HOGAN

EMOTIONAL INTELLIGENCE

EQ

THE ABILITY TO IDENTIFY AND MANAGE ONE'S OWN AND OTHERS' EMOTIONS

Technical Manual

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Hogan Personality Inventory ™

Hogan Development Survey ™

Motives, Values, Preferences Inventory ™

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1 Introduction

1.1 Background Through most of human history, people have believed that emotions are disruptive and affect our thoughts and behavior in negative ways. Emotions are believed to undermine our capacity for rational thought; this leads to the view that effective functioning requires controlling emotions. For example, the Roman Stoic Publilius Syrus, writing in the first century B.C., stated: "rule your feelings, lest your feelings rule you." Beginning with the great Scottish philosopher David Hume (1737/1969), more recent writers, including Friedrich Nietzsche and Sigmund Freud, have argued that reason and emotion are inseparable, that reason is necessarily "the slave of passion."

Modern psychological research has validated Hume, Nietzsche, and Freud: emotions are inseparable from reasoning (Bechara, Damasio, & Damasio, 2000) and integral to human functioning (Izard, 1977). Far from being "acute disturbances" to reason, emotional responses follow logical patterns that actually help people respond to their environment (Izard, 1977), interact with others (Keltner & Haidt, 1999), and understand and respond to organizational change (Huy, 1999). Thus, emotions can be seen as crucial guides to social interaction (Seo, Barrett, & Bartunek, 2004). In Ekman's (2003) words, emotions make life livable.

In the business world, emotions influence peoples' performance in their jobs and organizations (George & Brief, 1996). Emotions impact thinking, decision-making, teamwork, leadership, and other work-related behaviors (Barsade & Gibson, 2007; Brief & Weiss, 2002; Elfenbein, 2007; Weiss & Cropanzano, 1996). These considerations created considerable interest in the concept of emotional intelligence/quotient (EQ; Cherniss, 2010; Goleman, 1995; Mayer & Salovey, 1997) because the EQ concept captures the intuitive insight that how people manage their emotions can enhance or impede career success. Early research suggested that companies using EQ assessments for selection realized significant improvements in sales, tenure, productivity, and net profits (Cherniss, 1999). More recent research demonstrates that higher levels of EQ in leaders, sales people, customer service reps—any role that involves interacting with others—predicts greater individual effectiveness (Joseph & Newman, 2010).

To help organizations identify job applicants with skill at managing emotions, Hogan Assessment Systems (Hogan) developed an assessment designed to predict emotionally competent behavior. This report describes: (1) the Hogan EQ Model; and (2) the development of psychometric scales that align with the six components of the model. We provide evidence regarding the validity of the scales for predicting emotional competence and other important work behaviors. The research conforms to standards outlined in the *Uniform Guidelines on Employee Selection Procedures* (Equal Employment Opportunity Commission [EEOC], 1978; hereafter "*Uniform Guidelines*"), the *Principles for the Validation and Use of Personnel Selection Procedures* (Society for Industrial and Organizational Psychology [SIOP], 2003; hereafter "*Principles"*), and the *Standards for Educational and Psychological Testing* (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 1999; hereafter "*Standards"*). In areas where the *Uniform Guidelines*, *Principles* or *Standards* proved vague or inapplicable, we relied on the broader scientific-professional literature for guidance.

1.2 Overview The research described in this manual relies on archival data using the Hogan Personality Inventory (HPI; R. Hogan & J. Hogan, 1995, 2007) and Hogan Development Survey (HDS; R. Hogan & J. Hogan, 1997, 2009) to predict EQ-related competencies. We used three studies to create scales to assess EQ. In Study 1, we identified the facets of personality most closely related to the six components in the Hogan EQ Model (Chapter 2). First, we identified archival studies containing criterion data that matched the competency definitions. Next, we examined correlations between HPI HICs (Chapter 3) and these criterion variables. Finally, we evaluated the validity of the scales created using the HICs that best predicted each competency (Chapter 4). In Study 2, we examined relationships between these scales and ratings of various performance dimensions to provide additional evidence to support the utility of the scales for predicting diverse work outcomes (Chapter 5). Finally, in Study 3, we explored the utility of including dark-side personality measures in each scale (Chapters 6 and 7).

This document, which describes this research, is organized in the following sections:

Introduction – Overview of research

Hogan EQ Model – Description of model

The Hogan Personality Inventory (HPI) – Description of assessment

Development of HPI-Based EQ Scales – Study 1 summary

Validation of HPI-Based EQ Scales – Prediction of Leadership, Employability, and Teamwork - Study 2 summary

The Hogan Development Survey (HDS) – Description of assessment

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Applications and Recommendations – Application of algorithms

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2 Hogan Emotional Intelligence Model

2.1 The State of EQ Research EQ concerns the competencies needed to recognize, process, and manage emotions (Zeidner, Roberts, & Matthews, 2008). EQ is not a new idea; it represents the latest incarnation of the broader search for capacities beyond cognitive ability that are important for social effectiveness (e.g., Chamorro-Premuzic, 2011; Gardner, 1983; Landy, 2005; Stricker & Rock, 1990; Thorndike, 1920; Wagner, 1987; Weis & Süss, 2005).

To better understand EQ, consider an internal marketing consultant who has developed a brilliant campaign that will increase her company's market share by 125%. She knows that her boss is risk averse and more anxious at the beginning of each week due to built-up client demands from the weekend. High EQ helps her recognize and understand her manager's emotional state, prompting her to wait until the end of the week to propose her idea.

Goleman (1995) popularized EQ for human resource applications, and the idea was adopted uncritically (cf. R. Hogan & Stokes, 2006). Goleman proposed EQ as a cure to dysfunctional leadership, general angst, and unethical conduct, noting that EQ is "as powerful and at times more powerful than IQ" in predicting success and curing strife in life (Goleman, 1995, p. 34). Goleman (1995) further described EQ as an assortment of preexisting positive characteristics such as political awareness, achievement orientation, and conscientiousness (pp. 26-28). Goleman's views on EQ often went beyond available evidence (Davies, Stankov, & Roberts, 1998; Epstein, 1998; Matthews, Roberts, & Zeidner, 2004; Mayer & Cobb, 2000) and led to a proliferation of multiple EQ instruments, research streams, and academic backlash (Landy, 2005; Locke, 2005; Murphy & Sideman, 2006).

The most frequent criticism of EQ concerns the breadth, redundancy, and multiplicity of its content across models (Mayer, Salovey, & Caruso, 2008), which led Locke (2005) to ask, "what does EQ *not* include?" (p. 428). In contrast, proponents argue that EQ is a coherent domain covering a wide array of emotional, social, and personal competencies (e.g., Bar-On, 2004; Chamorro-Premuzic, & Furnham, 2010; Cherniss, 2010; Petrides & Furnham, 2003). A cursory examination of the literature, however, suggests there is no clear consensus regarding the substance of EQ. Representations of EQ range from mental ability-based models (e.g., Mayer & Salovey, 1997) to contextually-bound knowledge of rules for appropriate feelings (Denham, 1998; Izard, 2001), to a complex interplay of emotional, mood, personality, and social orientation (Bar-On, 2004).

