TECHNICAL REPORT

Validity of the Hogan Personality Inventory, Hogan Development Survey, and the Motives, Values, Preferences Inventory for Developing Leaders using The Essential Leader model

Documentation of Evidence for Competency Validation

November 2019

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RESEARCH SUMMARY

This report summarizes the competency research conducted for The Aware Leader's competency model: "The Essential Leader". The Aware Leader collaborated with Hogan to validate the Hogan Personality Inventory (HPI), Hogan Development Survey (HDS), and Motives, Values, Preferences Inventory (MVPI), to predict an individual's potential to perform the competency-based requirements associated with successful Leader performance based on The Essential Leader model.

The report details the methods used to (a) identify the accumulation of validity evidence and (b) provide rationale for the HPI, HDS, and MVPI scale selection for each competency.

Hogan researchers conducted a review of the model to understand the key competencies and aligned those competencies to the Hogan Competency Model (HCM). Next, employing a synthetic/job component validation process, we searched the Hogan archive to locate criterion measures of HCM competencies aligned with the client's competencies. This process (a) identified valid predictors of those job components based on the results of archival validation studies, (b) aggregated correlations across multiple studies for each component/competency, and (c) applied the results to the same components/competencies required for Leaders. Hogan then used these results and content validity/expert judgment to develop the final scale recommendations used to predict each competency.

The remainder of this document describes (a) the research process, (b) the recommended scoring guidelines, and (c) the estimated impact of using the assessments to develop Leaders.

We organized this document in the following sections:

- ***Introduction*** – project overview
- ***Competency Identification*** – establishing critical competencies
- ***Synthetic/Job Component Validity*** – research on jobs with similar components
- ***Recommendations*** – scale selection, application, and implementation

For more detailed information about the processes detailed in the following pages, please consult the Hogan Competency Research Methodology (HCRM) annex. The annex contains non-company specific details regarding all research steps available to clients.

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1 INTRODUCTION

1.1 Problem and Setting

The Aware Leader development process is critical for developing talented Leaders who will contribute to the long-term success of their respective companies. The complexities of succession planning and the dynamic job market warrant continuous evaluation and improvement of Leader development processes.

A review of alternative development techniques prompted The Aware Leader to conclude that an assessment of personality characteristics could enhance the current procedures used to develop Leaders at any company. The Aware Leader contacted Hogan and initiated research to construct a measurement platform for The Aware Leader's "The Essential Leader" competencies. By aligning the Aware Leader competency model to the Hogan Competency Model (HCM), Hogan can leverage 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, 2010; hereafter "MVPI") to create custom scale recommendations. For more information on the development of the HCM and how Hogan uses personality to predict performance based on competencies, please refer to HCRM chapter A1. If the inventory scales demonstrated validity, The Aware Leader planned to use the assessments to help develop Leaders.

Our 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, 2014; hereafter "Standards"). In areas where the Uniform Guidelines, Principles and/or Standards proved vague or inapplicable, the research approach relies on the broader scientific/professional literature for guidance.

1.2 User, Location(s), and Dates of Study

The Aware Leader is an independent consulting firm founded by Richard Metheny (The Aware Leader, 2019). Hogan conducted research described in this report between September 2019 and November 2019. Although most work occurred online or over the phone, participating individuals were located:

Hogan Assessment Systems 11 S. Greenwood Tulsa, OK 74120	The Aware Leader 638 Turner Avenue Dallas, TX 75208

For additional information regarding (a) the foundation, (b) rationale behind the steps described in this report, or (c) assessments used in this study, please consult the HCRM.

2 COMPETENCY IDENTIFICATION

The first step in competency modeling is to identify the critical components of a job using job analysis. Many clients conduct a job analysis internally and develop a model of competencies critical for success within a role or their organization. For clients who have conducted their own job analysis and created their own model, Hogan will not complete a job analysis and will move to competency alignment. If they have not identified critical competencies, Hogan can conduct a job analysis to identify critical competencies.

2.1 Job Analysis

In the present study, Hogan did not conduct a job analysis because conversations between Hogan and The Aware Leader led to a decision to focus on the critical competencies identified by The Aware Leader's internal research. For more information on Hogan's approach to job analysis, please consult HCRM section A2.1.

2.2 Competency Alignment

As part of the development of competency-based guidelines, Hogan aligned The Aware Leader competencies with the HCM (Hogan Assessment Systems, 2016). To align the two competency models, clear competency definitions were necessary. For this project, we relied on information provided by The Aware Leader to define each competency and illustrate the types of work styles and behaviors associated with each component. The Hogan research team then used their expert knowledge of competencies and job performance to align the Aware Leader competencies (and competency components) with Hogan competencies. For more information on this process, see HCRM section A2.3. Table 1 displays the alignment of the Hogan and The Aware Leader competency models.

Table 1 The Aware Leader and Hogan Competency Alignment

The Aware Leader Competency	The Aware Leader Competency Definition	Hogan Competency	Hogan Competency Definition
Thinking Critically			
	Decides with speed and conviction, has mental agility	Decision Making	Uses sound judgment to make timely and effective decisions.
		Displaying Confidence	Projects poise and self-assurance when completing work tasks.
	Demonstrates strategic foresight and an orientation to the preferred future	Anticipating Problems	Forecasts and detects errors, gaps, and potential flaws.
		Driving Strategy	Directs effort to achieve long-term business objectives.
	Sees the enterprise as a series of integrated and interlocking processes	Business Insight	Applies business knowledge to achieve organizational goals and objectives.
	Generates original thoughts and is resourceful in finding ways to improve things	Driving Change	Champions new methods, systems, and processes to improve performance.
		Driving Innovation	Stimulates creative ideas and perspectives that add value.
	Raises vital questions and problems, formulating them clearly and precisely	Anticipating Problems	Forecasts and detects errors, gaps, and potential flaws.
		Verbal Communication	Expresses ideas and opinions effectively in spoken conversations.
	Comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards	Solving Problems	Identifies solutions given available information.
Understanding Impact			
	Thinks and acts ethically and morally	Integrity	Acts honestly in accordance with moral or ethical principles.
	Sets high standards of execution incorporating mission into daily activities	Quality Focus	Strives to meet quality standards and produce quality work products

Table 1 The Aware Leader and Hogan Competency Alignment (Continued)

The Aware Leader Competency	The Aware Leader Competency Definition	Hogan Competency	Hogan Competency Definition
	Knows potential impacts and consequences of decision making in situations both internally and externally	Taking Smart Risks	Evaluates tradeoffs between potential costs and benefits and acts accordingly.
	Shows patience and responds calmly to stressful or trying situations	Handling Stress	Manages pressure without getting upset, moody, or anxious.
	Understands and manages the power and politics inherent in any organization	Political Savvy	Recognizes, interprets, and works within the political environment of an organization.
	Is in touch with emotions and effects on behavior to better understand how to influence people to achieve outcomes	Influencing Others	Persuades others to help achieve organizational goals and objectives.
Leveraging Knowledge			
	Demonstrates continuous-improvement mindset and knows the industry	Driving Change	Champions new methods, systems, and processes to improve performance.
		Industry Insight	Applies knowledge of industry trends and outlooks to achieve organizational goals and objectives.
	Leverages functional knowledge, technical skills and expertise and shares with others	Leveraging Work Skills	Applies technology and job-relevant abilities to complete work tasks.
		Presenting to Others	Conveys ideas and information to groups.
	Optimizes financial acumen to make business decisions	Financial Insight	Applies financial knowledge to achieve organizational goals and objectives.
	Stays up-to-date with industry-specific content knowledge, rapidly assimilating and using new knowledge	Industry Insight	Applies knowledge of industry trends and outlooks to achieve organizational goals and objectives.

Table 1 The Aware Leader and Hogan Competency Alignment (Continued)

The Aware Leader Competency	The Aware Leader Competency Definition	Hogan Competency	Hogan Competency Definition
	Effectively seeks and shares information	Verbal Communication	Expresses ideas and opinions effectively in spoken conversations.
		Processing Information	Gathers, organizes, and analyzes diverse sources of information.
	Makes evidence-based decisions	Decision Making	Uses sound judgment to make timely and effective decisions.
Leading Self			
	Draws on personal and professional strengths as well as areas for personal development to build capacity	Professionalism	Acts in accordance with job-related values, principles, and standards.
	Is aware of judgments, emotions and physical sensations resulting in greater clarity and resolve in determining the best options – especially in situations of conflict and change.	Self Management	Demonstrates appropriate motivation, attitude, and self-control.
		Managing Conflict	Resolves hostilities and disagreements between others.
	Knows one's own method of decision making and problem solving	Self Management	Demonstrates appropriate motivation, attitude, and self-control.
		Decision Making	Uses sound judgment to make timely and effective decisions.
		Solving Problems	Identifies solutions given available information.
	Understands own strengths and limitations, values self-knowledge, and seeks feedback	Self-Development	Actively acquires new knowledge and skills to remain current with and/or grow beyond job requirements.
	Manages the quality of their energy, regardless of the external pressures they're facing	Handling Stress	Manages pressure without getting upset, moody, or anxious.
		Overcoming Obstacles	Pursues goals and strategies despite discouragement or opposition.

Table 1 The Aware Leader and Hogan Competency Alignment (Continued)

The Aware Leader Competency	The Aware Leader Competency Definition	Hogan Competency	Hogan Competency Definition
	Is responsible and accountable for actions and reactions	Accountability	Accepts responsibility for one's actions regardless of outcomes.
Directing People			
	Clearly communicates expectations	Verbal Communication	Expresses ideas and opinions effectively in spoken conversations.
	Builds and leads teams and develops future leaders	Team Building	Assembles productive groups based upon required skills, goals and tasks.
	Challenges other people appropriately and rejects mediocrity	Driving Performance	Provides guidance and feedback to maximize performance of individuals and/or groups.
	Constructively supports and manages disagreements	Managing Conflict	Resolves hostilities and disagreements between others.
	Entrust work to others, utilizing individual and team strengths to achieve goals	Delegating	Assigns work to others based on tasks, skills, and workloads.
	Instructs, guides, and oversees the performance of staff	Driving Performance	Provides guidance and feedback to maximize performance of individuals and/or groups.
		Leading Others	Demonstrates general leadership ability and effectiveness.
Influencing Others			
	Engages with impact motivating, persuading and exciting others	Inspiring Others	Motivates others to accomplish organizational goals.
	Cuts through the noise with authentic, credible self-promotion that helps others as well as themselves	Displaying Confidence	Projects poise and self-assurance when completing work tasks.

Table 1 The Aware Leader and Hogan Competency Alignment (Continued)

The Aware Leader Competency	The Aware Leader Competency Definition	Hogan Competency	Hogan Competency Definition
	Cuts through the noise with authentic, credible self-promotion that helps others as well as themselves	Developing People	Provides support, coaching, training, and career direction to others.
		Integrity	Acts honestly in accordance with moral or ethical principles.
	Serves as a change agent, assists others in understanding needed changes, reasons for change and the change process	Driving Change	Champions new methods, systems, and processes to improve performance.
		Influencing Others	Persuades others to help achieve organizational goals and objectives.
	Establishes and models standards that fosters exceptional quality and continuous improvement	Quality Focus	Strives to meet quality standards and produce quality work products.
		Driving Performance	Provides guidance and feedback to maximize performance of individuals and/or groups.
	Articulates ideas clearly and organizes ideas effectively	Verbal Communication	Expresses ideas and opinions effectively in spoken conversations.
		Processing Information	Gathers, organizes, and analyzes diverse sources of information.
	Communicates organizational mission, vision, objectives and priorities	Verbal Communication	Expresses ideas and opinions effectively in spoken conversations.
		Presenting to Others	Conveys ideas and information to groups.
Initiating Action			
	Takes action without being prompted and takes personal responsibility	Taking Initiative	Takes action without needing direction from others.

Table 1 The Aware Leader and Hogan Competency Alignment (Continued)

The Aware Leader Competency	The Aware Leader Competency Definition	Hogan Competency	Hogan Competency Definition
	Leads a transformation/change agenda	Driving Change	Champions new methods, systems, and processes to improve performance.
	Executes the vision	Driving Strategy	Directs effort to achieve long-term business objectives.
	Has high level of energy and motivation to sustain performance over time	Working Hard	Consistently strives to complete tasks and assignments at work.
		Self Management	Demonstrates appropriate motivation, attitude, and self-control.
		Engagement	Demonstrates loyalty and commitment through enthusiasm and extra effort.
	Turns ideas into actions that result in getting things implemented	Driving for Results	Accomplishes goals, completes tasks, and achieves results.
	Shows good judgment in strategies, tactics, and people decisions, reversing course quickly when needed	Decision Making	Uses sound judgment to make timely and effective decisions.
		Flexibility	Changes direction as appropriate based on new ideas, approaches, and strategies.
Relating Successfully			
	Works collegially, recognizes importance of relationships, inclusivity, and diversity	Leveraging Diversity	Respects and values individual differences to obtain a desired effect or result.
	Maintains broad internal and external networks of business relationships	Networking	Builds and maintains a system of strategic business connections.
	Interacts capably with a wide variety of stakeholders	Leveraging People Skills	Gets along well with others, is tactful, and behaves appropriately in social situations.

Table 1 The Aware Leader and Hogan Competency Alignment (Continued)

The Aware Leader Competency	The Aware Leader Competency Definition	Hogan Competency	Hogan Competency Definition
	Builds trusting, collaborative relationships	Relationship Building	Develops collaborative relationships to facilitate current and future objectives.
	Shows empathy towards others and considers other feelings	Caring about People	Displays sensitivity towards the attitudes, feelings, or circumstances of others.
	Actively listens, offers full attention when others speak, and is seen as a coach and mentor	Listening to Others	Listens and restates the ideas and opinions of others to improve mutual understanding.
		Developing People	Provides support, coaching, training, and career direction to others.

3 SYNTHETIC/JOB COMPONENT VALIDITY

The following section presents synthetic/job component validity. The Hogan archive contains information from over 1,000 research studies conducted from 1981 to the present and provides a means to identify the best predictor(s) of each competency in the HCM. Lemming, Nei, & Foster (2016) mapped each of the criteria from over 375 criterion-related validity studies in the Hogan archive onto the Hogan competencies and conducted a meta-analysis for each Hogan scale-by-competency relationship. These meta-analyses provide stable estimates of the relationships between the Hogan scales and the critical competencies for Leaders as defined by The Aware Leader. For more information on Hogan's approach, please consult the HCRM section A3.

3.1 Validity of the HPI for Predicting Job Performance

Table 2 contains operational validities (corrected for sampling error, unreliability in the criterion measure, and range restriction; see HCRM A3.3.1 for more information) of the relationships between the seven HPI scales and the critical competencies for Leaders as defined by The Aware Leader. Each competency has empirical support for several scales:

- **Thinking Critically:** Adjustment, Ambition, and Learning Approach
- **Understanding Impact:** Adjustment, Ambition, Sociability, Interpersonal Sensitivity, and Prudence
- **Leveraging Knowledge:** Adjustment, Ambition, and Learning Approach
- **Leading Self:** Adjustment, Ambition, Interpersonal Sensitivity, and Prudence
- **Directing People:** Adjustment, Ambition and Interpersonal Sensitivity
- **Influencing Others:** Adjustment, Ambition and Interpersonal Sensitivity
- **Initiating Action:** Adjustment and Ambition
- **Relating Successfully:** Adjustment and Interpersonal Sensitivity

Table 2 HPI Correlations with Critical Competencies

Competency	*K*	*N*	ADJ	AMB	SOC	INP	PRU	INQ	LRN
Thinking Critically									
Decides with speed…	45	5,593	.10*	.13*	-.02	.02	.06*	.02	.07*
	26	3,504	.15*	.39*	.14*	.05	.01	.09*	.10*
Demonstrates strategic foresight…	16	2,108	.03	.12*	-.04	-.08	.01	.01	.01
	16	2,279	.15*	.33*	.03	.05	.04	-.02	.05
Sees the enterprise…	13	1,671	.08*	.27*	.07*	-.07	.00	.02	.03
Generates original thoughts…	9	876	.07	.28*	.16*	.22*	.02	.00	.07
	20	1,783	.14*	.27*	.07	.06	.08*	.09*	.13*
Raises vital questions…	16	2,108	.03	.12*	-.04	-.08	.01	.01	.01
	71	6,999	.15*	.21*	.03	.13*	.09*	.03	.09*
Comes to well-reasoned…	52	5,305	.11*	.17*	.04	.03	.05*	.08*	.05
Understanding Impact									
Thinks and acts…	63	7,136	.16*	-.01	-.06	.11*	.16*	-.04	.00
Sets high standards…	29	3,048	.13*	.07	-.09*	.09*	.16	-.03	.05
Knows potential impacts…	18	2,545	.10*	.36*	.12*	.14*	.00	.11*	.10*
Shows patience and…	92	10,076	.26*	.13*	-.02	.12*	.12*	.00	.06*
Understands and manages…	6	1,067	.18*	.25*	.06	.18*	.07	-.04	.05
Is in touch…	15	1,871	.14*	.32*	.14*	.18*	.04	.04	.08
Leveraging Knowledge									
Demonstrates continuous-improvement mindset…	9	876	.07	.28*	.16*	.22*	.02	.00	.07
	30	3,473	.12*	.17*	.01	.00	.03	.08*	.09*
Leverages functional knowledge	22	1,405	.21*	.24*	.05	.05	.06	.07	.16*
	9	935	-.04	.30*	.26*	.21	-.06	.08	.08
Optimizes financial acumen…	11	1,204	.12*	.22*	.01	.04	.11*	-.01	.10*
Stays up-to-date with…	30	3,473	.12*	.17*	.01	.00	.03	.08*	.09*
Effectively seeks and…	26	3,063	.11*	.18*	-.04	-.02	.08*	.04	.13*
	71	6,999	.15*	.21*	.03	.13*	.09*	.03	.09*
Makes evidence-based decisions…	45	5,593	.10*	.13*	-.02	.02	.06*	.02	.07*
Leading Self									
Draws on personal…	52	6,559	.19*	.15*	-.02	.13*	.13*	-.02	.01
Is aware of…	16	1,850	.13*	.17*	.10	.08	.07	.05	.07
	22	2,244	.20*	.16*	-.02	.09*	.07	.00	.03
Knows one's own…	16	1,850	.13*	.17*	.10	.08	.07	.05	.07
	45	5,593	.10*	.13*	-.02	.02	.06*	.02	.07*
Understands own strengths…	52	5,305	.11*	.17*	.04	.03	.05*	.08*	.05
	56	5,407	.13*	.20*	.03	.10*	.10*	.10*	.12*
Manages the quality….	92	10,076	.26*	.13*	-.02	.12*	.12*	.00	.06*
	32	3,178	.11*	.23*	.01	.08	.09*	.03	.04

