15.80
	Meets Requirements	48.70	51.20	43.60	47.40
	Exceeds Requirements	25.90	30.20	26.50	36.80

Sample Report



INTRODUCTION

This report summarizes the candidate's assessment results from the Hogan Personality Inventory (HPI), Hogan Development Survey (HDS), and Motives, Values Preferences Survey (MVPI) mapped to the Hogan High Potential Competency Profile. The ratings provide a hiring manager with additional information about a candidate's potential to meet the requirements associated with competencies in the profile. The interview guide offers questions that can be used to further probe competency behaviors.

The interview guide offers questions that can be used to further probe competency behaviors.

The results contained in this report are NOT meant to supersede the judgment of a hiring manager. Rather, a hiring manager should use these results as one input into his/her process for arriving at a hiring decision regarding a candidate.

HOGAN HIGH POTENTIAL ASSESSMENT PROFILE

E Exceeds Requirements MR Meets Requirements B Below Requirements

Competency	Competency Definition	Rating
Business Domain – Competencies related to the processing of information to address business challenges.		
Strategic Reasoning	Combines the ideas of self and others to envision the possibilities and chart a course to an improved future-state.	B
Tactical Problem Solving	Synthesizes available data and facts into plausible courses of action that will result in the resolution of identified problems.	MR
Operational Excellence	Manages business priorities and resources to ensure the efficient, timely, and cost effective achievement of business results.	E
Leadership Domain – Competencies related to the challenges of leading self and others.		
Results Orientation	Establishes high performance standards for self and others and assumes personal ownership and accountability for achieving business results.	B
Talent Development	Pursues a personal course of development related to business acumen and uses that knowledge to hire, coach, and develop the performance of others.	B
Interpersonal Domain – Competencies related to building and maintaining relationships.		
Respect for People	Builds trust-based relationships with people by treating them with dignity, respect, and fairness, while valuing their diversity in background and views.	MR
Collaboration	Develops positive working relationships that emphasize team accomplishment in conjunction with individual contribution.	MR
Intrapersonal Domain – Competencies related to the way one approaches challenges in the workplace.		
Strategic Self-Awareness	Recognizes own strengths and weaknesses and uses that information to guide personal growth and development.	MR
Tenacity	Pursues the resolution of business challenges with urgency and determination to achieve positive outcomes.	MR
Judgment	Initiates action only after evaluating the consequences of the action and determining that the benefits are likely to outweigh the costs.	E

HOGAN HIGH POTENTIAL INTERVIEW GUIDE

Business Domain – Competencies related to the processing of information to address business challenges.	
Strategic Reasoning	• Give an example of when you have identified an impending issue or trend and describe the steps you took to deal with the issue. • Tell me about a time when you envisioned a unique idea or built on the idea of another and took action to turn your vision into reality.
Tactical Problem Solving	• Give an example of when your ability to think outside the box and create a new solution to an old or recurring problem led to positive results. • Tell me about a time when your ability to solve a problem in a practical, hands-on manner resulted in a simple yet highly effective solution.
Operational Excellence	• Provide an example of when you worked on a complicated project in which you needed to balance priorities and resources in order to ensure success. • Give an example of when your planning and organizing skills allowed you to achieve an important work objective.
Leadership Domain – Competencies related to the challenges of leading self and others.	
Results Orientation	• It is not always easy to achieve required work goals or objectives. Describe a stretch goal or objective that you were able to achieve. Why was it a stretch goal? • Give an example of when you had to set performance standards for yourself and others and took the lead for achieving results based on the standards set.
Talent Development	• Give an example of when you learned from observing others perform. How did you apply this knowledge in the future? • Provide an example of when you used your business knowledge to successfully coach a team member or colleague to perform a challenging aspect of his\her job.
Interpersonal Domain – Competencies related to building and maintaining relationships.	
Respect for People	• Have you ever said something to a colleague that was too direct (or blunt) and it hurt your working relationship? How did you handle the situation? • Give an example of a time when you had to maintain the self-esteem of a peer or colleague to ensure a good working relationship.
Collaboration	• Describe the most effective techniques you have used to encourage or motivate team members to work together and contribute their talents to accomplish a team goal. Provide an example. • Provide an example of when you challenged a team member's position or actions and still maintained a positive working relationship.
Intrapersonal Domain – Competencies related to the way one approaches challenges in the workplace.	
Strategic Self-Awareness	• Give an example of when you have used feedback from others to change your behavior or improve your performance • Tell me about a time when you recognized an emerging strength and proactively sought out an assignment or job to further build the strength.
Tenacity	• Give an example of when you persisted when facing failure to the point where you eventually achieved success. • Tell me about a time when you misjudged the need for urgency with respect to a task or assignment. How did you handle the situation?
Judgment	• Give an example of an important decision you were required to make although you felt you did not have sufficient information to make the decision. How did you handle the situation? • Describe the process you typically follow when you are required to make a critical decision that has significant risk associated with it. Can you provide an example?

ISBN: 978-0-9840969-2-3