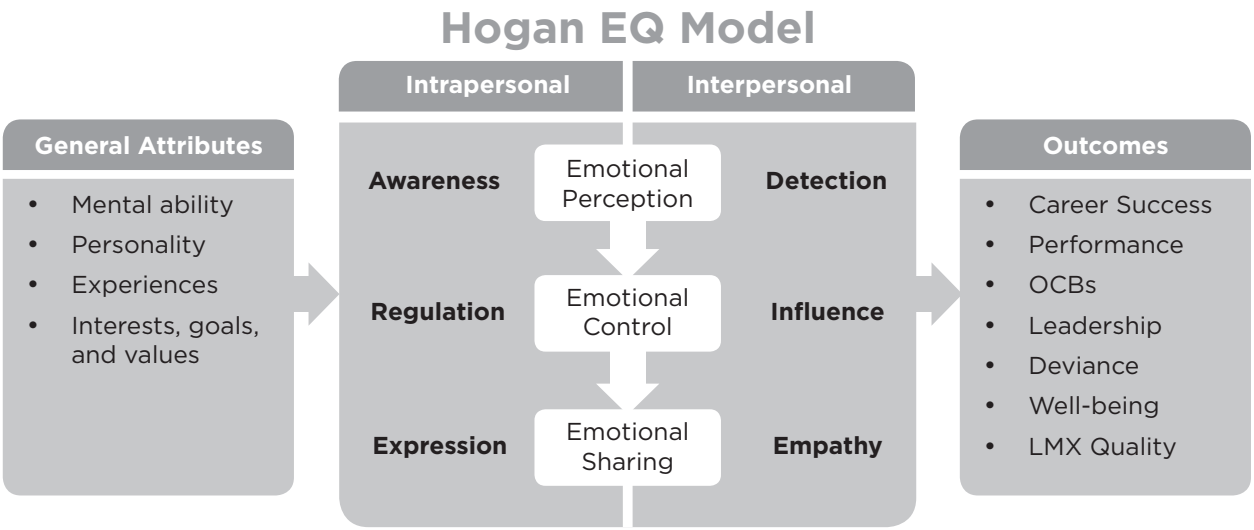
Additional critiques of EQ concern the psychometric issues that plague self-report "mixed" models (Roberts, MacCann, Matthews, & Zeidner, 2010). Further, alternative competing measures and conceptions of EQ tend to be uncorrelated, suggesting that they measure different constructs (Van Rooy & Viswesvaran, 2004; Zeidner et al., 2008).

2.2 Theory and Structure An alternative approach to assessing EQ is to organize the various EQ models into a single, more comprehensive, model (Cherniss, 2010; Giardini & Frese, 2007; Zeidner et al., 2008). Following other recent EQ competency integrations (Bartram, 2005; Joseph & Newman, 2010; Lievens & Chan, 2010; Scherer, 2007), we conceptualize EQ as a set of distinct but related constructs. Furthermore, each construct is a partial mediator of

the predictive effects of personality on career, relationships, and work success. Our model attempts to reconcile opposing arguments regarding the assessment of EQ (Lievens & Chan, 2010).

EQ critics argue that various conceptualizations of emotional competencies (e.g., mixed-model EQ) are based on the same underlying personality dimensions (e.g., Locke, 2005; Murphy & Sideman, 2006) and are therefore not unique. However, this criticism overlooks the incremental validity that EQ measures demonstrate over established personality measures (Chamorro-Premuzic, & Furnham, 2010; Cherniss, 2010; Joseph & Newman, 2010; O'Boyle, Humphrey, Pollack, Hawver, & Story, 2010; Zeidner et al., 2008). On the other hand, EQ advocates (e.g., Cherniss, 2010; Goleman, 1995; Petrides & Furnham, 2003) focus on the multidimensional competencies and correctly argue "their" versions of EQ are proximal, and sometimes better (Joseph & Newman, 2010) predictors of performance. This view ignores the role of established dimensions of personality in determining their competencies and makes it difficult to determine how much EQ uniquely matters to work results relative to other attitudes and personality characteristics. We avoid both issues by offering an intermediate model (elaborated below) in which emotional competencies occupy a "middle ground," serving as mediating mechanisms between established personality attributes and work outcomes (see Figure 2.1).

Figure 2.1 Hogan EQ Model Conceptual Framework



The model offered in Figure 2.1 incorporates commonly studied EQ components using the four-branch model of EQ (Salovey & Mayer, 1997), its progenies (Law, Wong, & Song, 2004; Palmer & Stough, 2001; Tett, Fox, & Wang, 2005), and other affective and social competence frameworks from the psychological literature (Halberstadt, Denham, & Dunsmore, 2001; McFall, 1982; Riggio, Riggio, Salinas, & Cole, 2003; Scherer, 2007). This model helps reconcile competing conceptual (Cherniss, 2010; Zeidner et al., 2008), psychometric (Joseph & Newman, 2010; O'Boyle et al., 2010), and developmental perspectives (Halberstadt et al., 2001; Scherer, 2007). Conceptually, it ties together diverse, oftentimes competing, views on EQ into a single domain based on ability and emotional competence literatures. Psychometrically,

it helps articulate why personality and cognitive ability correlate with self-perceptions of emotional capabilities and objective scores on ability-based EQ tests. Developmentally, it maintains that individual differences facilitate the acquisition and expression of EQ over time.

Theoretical Content. At the broadest level, most EQ models contain three components: perceiving, controlling, and sharing emotional signals (Chamorro-Premuzic, 2011; Chamorro-Premuzic & Furnham, 2010; Halberstadt et al., 2001; Mayer & Salovey, 1997; Palmer, Gignac, Ekermans, & Stough, 2008; Riggio & Lee, 2007; Saarni, 1999; Scherer, 2007; Tett et al., 2005)[1], and each component aligns with Gross and Thompson's (2007) model of emotional experience: attention, assessment, and response. This three-part distinction is based on earlier models of clinical and communication training aimed at improving the "people skills" of managers: (a) the "decoding" of messages and social situations, (b) the processing of such information, and (c) the "enactment" of an intended response (Riggio & Lee, 2007). Most EQ models also distinguish between self- and other-focused emotional competencies (Gardner, 1983; Tett et al., 2005; Weisinger, 1998). Research on emotions (Keltner & Haidt, 1999), human performance (R. Hogan & Warrenfeltz, 2003), and intelligence (Gardner, 1983) suggests emotional functioning exists on different levels: inward vs. outward, private vs. social, and intrapersonal vs. interpersonal. Such perspectives place differential emphasis upon the experiential vs. the social nature of emotions.

Psychometrics. The relationships between the components of EQ, personality, and cognitive ability have been studied in detail. O'Boyle et al. (2010) estimate corrected correlations ranging from small to moderate (.11 to .54) between the Big Five personality factors and all major EQ models. Thus, every existing EQ instrument is to some degree correlated with personality. Joseph and Newman (2010) provide meta-analytic evidence that conscientiousness is linked to higher emotional perception and emotional stability with higher emotional regulation. They argue that conscientious individuals tend to be more self-conscious, and thus pay more attention to other's judgments, while neurotic individuals tend not to regulate their emotions effectively. Other research suggests that: (a) approximately 2/3 of the variability in EQ can be accounted for by personality variables, and (b) when neuroticism is scored as emotional stability or adjustment, all Big Five factors are positively correlated with EQ (Webb et al., 2013).

Development. Personality influences the types of situations and experiences we encounter (Buss, 1987; Snyder & Ickes, 1985) and the social roles we adopt (Roberts, 2006; Roberts & Wood, 2006), which then shape the types of competencies we acquire. For instance, agreeable people are much more likely to adopt "getting along" roles, such as volunteering (Carlo, Okunb, Knight, & Guzman, 2005; Graziano & Eisenberg, 1997). By doing so, they will come to see themselves as altruistic and adopt additional helpful roles (Roberts & Woods, 2006), which should further enhance and reinforce their capacity to empathize with and relate to others (agreeableness and empathy are correlated, see Davies, Stankov, & Roberts,

[1] Understanding and emotional facilitation are other common EQ components (e.g., Mayer & Salovey, 1997; Law et al., 2004). Understanding includes the ability to discriminate among emotions and imagine their effects (Mayer & Salovey, 1997) and tends to be correlated with crystallized forms of knowledge (e.g., verbal facts; Roberts et al., 2006). Because this is an index of emotional knowledge in the abstract rather than the live competence of EQ in the social world (see Scherer, 2007; Spector & Johnson, 2006), it is excluded. Second, emotional facilitation is the ability to generate and use emotions to guide thought (Mayer & Salovey, 1997). However, multiple studies suggest this scale has poor structural and construct validity (Gignac, 2005; Maul, 2011; Rossen, Kranzler, & Algina, 2008); some studies also suggest it is redundant with emotional regulation (Joseph & Newman, 2010). Thus, we exclude these two components from the current model.