Table 2 HPI Correlations with Critical Competencies (Continued)

Competency	*K*	*N*	ADJ	AMB	SOC	INP	PRU	INQ	LRN
Is responsible and…	58	6,992	.12*	.03	-.05*	.06	.11	-.03	-.02
Directing People									
Clearly communicates expectations	71	6,999	.15*	.21*	.03	.13*	.09*	.03	.09*
Builds and leads…	22	2,628	.18*	.28*	.03	.20*	.07	-.01	.07*
Challenges other people…	24	2,115	.11*	.23*	.02	.09	.09*	-.02	.10*
Constructively supports and…	22	2,244	.20*	.16*	-.02	.09*	.07	.00	.03
Entrust work to…	10	1,401	.12	.25*	.06	.15	.02	-.02	.04
Instructs, guides, and…	24	2,115	.11*	.23*	.02	.09	.09*	-.02	.10*
	41	4,777	.14*	.38*	.11*	.13*	.07*	.07*	.07*
Influencing Others									
Engages with impact…	33	3,162	.12*	.24*	.02	.09*	.06*	-.01	.02
Cuts through the…	26	3,504	.15*	.39*	.14*	.05	.01	.09*	.10*
	41	4,357	.06*	.24*	.05	.07	.05	.02	.01
Serves as a…	63	7,136	.16*	-.01	-.06	.11*	.16*	-.04	.00
	9	876	.07	.28*	.16*	.22*	.02	.00	.07
Establishes and models…	15	1,871	.14*	.32*	.14*	.18*	.04	.04	.08
	29	3,048	.13*	.07	-.09*	.09*	.16	-.03	.05
Articulate ideas clearly…	24	2,115	.11*	.23*	.02	.09	.09*	-.02	.10*
	71	6,999	.15*	.21*	.03	.13*	.09*	.03	.09*
Communicates organizational mission…	26	3,063	.11*	.18*	-.04	-.02	.08*	.04	.13*
	71	6,999	.15*	.21*	.03	.13*	.09*	.03	.09*
	9	935	-.04	.30*	.26*	.21	-.06	.08	.08
Initiating Action									
Takes action without…	72	7,394	.14*	.20*	.01	.06*	.10*	.02	.09*
Leads a transformation/change…	9	876	.07	.28*	.16*	.22*	.02	.00	.07
Executes the vision…	16	2,279	.15*	.33*	.03	.05	.04	-.02	.05
Has high level…	48	5,435	.09*	.01	-.07*	.04	.13*	-.07*	.03
	16	1,850	.13*	.17*	.10	.08	.07	.05	.07
Turns ideas into…	39	3,429	.17*	.19*	.01	.17*	.16*	.01	.04
	88	9,769	.10*	.22*	.01	.05	.08*	-.03	.04*
Shows good judgment…	45	5,593	.10*	.13*	-.02	.02	.06*	.02	.07*
	65	6,723	.15*	.14*	.04	.13*	.06*	.04	.03
Relating Successfully									
Works collegially, recognizes…	13	1,570	.22*	.00	.00	.24*	.09*	.06	.06
Maintains broad internal…	9	768	.11*	.25*	.15	.25*	.01	.03	.00
Interacts capably with…	74	8,591	.19*	.09*	.00	.21*	.12*	-.01	.01
Builds trusting, collaborative…	41	4,837	.12*	.09*	.02	.14*	.09*	-.07*	-.02

Table 2 HPI Correlations with Critical Competencies (Continued)

Competency	*K*	*N*	ADJ	AMB	SOC	INP	PRU	INQ	LRN
Shows empathy towards…	30	3,611	.18*	.06	-.02	.16*	.14*	.01	.01
Actively listens, offers…	34	3,721	.17*	.05	-.06	.16*	.13*	-.03	-.01
	41	4,357	.06*	.24*	.05	.07	.05	.02	.01

Note. Results presented in the table are operational validities; * = 95% confidence interval did not contain 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.

3.2 Validity of the HDS for Predicting Job Performance

Table 3 provides operational validities (corrected for sampling error, unreliability in the criterion measure, and range restriction; see HCRM A3.1.1 for more information) of the relationships between the 11 HDS scales and the Aware Leader competencies. Each competency has empirical support for several scales:

- **Thinking Critically:** Excitable, Cautious, Reserved, and Imaginative.
- **Understanding Impact:** Excitable, Skeptical, Cautious, Leisurely, Colorful, and Imaginative.
- **Leveraging Knowledge:** Excitable, Cautious, Imaginative, and Reserved.
- **Leading Self:** Excitable, Skeptical, Cautious, and Imaginative.
- **Directing People:** Excitable, Cautious, Reserved, and Leisurely.
- **Influencing Others:** Excitable, Cautious, Reserved, Colorful.
- **Initiating Action:** Excitable, Cautious, and Imaginative.
- **Relating Successfully:** Excitable, Skeptical, Mischievous, and Imaginative.

Table 3 HDS Correlations with Critical Competencies

Competency	*K*	*N*	EXC	SKE	CAU	RES	LEI	BOL	MIS	COL	IMA	DIL	DUT
Thinking Critically													
Decides with speed…	24	2,964	-.14*	-.06*	-.04	.02	-.08*	-.04	-.04	-.04	-.12*	-.01	-.05
	9	1,375	-.19*	-.11*	-.21*	-.05	-.05	.04	-.02	.10	-.08	.05	-.14*
Demonstrates strategic foresight…	6	1,209	.00	-.05	-.01	.16*	.05	-.01	-.08*	-.03	-.12*	.05	-.06
	12	1,744	-.14*	-.13*	-.19*	-.09	-.13*	.02	.00	.08*	-.08	-.06	-.09*
Sees the enterprise…	7	1,056	-.12	.00	-.25*	-.01	-.08*	.12*	.00	.03	.02	.00	-.17*
Generates original thoughts…	4	566	-.14	-.06	-.28*	-.24*	.00	.16*	.02	.16*	.10	-.09	.05
	8	431	-.30*	-.16	-.14	-.07	-.19	.00	.01	.07	-.02	-.07	-.09
Raises vital questions…	6	1,209	.00	-.05	-.01	.16*	.05	-.01	-.08*	-.03	-.12*	.05	-.06
	18	2,032	-.13*	-.08*	-.19*	-.13*	-.07	.01	-.04	.06	-.07	-.02	-.03
Comes to well-reasoned…	15	1,731	-.11	-.04	-.10	.03	-.01	-.01	-.07	.03	-.06	-.01	-.08
Understanding Impact													
Thinks and acts…	32	3,715	-.13*	-.06*	.05	.02	-.06	-.07*	-.14*	-.09*	-.13*	.06	.03
Sets high standards…	7	626	-.13	-.11*	.01	.00	-.14*	-.07	-.17*	-.13	-.21*	.03	.06
Knows potential impacts…	5	528	-.19	-.15	-.35*	-.17	-.23*	.00	-.09	.08	-.12	.06	-.09*
Shows patience and…	29	3,242	-.22*	-.11*	-.17*	-.08*	-.05	.02	-.02	.02	-.08*	-.04	-.01
Understands and manages…	3	563	-.19	-.14*	-.14	-.05	-.25*	-.04	.04	.13	.04	-.02	-.03
Is in touch…	7	554	-.26*	-.17*	-.16*	-.08	-.11	-.01	.02	.15*	.01	-.19*	.02
Leveraging Knowledge													
Demonstrates continuous-improvement mindset…	4	566	-.14	-.06	-.28*	-.24*	.00	.16*	.02	.16*	.10	-.09	.05
	8	994	-.09	-.06	-.02	.02	-.06	.03	.00	.04	-.02	-.06	-.12
Leverages functional knowledge…	5	707	-.11	-.08*	-.28*	-.16	-.12	.06	.07	.07*	-.03	.06	-.03
	4	527	-.10	.06	-.34	-.35*	.01	.25*	.16*	.32*	.32*	-.11*	-.23*
Optimizes-financial acumen…	5	701	-.12*	-.14*	-.31*	.06	.01	-.03	.01	.05	-.18	.11	-.09

Table 3 HDS Correlations with Critical Competencies (Continued)

Competency	*K*	*N*	EXC	SKE	CAU	RES	LEI	BOL	MIS	COL	IMA	DIL	DUT
Stays up-to-date with…	8	994	-.09	-.06	-.02	.02	-.06	.03	.00	.04	-.02	-.06	-.12
Effectively seeks and…	13	1,423	-.14	-.07	-.02	.14	-.06	-.03	-.03	-.03	-.09*	-.01	-.02
	18	2,032	-.13*	-.08*	-.19*	-.13*	-.07	.01	-.04	.06	-.07	-.02	-.03
Makes evidence-based decisions…	24	2,964	-.14*	-.06*	-.04	.02	-.08*	-.04	-.04	-.04	-.12*	-.01	-.05
Leading Self													
Draws on personal…	15	2,334	-.16*	-.08*	-.04	-.03	-.05	-.04	-.04	-.03	-.11*	.09*	.03
Is aware of…	8	1,137	-.24*	-.13*	-.09	-.06	-.06	.02	-.06	.05	-.11	.08	.01
	5	402	-.19*	-.16*	-.15*	-.07	-.11*	.01	-.04	.01	-.09	-.09	-.05
Knows one's own…	8	1,137	-.24*	-.13*	-.09	-.06	-.06	.02	-.06	.05	-.11	.08	.01
	24	2,964	-.14*	-.06*	-.04	.02	-.08*	-.04	-.04	-.04	-.12*	-.01	-.05
	15	1,731	-.11	-.04	-.10	.03	-.01	-.01	-.07	.03	-.06	-.01	-.08
Understands own strengths…	15	1,566	-.13*	-.10*	-.06	.03	-.05	.01	-.01	-.01	-.06	.07	-.02
Manages the quality…	29	3,242	-.22*	-.11*	-.17*	-.08*	-.05	.02	-.02	.02	-.08*	-.04	-.01
	7	786	-.24*	-.15*	-.34*	-.16	-.09	.09*	.09*	.16*	.07	.10	.01
Is responsible and…	22	3,242	-.11*	-.07*	.04	.01	-.02	-.01	-.08*	-.04	-.10*	.10*	-.01
Directing People													
Clearly communicates expectations…	11	1178	-.06	-.08	-.10*	-.05	.01	.07*	.09	.02	-.03	.00	.03
Builds and leads…	11	1178	-.06	-.08	-.10*	-.05	.01	.07*	.09	.02	-.03	.00	.03
Challenges other people…	13	1,383	-.19	-.09	-.23*	-.10	-.11*	.05	-.05	.04	-.05	-.04	-.02
Constructively supports and…	5	402	-.19*	-.16*	-.15*	-.07	-.11*	.01	-.04	.01	-.09	-.09	-.05
Entrust work to…	8	1,077	-.13	.00	-.31*	-.15	-.13*	.10	-.01	.08	.05	-.12	-.09*
Instructs, guides, and…	13	1,383	-.19	-.09	-.23*	-.10	-.11*	.05	-.05	.04	-.05	-.04	-.02
	17	1,842	-.18*	-.07	-.21*	.00	-.09	.06	.02	.10*	-.03	.01	-.09
Influencing Others													
Engages with impact…	17	1,668	-.11	-.04	-.14*	.01	-.11*	.04	.00	.04	-.04	-.09	-.02
Cuts through the…	9	1,375	-.19*	-.11*	-.21*	-.05	-.05	.04	-.02	.10	-.08	.05	-.14*
	15	1,330	-.10	-.09	-.09	-.08	-.04	.03	-.02	.03	-.08	-.04	.03
	32	3,715	-.13*	-.06*	.05	.02	-.06	-.07*	-.14*	-.09*	-.13*	.06	.03
Serves as a…	4	566	-.14	-.06	-.28*	-.24*	.00	.16*	.02	.16*	.10	-.09	.05
	7	554	-.26*	-.17*	-.16*	-.08	-.11	-.01	.02	.15*	.01	-.19*	.02

Table 3 HDS Correlations with Critical Competencies (Continued)

Competency	*K*	*N*	EXC	SKE	CAU	RES	LEI	BOL	MIS	COL	IMA	DIL	DUT
Establishes and models…	7	626	-.13	-.11*	.01	.00	-.14*	-.07	-.17*	-.13	-.21*	.03	.06
	13	1,383	-.19	-.09	-.23*	-.10	-.11*	.05	-.05	.04	-.05	-.04	-.02
Articulates ideas clearly…	18	2,032	-.13*	-.08*	-.19*	-.13*	-.07	.01	-.04	.06	-.07	-.02	-.03
	18	2,032	-.13*	-.08*	-.19*	-.13*	-.07	.01	-.04	.06	-.07	-.02	-.03
	13	1,423	-.14	-.07	-.02	.14	-.06	-.03	-.03	-.03	-.09*	-.01	-.02
Communicates organizational mission…	18	2,032	-.13*	-.08*	-.19*	-.13*	-.07	.01	-.04	.06	-.07	-.02	-.03
	4	527	-.10	.06	-.34	-.35*	.01	.25*	.16*	.32*	.32*	-.11*	-.23*
Initiating Action													
Takes action without…	17	1,852	-.15*	-.07	-.18*	.06	-.08	.02	-.05	-.02	-.10*	.01	-.10*
Leads a transformation/change…	4	566	-.14	-.06	-.28*	-.24*	.00	.16*	.02	.16*	.10	-.09	.05
Executes the vision…	12	1,744	-.14*	-.13*	-.19*	-.09	-.13*	.02	.00	.08*	-.08	-.06	-.09*
	15	2,291	-.08	-.06	.05	.01	.02	.01	-.07*	-.04	-.09*	.11*	.02
Has high level…	8	1,137	-.24*	-.13*	-.09	-.06	-.06	.02	-.06	.05	-.11	.08	.01
	10	758	-.10	-.09	.01	-.07	-.06	-.11*	-.05	.00	-.12	.07	-.05
Turns ideas into…	26	3,293	-.16*	-.08	-.15*	-.05	-.10*	.00	-.05	.03	-.08	.02	-.08*
Shows good judgment…	24	2,964	-.14*	-.06*	-.04	.02	-.08*	-.04	-.04	-.04	-.12*	-.01	-.05
	18	1,666	-.17*	-.05	-.01	-.01	-.04	-.05	-.01	-.04	-.04	-.05	.07
Relating Successfully													
Works collegially, recognizes…	6	734	-.19*	-.14*	.06	-.02	-.06	-.21*	-.11	-.03	-.15*	-.05	.04
Maintains broad internal…	3	129	-.18*	-.11	-.21	.02	-.10	.07	.14	.03	.03	-.17	.15
Interacts capably with…	13	1,860	-.14*	-.10*	.04	-.09*	.04	-.04	-.09*	-.06	-.13*	.04	.06
Builds trusting, collaborative…	12	1,594	-.14*	-.09	-.11*	-.07	-.08	-.01	-.05	.04	-.10*	-.03	-.04
Shows empathy towards…	8	978	-.20*	-.14*	.01	-.02	-.01	.02	-.12*	-.01	.03	-.01	.09*
Actively listens, offers…	9	914	-.12	-.11*	-.01	-.01	.02	.03	-.02	.00	-.11*	.02	.03
Actively listens, offers…	15	1,330	-.10	-.09	-.09	-.08	-.04	.03	-.02	.03	-.08	-.04	.03

Note. Results presented in the table are operational validities; * = 95% confidence interval did not contain 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; IMA = Imaginative; DIL = Diligent; DUT = Dutiful.

3.3 Validity of the MVPI for Predicting Job Performance

Note that synthetic validation evidence for the MVPI is unavailable because the MVPI is not a generalizable predictor of job performance, as workplace culture and motivators are not consistent across companies or even specific job families. The Hogan research team used their expert judgment to align MVPI scales with the Aware Leader competencies

4 RECOMMENDATIONS

An extensive review of the results from the prior sections of this report allowed Hogan experts to determine the most appropriate scales to use as a foundation for developing Leaders.

Hogan recommends The Aware Leader use the competency-based solution outlined in this report to develop Leaders. By administering the HPI, HDS, and MVPI and using the associated competency mapping, The Aware Leader should be able to improve its development practices. For more information on the scoring development process, please see HCRM A4.