1998; McCrae, 2000). Further, the ordering (i.e., arrows) of the EQ components in our model are consistent with both cascading (Joseph & Newman, 2010) and pinwheel (Halberstadt et al., 2001) notions of development in which perceiving emotions is considered primary to controlling and sharing emotions. One must first be able to detect an emotion (e.g., perception) before being able to transform or manipulate the emotional content itself (e.g., control). Finally, the interpersonal consequences of emotions are conveyed through the capacity to interact with others appropriately (e.g., sharing).

2.3 Components

Emotional Perception. Most models assume that the basic EQ competency is the ability to perceive and interpret emotional states (Ciarrochi, Caputi, & Mayer, 2003). Most theories also assume that being able to perceive one's emotions and the emotions of others are separate but related competencies.

Therefore, the intrapersonal component of emotional perception, *emotional self-awareness,* is defined as being able to access, differentiate, and draw upon inner emotions to understand one's relation to the current social environment. This awareness, according to Buck (1984, p. 4), allows us to regulate our behavior because we can identify the source of our current emotional state. Recent research supports this notion, and suggests that persons with emotional self-awareness are less likely to let their moods interfere with their thoughts (Ciarrochi et al., 2003).

The interpersonal component of emotional perception, *emotional detection,* is defined as the ability to decipher the emotional signals of others. In most jobs, employees interact with a variety of coworkers who display emotions that provide information about their goals and attitudes (Rafaeli & Sutton, 1987). A person who excels at emotional detection can discriminate among genuine versus fake smiles and various gradations of other affective states (e.g., anger vs. irritation). Detecting colleagues' emotions may facilitate coordination and interpersonal functioning that may, in turn, enhance job performance (Law et al., 2004).

Emotional Control. Emotional control refers to strategies for altering the emotional states of oneself and others. Managing emotions is the "strategic" aspect of EQ in that it allows people to better attain their goals through direct manipulation of emotions with situational relevance (Mayer & Salovey, 1997).

The intrapersonal component, e*motional regulation,* represents proficiency in amplifying, nullifying, or reversing one's own emotional states. Joseph and Newman (2010) argue that emotional regulation includes the ability to select effective coping strategies. Thus, individuals high in emotional regulation will match their regulation strategies to the demands of tasks, thereby retaining more cognitive resources to maximize overall job performance (Joseph & Newman, 2010).

Emotional influence refers to influencing the internal affective states of others. The capability to regulate a customer or client's emotions, for instance, may lead to better interaction outcomes (Lopes et al., 2004). Unlike regulation, individuals often use emotional influence to pursue social goals, such as getting along with teammates.

Emotional Sharing. We base the emotional sharing component of our model on functional accounts of emotions (Frijda & Mesquita, 1994; Keltner & Haidt, 1999). Emotional sharing concerns being attuned to situational demands in the form of contextually appropriate responses (e.g., empathy to a customer's personal plight with appropriate vocal and facial displays).

Emotional expressivity, the intrapersonal component of emotional sharing, concerns being able to convey desirable emotional states to external observers. Hochschild (1983) coined the term *emotional labor* to refer to "the management of feeling to create a publicly observable facial and bodily display" (p. 7). For example, customer service representatives need to convey happiness, whereas bill collectors may portray anger to elicit payment (Elfenbein, 2007). Research on emotional labor demonstrates that most jobs demand[2] expressions of joy, happiness, and energy (Hochschild, 1983).

The interpersonal component of emotional sharing, *empathy,* is defined as the capacity to experience, share, and respond to the emotional state of another. The linguistic origins of the word empathy literally mean, "to feel into," an important component of social experience. Empathizing with others facilitates norm compliance, communicative ability, and social adroitness (Greif & R. Hogan, 1973). Being able to empathize with others creates deeper connections at work, thus allowing people to engage one another in social interactions and collaborative experiences (Kahn, 1992).

Component Descriptions. Table 2.1 presents descriptions of high and low scores on each component of the Hogan EQ Model.

Table 2.1 EQ Components and Descriptions

Component	Description
Awareness	Low scorers are detached from themselves and their surroundings. High scorers are responsive and present.
Detection	Low scorers misinterpret others' intentions, actions, and motives. High scorers are perceptive and read people well.
Regulation	Low scorers are reactive and unstable. High scorers are constant and centered.
Influence	Low scorers cannot sway or win people over. High scorers empower and embolden others.
Expressivity	Low scorers tend to guard or mask feelings. High scorers are direct and visibly enthusiastic.
Empathy	Low scorers are insensitive and unconcerned with peoples' situation. High scorers are connected and caring.

[2] Exceptions include roles such as police officer, lawyer, etc... requiring a tough exterior when speaking with others.

3 Description of the Hogan Personality Inventory (HPI)

3.1 Approach and Rationale Along with Ghiselli, Campbell, and Zedeck (1981), we define measurement as any procedure that assigns numbers systematically to characteristic features of people according to explicit rules. Researchers and practitioners can use these numbers to provide feedback or forecast future behavior(s).

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

Assessment publishers should document the ability of pre-employment instruments to predict job-relevant behaviors or outcomes in credible scientific sources. Supporting evidence should include significant and interpretable relations between scores on the pre-employment instrument and job performance criteria critical to success in the job of interest.

Pre-employment instruments should not discriminate unfairly based on gender, age, or race/ethnicity (EEOC, 1978). Researchers must validate selection procedures that could result in adverse impact in accordance with the *Uniform Guidelines*. Unfortunately, many instruments currently used in pre-employment screening processes fail to meet these requirements (R. Hogan, J. Hogan, & Trickey, 1999).

3.2 The Five Factor Model (FFM) The most important question for personality assessments is "What should we measure?" Historically, the answer depended on an author's personal interests (e.g., Locus of Control; Rotter, 1966), practical concerns (e.g., Minnesota Multiphasic Personality Inventory; Hathaway & McKinley, 1943), or theory (e.g., Myers-Briggs Type Indicator; Briggs-Meyers, McCaulley, Quenk, & Hammer, 1998; Thematic Apperception Test; Morgan & Murray, 1935). Multi-dimensional personality inventories developed during the 1940s and 1950s measured traits, or hypothetical structures believed to underlie differences in social behavior (cf. Allport, 1937). Early approaches to personality inventory construction led to more advanced test development strategies and improved the quality and interpretability of the instruments.

Current thinking in personality assessment converges on the idea that most personality characteristics can be described in terms of five personality dimensions. The FFM (cf. Digman, 1990; Goldberg, 1992; John, 1990, p. 72; McCrae & Costa, 1987), is based on 50 years of factor analytic research on the structure of observer ratings (cf. Norman, 1963; Thurstone, 1934; Tupes & Christal, 1961).

The FFM suggests that we think about and describe others and ourselves (Goldberg, 1990) in terms of five themes:

I. ***Surgency/Extraversion*** - the degree to which a person is outgoing and talkative
II. ***Agreeableness*** - the degree to which a person is pleasant and rewarding to deal with
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 was the starting point for the development of several prominent personality inventories (e.g., NEO-PI: Costa & McCrae, 1992; HPI: R. Hogan & J. Hogan, 1995, 2007; Personal Characteristics Inventory: Mount & Barrick, 2001). The five dimensions provide a useful taxonomy for classifying individual differences in social behavior (i.e., reputation). Evidence suggests that researchers can configure all existing multidimensional personality inventories in terms of these five dimensions (Wiggins & Pincus, 1992). Consequently, the FFM is the paradigm for current research in personality assessment (De Raad & Perugini, 2002; R. Hogan & J. Hogan, 1995, 2007).

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

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

3.3 Comparing the HPI to Other FFM Instruments The HPI was the first measure of normal personality based on the FFM and designed to predict occupational performance. The measurement goal of the HPI is to predict real-world outcomes. As such, it is considered a marker instrument, not only in English, but also for personality measures in other languages. Tables 3.1 through 3.4 present correlations between the HPI and other FFM assessments. Figure 3.1 shows median correlation coefficients that summarize HPI relations with Goldberg's (1992) Big-Five Markers (R. Hogan & J. Hogan, 2007), the Personal Characteristics Inventory (Mount & Barrick, 1995), the Inventario de Personalidad de Cinco Factores (IP/5F: Salgado & Moscoso, 1999), and the NEO PI-R (Goldberg, 2000).