4.1 Scale Selection

Hogan integrated both empirical and qualitative evidence to develop scale selections for each competency. As part of this study's content validation process, the Hogan team members referenced the following qualitative information sources: (a) The Aware Leader competency model, (b) the HPI, HDS, and MVPI technical manuals (R. Hogan & J. Hogan, 2007; R. Hogan & J. Hogan, 2009; J. Hogan & R. Hogan, 2010), (c) *The Hogan Guide: Interpretation and Use of the Hogan Inventories* (R. Hogan, J. Hogan, & Warrenfeltz, 2007), and (d) past profiles created for similar competencies. Quantitative results were derived from synthetic validity.

The following example provides an illustration of how we used empirical and content validity evidence together to create the most predictive competency mapping. For the "Builds trusting, collaborative relationships" sub-competency, the synthetic validity evidence provided empirical support for several HPI and HDS scales. Out of these empirically linked scales, Hogan selected the HPI Interpersonal Sensitivity and Sociability scales and the HDS Excitable and Mischievous scales to include in the profile due to their content validity. Specifically, those with higher scores on Interpersonal Sensitivity tend to be good communicators, who can tailor their style to accommodate a wide variety of individuals. Individuals with high scores on Sociability tend to enjoy interacting with others and are seen as socially skilled by both peers and customers. Low scorers on Excitable are not easily upset and tend to stay calm in difficult situations. Those who score lower on mischievous are easy to understand, think before they act, make good decisions, and are persistent about finishing tasks. Thus, behaviors associated with higher Interpersonal Sensitivity, and Sociability scores and lower Excitable and Mischievous scores predicted the behavioral descriptors of the "Builds trusting, collaborative relationships" sub-scale. Lastly, although we cannot draw on synthetic validity, we included the MVPI Affiliation scale based on The Aware Leader and Hogan's expert judgement and its content validity. For example, individuals who score higher on Affiliation value working with others, being highly visible in the organization, social interaction, and creating a sense of commitment to tasks or groups. Therefore, we used our expert judgment to include Affiliation in the competency mapping.

After developing scale selections using both quantitative and qualitative evidence, the Hogan and The Aware Leader teams discussed and reviewed each competency scale selection until all members agreed on the final solution. An overview of the scales selected for each competency is provided in the following sections.

4.2 The Aware Leader Competency Model Mapped to the HPI, HDS, & MVPI

Based on the results from the prior sections of this report, Hogan experts determined the most appropriate scales to use as a foundation for developing Leaders. After identifying the qualitatively- and quantitatively-linked scales, we examined the scales across each Aware Leader competency to ensure there were no redundancies across the model. In addition, this step safeguards against one scale dominating the model. A full overview of scale usage is presented in Table 4. This table also includes each scale's percent across competencies, which is calculated by dividing the total column by the total number of competencies in the model and describes the representation of each scale across the model. Hogan also provides each scale's percent across scales used, which is calculated by dividing the total column by the total sum of all scales used and describes the weight each scale is given across the model's scoring. For more information on Hogan's scale selection process, please refer to HCRM A4.

Table 4 Overview of Hogan Scale Usage

Scale	Frequency of Scale Used				Percent Across Competencies	Percent Across Scales Selected
	Pos	Mod	Neg	Total		
HPI						
Adjustment	13	3	0	**16**	**33%**	**6%**
Ambition	27	2	0	**29**	**60%**	**10%**
Sociability	5	7	1	**13**	**27%**	**5%**
Interpersonal Sensitivity	14	9	1	**24**	**50%**	**9%**
Prudence	22	1	0	**23**	**48%**	**8%**
Inquisitive	3	1	0	**4**	**8%**	**1%**
Learning Approach	10	0	0	**10**	**21%**	**4%**
HDS						
Excitable	0	0	22	**22**	**46%**	**8%**
Skeptical	0	0	8	**8**	**17%**	**3%**
Cautious	0	1	16	**17**	**35%**	**6%**
Reserved	0	0	11	**11**	**23%**	**4%**
Leisurely	0	0	12	**12**	**25%**	**4%**
Bold	0	3	2	**5**	**10%**	**2%**
Mischievous	0	0	4	**4**	**8%**	**1%**
Colorful	0	7	0	**7**	**15%**	**2%**
Imaginative	0	1	7	**8**	**17%**	**3%**
Diligent	0	2	3	**5**	**10%**	**2%**
Dutiful	0	0	5	**5**	**10%**	**2%**
MVPI						
Recognition	0	0	2	**2**	**4%**	**1%**
Power	17	0	0	**17**	**35%**	**6%**
Hedonism	1	0	0	**1**	**2%**	**0%**
Altruism	6	0	0	**6**	**13%**	**2%**
Affiliation	12	0	0	**12**	**25%**	**4%**
Tradition	3	0	2	**5**	**10%**	**2%**
Security	0	0	6	**6**	**13%**	**2%**
Commerce	1	0	0	**1**	**2%**	**0%**
Aesthetics	0	0	3	**3**	**6%**	**1%**
Science	6	0	0	**6**	**13%**	**2%**

Note. Total column is the total number of times each scale is used throughout the model; Percent Across Competencies is calculated by dividing the value in the total column by the number of competencies (N = 48) in the model; Percent Across Scales Selected is calculated by dividing the value in the total column by the sum total of all scales used (N = 28) in the model.

Table 5 The Aware Leader Competency Model Mapped to the HPI, HDS, & MVPI

COMPETENCY DESCRIPTION	HPI	HDS	MVPI
Thinking Critically			
Decides with speed and conviction, has mental agility	Adjustment (higher) Ambition (higher)	Cautious (lower) Imaginative (lower) Dutiful (lower)	Power (higher) Security (lower)
Demonstrates strategic foresight and an orientation to the preferred future	Adjustment (higher) Ambition (higher) Inquisitive (higher) Learning Approach (higher)	Excitable (lower) Imaginative (lower)	Power (higher)
Sees the enterprise as a series of integrated and interlocking processes	Ambition (higher)	Excitable (lower) Cautious (lower)	Power (higher)
Generates original thoughts and is resourceful in finding ways to improve things	Interpersonal Sensitivity (higher) Inquisitive (higher) Learning Approach (higher)	Excitable (lower) Cautious (lower)	Security (lower) Tradition (lower)
Raises vital questions and problems, formulating them clearly and precisely	Sociability (moderate) Prudence (higher) Interpersonal Sensitivity (moderate)	Leisurely (lower) Imaginative (moderate) Dutiful (lower)	Science (higher) Aesthetics (lower)
Comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards`	Adjustment (higher) Inquisitive (moderate)	Excitable (lower) Cautious (moderate)	Science (higher) Aesthetics (lower)
Understanding Impact			
Thinks and acts ethically and morally	Adjustment (higher) Prudence (higher)	Excitable (lower) Mischievous (lower)	Altruism (higher) Affiliation (higher)
Sets high standards of execution incorporating mission into daily activities	Sociability (moderate) Interpersonal Sensitivity (moderate) Prudence (higher)	Excitable (lower) Leisurely (lower)	Tradition (higher) Power (higher)

Table 5 The Aware Leader Competency Model Mapped to the HPI, HDS, & MVPI (continued)

COMPETENCY DESCRIPTION	HPI	HDS	MVPI
Knows potential impacts and consequences of decision making in situations both internally and externally	Ambition (higher) Sociability (higher) Learning Approach (higher)	Cautious (lower) Skeptical (lower)	Science (higher)
Shows patience and responds calmly to stressful or trying situations	Adjustment (higher) Prudence (moderate)	Excitable (lower) Diligent (lower)	Aesthetics (lower)
Understands and manages the power and politics inherent in any organization	Ambition (higher) Interpersonal Sensitivity (higher)	Excitable (lower) Leisurely (lower) Colorful (moderate)	Affiliation (higher)
Is in touch with emotions and effects on behavior to better understand how to influence people to achieve outcomes	Ambition (higher) Sociability (higher) Interpersonal Sensitivity (moderate)	Excitable (lower) Reserved (lower)	Power (higher)
Leveraging Knowledge			
Demonstrates continuous-improvement mindset and knows the industry	Ambition (higher) Learning Approach (higher)	Cautious (lower) Colorful (moderate)	Security (lower) Tradition (lower)
Leverages functional knowledge, technical skills and expertise and shares with others	Adjustment (higher) Sociability (higher) Learning Approach (higher)	Bold (moderate) Reserved (lower)	Power (higher) Affiliation (higher)
Optimizes financial acumen to make business decisions	Ambition (higher) Prudence (higher)	Cautious (lower) Imaginative (lower)	Commerce (higher) Power (higher)
Stays up-to-date with industry-specific content knowledge, rapidly assimilating and using new knowledge	Ambition (higher) Inquisitive (higher) Learning Approach (higher)	Bold (moderate) Leisurely (lower) Cautious (lower)	Science (higher)
Effectively seeks and shares information	Sociability (moderate) Interpersonal Sensitivity (higher) Learning Approach (higher)	Imaginative (lower) Reserved (lower)	Science (higher) Altruism (higher)
Makes evidence-based decisions	Ambition (higher) Learning Approach (higher)	Cautious (lower) Diligent (lower)	Science (higher)
Leading Self			
Draws on personal and professional strengths as well as areas for personal development to build capacity	Ambition (higher) Interpersonal Sensitivity (higher) Prudence (higher)	Excitable (lower) Skeptical (lower)	Recognition (lower)

Table 5 The Aware Leader Competency Model Mapped to the HPI, HDS, & MVPI (continued)

COMPETENCY DESCRIPTION	HPI	HDS	MVPI
Is aware of judgments, emotions and physical sensations resulting in greater clarity and resolve in determining the best options – especially in situations of conflict and change.	Adjustment (moderate) Prudence (higher)	Excitable (lower) Skeptical (lower) Leisurely (lower	Power (higher)
Knows one's own method of decision making and problem solving	Adjustment (moderate) Ambition (higher) Prudence (higher)	Cautious (lower) Dutiful (lower)	Power (higher)
Understands own strengths and limitations, values self-knowledge, and seeks feedback	Adjustment (moderate) Interpersonal Sensitivity (higher) Prudence (higher)	Skeptical (lower) Bold (lower)	
Manages the quality of their energy regardless of the external pressures they're facing	Adjustment (higher) Prudence (higher)	Excitable (lower) Cautious (lower)	
Is responsible and accountable for actions and reactions	Adjustment (higher) Prudence (higher)	Excitable (lower) Skeptical (lower) Diligent (moderate)	Recognition (lower)
Directing People			
Clearly communicates expectations	Ambition (moderate) Interpersonal Sensitivity (moderate) Sociability (moderate)	Reserved (lower)	Power (higher)
Builds and leads teams and develops future leaders	Ambition (higher) Interpersonal Sensitivity (higher) Prudence (higher)	Reserved (lower) Leisurely (lower)	Affiliation (higher)
Challenges other people appropriately and rejects mediocrity	Ambition (higher) Interpersonal Sensitivity (moderate)	Excitable (lower) Cautious (lower) Bold (moderate)	Power (higher)
Constructively supports and manages disagreements	Adjustment (higher) Interpersonal Sensitivity (moderate)	Excitable (lower) Leisurely (lower)	Affiliation (higher)
Entrust work to others, utilizing individual and team strengths to achieve goals	Ambition (higher) Interpersonal Sensitivity (higher)	Leisurely (lower) Diligent (lower)	Affiliation (higher)
Instructs, guides, and oversees the performance of staff	Interpersonal Sensitivity (moderate) Prudence (higher) Learning Approach (higher)	Excitable (lower) Leisurely (lower)	Altruism (higher)

Table 5 The Aware Leader Competency Model Mapped to the HPI, HDS, & MVPI (continued)

COMPETENCY DESCRIPTION	HPI	HDS	MVPI
Influencing Others			
Engages with impact motivating, persuading and exciting others	Ambition (higher) Interpersonal Sensitivity (higher)	Cautious (lower) Colorful (moderate)	Power (higher)
Cuts through the noise with authentic, credible self-promotion that helps others as well as themselves	Ambition (moderate) Sociability (higher) Prudence (higher)	Mischievous (lower) Leisurely (lower)	Affiliation (higher) Altruism (higher)
Serves as a change agent, assists others in understanding needed changes, reasons for change and the change process	Adjustment (higher) Ambition (higher) Sociability (moderate)	Cautious (lower) Reserved (lower)	Security (lower) Tradition (lower)
Establishes and models standards that fosters exceptional quality and continuous improvement	Ambition (higher) Prudence (higher) Learning Approach (higher)	Excitable (lower) Leisurely (lower) Imaginative (lower)	Power (higher)
Articulates ideas clearly and organizes ideas effectively	Sociability (moderate) Interpersonal Sensitivity (moderate) Prudence (higher)	Reserved (lower) Imaginative (lower)	
Communicates organizational mission, vision, objectives and priorities	Ambition (higher) Sociability (moderate)	Reserved (lower) Colorful (moderate)	Tradition (higher)
Initiating Action			
Takes action without being prompted and takes personal responsibility	Ambition (higher) Prudence (higher)	Cautious (lower) Dutiful (lower)	Power (higher)
Leads a transformation/change agenda	Ambition (higher) Interpersonal Sensitivity (moderate)	Cautious (lower) Colorful (moderate)	Security (lower)
Executes the vision	Ambition (higher) Prudence (higher)	Excitable (lower) Leisurely (lower)	Power (higher)
Has high level of energy and motivation to sustain performance over time	Ambition (higher) Interpersonal Sensitivity (higher) Prudence (higher)	Excitable (lower) Diligent (moderate)	Hedonism (higher)
Turns ideas into actions that result in getting things implemented	Ambition (higher) Prudence (higher)	Cautious (lower) Dutiful (lower)	Power (higher)

Table 5 The Aware Leader Competency Model Mapped to the HPI, HDS, & MVPI (continued)

COMPETENCY DESCRIPTION	HPI	HDS	MVPI
Shows good judgment in strategies, tactics, and people decisions, reversing course quickly when needed	Adjustment (higher) Prudence (higher)	Excitable (lower) Skeptical (lower)	Security (lower)
Relating Successfully			
Works collegially, recognizes importance of relationships, inclusivity, and diversity	Adjustment (higher) Interpersonal Sensitivity (higher)	Bold (lower) Reserved (lower)	Affiliation (higher)
Maintains broad internal and external networks of business relationships	Ambition (higher) Interpersonal Sensitivity (higher)	Reserved (lower) Colorful (moderate)	Affiliation (higher)
Interacts capably with a wide variety of stakeholders	Ambition (higher) Interpersonal Sensitivity (higher) Prudence (higher)	Excitable (lower) Reserved (lower) Colorful (moderate)	Power (higher)
Builds trusting, collaborative relationships	Interpersonal Sensitivity (higher) Sociability (higher)	Excitable (lower) Mischievous (lower)	Affiliation (higher)
Shows empathy towards others and considers other feelings	Adjustment (higher) Interpersonal Sensitivity (higher) Prudence (higher)	Skeptical (lower) Mischievous (lower)	Affiliation (higher) Altruism (higher)
Actively listens, offers full attention when others speak, and is seen as a coach and mentor	Ambition (higher) Sociability (lower) Interpersonal Sensitivity (higher)	Skeptical (lower) Imaginative (lower)	Affiliation (higher) Altruism (higher)

4.3 Adverse Impact.

An examination of Adverse Impact (A.I.) is critical for companies that use professionally developed selection instruments to make personnel decisions in the U.S. In such a system, companies use selection results to determine which applicants will advance to later stages in the selection process. In the current project, the client did not intend to use the system for selection purposes. Therefore, we did not conduct A.I. analyses. For more information on Hogan's A.I. process, see HCRM section A4.3.

4.4 Uses and Applications

Hogan recommends Leader development should be determined, in part, by using the competency-based guidelines outlined in this report. Performance appraisal and/or monitoring data should be maintained, if possible, on Leaders developed using the guidelines found in HCRM section A4.4. These data provide a check on the validity of scoring recommendations and help determine utility. For further information concerning this research or the results provided, please contact:

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Tulsa, Oklahoma 74120
(918) 749-0632

4.5 Accuracy and Completeness

Hogan completes all procedures within the requirements of both the Uniform Guidelines and the Principles. Hogan derives results strictly from the research processes described above and archived study results and does not embellish, falsify, or alter results in any manner.

Hogan attests to the accuracy of the data collection, analysis, and reporting procedures used in all validity studies. Hogan enters all data collected into a database and computes results using the latest version of SPSS statistical software. In the event of a challenge to the research done by Hogan, The Aware Leader will be granted access to technical documentation and data as needed.

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ANNEX: Hogan Competency Research Methodology (HCRM)

Annex Summary

This annex provides a summary of research procedures used 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, 2010; hereafter "MVPI") for predicting job performance. All methods used to (a) identify the job's key requirements, (b) accumulate validity evidence, and (c) select scales to predict performance are included in this guide and outlined below. Not all clients choose or need to complete all of the listed steps.

Hogan uses a synthetic validity approach to validate competency research. First, a team of Ph.D. and Masters level psychologists aligns the client's model with the Hogan Competency Model (HCM). If the client does not have an established competency model, they may choose to select competencies from the HCM based on Subject Matter Expert (SME) ratings. Next Hogan examines evidence from the Hogan archive to select the best scale predictors for each competency. Finally, Hogan uses these scales to recommend scoring options that best fit client needs.

Our 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 relies on the broader scientific/professional literature for guidance.