Table 3.1 Correlations between Goldberg's Big-Five Markers and the HPI Scales

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

Note. N = 168. Table taken from the *HPI Manual* (R. Hogan & J. Hogan, 2007). Factor 1 = Surgency; Factor II = Agreeableness; Factor III = Conscientiousness; Factor IV = Emotional Stability; Factor V = Intellect; ADJ = Adjustment; AMB = Ambition; SOC = Sociability; INP = Interpersonal Sensitivity; PRU = Prudence; INQ = Inquisitive; LRN = Learning Approach. * $p < .05$, one-tailed; directional relationships hypothesized a priori.

Table 3.2 Correlations between the PCI Primary Scales and the HPI Scales

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

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

Table 3.3 Correlations between the IP/5F and the HPI Scales

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

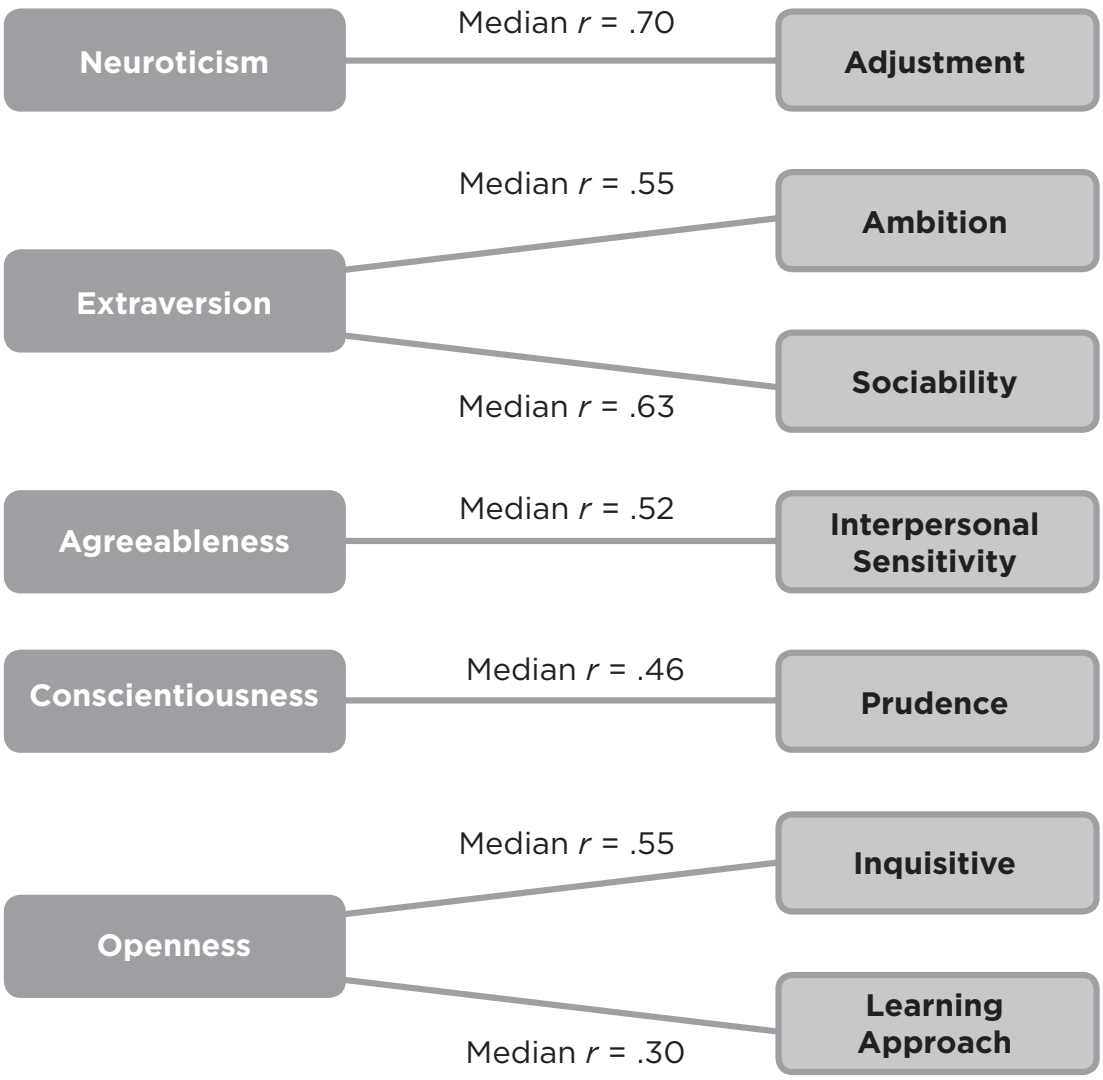
Note. N = 200. ADJ = Adjustment; AMB = Ambition; SOC = Sociability; INP = Interpersonal Sensitivity; PRU = Prudence; INQ = Inquisitive. * $p < .05$.

Table 3.4 Correlations between the NEO-PI-R and the HPI Scales

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

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

Figure 3.1 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).

3.4 HPI Description and Development

HPI Description

206 True/false items with no psychiatric content

Seven personality scales, one validity scale, and no item overlap

Fourth-grade reading level

15-20 minute completion time

Items carefully screened to minimize invasion of privacy

Designed for ages 18 and above

Internet administration and reporting

HPI Development

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

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

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

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

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

Research indicates that real job applicants who completed the HPI as part of the job application process could not "fake" their scores on a second occasion after being rejected the first time (J. Hogan, Barrett, & R. Hogan, 2007).

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

Constructs Measured

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

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

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

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

Interpersonal Sensitivity concerns the degree to which a person has social sensitivity, tact, and perceptiveness (FFM: Agreeableness).

Prudence concerns the degree to which a person seems conforming, dependable, and has self-control (FFM: Conscientiousness).

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

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

In terms of instrument development, we refined an initial pool of 425 items using factor analysis and empirical validation procedures to assign 206 items to seven construct scales. HPI scales demonstrate adequate psychometric qualities (Lobello, 1998). We retained items in the final battery based on their demonstrated ability to predict significant non-test behavior. There is no item overlap among the primary scales and the validity scale. Empirical validation research conducted over the last 20 years provides a firm understanding of construct validity and the nature and range of job performance prediction. The HPI is a well-validated instrument that predicts job performance across occupations and organizations (Axford, 1998; J. Hogan & Holland, 2003).

3.5 Homogeneous Item Composites (HICs) During the development of the HPI, it appeared that each scale could be broken down into a set of related themes. Because the items in these themes clustered together, they were named Homogeneous Item Composites (Zonderman, 1980), or HICs. For each HPI scale, the items comprising each HIC form small facets that represent themes within the larger construct. The number of these facets varies depending on the scale, ranging from four (Learning Approach) to eight (Adjustment).

In the spring of 1992, we conducted factor analyses on the HIC correlation matrix. Analyses indicated that seven factors underlie the matrix, forming the basis of the HPI scales. Because a few HICs had substantial loadings on two factors, we used this information to balance the number of items on each scale by assigning HICs accordingly. A total of 41 HICs comprise the current version of the HPI, with no overlap between items, HICs, and scales.

Table 3.5 HPI Scales, HICs, Descriptions, and Sample Items

HPI Scale	Description	Sample Item
Adjustment		
Empathy	Absence of irritability	I dislike criticizing people, even when they need it
Not Anxious	Absence of anxiety	Deadlines don't bother me
No Guilt	Absence of regret	I rarely feel guilty about the things I have done
Calmness	Lack of emotionality	I keep calm in a crisis
Even-tempered	Not moody or irritable	I hate to be interrupted
No Complaints	Positive attitude toward performance	I almost never receive bad service
Trusting	Not suspicious of others	People really care about one another
Good Attachment	Good family relationships	In school, teachers liked me
Ambition		
Competitive	Being competitive, ambitious, and persistent	I want to be a success in life
Self-confident	Confidence in oneself	I expect to succeed at everything
Accomplishment	Goal attainment	I am known as someone who gets things done
Leadership	Capacity for leadership	In a group I like to take charge of things
Identity	Satisfaction with one's life tasks	I know what I want to be
No Social Anxiety	Social self-confidence	I don't mind talking in front of a group of people
Sociability		
Likes Parties	Enjoys parties	I would go to a party every night if I could
Likes Crowds	Finds large crowds exciting	Being part of a large crowd is exciting
Experience Seeking	Preference for variety and challenge	I like a lot of variety in my life
Exhibitionistic	Exhibitionistic tendencies	I like to be the center of attention
Entertaining	Is witty and entertaining	I am often the life of the party
Interpersonal Sensitivity		
Easy to Live With	Tolerant and easygoing nature	I work well with other people
Sensitive	Tends to be kind and considerate	I always try to see the other person's point of view
Caring	Interpersonal sensitivity	I am sensitive to other people's moods
Likes People	Enjoys social interaction	I enjoy just being with other people
No Hostility	Lack of hostility	I would rather not criticize people

Table 3.5 HPI Scales, HICs, Descriptions, and Sample Items (continued)

HPI Scale	Description	Sample Item
Prudence		
Moralistic	Adhering strictly to conventional values	I always practice what I preach
Mastery	Being hardworking	I do my job as well as I possibly can
Virtuous	Being perfectionistic	I strive for perfection in everything I do
Not Autonomous	Concern about others' opinion of oneself	Other people's opinions of me are important
Not Spontaneous	Preference for predictability	I always know what I will do tomorrow
Impulse Control	Lack of impulsivity	I rarely do things on impulse
Avoids Trouble	Professed troublemaker	When I was in school, I rarely gave the teachers any trouble
Inquisitive		
Science Ability	Interest in science	I am interested in science
Curiosity	Curiosity about the world	I have taken things apart just to see how they work
Thrill Seeking	Enjoyment of adventure and excitement	I would like to be a race car driver
Intellectual Games	Enjoys intellectual games	I enjoy solving riddles
Generates Ideas	Ideational fluency	I am known for having good ideas
Culture	Interest in culture	I like classical music
Learning Approach		
Education	Is a good student	As a child, school was easy for me
Math Ability	Is good with numbers	I can multiply large numbers quickly
Good Memory	Has a good memory	I have a large vocabulary
Reading	Enjoys reading	I would rather read than watch TV
Other		
Self Focus	Introspection	I often think about the reasons for my actions
Impression Management	Reputation control	I often wonder what other people are thinking of me
Professional Appearance	Public self-consciousness	My success depends on how others perceive me

4 Study 1: Development of HPI-Based EQ Scales

4.1 Algorithms Combinations of personality facets consistently predict a range of work outcomes better than broad personality factors (Casillas, Robbins, McKinniss, Postlethwaite, & Oh, 2009; J. Hogan & Roberts, 1996; Ones, Dilchert, Viswesvaran, & Judge, 2007; Paunonen, 1998; Paunonen & Ashton, 2001; Paunonen, Haddock, Försterling, & Keinonen, 2003; Paunonen & Nicol, 2001; Tett & Christiansen, 2007). However, research is required using data from multiple samples to identify the facets that best predict performance across jobs, organizations, and industries.

To create the six scales of the Hogan EQ Report, we used data from the Hogan archive, and proceeded in three steps. First, we developed clear definitions of each component. Next, using archival data, we identified HPI facets correlated with each component. Finally, we tested various combinations of facets to minimize overlap between the EQ scales and maximize prediction of the EQ competencies.

4.2 Initial Scale Development We first identified the HICs that seemed most related to each component; an expert panel with extensive experience using the HPI to forecast job performance made these judgments. Next, we identified studies in the Hogan archive that contained criterion variables that seemed logically related to each component. Finally, we examined correlations between each HIC and criterion variables aligned with each component.

The number of studies containing criterion data representing each EQ component ranged from 8 to 23. Examples of criterion for each EQ component are presented in Table 4.1.

Table 4.1 Example Performance Criteria for EQ components

Component	Example Items
Awareness	- Remains aware of the impression that he/she makes on others - Displays awareness of impact on others - Exhibits awareness of his or her own strengths and limitations
Detection	- Can read people quickly and accurately - Recognizes when assistance is needed by others - Recognizes verbal and nonverbal cues and reacts appropriately
Regulation	- Handles pressure without getting upset, moody, or anxious - Keeps emotions under control at all times - Persists during difficult periods with energy and enthusiasm
Influence	- Effectively calms others such as angry or distraught customers - Helps make others enjoy their work; is rewarding to be around - Creates a good first impression; instills trust and confidence
Expressivity	- Shows excitement about doing a job well - Is generally upbeat and positive at work - Acts in a friendly, caring, and cooperative manner
Empathy	- Is considerate of coworkers and customers - Considers the needs of others before taking actions - Shows concern for the rights and feelings of others

Finally, we identified HICs that were (a) theoretically aligned with the EQ components and (b) predicted job performance measures aligned with each EQ component. Table 4.2 presents these results.

Table 4.2 Theoretically and Empirically aligned HPI HICs

HPI Scale	HIC	EQ Components					
		1	2	3	4	5	6
Adjustment	Empathy			X			X
	No Anxiety			X			X
	No Guilt		X		X		
	Calm			X			X
	Even-tempered	X		X	X		X
	No Complaints					X	
	Trusting				X		
	Good Attachment						
Ambition	Competitive						
	Self-confident		X			X	
	Accomplishment						
	Leadership						
	Identity				X		
	Engaging						
Sociability	Likes Parties		X				
	Likes Crowds						
	Experience Seeking						X
	Exhibitionistic	X					
	Entertaining						
Interpersonal Sensitivity	Easy to Live With	X				X	
	Sensitive						X
	Caring	X	X		X		
	Likes People						
	No Hostility			X		X	

Table 4.2 Theoretically and Empirically aligned HPI HICs (continued)

HPI Scale	HIC	EQ Components					
		1	2	3	4	5	6
Prudence	Moralistic						
	Mastery	X					
	Virtuous	X					
	Not Autonomous				X	X	
	Not Spontaneous					X	
	Impulse Control		X				
	Avoids Trouble				X		
Inquisitive	Science						
	Curiosity						
	Thrill Seeking						
	Intellectual Games						
	Generates Ideas						
	Culture					X	
Learning Approach	Good Memory						
	Education			X			
	Math Ability						
	Reading						

Note. 1 = Awareness; 2 = Detection; 3 = Regulation; 4 = Influence; 5 = Expressivity; 6 = Empathy.

4.3 Analytical Procedures We used meta-analysis to examine the predictive validity of the EQ scales. Meta-analysis averages findings from multiple studies to establish the "true" relationships between variables. Meta-analysis controls for error due to sampling, measurement, range restriction, and potential moderating variables and provides a best estimate of these relationships across jobs and organizations (Smith & Glass, 1977). We used meta-analysis procedures outlined by Hunter and Schmidt (2004). These procedures demonstrate that correlations between performance measures and cognitive ability tests (Schmidt & Hunter, 1977), biographical data inventories (Schmidt & Rothstein, 1994), personality inventories (Barrick & Mount, 1991; Barrick, Mount, & Gupta, 2003; J. Hogan & Holland, 2003; Hough, 1992; Judge, Bono, Ilies, & Gerhardt, 2002; Salgado, 1997; Tett, Jackson, & Rothstein, 1991), assessment center exercises (Arthur, Day, McNelly, & Edens, 2003; Gaugler, Rosenthal, Thornton, & Benson, 1987), and situational judgment tests (McDaniel, Morgeson, Finnegan, Campion, & Braverman, 2001) generalize across jobs and organizations.