A1. WHAT TO MEASURE AND WHY

Global markets require organizations to simultaneously work within different locations, legal environments, and cultures. One strategy for facing this challenge is restructuring jobs, such as reducing management layers and relying on work teams, to increase adaptability and responsiveness (Ashkenas, Ulrich, Jick, & Kerr, 2002; Howard, 1995; Keidel, 1994). As a result of global markets, traditional task-based job analysis procedures may lack the flexibility required to identify the knowledge, skills, and abilities essential for success in many jobs (Barnes-Nelson, 1996; Olian & Rynes, 1991; Sanchez, 1994). On the other hand, competencies exhibit evidence of generalizability across industries (Lemming & Ness, 2017). Therefore, organizations often use competency models to align many of their Human Resource Management applications.

The work of David McClelland (1973) set the stage for the widespread growth of competencies. McClelland argued that aptitude tests, almost universally used to predict performance, do not serve their intended purpose well and are prone to cultural biases. Also, he argued other traditional measures, such as examination results and references, are equally poor at predicting job success. Instead, McClelland suggested individual competence might provide a more promising alternative for predicting performance. He described competencies as representing groups of behaviors underlying individual characteristics that enable superior job performance.

Competencies appear in educational, training, employment, and assessment contexts, where often a primary goal is identifying individual characteristics that lead to success (Boyatzis, Stubbs, & Taylor, 2002; Rubin et al., 2007; Spencer & Spencer, 1993). Companies can link individual characteristics to competencies that represent critical job components. Then they can use this information to select individuals with these characteristics and guide development and training efforts (Schippmann et al., 2000).

A1.1 The Hogan Competency Model

During the past several years, Hogan witnessed an increase in the number of requests for competency-based reports as more organizations develop and use competency models. To identify relationships between commonly used competencies and personality, we developed the Hogan Competency Model (HCM).

Hogan's Research Division (HRD) designed the HCM to align with other well-known competency models and personality measures. The development of the HCM included five steps. First, we reviewed 56 competency definitions, flagging competencies that measured multiple constructs or overlapped with other competencies. Next, we reviewed 21 academic, commercial, and government competency models and compared them to the 56 competencies. Three HRD researchers independently mapped the original 56 competencies to each comparison model. Based on all available information from the first two steps, we eliminated redundant competencies, clarified definitions, and added frequently occurring and missing competencies. Fourth, we obtained feedback from non-Industrial/Organizational (I/O) professionals on the revised list of competencies. Finally, four HRD researchers again independently mapped the revised competency model to each of the 21 comparison models.

The resulting model includes 62 competencies. The following sections further delineate these steps.

A1.1.1 Competency Definitions

We began by examining the competencies and definitions on 56 competencies. First, HRD identified overlapping competencies by examining competency definitions and correlating ratings obtained on a sample of over 500 jobs. Results indicated that several competencies overlapped both conceptually and statistically. For example, Trustworthiness and Integrity overlapped significantly, as did Adaptability and Flexibility. Furthermore, other models often treated these and other pairings as one competency.

Next, we reviewed competency definitions. We flagged competency definitions that (a) included the competency name in the definition, (b) contained multiple concepts, (c) overlapped with other competencies, or (d) were generally unclear. For example, Innovation was defined as "finding innovative solutions…," and the definition of Planning/Organizing addressed multiple concepts (Resource Management and Time Management), but not aspects of organization typically addressed by similar competencies in other models.

A1.1.2 Competitor and Academic Competency Models

Next, we reviewed 21 independent competency models and compared the 56 competencies to the identified models. These models came from academic, commercial, and government sources. We identified competency models using three strategies. First, we conducted a literature search for publications outlining relevant competency models (e.g. Tett, Guterman, Bleir, & Murphy, 2000). Next, we contacted partner organizations, including clients and distributors, and asked for their competency models. Finally, we contacted companies and competitors with well-advertised or commonly-used models (e.g. SHL, Bartram, 2005). We only reviewed whole models containing complete competency definitions. Our final sample consisted of 6 commercial, 12 academic, and 3 government agency models. See Appendix A for a list of the models.

A1.1.3 Competency Mapping

Competency mapping consisted of three phases:

> *Phase 1: I/O Professionals*. Three HRD researchers independently mapped the 56 competencies to each competency in the 21 comparison models. Raters indicated if the competencies in the other models mapped directly to a Hogan competency, more than one Hogan competency, or none. In addition, each rater maintained a list of frequently occurring competencies that mapped poorly to Hogan competencies or were not included in the Hogan model. We aggregated the results and the raters met to resolve conflicts and reach a final consensus. Based on these final results and our previous review of competency definitions, we eliminated redundant competencies, clarified definitions, and added missing competencies.

Phase 2: Non I/O Professionals. To better represent individuals who will use the model in the future, we asked four non-I/O professionals to provide feedback on the revised list of competencies. Our goal was to ensure that all competencies were easy for the target population to understand and use. We obtained feedback from non-I/O professionals with extensive business experience and expertise in different areas (IT, Finance, Sales, and Operations). First, each individual independently mapped each competency into the Domain Model, noting if each competency fell under one primary domain and potentially a secondary domain. Second, they provided recommendations for the content and phrasing of the competency names and definitions. The raters successfully placed 43 of the competencies into the same domain, indicating high rater agreement. Furthermore, no rater noted any problems with the competency model names and definitions, indicating that the model is intuitive and not overly laden with I/O jargon.

Phase 3: Re-mapping by I/O Professionals. Finally, four HRD researchers again independently mapped the revised competency model to each of the 21 comparison models and met to reach a final consensus. The number of competencies that mapped to the comparison models greatly increased from phase 1. However, we found a few definitions that needed further revision and identified four additional competencies for inclusion. For example, because 7 of the 21 comparison models contained Valuing Diversity, we added it to the Hogan model. The resulting competency model includes 62 competencies.

Overall, each Hogan competency averaged seven mappings. We mapped each model to the Hogan model a minimum of three times. This represents over 12,480 individual comparisons of the Hogan model to the comparison models. This finding provides further support for the comprehensiveness of the HCM. Appendix B presents the resulting HCM from this approach. Table A1 presents a crosswalk between the labels for the 56 and the 62 Hogan Competency Models. In 2015, Hogan updated the competency names and definitions based on client feedback about business language.

Table A1 Crosswalk Between HCM Versions

56 HCM	62 HCM (Original)	62 HCM (Current)
Achievement Orientation (modified definition)	Achievement Orientation	Driving for Results
Verbal Direction (similar to)	Active Listening	Listening to Others
NEW	Ambiguity Tolerance	Dealing with Ambiguity
Build Strategic Work Relationships	Building Relationships	Relationship Building
Building Teams (modified definition)	Building Teams	Team Building
NEW	Business Acumen	Business Insight
NEW	Caring	Caring about People
Citizenship (completely new and different definition)	Citizenship	Organizational Citizenship
NEW	Competitive	Competing with Others
Decision Making/Judgment (modified definition)	Decision Making	Decision Making
Delegation (modified definition)	Delegation	Delegating
Dependability	Dependability	Dependability
Detail Orientation (modified definition)	Detail Orientation	Detail Focus
Employee Development/Training Others (combined and modified definition)	Employee Development	Developing People
NEW	Financial Acumen	Financial Insight
Flexibility/Adaptability (modified definition)	Flexibility	Flexibility
NEW/verbal direction (modified)	Following Procedures	Rule Compliance
NEW	Goal Setting	Setting Goals
Industry Knowledge (modified definition)	Industry Knowledge	Industry Insight
Influence/Gaining Commitment (completely new and different definition)	Influence	Influencing Others
NEW	Information Analysis	Processing Information
Initiative	Initiative	Taking Initiative
Innovation (completely new definition)	Innovation	Driving Innovation
Interpersonal Skills	Interpersonal Skills	Leveraging People Skills
NEW	Intrapersonal Skills	Self Management
Leadership (modified definition)	Leadership	Leading Others
Facilitating Change (completely new and different definition)	Managing Change	Driving Change
Conflict Resolution (modified definition)	Managing Conflict	Managing Conflict
Performance Management/Performance Feedback/Follow-Up (completely new and different definition)	Managing Performance	Driving Performance
Leadership (modified)/NEW	Motivating Others	Inspiring Others
Negotiation	Negotiation	Negotiating
Oral Communication (modified definition)	Oral Communication	Verbal Communication
Organizational Commitment	Organizational Commitment	Engagement
NEW	Perseverance	Overcoming Obstacles
Planning/Organizing (new definition)	Planning/Organizing	Planning and Organizing

Table A1 Crosswalk Between HCM Versions (Continued)

56 HCM	62 HCM (Original)	62 HCM (Current)
Political Awareness (no definition with CET)	Political Awareness	Political Savvy
Formal Presentation (modified definition)	Presentation Skills	Presenting to Others
Problem Solving (modified definition)	Problem Identification	Anticipating Problems
Problem Solving (modified definition)	Problem Solving	Solving Problems
Professionalism (no definition with CET)	Professionalism	Professionalism
Quality Orientation (no definition with CET)	Quality Orientation	Quality Focus
Management Performance (definition modified)	Resource Management	Managing Resources
NEW	Responsibility	Accountability
Risk Taking	Risk Management	Taking Smart Risks
Safety	Safety	Safety Focus
Sales Ability, Facilitative Sales, Consultative Sales (all combined and modified definition)	Sales Ability	Sales Focus
NEW	Self Confidence	Displaying Confidence
Continuous Learning (modified definition)	Self Development	Self Development
Customer Service (modified definition)	Service Orientation	Customer Focus
NEW	Social Engagement	Networking
Strategic Vision (new definition)	Strategic Planning	Driving Strategy
Stress Tolerance	Stress Tolerance	Handling Stress
NEW	Talent Management	Attracting Talent
Teamwork (new definition)	Teamwork	Teamwork
Planning/Organizing (modified name)	Time Management	Time Management
Trustworthiness/Integrity (combined/modified definition)	Trustworthiness	Integrity
NEW	Valuing Diversity	Leveraging Diversity
Vigilance	Vigilance	Staying Alert
Work Attitude	Work Attitude	Positive Attitude
NEW	Work Ethic	Working Hard
Job Knowledge	Work Skills	Leveraging Work Skills
Written Communication	Written Communication	Written Communication

A1.1.4 Domain Model

The Domain Model is used to effectively classify existing competencies into a comprehensive and meaningful performance model (R. Hogan & Warrenfeltz, 2003; Warrenfeltz, 1995), leading to easier interpretations of and comparisons across models. The model contains four domains:

- *Intrapersonal Skills* – Intrapersonal skills develop early in childhood and have important consequences for career development in adulthood. Core components include core-self-esteem, resiliency, and self-control. Intrapersonal skills form the foundation on which careers develop.

- *Interpersonal Skills* - Interpersonal skills concern building and sustaining relationships. Interpersonal skills can be described in terms of three components: (a) an ability to put oneself in the position of another person, (b) an ability to accurately perceive and anticipate other's expectations, and (c) an ability to incorporate information about the other person's expectations into subsequent behavior.

- *Technical Skills* - Technical skills differ from Intrapersonal and Interpersonal skills in that they are (a) the last to develop, (b) the easiest to teach, (c) the most cognitive, and (d) the least dependent upon dealing with other people. Technical skills involve comparing, compiling, innovating, computing, analyzing, coordinating, and synthesizing work activities.

- *Leadership Skills* - Leadership skills can be understood in terms of five components that depend upon intrapersonal, interpersonal, and technical skills. First, leadership skills entail an ability to recruit talented people to join the team. Second, leaders must be able to retain talent once it has been recruited. Third, leaders must be able to motivate a team. Fourth, effective leaders are able to develop and promote a vision for the team. Finally, leadership skill involves being persistent and hard to discourage.

R. Hogan and Warrenfeltz (2003) suggest that the four domains form a natural, overlapping developmental sequence, with the latter skills (e.g., Leadership Skills) depending on the appropriate development of the earlier skills (e.g., Intrapersonal Skills). Each of the performance domains can be further decomposed into various performance dimensions or competencies. Table A2 outlines the complete Domain Model, illustrating the links between common competencies associated with each domain and Five Factor Model (FFM) personality measures. Each competency in the HCM falls under one of the four domains.

Table A2 Domain Model of Job Performance, Example Competencies, and Personality Measures

Metaconcept	Domain	Example Competency	FFM Measurement
Getting Ahead	Leadership	Achievement Building Teams Business Acumen Decision Making Delegation Employee Development Initiative Leadership Managing Performance Resource Management	Surgency/Extraversion
	Business	Analysis Creating Knowledge Decision Making Political Awareness Presentation Skills Problem Solving Safety Technical Skill Training Performance Written Communication	Openness to Experience
Getting Along	Interpersonal	Building Relationships Communication Consultative Skills Cooperating Influence Interpersonal Skill Organizational Citizenship Service Orientation Teamwork Trustworthiness	Agreeableness Surgency/Extraversion
	Interpersonal	Dependability Detail Orientation Flexibility Following Procedures Integrity Planning Respect Risk Taking Stress Tolerance Work Attitude	Conscientiousness Emotional Stability

A1.2 Personality Measurement and Prediction

The 1980s witnessed a growth in the use of competencies to identify and predict leadership effectiveness and long-term success (Boyatzis, 1982; McClelland & Boyatzis, 1982). These applications led to the development of competency-based selection tools, such as behavioral event interviews (Boyatzis, 1994; McClelland, 1998; Spencer, McClelland, & Spencer, 1994) and high-level management and leadership competency models (Hollenbeck, McCall, & Silzer, 2006) that often include differences between job levels (Rodriguez, Patel, Bright, Gregory, & Gowing, 2002).

Also, competencies provide a structure for linking performance with cognitive ability and personality (Dragoni, Oh, Vankatwyk, & Tesluk, 2011; Heinsman, de Hoogh, Koopman, & van Muijen, 2007), coaching employees to overcome dysfunctional behavior (Boyatzis, 2006), promoting employees (Morgeson, Campion, Levashina, 2009), improving workplace safety (Chang, Chen, & Wu, 2012), and selecting and developing high potential employees (Dragoni et al., 2011; McClelland, 1994). More recently, researchers have focused on identifying best practices for developing and implementing competency models (Campion et al., 2011) as well as suggestions for developing the next generation of competency modeling (Schippmann, 2010). Hogan uses personality to predict performance based on competencies.

A1.2.1 Approach and Rationale

Validating any selection instrument relies on accurate measurement. Measurement consists of any procedure that assigns numbers systematically to characteristic features of people according to explicit rules (Furr, 2018; Ghiselli, Campbell, & Zedeck, 1981). Professionals use these numbers to make predictions or forecast future behavior(s). Assigning numbers in a systematic fashion to characteristics is a necessary, but not sufficient, requirement of any pre-employment selection tool. Every instrument should also provide evidence to support (a) the reliability of the instrument and (b) relationships between scores on the instrument and job-relevant behaviors or outcomes (Equal Employment Opportunity Commission, 1978). At a minimum, professionals should evaluate the reliability of assessments 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).

Test publishers should document an assessment's ability to predict job-relevant behaviors or outcomes in credible scientific sources. The supporting evidence should include significant and interpretable relations between scores on the instrument and indices of job performance. Moreover, evidence should also demonstrate that scores on the instrument predict job performance criteria critical to success in the job of interest, rather than an ability to predict performance outcomes unrelated to critical work or behaviors.

Assessment instruments should also be "fair," in that they should not discriminate unfairly on the basis of gender, age, or race (Equal Employment Opportunity Commission, 1978). As such, professionals must validate selection procedures that result in adverse impact in accordance with the *Uniform Guidelines*. Unfortunately, many instruments used in applied contexts fail to meet the criteria outlined above (R. Hogan, J. Hogan, & Trickey, 1999).

A1.2.2 Measuring Personality

For personality assessment, the most important question 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 reflect five broad personality dimensions (Hough & Dilchert, 2010). The Five-Factor Model (FFM; cf. Digman, 1990; Goldberg, 1992; John, 1990, p. 72; McCrae & Costa, 1987), which emerged from 50 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 in terms of five themes (Goldberg, 1990):

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 30 years (e.g., NEO-PI: Costa & McCrae, 1992; HPI: R. Hogan & J. Hogan, 1995, 2007; Personal Characteristics Inventory: Mount & Barrick, 2001; FFMQ: Gill & Hodgkinson, 2007; IPIP: Donnellan, Oswald, Baird, & Lucas, 2006). 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 conform, with little difficulty, to these five dimensions (Wiggins & Pincus, 1992). Consequently, the FFM represents the dominant paradigm for current research in personality assessment (De Raad & Perugini, 2002; R. Hogan & J. Hogan, 1995, 2007).

The FFM rests on observer's descriptions of others. These observations form the basis of one's reputation, or how people describe coworkers or peers (R. Hogan, 1983, 2005). 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, or view of him or herself (cf. Goffman, 1958). Reputations are public, tell us about observable tendencies and behavior, can be measured reliably, and can be used to forecast future behavior (cf. Emler, 1990). Consequently, a person's reputation represents an invaluable

source of information about work-related strengths and shortcomings and influences the direction of careers.

A1.2.3 Personality as a Predictor of Important Outcomes

Personality assessment samples self-presentational behavior, or how a person portrays him or herself to others on the job. Using a personality assessment allows us to aggregate these behavioral samples, assign them numbers according to certain agreed-upon rules, and then use these numbers or scores to make predictions about a person's future behavior. More importantly, personality measurement provides highly meaningful information, as previous research shows that personality predicts numerous work and non-work related outcomes. Recently, Hough and Oswald (2008) provided a summary of the value of applied personality assessment.

For example, personality predicts a number of major life outcomes, such as academic achievement, mortality, divorce, subjective well-being, and occupational attainment (Lievens, Ones, & Dilchert, 2009; O'Connor & Paunonen, 2007; Poropat, 2009; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007; Rothstein, Paunonen, Rush, & King, 1994; Steel, Schmidt, & Shulz, 2008). Research also demonstrates that personality predicts health-related behaviors including the use of drugs and alcohol (Bogg & Roberts, 2004; Cooper-Hakim & Viswesvaran, 2002; Paunonen, Haddock, Forsterling, & Keinonen, 2003; Roberts, Chernyshenko, Stark, & Goldberg, 2005). Illustrating the value of personality across contexts, Ozer and Benet-Martinez (2006) noted that, at an individual level, personality dispositions relate to happiness, physical and psychological health, spirituality, and identity. At an interpersonal level, the authors also found personality related to the quality of peer, family, and romantic relationships. Finally, at a social/institutional level, personality relates to occupational choice, satisfaction, performance, community involvement, criminal activity, and political ideology.

Additional research illustrates the value of personality for predicting work-related outcomes. For example, researchers consistently find that personality predicts overall job performance (e.g., Barrick, Mount, & Judge, 2001; Dudley, Orvis, Lebiecki, & Cortina, 2006; J. Hogan & Holland, 2003), task performance (Dudley et al., 2006; Hurtz & Donovan, 2000), expatriate performance (Mol, Born, Willemsen, & Van Der Molen, 2005) and performance in teams (Peeters, Van Tuijl, Rutte, & Reymen, 2006). Also, personality predicts a range of contextual performance variables including Organizational Citizenship Behaviors (OCBs), altruism, job dedication, interpersonal facilitation, and generalized compliance (Borman, Penner, Allen, & Motowidlo, 2001; Chiaburu, Oh, Berry, Li, & Gardner, 2011; Dudley et al., 2006; Hurtz & Donovan, 2000; LePine, Erez, & Johnson, 2002; Organ & Ryan, 1995).

Regarding specific work skills and individual competence, researchers report that personality predicts training performance and skill acquisition (Barrick & Mount, 1991; Barrick et al., 2001; Colquitt, LePine, & Noe, 2000; Major, Turner, & Fletcher, 2006), goal setting (Judge & Ilies, 2002; Steel, 2007), creativity and innovation (Feist, 1998; Furnham, Crump, Batey, Chamorro-Premuzic, 2009; Hough, 1992; Hough & Dilchert, 2007), teamwork (Barrick, Mount, & Gupta, 2003; J. Hogan & Holland, 2003), and job and career satisfaction (Judge, Heller, & Mount, 2002; Ng, Eby, Sorensen, & Feldman, 2005). Among leaders and managers,

personality shows significant correlations with overall managerial effectiveness, promotion, and managerial level (Hough, Ones, & Viswesvaran, 1998; Oh & Berry, 2009), as well as leader emergence and effectiveness (Bono & Judge, 2004; Judge, Bono, Ilies, & Gerhardt, 2002).

Organizations can also use personality measures to identify employees likely to engage in Counterproductive Work Behaviors (CWBs), or behaviors that violate the norms of an organization and cause harm to the organization itself, specific members of the organization, or both (Berry, Ones, & Sackett, 2007; Gruys & Sackett, 2003). In comparison to overt integrity tests, personality-based integrity tests predict more specific negative outcomes such as theft, disciplinary actions, and absenteeism (Ones, Viswesvaran, & Schmidt, 1993, 2003).

Considering the applied value of personality in predicting a range of important business-related outcomes, as well as the robustness of these measures against the pitfalls of adverse impact and faking, it is advantageous for organizations to use personality assessment to predict meaningful job performance outcomes. In addition, evaluations of an assessment inventory's predictive effectiveness and operational validity are essential to demonstrate business necessity. As such, Hogan uses rigorous procedures to provide clients with validity evidence for our instruments.

A1.2.4 Advantages of Using Personality Assessments

In comparison to other methods often employed as a foundation for candidate screening, personality testing offers several advantages. Consider the following:

- Including personality measures within traditional selection batteries is one way to decrease the likelihood of adverse impact against minority groups (Campbell, 1996); using personality measures results in smaller group differences than those found for ability measures (Foldes, Duehr, & Ones, 2008). Normal personality measures are rarely challenged in court (Williams, Schaffer, & Ellis, 2013).

- Cognitive ability measures tend to predict technical performance, not interpersonal skills or initiative. These tools also tend to discriminate in terms of gender, age, and race/ethnicity (Hausdorf, LeBlanc, & Chawla, 2003). Cognitive ability measures tend to exhibit slope and intercept test biases that impact racial subgroups (Berry, 2015). Further, much of the performance variation is thought to lie in noncognitive factors (i.e. personality), as cognitive ability at the upper levels is narrow (Hollenbeck, 2009).

- There is little empirical support for a link between subjective reviews of resumes and job performance; reviewing a resume does not appear to predict subsequent job performance (O'Leary, 2009).

- Biodata measures tend to be custom-developed tools (Bliesener, 1996), not readily available in an off-the-shelf form, and tend to lack the structure and interpretability necessary to enable professional development. In addition, predictions based on biodata measures with non-verifiable items are less valid (Harold, McFarland, & Weekley, 2006).

- Work sample measures and assessment centers, while valid, tend to discriminate in terms of race and ethnicity much more than previously thought (Dean, Roth, & Bobko, 2008; Roth, Bobko, McFarland, & Buster, 2008). Further, assessment centers tend to lack construct validity evidence (Lievens, 2002), and include subjective rater biases (Miron-Shatz & Ben-Shakhar, 2008).

- Integrity tests can predict counterproductive work behaviors, but their predictive strength is currently under dispute (Sackett, Lievens, Van Iddekinge, & Kuncel, 2017). In addition, existing FFM measures are highly related to integrity tests, which indicates integrity (in part) is a combination of FFM personality (Berry, Sackett, & Wiemann, 2007).

- Although face valid and expected as part of the selection process, interviews tend to be subjective and need structure in order to be a strong predictor of job performance (Macan, 2009).

- Empirical research clearly demonstrates that personality assessments are strong incremental predictors of work outcomes; yet personality may also play a role in predicting team performance and organizational culture shifts (Church et al., 2015).

A1.3 Assessments

Hogan offers three personality based assessments – the HPI, HDS, and MVPI. The following sections provide a summary of each measure's purpose, development, and content.

A1.3.1 The Hogan Personality Inventory

Quick Facts

- 4-point Likert-type items
- 7 personality scales,

  41 sub-scales, 1 validity scale
- 4th grade reading level
- Carefully screened to minimize invasion of privacy
- 15-20 minute completion time
- Designed for ages 18 and older
- Internet administration and reporting

Based on the FFM, development of the HPI began in the late 1970s, with assessment construction and validation conducted in accordance with professional *Standards* and the *Uniform Guidelines.* The HPI was the first measure of normal personality developed explicitly to assess the FFM in occupational contexts. 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 considered a marker instrument.

Initial item generation for the HPI reflected the standard FFM dimensions. However, analyses revealed seven factors, two more than prescribed by the FFM. Analyses suggested that the standard FFM dimension called Surgency has two components that are conceptually unrelated. One component is Sociability, which concerns impulsivity and the need for social interaction – or a lack of shyness. The other component is Ambition, which concerns a desire for status, power, recognition, and achievement. Additionally, we found that the FFM dimension called Intellect/Openness to Experience has two components; one

component concerns an interest in culture and ideas, and the other concerns interest in acquiring new knowledge.

The seven scales and related FFM dimensions are as follows:

- **Adjustment**: steady in the face of pressure (FFM: Emotional Stability)
- **Ambition**: appearing leader-like, status-seeking, and achievement-oriented (FFM: Extraversion)
- **Sociability**: needing and/or enjoying social interaction (FFM: Extraversion)
- **Interpersonal Sensitivity**: having social sensitivity, tact, and perceptiveness (FFM: Agreeableness)
- **Prudence**: conforming, dependable, and has self-control (FFM: Conscientiousness)
- **Inquisitive**: imaginative, adventurous, and analytical (FFM: Intellect/Openness)
- **Learning Approach**: enjoying academic activities and valuing education as an end in itself (FFM: Intellect/Openness)

In the final stages of item development, researchers produced a pool of 420 items containing no psychiatric or mental health content. These items were later refined using factor analysis and empirical validation procedures to assign 206 of the initial 420 items to one of the seven construct scales. The items form small composites (i.e., facets) that represent themes with the larger constructs. The number of composites per scale ranges from four (Learning Approach) to eight (Adjustment).

In addition to the seven primary scales, Hogan also developed a validity scale. The validity scale consists of 14 items focused on detecting careless or random responding. Initial research suggests that 99% of the research sample answered the same way for a particular validity item. Therefore, a contrary response to one of these items is an infrequent occurrence; a contrary response to five of these items (validity cutoff score) places a person in the 5.7th percentile of a large representative sample (N = 65,535), suggesting that random or careless responding may be occurring. Additionally, recent research indicates that real job applicants who completed the HPI as part of the job application process did not/could not "fake" their scores on a second occasion having been rejected the first time (J. Hogan, Barrett, & Hogan, 2007). Further, McGrath, Mitchell, Kim, & Hough (2010) found no evidence that participants distort results just for the sake of it.

In order to develop scores for the HPI, researchers first needed to identify a frame of reference for score interpretation. Researchers refer to this process as "norming" the scores (Nunnally, 1967). For this purpose, Hogan designed the Global Norm as a globally representative norm combining data from multiple countries and languages into a single dataset. To build this dataset, we started with over 1.4 million cases of HPI data (N = 1,481,024) collected between April 2001 and October 2010.

We eliminated cases based on three criteria. First, we removed cases missing responses to more than 33% of HPI assessment items. Next, we eliminated cases for which we could not identify the assessment language. Finally, we eliminated all test cases, such as those used

for quality assurance or demonstration purposes. The resulting sample contained 1,151,902 cases of data.

Next, we examined representation across languages. Some languages, such as the original U.S. English forms and other well-established translations (e.g. Australian English, Spanish) were overrepresented. Other newer and less frequently used translations (e.g., Estonian, Macedonian) were underrepresented. To ensure that the normative dataset did not contain an overrepresentation of any one language, we set a maximum threshold of 10,000 cases per language. When more than 10,000 cases of data were available, we randomly identified cases based on availability of HDS and MVPI data, workforce composition, assessment purpose (i.e., personnel selection, employee development), age, and gender. The resulting dataset included 145,792 cases of data. While Hogan recommends using the Global norm, clients can also use a local norm for situations where a single-language norm is available and applicants are likely to come from a concentrated geographic area, being assessed in the same language. For more information, please see the Global Norm technical report (Hogan Research Division, 2011).

The HPI Global Norms include data from 144,877 cases of working adults across multiple countries, industries, organizations, and jobs. The normative sample is representative across all ISCO-88 major job codes. These data include supervisory and non-supervisory personnel and strikes a balance between selection and development cases. The Global Norm technical report documents the norm development process in further detail (Hogan Research Division, 2011). Additionally, over 450 validity generalization studies and 400 criterion-related validation studies used the HPI to evaluate occupational performance across jobs and industries. Jobs studied represent 95% of the industry coverage of the Dictionary of Occupational Titles (U.S. Department of Labor, 1991).

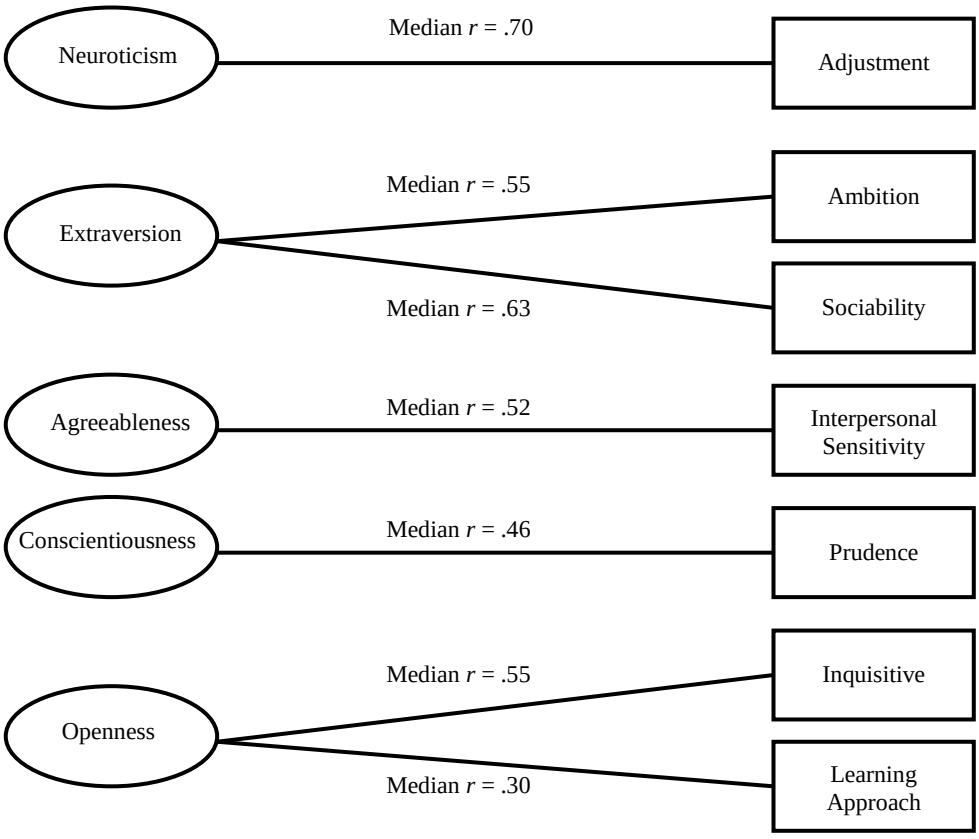
Hogan gathered validation evidence by identifying relationships between the HPI and other well-known measures of FFM. Table A3 presents correlations between the HPI and other assessments of the FFM. Figure A1 shows median correlation coefficients that summarize HPI relations with Goldberg's (1992) Big-Five Markers (R. Hogan & J. Hogan, 2007), the Personal Characteristics Inventory (Mount & Barrick, 1995), the Inventario de Personalidad de Cinco Factores (IP/5F: Salgado & Moscoso, 1999), and the NEO PI-R (Goldberg, 2000).

Table A3 Correlations between HPI Scales and other FFM Assessments

	Hogan Personality Inventory						
	ADJ	AMB	SOC	INP	PRU	INQ	LRN
Extraversion/Surgency							
Goldberg Big Five	.04	.55*	.44*	.31*	-.24*	.29*	-.03
PCI	.04	.39*	.64*	.26*	-.09	.18*	N/A
IP/5F	.24*	.60*	.62*	.35*	.04	.41*	N/A
NEO-PI-R	.16*	.54*	.63*	.44*	-.06	.22*	.08*
Agreeableness							
Goldberg Big Five	.13	-.11	.02	.56*	.23*	-.12	-.17*
PCI	.50*	.25*	.09	.61*	.21*	-.03	N/A
IP/5F	.22*	-.12	-.10	.37*	.25*	-.10	N/A
NEO-PI-R	.31*	-.12*	-.24*	.47*	.46*	-.20*	-.08*
Conscientiousness							
Goldberg Big Five	.10	.24*	-.26*	-.07	.36*	-.17	-.08
PCI	.24*	.39*	-.06	.17*	.59*	.08	N/A
IP/5F	.22*	.35*	.08	.30*	.49*	.19*	N/A
NEO-PI-R	.24*	.37*	-.05	.08	.42*	.05	.16*
Neuroticism/Emotional Stability							
Goldberg Big Five	.70*	.39*	-.04	.27*	.01	.28*	.11
PCI	.69*	.59*	-.02	.46*	.25*	.06	N/A
IP/5F	-.66*	-.50*	-.16*	-.31*	-.32*	-.26*	N/A
NEO-PI-R	-.72*	-.53*	-.08*	-.27*	-.22*	-.15*	-.17*
Openness							
Goldberg Big Five	.05	.22*	-.04	-.01	.03	.33*	.35*
PCI	.12	.36*	.15	.17*	-.05	.57*	N/A
IP/5F	.11	.44*	.51*	.25*	-.15*	.69*	N/A
NEO-PI-R	.01	.20*	.38*	.19*	-.31*	.52*	.24*

Note. Data taken from tables in the HPI Manual (R. Hogan & J. Hogan, 2007). Goldberg Big Five N = 168; PCI N = 154; IP/5F N = 200; NEO-PI-R N = 679. * $p < .05$

Figure A1 Relationships 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 & J. Hogan, 2007), Personal Characteristics Inventory (Mount & Barrick, 2001), 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.

Empirical validation research conducted over the last 30 years provides a firm understanding of construct validity and the nature and range of job performance prediction. Meta-analyses of HPI scales indicate that the estimated true scale validities for predicting job performance are as follows: Adjustment (.43), Ambition (.35), Interpersonal Sensitivity (.34), Prudence (.36), Inquisitive (.34), and Learning Approach (.25) (J. Hogan, & Holland, 2003). Internal consistency reliabilities (Cronbach's α) range from .57 to .83. Test-retest reliabilities range from .69 to .87 suggesting consistent results for the same individuals over subsequent occasions. Research to date also shows that the HPI produces no adverse impact against any racial/ethnic, gender, or age group. Overall, the HPI is a well-validated and reliable instrument that predicts job performance across occupations and organizations (Axford, 1998; J. Hogan & Holland, 2003). The HPI manual documents the development and psychometric properties in further detail (R. Hogan & J. Hogan, 2007).