According to the *Principles*, "reliance on meta-analysis results is more straightforward when they are organized around a construct or set of constructs" (SIOP, 2003, p. 30). J. Hogan and Holland (2003) used a domain skills model as the basis for their well-known meta-analysis of the validity of personality predictors. They showed that personality predicts job performance more strongly than previously reported. A construct driven approach, which aligns facets of personality with work-related outcomes, has two advantages. First, theory drives professional judgment, which is unavoidable when compiling data from multiple studies. Second, a theory-

driven approach provides a framework for interpreting results.

We used zero-order, product-moment correlations (*r*) as effect sizes for all studies included in the meta-analyses. As recommended by Hunter and Schmidt (2004), we used a random-effects model, allowing the population parameter to vary across studies. This model provides for the possibility that relationships between variables may vary across jobs and organizations. This feature is in contrast to a fixed-effects model, which assumes the relationship between variables is consistent across all possible situations.

Using a random-effects model allows researchers to present both confidence and credibility intervals. Confidence intervals estimate the significance of a relationship between variables across jobs and organizations. If the lower bound of a 95% confidence interval does not include zero, there is less than a 5% chance that the results of the meta-analysis are due to chance. Credibility intervals estimate the variability of results across studies. If the lower bound of an 80% credibility interval does not include zero, more than 90% of the results across situations will be positive. In other words, confidence intervals estimate the accuracy of the relationship between variables, and credibility intervals estimate the variability in results across jobs and organizations.

We followed procedures outlined by Barrick and Mount (1991) and Tett et al. (1991) and used a .52 reliability coefficient as proposed by Rothstein (1990) to estimate the reliability of supervisors' performance ratings. Supervisors' ratings are unreliable due to the characteristics of the supervisor and the time during which measures are collected. Low reliability attenuates correlations between predictors and job performance measures, and correcting for unreliability in the criteria estimates "operational validity," the relationship between scores on our EQ scales and job performance.

According to Hunter and Schmidt (2004), meta-analytic results can be biased unless each sample contributes approximately the same number of correlations to the analysis. Consequently, we used only one criterion measure per study to represent each component. Our procedure uses both negative and positive correlations rather than mean absolute values for averaging correlations. This is the major computational difference between the current analyses and those presented by Tett et al. (1991, p. 712). We did not correct correlation coefficients to estimate validity at the construct level. Although some (e.g., Mount & Barrick, 1995; Ones, Viswesvaran, & Schmidt, 1993) argue this is an artifact that can be corrected, we believe it is premature to estimate the validity of perfect constructs when there is no agreement regarding what they are. That is, scales on different personality measures with the same names usually extend the boundaries of those constructs in directions beyond the central theme (Barrett & Rolland, 2009).

4.4 Results Table 4.3 presents the relationships between scores for each EQ scale and relevant measures of job performance. As seen, we identified at least eight studies containing criterion data for the six EQ scales. These studies included between 1,108 and 2,549 participants. Operational validities ranged from .17 to .25. The combination of both theoretical and empirical linkages between HICs used in each scale and job performance provides support for their use.

Table 4.3 Validity Results for EQ Scales

Component	k	N	R_{sw}	SD_{sw}	ρ	SD_p	% Var	80% CV	95% CI
Awareness	13	1,565	.16	.09	.22	.13	90%	.14	.11
Detection	8	1,108	.17	.07	.24	.10	100%	.17	.12
Regulation	23	2,391	.18	.13	.25	.19	51%	.06	.12
Influence	18	2,276	.14	.06	.19	.08	100%	.14	.11
Expressivity	15	1,264	.15	.12	.21	.17	75%	.08	.09
Empathy	18	2,549	.12	.07	.17	.09	100%	.12	.09

Note. Results corrected for criterion unreliability. k = Number of correlations; N = Sample size; R_{sw} = Sample-weighted mean correlation; SD_{sw} = Sample-weighted standard deviation; ρ = Operational Validity; SD_p = Standard deviation of the corrected population correlation; % Var = Percent of variance accounted for by sampling error and artifact corrections'; 80% CV = lower 10% boundary of 80% Credibility Interval; 95% CI = lower 2.5% boundary of 95% Confidence Interval.

Table 4.3 shows that the lower bounds for credibility intervals and confidence intervals do not include zero for any competency. Because over 90% of all samples produced positive results, and each scale produced scores significantly related to each component, these results support combining HICs to predict EQ competencies.

5 Study 2: Validation of HPI-Based EQ Scales

In this section (Study 2), we examine relationships between our new EQ scales and three important work compentencies: Leadership, Employability, and Teamwork.

We define Leadership as the ability to empower subordinates, provide them with structure and direction, and create high-performing teams. People rated lower on Leadership tend to alienate and infantilize subordinates and create dysfunctional teams.

We define Employability as the degree to which a person can effectively gain and retain employment. People rated higher on Employability are seen as compliant, conforming, and rewarding to deal with. People rated lower on Employability are seen as defiant, insubordinate, and unpleasant.

We define Teamwork as a person's capacity to work well with an interdependent group of people to accomplish team tasks. People rated higher on Teamwork effectively monitor others' task loads, support one another, engage in collaborative problem solving, and effectively self-regulate without the team's oversight. People rated low on Teamwork tend to slack off, ignore teammates, or undermine a team's ability to synchronize its efforts.

5.1 Method This study paralleled Study 1. To summarize, we identified archival studies that met three criteria: (a) contained HPI HIC-level data; (b) used a concurrent or predictive validation strategy; and (c) included supervisor's ratings. We identified 22 to 23 studies for Leadership (N = 2,386–3,024), 11 studies for Employability (N = 1,244–1,257), and 41 to 42 studies for Teamwork (N = 5,214–5,639) that met these criteria.

5.2 Results Table 5.1 presents the relationships between scores for each EQ scale and Leadership, Employability, and Teamwork ratings.

Table 5.1 Validity Results for Predicting Leadership, Employability, and Teamwork Ratings

Component	k	N	R_{sw}	SD_{sw}	ρ	SD_p	% Var	80% CV	95% CI
Leadership									
Awareness	23	3,024	.10	.07	.13	.09	100%	.10	.07
Detection	23	2,857	.09	.08	.13	.12	100%	.09	.05
Regulation	22	2,386	.02	.11	.03	.16	72%	-.05	-.02
Influence	23	3,041	.10	.09	.14	.12	97%	.10	.06
Expressivity	23	3,018	.09	.10	.13	.14	75%	.03	.05
Empathy	23	2,847	.01	.10	.02	.14	74%	-.05	-.03
Employability									
Awareness	11	1,257	.13	.14	.18	.20	39%	-.01	.04
Detection	11	1,244	.10	.07	.14	.10	100%	.10	.05
Regulation	11	1,257	.15	.07	.21	.10	100%	.15	.10
Influence	11	1,255	.19	.09	.27	.13	97%	.19	.14
Expressivity	11	1,257	.17	.11	.24	.16	61%	.09	.10
Empathy	11	1,245	.17	.08	.24	.12	100%	.17	.12
Teamwork									
Awareness	42	5,617	.08	.09	.12	.13	88%	.05	.05
Detection	42	5,379	.07	.11	.10	.16	60%	-.02	.04
Regulation	42	5,639	.08	.08	.11	.12	100%	.08	.05
Influence	41	5,240	.13	.11	.18	.15	63%	.05	.10
Expressivity	41	5,214	.09	.10	.13	.14	77%	.03	.06
Empathy	42	5,373	.10	.10	.14	.14	76%	.04	.07

Note. Results corrected for criterion unreliability. k = Number of correlations; N = Sample size; R_{sw} = Sample-weighted mean correlation; SD_{sw} = Sample-weighted standard deviation; ρ = Operational Validity; SD_p = Standard deviation of the corrected population correlation; % Var = Percent of variance accounted for by sampling error and artifact corrections'; 80% CV = lower 10% boundary of 80% Credibility Interval; 95% CI = lower 2.5% boundary of 95% Confidence Interval.

Table 5.1 shows that the lower bounds of the credibility interval for Regulation (Leadership), Empathy (Leadership), Awareness (Employability), and Detection (Teamwork) include zero. This means that an effect exists, but the relationship may differ across jobs and contexts. Further, the confidence intervals for Regulation (Leadership) and Empathy (Leadership) include zero. This suggests results were not significant across all studies. For the other EQ components, because 90% of all samples produced positive results, and each EQ scale significantly predicted the competencies, results support the predictive validity of our EQ scales for predicting various work outcomes.