Favorable reviews of the HPI appear in several sources including the Buros Institute of Mental Measurements' Thirteenth Mental Measurements Yearbook (Lobello, 1998; Axford, 1998), the British Psychological Society Psychological Testing Centre Test Reviews (Creed &

Shackleton, 2007; Marshall & Lindley, 2009), and the Oregon Research Institute (Goldberg, 2008). The research conducted by the Oregon Research Institute (using the HPI) compiled longitudinal data on major personality assessments from a community sample in Eugene-Springfield, Oregon in 1997 and 2007. The data is a comprehensive and objective source of validity evidence for the HPI. The results of these two studies indicate that the HPI has sufficient convergent and discriminant validity with other FFM measures (Goldberg, 2008).

A1.3.2 The Hogan Development Survey

Quick Facts

- 4-point Likert-type items
- 11 primary scales, 33 sub-scales
- 6th grade reading level
- Not interpretable in terms of medical or psychiatric disability
- 15-20 minute completion time
- Designed for ages 18 and older
- Internet administration and reporting

In contrast to 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; J. Hogan, R. Hogan, & Kaiser, 2011; 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 (J. Hogan et al., 2010; 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 Five-Factor Model is a cross-section of personality at the competent end of the distribution. At the opposite end of the spectrum of personality are clinical disorders, or

sustained patterns of maladaptive feeling, thinking, and behavior. However, personalities do not exist as opposite extremes, where each individual is either "clinically disordered" or "competent." Rather, these descriptors exist as anchors on opposite ends of a continuum of functioning. Between these extremes lies a gray area previously ignored by personality researchers. In this gray area, an individual's personality may be considered "normal," though that person may exhibit certain quirks or "dysfunctional dispositions" that, while flawed, do not rise to the level of clinically disordered functioning. The HDS serves as a measure of these "dysfunctional disorders," or the negative characteristics of personality that may adversely affect the lives of otherwise normal adults. In the context of personnel selection, the HDS identifies applicants whose behavior, over time, will erode relationships with others because of flawed interpersonal strategies.

Hogan consulted three primary sources for scale development: (1) unique themes of behavior that are suggested by the personality disorders but that are common expressions of normal personality, (2) managerial derailment literature (cf. J. Hogan et al., 2010), and (3) performance appraisals (Millikin-Davies, 1992; Shipper & Wilson, 1992; Sorcher, 1985; White & DeVries, 1990). These sources suggested 11 dysfunctional dispositions that can impede job performance and lead to career difficulties. These 11 dysfunctional dispositions are defined as follows:

- **Excitable:** volatile and inconsistent, being enthusiastic about new persons or projects and then becoming disappointed with them
- **Skeptical:** cynical, distrustful, overly sensitive to criticism, and questioning others' true intentions
- **Cautious:** resistant to change and reluctant to take even reasonable chances for fear of being evaluated negatively
- **Reserved:** socially inept and lacking interest in or awareness of the feelings of others
- **Leisurely:** autonomous, indifferent to other people's requests, and becoming irritable when they persist
- **Bold:** unusually self-confident and, as a result, reluctant to admit mistakes or listen to advice, and has difficulty learning from experience
- **Mischievous:** enjoys taking risks and testing the limits
- **Colorful:** expressive, dramatic, and wanting to be noticed
- **Imaginative:** acting and thinking in creative and sometimes unusual ways
- **Diligent:** careful, precise, and critical of others' performance
- **Dutiful:** eager to please, reliant on others for support, and reluctant to take independent action

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. In 1995, Hogan defined a final item pool based on item analyses, scale-level factor analyses, correlations between scale scores and other psychometric measures, and correlations with non-test behavior. Final scales on the HDS consist of 14 agree/disagree items each. There is

no item overlap among the 11 scales. The items were screened for content that might seem offensive or invade privacy. In 2014, Hogan added sub-scales to the HDS, which allows for deeper exploration of how each derailer manifests itself; each 14-item HDS scale is represented by three sub-scales with two sub-scales having five items and one sub-scale having four items (Hogan Assessment Systems, 2014).

Initial principle components analysis of the HDS yields three clearly defined factors that support interpreting the inventory using Horney's (1950) taxonomy of flawed interpersonal characteristics (R. Hogan & J. Hogan, 2001). In 2014, Hogan retested the factor structure, resulting in a four-factor model. This split Horney's 'moving toward people' dimension into two distinct factors, where individual's manage insecurities by either (a) building alliances or (b) minimizing the threat of criticism (Hogan Assessment Systems, 2014). These dispositions extend the FFM personality dimensions, defining 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 syndrome with various related components, as seen in the scale definitions. As such, these dysfunctional dispositions lie at the intersection of normal personality and personality disorders.

As with the HPI, researchers first needed to identify a frame of reference for score interpretation. This process, termed "norming", includes 67,614 working adults spanning across multiple countries, industries, organizations, and jobs. These data include supervisory and non-supervisory personnel and strikes a balance between selection and development cases. The Global Norm technical report (a) documents the norm development process in further detail (Hogan Research Division, 2011) and (b) displays the HDS norms by gender, age, and race/ethnicity. Additionally, researchers have used the HDS in hundreds of validity generalization and criterion-related validation studies to predict occupational performance across a range of jobs and industries, especially in management and leadership in roles (i.e., Fleming, 2004; Khoo & Burch, 2008).

Empirical validation research conducted over the last 10 years provides a firm understanding of the construct validity and the nature and range of job performance outcomes predicted by the HDS scales. Hogan reports construct validity evidence in the assessment manual. Scale correlations with non-test behavior and observer ratings appear in R. Hogan and J. Hogan (2001, 2009). The alpha reliabilities for the scales range from .43 to .68 and short-term test-retest reliabilities, calculated using Pearson correlations, range from .64 to .75 (R. Hogan & J. Hogan, 2009). Test-retest reliabilities using normalized Euclidean similarities, a measure of the distance between the scores, range from .76 to .85 (R. Hogan & J. Hogan, 2009). Additionally, research indicates no adverse impact associated with the HDS against any racial/ethnic, gender, or age groups. The HDS manual documents the development and psychometric properties in further detail (R. Hogan & J. Hogan, 2009).

Favorable reviews of the HDS appear in the Buros Institute of Mental Measurement' *The Nineteenth Mental Measurements Yearbook* (Axford & Hayes, 2014), the British Psychological Society Psychological Testing Centre *Test Reviews* (Hodgkinson & Robertson, 2007), and the Oregon Research Institute (Goldberg, 2008). The Oregon Research Institute research on the HDS compiled longitudinal data on a variety of personality assessments from a community

sample in Eugene-Springfield Oregon in 2007. Results show desirable convergent and discriminant validity of the HDS with other personality measures (R. Hogan & J. Hogan, 2009).

It is important to note that the HDS is neither intended to, nor appropriate for, diagnosing mental illness (Americans with Disabilities Act, 1990); rather, the HDS is a measure of normal personality characteristics that hinder the ability to build relationships and accomplish goals in organizational contexts. The Americans with Disabilities Act (1990), as amended, restricts pre-employment use of "medical evaluations." To determine if a measure constitutes a "medical evaluation," courts examine: (1) whether a healthcare professional administered and interpreted the measure, (2) whether test developers designed it to identify a physical or mental health impairment, (3) whether it was invasive, (4) whether it assessed physiological responses, (5) whether it was typical in medical settings, and (6) whether medical tools were used (*Karraker v. Rent-A-Center, Inc.*, 2005). Applying these factors to the HDS shows that it is not a "medical evaluation" under the American with Disabilities Act (1990).

Because of this, a primary consideration shaping the development of the HDS concerned the actual content of the items. Because 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, Hogan did not validate the HDS against clinical diagnoses, but against descriptions provided by participants' close working associates (Fico, R. Hogan, & J. Hogan, 2000; R. Hogan & J. Hogan, 2009). Aside from 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. This has clear practical implications, as taking a strength to the extreme is often detrimental to performance, and in some cases, performance suffers even when managers show a slight tendency to exaggerate their strengths (Kaplan & Kaiser, 2009).

A1.3.3 The Motives, Values, Preferences Inventory

Quick Facts

- Agree/Uncertain/Disagree items
- 10 primary scales, 5 themes per scale
- 3rd grade reading level
- 15-20 minute completion time
- Designed for ages 18 and older
- Internet administration and reporting

The MVPI (J. Hogan & R. Hogan, 1996; 2010) serves two distinct purposes. First, it allows for an evaluation of fit between an individual and an organization, an important index given that greater similarity between individual and organizational values facilitates successful person-organization fit. 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.).

MVPI scales represent dimensions with a historic presence in the literature on motivation, as Hogan reviewed 80 years of theory and research on motives, values, and interests (i.e. Spranger, 1928; Allport, 1961; Murray, 1938; Allport, Vernon, and Lindzey, 1960; Holland, 1966; 1985). The MVPI is comprised of items derived rationally from hypotheses about the likes, dislikes, and aversions of the "ideal" exemplar of each motive. Each scale is composed of five themes: (a) Lifestyles, which concern the manner in which a person would like to live; (b) Beliefs, which involve "shoulds", ideals, and ultimate life goals; (c) Occupational Preferences, which include the work an individual would like to do, what constitutes a good job, and preferred work materials; (d) Aversions, which reflect attitudes and behaviors that are either disliked or distressing; and (e) Preferred Associates, which include the kind of persons desired as coworkers and friends. The resulting 10 scales are defined as follows:

- **Recognition:** fame, visibility, and publicity
- **Power:** competition, achievement, and being influential
- **Hedonism:** fun, good company, and good times
- **Altruism:** actively helping others and improving society
- **Affiliation:** frequent and varied social interaction
- **Tradition:** history, rituals, and old-fashioned virtues
- **Security:** certainty, predictability, and risk free environments
- **Commerce:** business activities, money, and financial gain
- **Aesthetics:** creative and artistic self-expression
- **Science:** ideas, technology, and rational problem solving

The MVPI is an organization-specific performance predictor (J. Hogan & R. Hogan, 1996; 2010). There are no correct or incorrect responses for the MVPI scales; therefore, there is no

need for validity or faking keys. There is no item overlap among the 10 scales. The items were screened for content that might seem offensive or invade privacy.

As with the HPI and HDS, researchers needed to identify a frame of reference for score interpretation. This "norming" process includes over 48,267 working adults spanning across multiple countries, industries, organizations, and jobs. These data include supervisory and non-supervisory personnel and strikes a balance between selection and development cases. The Global Norm technical report (a) documents the norm development process in further detail (Hogan Research Division, 2011) and (b) displays the MVPI norms by gender, age, and race/ethnicity.

The scales demonstrate adequate psychometric qualities with internal-consistency reliability coefficients ranging between .70 (Security) and .84 (Aesthetics). Test-retest reliability coefficients (assessed over an eight-week period) range from .71 to .85. Additionally, researchers have used the MVPI in hundreds of validity generalization and criterion-related validation studies to predict occupational performance across a range of jobs and industries (e.g., Shin & Holland, 2004). The MVPI manual documents the development and psychometric properties in further detail (J. Hogan & R. Hogan, 2010).

Favorable reviews of the MVPI appear in the Buros Institute of Mental Measurements' *The Fourteenth Mental Measurements Yearbook* (Roberts, 2001; Zedeck, 2001) and the British Psychological Society's Psychological Testing Centre's *Test Reviews (*Feltham & Loan-Clarke, 2007*).* The Oregon Research Institute included the MVPI in its 2007 data collection effort involving the community population in Eugene-Springfield, Oregon. This research effort is the largest of its kind and compiles longitudinal data on major personality and culture fit assessments.

A2. COMPETENCY IDENTIFICATION

As more companies use competency models for a variety of purposes, the need to align personality instruments with customized competency models continues to grow. Scholars call for combining job analysis with competency modelling (e.g., Sanchez & Levine, 2009). Many clients conduct a job analysis in the process of developing their competency model. Hogan can use this information in linking personality to their competency model. Hogan can also conduct a job analysis for the client to provide additional evidence of the critical personality characteristics, values, and competencies that we can use to build scoring recommendations for a specific job or organization. For clients who have already conducted job analysis work on their own, Hogan will move directly to competency alignment as the next step in linking a model to personality. For these reasons, this section provides a general overview of the possible steps Hogan may take when creating a competency solution for a client.

A2.1 Job Analysis

This section describes the potential steps conducted to identify the critical aspects of a job. In some cases, all of these steps are completed. In other instances, circumstances may prevent or obviate completion of certain processes. As such, this section should be taken as a general overview of possible steps that Hogan may take when conducting a job analysis.

A2.1.1 Job Analysis Survey

Hogan designed a standardized on-line job analysis survey to identify the critical worker-oriented requirements in terms of the key personal requirements and critical competencies required for effective performance. The Job Evaluation Tool ("JET"; Hogan Assessment Systems, 2000) consists of four components: (a) the Performance Improvement Characteristics (PIC) survey, (b) the Derailment Characteristics Questionnaire (DCQ) survey, (c) the Motivational Improvement Characteristics (MIC) survey, and (d) the Competency Evaluation Tool (CET). Hogan administers the JET to Subject Matter Experts (hereafter, SMEs) – individuals highly familiar with the target job(s) and how the job(s) should ideally be performed. SMEs generally include both supervisors and high performers in the job(s) at hand.

As described by Foster, Gaddis, and Hogan (2012), we use intra-class correlations as the basis for computing inter-rater reliability estimates. However, we now use a two-way random model to test for the absolute agreement among ratings. Our rationale for using a two-way random model stems from the typical use case where (a) we have a sample of 8-10 SMEs ratings each section of the JET, (b) our SME sample is randomly drawn from a larger SME population, and (c) it's important to control for SME rater effects as we assume rater variance is only adding noise to the reliability estimate. We also follow Foster et al.'s (2012) .80 or higher reliability requirement. In cases where estimates fall short of this benchmark, we either (a) ask for additional raters to complete the JET or (b) run outlier analyses to see if problematic raters can be removed from the reliability analyses.

A2.1.1a Performance Improvement Characteristics

As indicated by Foster et al. 2012:

> "The FFM provides a systematic method for classifying individual differences in social and work behavior. These five dimensions, which are based on observers' descriptions of others, capture the content of virtually any personality assessment (Wiggins & Pincus, 1992). As a result, the FFM represents the paradigm for modern personality research and is particularly relevant for job analysis because it provides a taxonomy of observer ratings. Applications of the FFM for job analysis tell us about the reputation of individuals who exhibit behaviors associated with successful job performance." (p.251-253)

Foster et al. provide additional justification for the development of the PIC:

> "The development of the PIC was based on research using the FFM structure with adjective checklist item content to indicate worker requirements (Hogan & Arneson, 1987). SMEs used this checklist to describe the characteristics of an ideal employee in a specific job. This method yielded positive results and suggested that a similar approach could identify important worker characteristics required for a range of jobs. For example, researchers found that the checklist reliably differentiated between jobs, both supervisors and high-performing incumbents agreed on the profile of the ideal workers, and the profile of the ideal *worker* differed from that of the ideal *person* (Hogan & Rybicki, 1998). Based on these findings, professionals can use the PIC, in conjunction with test validation research for personnel selection and development, for any job where people interact with others." (p.253)

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 et al., 2012; J. Hogan & Rybicki, 1998). SMEs rated the 48 PIC items using a scale ranging from 0 (*Does Not Improve Performance*) to 3 (*Substantially Improves Performance*). For more detailed PIC item descriptions, see Table A4.

Table A4 PIC Items

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

The PIC is not intended for use in pre-employment decision-making. It is a job analysis tool designed solely to help 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 reported in the manual indicate that PIC scales' internal consistency reliability estimates range between .76 (Adjustment) and .87 (Interpersonal Sensitivity); 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 Hogan Personality Inventory (HPI; R. Hogan & J. Hogan, 1995, 2007) that predict successful job performance (Foster et al., 2012; Meyer & Foster, 2007; Rybicki, 1997).

The 48 PIC items align conceptually and empirically with the Five-Factor Model and the HPI (refer to Table A5). 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 judge as important for the job under evaluation.

Table A5 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 we use PIC scores to 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.

A2.1.1b Derailment Characteristics Questionnaire

Over 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 (1985) observations overlap substantially with those from other organizational psychologists — that individuals with leadership responsibilities who demonstrate dysfunctional dispositions leading to an inability to build an effective team will ultimately fail or become less than optimally effective in their roles.

To tap 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 behaviors (J.

Hogan et al., 2010). These attributes coexist with good interpersonal skills and technical competence, and may be 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 6 for each dimension. For more detailed DCQ item descriptions, see Table A6.

Table A6 DCQ Items

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

Hogan computes scale scores on the DCQ by (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. The resulting percentile scores illustrate the characteristics the SME panel judged important for the job under evaluation. In contrast with 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 job performance. The items align with the 11 HDS scales, as shown in Table A7.

Table A7 HDS and DCQ Scale Definitions

Scale Name	Definition - *The degree to which a person seems…*
Excitable	volatile and hard to please, enthusiastic about new persons or projects and then becoming disappointed with them
Skeptical	cynical, mistrustful, and doubtful of the true intentions of others
Cautious	to be conservative, careful, worried about making mistakes, and reluctant to take initiative for fear of being criticized
Reserved	to keep to oneself, to dislike working in teams, and to be indifferent to the moods of others
Leisurely	independent, refusing to be hurried, ignoring other peoples' requests, and becoming irritable if they persist
Bold	unusually self-confident, having strong feelings of entitlement, and reluctant to admit mistakes, listen to advice, or attend to feedback
Mischievous	to enjoy taking risks and testing the limits, being easily bored, and seeking excitement
Colorful	lively, expressive, dramatic, and wanting to be noticed
Imaginative	to act and think in creative and sometimes unusual ways
Diligent	meticulous, precise, and critical of the performance of others
Dutiful	eager to please, ingratiating, and reluctant to take independent action

A2.1.1c 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 (1987) 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 ideal workgroup climate. These values include interests such as work quality, social interaction, helping others, profitability, enjoyment, accomplishment, recognition, technology, predictability, and adherence to established standards of conduct. 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. For more detailed MIC item descriptions, see Table A8.