5.3 EQ Scale Correlations To examine the relationships between the EQ scales, we computed correlations using data in the Hogan Global Normative dataset (N = 145,792) (Hogan Assessment Systems, 2012). We examined test-retest reliability using a sample of 412 respondents who completed the HPI on multiple occasions. This sample included data from 221 males and 117 females (74 respondents did not indicate their gender). Respondent ages ranged from 18 to 62 with a mean of 28.09 years (SD = 18.14). Duration between the first and

second administrations of the HPI ranged from 0 to 64 months with a mean of 11.30 (SD = 9.98). We did not examine internal consistency using coefficient alpha because we combined HICs from multiple HPI primary scales to form the heterogeneous EQ scales and the statistical independence of these HICs reduces internal consistency. Therefore, test-retest reliability is the more appropriate index of reliability. Table 5.2 presents correlations between the scales and their test-retest reliability.

Table 5.2 Correlation Results for the Hogan EQ Model

	AWA	DET	REG	INF	EXP	EMP
AWA	*.60*	.24	.45	.39	.30	.41
DET		*.64*	.40	.48	.37	.41
REG			*.65*	.57	.45	.88
INF				*.65*	.57	.54
EXP					*.60*	.41
EMP						*.65*

Note. All correlations are significant at the .001 level. Diagonal results (those in italics) represent test-retest reliability results. AWA = Emotional Awareness; DET = Emotional Detection; REG = Emotional Regulation; INF = Emotional Influence; EXP = Emotional Expressivity; EMP = Emotional Empathy.

These results suggest that, although the correlations are generally moderate and positive, the scales are not redundant. Despite efforts to reduce overlap, some scales are substantially related because they reflect the central theme of using internal and external sources of emotions to adapt to the environment. In other words, because they predict similar outcomes, many of the scales are correlated.

5.4 Averaged EQ Scale Results To examine the predictive validity of the complete EQ model, we examined correlations between average scores on the six EQ scales with interpersonal competency ratings and used meta-analysis to combine results across studies. Table 5.3 presents these results.

Table 5.3 Validity Results for the Overall EQ Model

	k	N	R_{sw}	SD_{sw}	ρ	SD_{ρ}	% Var	80% CV	95% CI
Leadership	23	3,048	.09	.10	.12	.13	79%	.04	.05
Employability	11	1,257	.20	.09	.28	.13	92%	.20	.15
Teamwork	42	5,649	.12	.09`	.16	.13	80%	.07	.09

Note. Results corrected for criterion unreliability. k = Number of correlations; N = Sample size; R_{sw} = Sample-weighted mean correlation; SD_{sw} = Sample-weighted standard deviation; ρ = Operational Validity; SD_{ρ} = Standard deviation of the corrected population correlation; % Var = Percent of variance accounted for by sampling error and artifact corrections'; 80% CV = lower 10% boundary of 80% Credibility Interval; 95% CI = lower 2.5% boundary of 95% Confidence Interval.

The lower bound of the 95% confidence interval for all three performance dimensions is above zero, indicating that scores on the six EQ scales are significantly correlated with supervisors' ratings of Leadership, Employability, and Teamwork. Furthermore, the lower bound of the 80% credibility values are above zero, indicating that these results should generalize across jobs and organizations.

6 Description of the Hogan Development Survey (HDS)

Bright-side personality characteristics are only one manifestation of EQ. Research shows that dark-side characteristics also predict important work outcomes (R. Hogan & J. Hogan, 2009). Our final study explores the value of adding HDS scales to the HPI-based EQ scales.

6.1 The Hogan Development Survey The HPI evaluates day-to-day personality, and the HDS is designed to assess 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 or when they let down their guard and stop considering how their actions affect others. These deeply ingrained tendencies 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. They develop during childhood as strategies for dealing with criticism or feelings of inadequacy. Horney (1950) identified three major domains of flawed dispositions: (a) managing insecurity by forming alliances (i.e., moving toward people), (b) managing insecurity by avoiding others (i.e., moving away from people), and (c) managing insecurity 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 two ways. One view argues that failure is synonymous with the absence of characteristics needed for success (Bray & Howard, 1983). A second view argues that failure is more about exhibiting undesirable qualities (i.e., derailing characteristics) than lacking positive ones (J. Hogan et al., 2011; R. Hogan & J. Hogan, 2001). This second position suggests a different perspective for understanding employee failure. Research shows that we can predict the desirable qualities associated with occupational success. The Five-Factor Model (Wiggins, 1996) is a cross-section of personality at the competent end of the distribution. At the 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 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.

The HDS assesses 11 dysfunctional dispositions that can impede job performance and lead to career difficulties. In the context of personnel selection, the HDS identifies applicants whose behavior, over time, will erode relationships with others because of flawed interpersonal

strategies. These dysfunctional dispositions lie at the intersection of normal personality and personality disorders. They are extensions of the FFM personality dimensions, where these tendencies define the ends of the various five dimensions. Although the scales of the HDS relate to the dimensions of the FFM, each HDS scale reflects a syndrome with various related components.

6.2 HDS Description and Development

HDS Description

168 True/false items with no psychiatric content

Eleven personality scales, one social desirability scale, and no item overlap between scales

Fifth-grade reading level

15-20 minute completion time

Items are not interpretable in terms of medical or psychiatric disability

Designed for ages 18 and above

Internet administration and reporting

HDS Development

Principal components analysis of the HDS yields three clearly defined factors that support interpreting the inventory in terms of Horney's (1950) taxonomy of flawed interpersonal characteristics (R. Hogan & J. Hogan, 2001).

Favorable reviews of the HDS appear in the Buros Institute of Mental Measurements' *The Fourteenth Mental Measurements Yearbook* (Fox & Huebner, 2001), and the British Psychological Society Psychological Testing Centre "Test Reviews" (Hodgkinson & Robertson, 2007). Additional objective reviews for the HDS exists with the Oregon Research Institute (Goldberg, 2008).

HDS norms include data from over 109,000 working adults and job applicants from a variety of organizations. These data include supervisory and non-supervisory personnel and strike a balance between selection and development cases. Descriptive statistics for HDS scales appear by gender, age, and race/ethnicity in the Hogan Development Survey manual (R. Hogan & J. Hogan, 2009).

Researchers have used the HDS in over 30 criterion-related validation studies to predict occupational performance across a range of jobs and industries, especially in management and leadership roles (Fleming, 2004; Khoo & Burch, 2008). To date, research indicates no adverse impact by race/ethnicity, gender, or age.

Alpha reliabilities for the scales range from .43 to .68 and short-term test-retest reliabilities, calculated using Pearson correlations, range from .66 to .75 (R. Hogan & J. Hogan, 2009). Test-retest reliabilities using normalized Euclidean similarities range from .76 to .85 (R. Hogan & J. Hogan, 1997). The 2009 HDS manual documents the development and psychometric properties in further detail.

Construct validity evidence is reported in the test manual; scale correlates with non-test behavior and observer ratings appear in R. Hogan and J. Hogan (2001, 2009).

In 2007, the Oregon Research Institute included the HDS in its longitudinal research effort to collect data from a community sample in Eugene-Springfield Oregon on a variety of personality assessments. As a result, the HDS has desirable convergent and discriminant validity with other personality measures (R. Hogan & J. Hogan, 2009).

The HDS scales are defined as follows:

Excitable concerns seeming moody and inconsistent, being enthusiastic about new persons or projects and then becoming disappointed with them.

Skeptical concerns seeming cynical, distrustful, overly sensitive to criticism, and questioning others' true intentions.

Cautious concerns seeming resistant to change and reluctant to take reasonable chances for fear of being evaluated negatively.

Reserved concerns seeming socially withdrawn and lacking interest in, or awareness of, the feelings of others.

Leisurely concerns seeming autonomous, indifferent to other people's requests, and becoming irritable when they persist.