Table A8 MIC Items

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

Hogan computes scale scores on the MIC by (a) summing the item responses that correspond to each of the 10 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 important for the job under evaluation. The 40 items align with the 10 MVPI scales, as shown in Table A9.

Table A9 MVPI and MIC Scale Definitions

Scale Name	Definition – the degree to which a person values
Recognition	praise and recognition
Power	accomplishment and competition
Hedonism	fun and having a good time
Altruism	helping and caring for others
Affiliation	friendship and social interaction
Tradition	history and old-fashioned virtues
Security	certainty and predictability in life
Commerce	business and financial matters
Aesthetics	work quality and artistic endeavors
Science	the pursuit of knowledge

A2.1.1d Competency Evaluation Tool

Boyatzis (1982) extended the work of McClelland (1973) and 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. The *Principles* recognize that competency modeling is used by many organizations as a means for describing broad requirements for a wide range of jobs. Every existing competency model can be organized in terms of a "domain model" first proposed by Warrenfeltz (1995). The domain model is composed of four domains: (a) Intrapersonal skills, (b) Interpersonal skills, (c) Technical skills, and (d) Leadership skills. R. 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 US economy.

The CET is designed to serve as a comprehensive list of competencies that appear in (or can be translated from) the major taxonomic sources, including the Great Eight. The CET's development centered on a review of 21 competency models used across academic, commercial, and government settings. This development process ensured that the model is

comprehensive and that it can be easily compared to and used in conjunction with other competency models (Hogan Assessment Systems, 2009).

The CET asks SMEs to indicate the degree to which each of 62 listed competencies is related to successful performance in the job or job family under study. Each listed competency is accompanied by a brief definition in Table A10. Raters are asked 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). Using the competencies identified by the SMEs, Hogan can recommend competency scoring.

Table A10 CET Items

1	Accountability: Accepts responsibility for one's actions regardless of outcomes.
2	Anticipating Problems: Forecasts and detects errors, gaps, and potential flaws.
3	Attracting Talent: Recruits, rewards, and retains individuals with needed skills and abilities.
4	Business Insight: Applies business knowledge to achieve organizational goals and objectives.
5	Caring about People: Displays sensitivity towards the attitudes, feelings, or circumstances of others.
6	Competing with Others: Strives to exceed others' performance.
7	Customer Focus: Provides courteous, timely, and helpful service to encourage client loyalty.
8	Dealing with Ambiguity: Comfortably handles unclear or unpredictable situations.
9	Decision Making: Uses sound judgment to make timely and effective decisions.
10	Delegating: Assigns work to others based on tasks, skills, and workloads.
11	Dependability: Performs work in a reliable, consistent, and timely manner.
12	Detail Focus: Performs work with care, accuracy, and attention to detail.
13	Developing People: Provides support, coaching, training, and career direction to others.
14	Displaying Confidence: Projects poise and self-assurance when completing work tasks.
15	Driving Change: Champions new methods, systems, and processes to improve performance.
16	Driving for Results: Accomplishes goals, completes tasks, and achieves results.
17	Driving Innovation: Stimulates creative ideas and perspectives that add value.
18	Driving Performance: Provides guidance and feedback to maximize performance of individuals and/or groups.
19	Driving Strategy: Directs effort to achieve long-term business objectives.
20	Engagement: Demonstrates loyalty and commitment through enthusiasm and extra effort.
21	Financial Insight: Applies financial knowledge to achieve organizational goals and objectives.
22	Flexibility: Changes direction as appropriate based on new ideas, approaches, and strategies.
23	Handling Stress: Manages pressure without getting upset, moody, or anxious.
24	Industry Insight: Applies knowledge of industry trends and outlooks to achieve organizational goals and objectives.
25	Influencing Others: Persuades others to help achieve organizational goals and objectives.
26	Inspiring Others: Motivates others to accomplish organizational goals.
27	Integrity: Acts honestly in accordance with moral or ethical principles.
28	Leading Others: Demonstrates general leadership ability and effectiveness.
29	Leveraging Diversity: Respects and values individual differences to obtain a desired effect or result.
30	Leveraging People Skills: Gets along well with others, is tactful, and behaves appropriately in social situations.
31	Leveraging Work Skills: Applies technology and job-relevant abilities to complete work tasks.
32	Listening to Others: Listens and restates the ideas and opinions of others to improve mutual understanding.
33	Managing Conflict: Resolves hostilities and disagreements between others.
34	Managing Resources: Coordinates people and financial and material capital to maximize efficiency and performance.
35	Negotiating: Explores alternatives to reach outcomes acceptable to all parties.
36	Networking: Builds and maintains a system of strategic business connections.
37	Organizational Citizenship: Exceeds job requirements to help the organization.
38	Overcoming Obstacles: Pursues goals and strategies despite discouragement or opposition.
39	Planning and Organizing: Coordinates and directs activities to help achieve business objectives.
40	Political Savvy: Recognizes, interprets, and works within the political environment of an organization.
41	Positive Attitude: Displays a positive disposition towards work.
42	Presenting to Others: Conveys ideas and information to groups.
43	Processing Information: Gathers, organizes, and analyzes diverse sources of information.
44	Professionalism: Acts in accordance with job-related values, principles, and standards.
45	Quality Focus: Strives to meet quality standards and produce quality work products.
46	Relationship Building: Develops collaborative relationships to facilitate current and future objectives.
47	Rule Compliance: Adheres to directions, policies, and/or legal guidelines.
48	Safety Focus: Attends to precautions and proper procedures to guard against work-related accidents and injuries.
49	Sales Focus: Generates revenue by promoting products and services to others.
50	Self-Development: Actively acquires new knowledge and skills to remain current with and grow beyond job requirements.
51	Self-Management: Demonstrates appropriate motivation, attitude, and self-control.
52	Setting Goals: Identifies short-term objectives and steps to achieve them.
53	Solving Problems: Identifies solutions given available information.
54	Staying Alert: Remains focused when performing monotonous tasks.
55	Taking Initiative: Takes action without needing direction from others.
56	Taking Smart Risks: Evaluates tradeoffs between potential costs and benefits and acts accordingly.
57	Team Building: Assembles productive groups based upon required skills, goals and tasks.
58	Teamwork: Collaborates with others to achieve goals.
59	Time Management: Plans and prioritizes work to maximize efficiency and minimize downtime.
60	Verbal Communication: Expresses ideas and opinions effectively in spoken conversations.
61	Working Hard: Consistently strives to complete tasks and assignments at work.
62	Written Communication: Expresses ideas and opinions effectively in writing.

A2.2 Competency Alignment

As more companies use competency models for a variety of purposes, the need to align personality instruments with customized competency models continues to grow. Although competency models invariably differ across organizations, similarities often exist. HRD developed the HCM to capture these similarities by continually reviewing a wide range of existing competency models throughout the development process. As a result, HRD can easily map HCM competencies to the vast majority of competencies presented in other models.

During the mapping process, Hogan SMEs, consisting of expert Ph.D.- and Masters-level practitioners, evaluate both competency models and indicate which HCM competencies align with each of the client's competencies. Often, client competencies are broad and align with multiple HCM competencies. When that is the case, HRD can combine HCM competencies to adequately align with the client's model. During the mapping process, HRD resolves disagreements among SMEs through a group decision-making task where they discuss the disagreement(s) and come to a consensus as to which HCM competency best aligns with the corresponding client competency.

Competency mapping studies serve a number of purposes, such as identifying personality scales that are predictive of performance for a job or aligning CET results to verify that competencies in a client's existing model are important for performance. Competency mapping studies may also be the first step in more comprehensive studies. By first aligning HCM competencies with competencies in a client's model, HRD can more effectively use data from the JET and Hogan archive to answer critical research questions.

A3. SYNTHETIC/JOB COMPONENT VALIDITY

Once Hogan has identified the relevant competencies in the HCM based on job analysis and/or competency alignment results, we can use synthetic/job component validation research to identify the best predictors of performance dimensions that directly align to each competency. The next section describes the approach HRD takes to conduct synthetic validation research.

A3.1 Synthetic 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). Since Mossholder and Arvey's initial demonstration, synthetic validity has gained more support and popularity (e.g. Hoffman, Holden, & Gale, 2000; Jeanneret & Strong, 2003; Johnson & Carter, 2010; Johnson, Carter, Davison, & Oliver, 2001; Johnson et al., 2010; McCloy, 1994; 2001; Scherbaum, 2005).

Brannick and Levine (2002) point out that synthetic validity approaches allow us to build up validity evidence from small samples with common job components. Johnson and Carter (2010) showed that synthetic validity (a) produced coefficients quite similar to coefficients obtained from more traditional local validation research and (b) may be more advantageous when developing selection batteries for newly created jobs, given that tenured job incumbents are needed for criterion-related validation studies.

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 composing 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 (hereafter, JCV: McCormick et al., 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 Position Analysis Questionnaire 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. Because the concept of synthetic validity has evolved over the years, Hogan uses interchangeably the terms criteria, performance dimensions, job components, work components, competencies, and domains of work.

A3.1.1 Gathering Synthetic Validity Evidence

The Hogan archive contains information from over 1,000 research studies conducted from 1981 to the present and provides a means to identify the best predictor(s) of each competency in the HCM. Lemming, Nei, & Foster (2016) mapped each of the criteria from over 375 criterion-related validity studies in the Hogan archive onto the Hogan competencies and conducted a meta-analysis for each Hogan scale-by-competency relationship.

Hogan used the procedures specified by Hunter and Schmidt (2004) 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 (2004) argue that samples should contribute the same number of correlations to meta-analysis results to avoid bias. Thus, Hogan selected only one correlation per study so that each sample contributed only one point estimate per predictor scale. Also, Hogan computed a range restriction index for HPI scales. Following procedures described by Hunter and Schmidt, Hogan divided each HPI scale's within-study standard deviation by the standard deviation reported by R. Hogan and J. Hogan (1995; 1997). 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, Jackson, and Rothstein (1991), and used the .52 reliability coefficient proposed by Tett, Jackson and Rothstein (1991) to estimate the reliability of supervisory ratings of job performance.

These meta-analyses provide stable estimates of the relationships between the 7 HPI scales, the 11 HDS scales, and the Hogan Competency Model. They report operational validities, which they corrected for sampling error, unreliability in the criterion measure, dichotomization (when necessary), and range restriction. Based on this evidence, Hogan can identify the characteristics associated with critical competencies for a client.

A4. RECOMMENDATIONS

A4.1 Scale Selection

All competency-based research solutions start with aligning each client competency to a matching competency from the HCM (Hogan Assessment Systems, 2016). Those competency alignments allow Hogan researchers to identify the Hogan scales that are empirically or theoretically related to a client's competency and use those scales to predict the client's competency. To make scale decisions, Hogan assimilates all available information from the (a) job analysis and/or (b) synthetic/job component validity.

First, Hogan uses a content validity approach to select critical personality characteristics and values. This approach uses SMEs who are knowledgeable of the HPI, HDS, and MVPI, as well as the critical client competencies. The SMEs include members of Hogan's Research and Consulting Teams. The Hogan team members have extensive experience using assessments for selection and leadership development. They have worked with many large organizations in numerous industries, including transportation, manufacturing, financial services, pharmaceutical, healthcare, and retail.

As part of each study's content validation process, the Hogan team members may reference the following qualitative information sources: (a) the client competency model, (b) the HPI, HDS, and MVPI technical manuals (R. Hogan & J. Hogan, 2007; R. Hogan & J. Hogan, 2009; J. Hogan & R. Hogan, 2010), (c) *The Hogan Guide: Interpretation and Use of the Hogan Inventories* (R. Hogan, J. Hogan, & Warrenfeltz, 2007), and (d) past profiles created for similar competencies. Quantitative results can be derived from the results of the job analysis and from synthetic validity. Hogan integrates both the empirical and the qualitative evidence to develop scale recommendations for each competency.

After identifying the qualitatively- and quantitatively-linked scales, the full set of SMEs examine the scales across each client competency to ensure there are no redundancies. In addition, this step safeguards against one scale dominating the model. The SMEs also reviewed the job analysis data to ensure scale representation matches the results. Hogan then reviews the scale recommendations with the client for their approval.

A4.2 Competency Scoring

For each competency in a client's model, Hogan provides scoring recommendations. There are several different types of competency scoring from which a client can choose. Based on client needs and other factors, the Hogan Research Division typically uses one of two different approaches to align Hogan assessments to client competencies: (a) scale-based profiles and (b) scale-based algorithms. The following sections present each approach. We describe pros and cons associated with each approach and the similarity of scores across methods.

A4.2.1 Profiles

Creating profiles starts with mapping each client competency to one from the HCM and identifying the assessment scales with empirical and/or theoretical linkages to the

competency. Using those scales, we then set normative percentile-based cutoff scores to place candidates into fit levels on each competency. As with traditional selection profiles, the assessments included, norms, levels of fit, percentage of candidates in each fit level, and reporting output are largely based on client needs. An example is provided below:

Scale	Low Fit	Moderate Fit	High Fit
HPI Ambition	Fails to Meet "Minimum Fit" Cutoff Scores	≥ 10 %	≥ 25%
HPI Inquisitive		≥ 10 %	≥ 25%
HPI Learning Approach		≥ 10 %	≥ 25%
HDS Excitable			≤ 90%
HDS Skeptical			≤ 90%
HDS Imaginative			≤ 90%
HDS Diligent			≤ 90%
MVPI Power			≥ 20%
MVPI Tradition			≤ 90%

The advantage of this method is that the client can identify specific weaknesses on the profile, which allows for better feedback/coaching. However, this ease of interpretation may come with a loss of predictive validity.

A4.2.2 Algorithms

To address the most significant limitations associated with scale-based profiles (i.e., predictive validity, inflexibility), we offer algorithm scoring. Like the profile approach, this solution begins with mapping client competencies to those from the HCM and identifying scales with empirical and/or theoretical linkages to each competency. However, instead of building profiles, we create mathematical algorithms for each competency. Algorithms use normative percentile scores instead of raw scores, which unit weights the scales included in each algorithm and facilitates interpretation. With based algorithms, the assessments included and reporting output can be customized to meet client needs. An example is provided below:

- Innovation = (Ambition + Inquisitive + (100 - Skeptical) + (100 - Cautious) + Power)/5

This method provides both predictive validity and interpretability. Algorithms are also inherently compensatory; candidates don't "fail" by having one low score on any given scale. However, continuous competency scoring does not easily facilitate scale-based feedback/coaching. For this reason, we may also set normative percentile-based cutoff scores to place candidates into fit levels on each competency.

A4.2.2a Moderate Scale Scores

In some cases, we may see both positive and negative support for a scale. This can lead us to target a moderate scoring range in the competency algorithm. An example algorithm with a moderate scale score (Mischievous) is provided below:

- Political Savvy = (Interpersonal Sensitivity + (100 - Excitable) + (50 - (|Mischievous - 50|))/3

A4.2.2b Custom Norms

Once an algorithm has been created, the client may want to examine how each individual scores in comparison to a specific population. For these projects, HRD calculates a score based on an algorithm using normative percentiles scores. This score is considered a raw competency score. This raw score is converted to a percentile score based on the specific population, such as global executives. Fit levels are then based on the percentile score. The advantage of this method is that it allows the client to interpret each competency score based on how that person's score compares to other individuals in the same population.

A4.2.3 Similarity Across Methods

Because we offer multiple research options for delivering competency-based solutions, a logical question concerns how similar scores are expected to be across these solutions. For example, if a person earns a high Innovation score derived from a profile, how likely is it that he/she will also earn a high score for Innovation derived from an algorithm? To answer that question, we used a large matched dataset of HPI and HDS data to score example competencies using the profiles and algorithms. We then correlated competency scores across methods to determine how consistent the scores are across research solutions.

Scores from profiles and algorithms show an average correlation of .57 across competencies. As expected, many of the same scales appear in profile and algorithm solutions for each competency, though the scoring method for each scale may vary across research solutions. In summary, competency scores are highly consistent across solutions. For more information, please see the Research Approaches to Aligning Hogan Scales with Competencies Whitepaper.

A4.3 Adverse Impact

Employment discrimination law focuses on two broad concepts: (1) disparate treatment and (2) disparate impact. Disparate treatment refers to intentionally treating an employee or applicant less favorably than coworkers or other applicants based on a protected class (see Title VII of the Civil Rights Act, 1964; *McDonnell Douglas Corp. v. Green*, 1973). Disparate impact, or Adverse Impact (hereafter, AI) refers to employment practices such as assessments and performance evaluations that appear neutral, but in fact adversely impact a protected class. Therefore, an examination of AI is critical for companies that use selection instruments to make personnel decisions. In such a system, companies use assessment results to determine which applicants will advance to later stages in the selection process.

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

> A selection rate for any [protected class] 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)

Although they are not legally binding, and courts vary in their degree of adherence, the Equal Employment Opportunity Commission (EEOC) relies on the *Guidelines* and the 4/5ths rule to guide enforcement decisions. However, employers should also consult the appropriate federal and state employment discrimination statutes and court decisions for more information on how their jurisdiction treats the *Guidelines* and the 4/5ths rule. Since 1978, the 4/5ths rule has been a common guideline in the U.S. for examining AI based on group selection rate differences (e.g., Bobko, Roth, & Potosky, 1999; Reilly & 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 (Morris & Lobsenz, 2000; Roth, Bobko, & Switzer, 2006; Shoben, 1978). However, a review of the *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 *Guidelines'* inception in 1978, the 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. Even when using statistical significance tests, experts recommend supplementing with 4/5ths calculations to serve as a practical significance test (Oswald, Dunleavy, & Shaw, 2017). As a result, Hogan continues to use the EEOC's recommendation of the 4/5ths rule.

Calculations examining the potential for AI 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.

Hogan evaluates potential selection rates for gender, age, and race/ethnicity groups using an archival sample of applicants who provided demographic characteristics. For these analyses, we compare individuals who fail the Minimum Fit screening guidelines to those who pass the Minimum Fit screening guidelines. The results of these analyses serve only as estimates of potential selection rates, and are not based on actual applicant data. When available, incumbent data from a local validation is used for these simulations. The EEOC instructs employers to maintain detailed documentation of hiring and other employment practice outcomes in the employer's specific workplace.

The information contained in this report is not intended to constitute legal advice and should not be relied upon in lieu of consultation with appropriate legal advisors in your own jurisdiction.

A4.4 Uses and Applications

Once Hogan establishes that the assessments are valid and the recommended scoring should not discriminate unfairly, we recommend that the client administer the assessments used to build the profile to applicants and score the assessments using the recommended scales and cutoff scores in the suggested profile. Therefore, employment suitability can be determined, in part, by assessing scores on the recommended assessment scales. When handling and sharing score data, applicant confidentiality should always be maintained and security procedures put in place to ensure data integrity and applicant privacy. Whenever possible, administration conditions should always be monitored and standardized. However, with online assessments, standardized conditions are not guaranteed due to the nature of the remote testing environment.

The following procedures will help companies use and monitor the selection process. First, the applicant flow should be examined closely to determine if the recommended cutoff scores allow enough applicants to pass while screening out applicants who are likely to be poor performers. Cutoff scores on which everyone fails are just as ineffective as those on which everyone passes. Second, companies should maintain records of test scores by demographic group, as indicated in the Uniform Guidelines, to monitor the possibility of adverse impact resulting from the use of the assessments. Third, the company should choose the appropriate administrative personnel to review the entire selection process to determine if any procedures can be improved. This step should be taken after the selection process has been used for at least one year but not more than five years. Test validation experts recommend that the results obtained in a validation study be reviewed and updated after five years (Schmit, Lundquist, & Beckham, 2008). Finally, performance appraisal and/or monitoring data should be maintained, if possible, on new incumbents who are hired using this selection procedure. These data will provide a check on the validity of the selection procedure and will help determine utility. In addition, Hogan recommends conducting follow-up analyses on the people hired using the assessments and exploring the utility and bottom-line impact of the proposed selection system. For further information concerning our research process, please contact:

Hogan Assessment Systems
11 S. Greenwood
Tulsa, Oklahoma 74120
(918) 749-0632

A4.5 Accuracy and Completeness

Hogan completes all procedures within the recommendations of both the *Uniform Guidelines* and the *Principles*. Hogan derives results strictly from the research processes described above and archived study results and does not embellish, falsify, or alter results in any manner.

Hogan attests to the accuracy of the data collection, analysis, and reporting procedures used in all validity studies. Hogan enters all data collected into a database and computes results using SPSS statistical software.

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Appendix A: Academic and Company Competency Models

Model	Reference	Model Type
Borman & Brush	Borman, W. C., & Brush, D. H. (1993). More progress toward a taxonomy of managerial performance requirements. *Human Performance, 6*, 1-21.	Academic
Campbell, McCloy, Oppler, & Sager	Campbell, J. P., McCloy, R. A., Oppler, S. H., & Sager, C.E. (1993). A theory of performance. In N. Schmitt & W. C. Borman (Eds.), *Personnel selection in organization* (pp. 35-70). San Francisco, CA: Jossey-Bass.	Academic
Flanagan	Flanagan, J. C. (1951). Defining the requirements of the executive's job. *Personnel Psychology, 28*, 28-35	Academic
Hemphill	Hemphill, J. K. (1959). Job descriptions for executives. *Harvard Business Review, 37*, 55-67.	Academic
Katzell	Katzell, R. A., Barret, R. S., Vann, D. H., & Hogan, J. M. (1968). Organizational correlates of executives roles. *Journal of Applied Psychology, 52*, 22-28.	Academic
Luthans & Lockwood	Luthans, F., & Lockwood, D. L. (1984). Toward an observation system for measuring leader behavior in natural settings. In J. G. Hunt, D. Hosking, C. Schriesheim, & R. Stewart (Eds.), *Leaders and managers: International perspectives on managerial behavior and leadership* (pp. 117-141). New York, NY: Pergamon Press.	Academic
Morse & Wagner	Morse, J. J., & Wagner, F. R. (1978). Measuring the process of managerial effectiveness. *Academy of Management Journal, 21*, 23-35.	Academic
Prien	Prien, E. P. (1963). Development of a supervisor description questionnaire. *Journal of Applied Psychology, 47,* 10-14.	Academic
Tett, Guterman, Bleier, & Murphy	Tett, R. P., Guterman, H. A., Bleier, A., & Murphy, P. J. (2000). Development and content validation of a "hyperdimensional" taxonomy of managerial competence. *Human Performance, 12*(3), 205-251.	Academic
Tornow & Pinto	Tornow, W. W. & Pinto, P. R. (1976). The development of a managerial job taxonomy: A system for describing, classifying, and evaluating executive positions. *Journal of Applied Psychology, 61*, 410-418.	Academic
Woffard	Woffard, J. C. (1970). Factor analysis of managerial behavior variables. *Journal of Applied Psychology, 54*, 169-173.	Academic
Yukl & Lepsinger	Yukl, G. A., & Lepsinger, R. (1992). An integrating taxonomy of manager behavior: Implications for improving managerial effectiveness. In J. W. Jones, B. D. Steffy, D. W. Bray (Eds.), *Applying psychology in business: The manager's handbook* (pp. 563-573). Lexington, MA: Lexington Books.	Academic

Appendix A: Academic and Company Competency Models (Continued)

Model	Reference	Model Type
Bigby Havis	https://www.bigby.com/systems/assessv2/admin/whitepaper.htm	Commercial
Jeanneret & Associates	Tett, R. P., Guterman, H. A., Bleier, A., & Murphy, P. J. (2000). Development and content validation of a "hyperdimensional" taxonomy of managerial competence. *Human Performance, 12*(3), 205-251.	Commercial
Lominger	Lombardo, M. M. & Eichinger, R. W. (2002). The leadership machine (3rd ed.). Minneapolis, MN: Lominger Limited Inc. Lombardo, M. M. & Eichinger, R. W. (2003). FYI: For your improvement (3rd ed.). Minneapolis, MN: Lominger Limited Inc.	Commercial
PDI	Tett, R. P., Guterman, H. A., Bleier, A., & Murphy, P. J. (2000). Development and content validation of a "hyperdimensional" taxonomy of managerial competence. *Human Performance, 12*(3), 205-251.	Commercial
Select International	Internal Company Source	Commercial
SHL	Bartram, D. (2005). The great eight competencies: A criterion-centric approach to validation. *Journal of Applied Psychology, 90*(6), 1185-1203.	Commercial
Career One Stop (U.S. Department of Labor-sponsored Web site)	www.careeronestop.org	Governmental
O*NET	www.onetcenter.org	Governmental
Office of Personnel Management	www.opm.com	Governmental

Appendix B: Hogan Competency Model

Competency Number	Competency	Definition	Domain
1	Accountability	Accepts responsibility for one's actions regardless of outcomes.	Intrapersonal
2	Anticipating Problems	Forecasts and detects errors, gaps, and potential flaws.	Business
3	Attracting Talent	Recruits, rewards, and retains individuals with needed skills and abilities.	Leadership
4	Business Insight	Applies business knowledge to achieve organizational goals and objectives.	Leadership
5	Caring about People	Displays sensitivity towards the attitudes, feelings, or circumstances of others.	Intrapersonal
6	Competing with Others	Strives to exceed others' performance.	Intrapersonal
7	Customer Focus	Provides courteous, timely, and helpful service to encourage client loyalty.	Interpersonal
8	Dealing with Ambiguity	Comfortably handles unclear or unpredictable situations.	Intrapersonal
9	Decision Making	Uses sound judgment to make timely and effective decisions.	Leadership
10	Delegating	Assigns work to others based on tasks, skills, and workloads.	Leadership
11	Dependability	Performs work in a reliable, consistent, and timely manner.	Intrapersonal
12	Detail Focus	Performs work with care, accuracy, and attention to detail.	Intrapersonal
13	Developing People	Provides support, coaching, training, and career direction to others.	Leadership
14	Displaying Confidence	Projects poise and self-assurance when completing work tasks.	Intrapersonal
15	Driving Change	Champions new methods, systems, and processes to improve performance.	Leadership
16	Driving for Results	Accomplishes goals, completes tasks, and achieves results.	Intrapersonal
17	Driving Innovation	Stimulates creative ideas and perspectives that add value.	Business
18	Driving Performance	Provides guidance and feedback to maximize performance of individuals and/or groups.	Leadership
19	Driving Strategy	Directs effort to achieve long-term business objectives.	Leadership
20	Engagement	Demonstrates loyalty and commitment through enthusiasm and extra effort.	Interpersonal
21	Financial Insight	Applies financial knowledge to achieve organizational goals and objectives.	Business
22	Flexibility	Changes direction as appropriate based on new ideas, approaches, and strategies.	Intrapersonal
23	Handling Stress	Manages pressure without getting upset, moody, or anxious.	Intrapersonal

Appendix B: Hogan Competency Model (Continued)

Competency Number	Competency	Definition	Domain
24	Industry Insight	Applies knowledge of industry trends and outlooks to achieve organizational goals and objectives.	Business
25	Influencing Others	Persuades others to help achieve organizational goals and objectives.	Interpersonal
26	Inspiring Others	Motivates others to accomplish organizational goals.	Leadership
27	Integrity	Acts honestly in accordance with moral or ethical principles.	Intrapersonal
28	Leading Others	Demonstrates general leadership ability and effectiveness.	Leadership
29	Leveraging Diversity	Respects and values individual differences to obtain a desired effect or result.	Interpersonal
30	Leveraging People Skills	Gets along well with others, is tactful, and behaves appropriately in social situations.	Interpersonal
31	Leveraging Work Skills	Applies technology and job-relevant abilities to complete work tasks.	Business
32	Listening to Others	Listens and restates the ideas and opinions of others to improve mutual understanding.	Interpersonal
33	Managing Conflict	Resolves hostilities and disagreements between others.	Leadership
34	Managing Resources	Coordinates people and financial and material capital to maximize efficiency and performance.	Leadership
35	Negotiating	Explores alternatives to reach outcomes acceptable to all parties.	Interpersonal
36	Networking	Builds and maintains a system of strategic business connections.	Interpersonal
37	Organizational Citizenship	Exceeds job requirements to help the organization.	Interpersonal
38	Overcoming Obstacles	Pursues goals and strategies despite discouragement or opposition.	Intrapersonal
39	Planning and Organizing	Coordinates and directs activities to help achieve business objectives.	Intrapersonal
40	Political Savvy	Recognizes, interprets, and works within the political environment of an organization.	Business
41	Positive Attitude	Displays a positive disposition towards work.	Intrapersonal
42	Presenting to Others	Conveys ideas and information to groups.	Business
43	Processing Information	Gathers, organizes, and analyzes diverse sources of information.	Business
44	Professionalism	Acts in accordance with job-related values, principles, and standards.	Intrapersonal
45	Quality Focus	Strives to meet quality standards and produce quality work products.	Business
46	Relationship Building	Develops collaborative relationships to facilitate current and future objectives.	Interpersonal

Appendix B: Hogan Competency Model (Continued)

Competency Number	Competency	Definition	Domain
47	Rule Compliance	Adheres to directions, policies, and/or legal guidelines.	Intrapersonal
48	Safety Focus	Attends to precautions and proper procedures to guard against work-related accidents and injuries.	Business
49	Sales Focus	Generates revenue by promoting products and services to others.	Business
50	Self Development	Actively acquires new knowledge and skills to remain current with and/or grow beyond job requirements.	Intrapersonal
51	Self Management	Demonstrates appropriate motivation, attitude, and self-control.	Intrapersonal
52	Setting Goals	Identifies short-term objectives and steps to achieve them.	Business
53	Solving Problems	Identifies solutions given available information.	Business
54	Staying Alert	Remains focused when performing monotonous tasks.	Intrapersonal
55	Taking Initiative	Takes action without needing direction from others.	Intrapersonal
56	Taking Smart Risks	Evaluates tradeoffs between potential costs and benefits and acts accordingly.	Intrapersonal
57	Team Building	Assembles productive groups based upon required skills, goals and tasks.	Leadership
58	Teamwork	Collaborates with others to achieve goals.	Interpersonal
59	Time Management	Plans and prioritizes work to maximize efficiency and minimize downtime.	Intrapersonal
60	Verbal Communication	Expresses ideas and opinions effectively in spoken conversations.	Interpersonal
61	Working Hard	Consistently strives to complete tasks and assignments at work.	Intrapersonal
62	Written Communication	Expresses ideas and opinions effectively in writing.	Business

Appendix C: Crosswalk between the 56 Item CET, the 62 Item CET, and Configure

56 item CET	Original CET Name	Configure Name
Achievement Orientation (modified definition)	Achievement Orientation	Driving for Results
Verbal Direction (similar to)	Active Listening	Listening to Others
NEW	Ambiguity Tolerance	Dealing with Ambiguity
Build Strategic Work Relationships	Building Relationships	Relationship Building
Building Teams (modified definition)	Building Teams	Team Building
NEW	Business Acumen	Business Insight
NEW	Caring	Caring about People
Citizenship (completely new and different definition)	Citizenship	Organizational Citizenship
NEW	Competitive	Competing with Others
Decision Making/Judgment (modified definition)	Decision Making	Decision Making
Delegation (modified definition)	Delegation	Delegating
Dependability	Dependability	Dependability
Detail Orientation (modified definition)	Detail Orientation	Detail Focus
Employee Development/Training Others (combined and modified definition)	Employee Development	Developing People
NEW	Financial Acumen	Financial Insight
Flexibility/Adaptability (modified definition)	Flexibility	Flexibility
NEW/verbal direction (modified)	Following Procedures	Rule Compliance
NEW	Goal Setting	Setting Goals
Industry Knowledge (modified definition)	Industry Knowledge	Industry Insight
Influence/Gaining Commitment (completely new and different definition)	Influence	Influencing Others
NEW	Information Analysis	Processing Information
Initiative	Initiative	Taking Initiative
Innovation (completely new definition)	Innovation	Driving Innovation
Interpersonal Skills	Interpersonal Skills	Leveraging People Skills
NEW	Intrapersonal Skills	Self Management
Leadership (modified definition)	Leadership	Leading Others
Facilitating Change (completely new and different definition)	Managing Change	Driving Change
Conflict Resolution (modified definition)	Managing Conflict	Managing Conflict
Performance Management/Performance Feedback/Follow-Up (completely new and different definition)	Managing Performance	Driving Performance
Leadership (modified)/NEW	Motivating Others	Inspiring Others
Negotiation	Negotiation	Negotiating
Oral Communication (modified definition)	Oral Communication	Verbal Communication
Organizational Commitment	Organizational Commitment	Engagement
NEW	Perseverance	Overcoming Obstacles
Planning/Organizing (new definition)	Planning/Organizing	Planning and Organizing

Appendix C: Crosswalk between the 56 Item CET, the 62 Item CET, and Configure (Continued)

56 item CET	Original CET Name	Configure Name
Political Awareness (no definition with CET)	Political Awareness	Political Savvy
Formal Presentation (modified definition)	Presentation Skills	Presenting to Others
Problem Solving (modified definition)	Problem Identification	Anticipating Problems
Problem Solving (modified definition)	Problem Solving	Solving Problems
Professionalism (no definition with CET)	Professionalism	Professionalism
Quality Orientation (no definition with CET)	Quality Orientation	Quality Focus
Management Performance (definition modified)	Resource Management	Managing Resources
NEW	Responsibility	Accountability
Risk Taking	Risk Management	Taking Smart Risks
Safety	Safety	Safety Focus
Sales Ability, Facilitative Sales, Consultative Sales (all combined and modified definition)	Sales Ability	Sales Focus
NEW	Self Confidence	Displaying Confidence
Continuous Learning (modified definition)	Self Development	Self Development
Customer Service (modified definition)	Service Orientation	Customer Focus
NEW	Social Engagement	Networking
Strategic Vision (new definition)	Strategic Planning	Driving Strategy
Stress Tolerance	Stress Tolerance	Handling Stress
NEW	Talent Management	Attracting Talent
Teamwork (new definition)	Teamwork	Teamwork
Planning/Organizing (modified name)	Time Management	Time Management
Trustworthiness/Integrity (combined/modified definition)	Trustworthiness	Integrity
NEW	Valuing Diversity	Leveraging Diversity
Vigilance	Vigilance	Staying Alert
Work Attitude	Work Attitude	Positive Attitude
NEW	Work Ethic	Working Hard
Job Knowledge	Work Skills	Leveraging Work Skills
Written Communication	Written Communication	Written Communication