Bold concerns seeming unusually self-confident and, as a result, unwilling to admit mistakes or listen to advice, and unable to learn from experience.

Mischievous concerns seeming to enjoy taking risks and testing the limits.

Colorful concerns seeming expressive, dramatic, and wanting to be noticed.

Imaginative concerns seeming to act and think in creative and sometimes unusual ways.

Diligent concerns seeming careful, precise, and critical of the performance of others.

Dutiful concerns seeming eager to please, reliant on others for support, and reluctant to take independent action.

In terms of instrument development, we wrote the items for the 11 HDS dimensions to reflect the core elements of each construct. This focus on the core of each construct contrasts with other existing inventories of personality disorders where items reflecting anxiety and depression appear on several scales, making scale interpretation difficult. Six cycles of item writing, testing, analysis, and further revision took place over a 3-year period. In 1995, we 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. 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.

It is important to note that the HDS is neither intended nor appropriate for diagnosing mental illness; rather, the HDS assesses personality characteristics that hinder a person's ability to build relationships and accomplish goals in organizational contexts. Because of this, the content of the HDS items is important. 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 coworkers, one's attitudes about competition and success, etc. Further, we 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). Besides 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, because overusing a strength often degrades performance, and in some cases, performance suffers even when managers show a slight tendency to exaggerate their strengths (Kaplan & Kaiser, 2009).

7 Study 3: Development and Validation of HPI- & HDS-Based EQ Scales

7.1 Scale Development We followed the procedures outlined in Chapter 4 to explore the value of adding HDS scales to the six HPI-based EQ scales. Specifically, we identified archival studies containing both HDS and performance data relating to each component. Second, we correlated HDS scale scores and performance measures. Finally, we aggregated results across studies. As seen in Table 7.1, each emotional component was linked with one or two scales.

Table 7.1 Theoretically and Empirically aligned HDS Scales

HDS Scale	EQ Components					
	1	2	3	4	5	6
Excitable			X			
Skeptical						
Cautious						
Reserved						
Leisurely	X					
Bold		X	X			
Mischievous						
Colorful						
Imaginative						
Diligent		X		X		X
Dutiful					X	

Note. 1 = Awareness; 2 = Detection; 3 = Regulation; 4 = Influence; 5 = Expressivity; 6 = Empathy.

7.2 Results Table 7.2 presents the results for the new EQ predictor scales. We identified studies containing criterion data for the six EQ components and both HPI HIC and HDS scale-level data. Each analysis contained between 38 and 428 participants. Corrected validities ranged from .12 to .38.

Table 7.2 Validity Results for HPI- & HDS-Based EQ Scales

Component	k	N	R_{sw}	SD_{sw}	ρ	SD_p	% Var	80% CV	95% CI
Awareness	1	38	.09	N/A	.12+	N/A	N/A	N/A	N/A
Detection	1	91	.27	N/A	.37+	N/A	N/A	N/A	N/A
Regulation	3	428	.27	.19	.38	.27	17%	.10	.05
Influence	2	127	.16	.12	.22	.17	95%	.16	-.02
Expressivity	2	59	.18	.36	.25	.50	23%	-.06	-.32
Empathy	2	71	.14	.00	.20	.00	100%	.14	-.09

Note. Results corrected criterion unreliability. k = Number of correlations; N = Sample size; Rsw = Sample-weighted mean correlation; SDsw = Sample-weighted standard deviation; ρ = Operational Validity; SDp = Standard deviation of the corrected population correlation; % Var = Percent of variance accounted for by sampling error and artifact corrections'; 80% CV = lower 10% boundary of 80% Credibility Interval; 95% CI = lower 2.5% boundary of 95% Confidence Interval; N/A = Not Applicable; + = Single correlation corrected for unreliability in the criterion.

Table 7.2 shows that the lower bound of the credibility interval and confidence interval for Expressivity includes zero. Further, the confidence intervals for Influence and Empathy include zero. In instances where the credibility interval does include zero, results indicate that an effect exists, but the relationship may differ across jobs and contexts; in instances where the confidence interval includes zero, results were not significant across all studies. However, it should be noted that this lack of statistical significance is likely due to the smaller sample sizes compared to Table 4.3. Given the theoretical and empirical links between the HDS scales and the components, there is strong evidence that the HDS predicts EQ-related work behaviors.

8 Applications and Recommendations

The Hogan archive provided the source data to develop the Hogan EQ scales. We used HIC-level data from the HPI, scale-level data from the HDS, and job performance criteria to develop the six Hogan EQ scales.

8.1 Scoring For each of the six EQ components in the Hogan EQ model, we computed final scale scores by converting results for each scale to a 0 to 40 scale. Table 8.1 presents means and standard deviations for each scale based on data from the Hogan Global Normative dataset (N = 66,950; note that using the HDS data resulted in fewer cases than presented in Chapter 6).

Table 8.1 Scale Means and Standard Deviations

Scale	M	SD
Awareness	29.90	3.75
Detection	24.30	3.46
Regulation	28.67	5.82
Influence	29.22	3.74
Expressivity	28.07	3.75
Empathy	26.52	4.81

Note. N = 66,950; M = Mean; SD = Standard Deviation.

Table 8.1 shows that means and standard deviations vary across scales, which means that score distributions will vary. Consequently, we used normative results to convert scores on the Hogan EQ scales to a common metric. The EQ Report presents these results on continuous scales with scores below the 26th percentile indicating a low score and scores above the 75th percentile indicating a high score. Appendix A provides a sample EQ Report.

8.2 Simulated Adverse Impact We evaluated potential selection rates for gender, age, and race/ethnicity. Because relevant racial/ethnic groups vary by country, we evaluated pass rates from a sample of 16,535 individuals in the U.S. who reported race/ethnicity according to EEOC guidelines. Hogan EQ Report users should evaluate pass rate differences based on race/ethnicity in other countries as data are available.

For these analyses, which only estimate potential selection rates, we compared individuals with scores in the bottom 25% to all others. A number of non-test factors, most notably the opportunity to take the assessment, affect selection rates. Tables 8.2 through 8.7 show the selection rates for each scale based on data from a HPI and HDS archival sample by demographic group, where males, whites, and applicants under 40 years of age serve as majority groups. Based on the 80% rule-of-thumb (or the "four-fifths rule" described in the *Uniform Guidelines*), these findings suggest that the inclusion of the Hogan EQ Report as a potential selection device should not result in adverse impact.

Table 8.2 Awareness Adverse Impact Results

		Fail	%	Pass	%	A.I. ratio
Total		2,422	14.6%	14,113	85.4%	
Sex	Men	1,062	13.7%	6,689	86.3%	
	Women	473	14.2%	2,855	85.8%	No A.I.
Age	< 40	1,694	14.1%	10,357	85.9%	
	≥ 40	728	16.2%	3,754	83.8%	No A.I.
Race	Black	38	8.5%	409	91.5%	No A.I.
	Hispanic	31	8.8%	321	91.2%	No A.I.
	Asian American/P.I.	65	19.0%	278	81.0%	No A.I.
	American Indian/A.N.	8	11.6%	61	88.4%	No A.I.
	White	979	14.0%	6,019	86.0%	

Note. P.I. = Pacific Islander; A.N. = Alaskan Native; No A.I. = No Adverse Impact.

Table 8.3 Detection Adverse Impact Results

		Fail	%	Pass	%	A.I. ratio
Total		1,587	9.6%	14,948	90.4%	
Sex	Men	774	10.0%	6,977	90.0%	
	Women	318	9.6%	3,010	90.4%	No A.I.
Age	< 40	1,220	10.1%	10,831	89.9%	
	≥ 40	367	8.2%	4,115	91.8%	No A.I.
Race	Black	32	7.2%	415	92.8%	No A.I.
	Hispanic	32	9.1%	320	90.9%	No A.I.
	Asian American/P.I.	56	16.3%	287	83.7%	No A.I.
	American Indian/A.N.	3	4.3%	66	95.7%	No A.I.
	White	665	9.5%	6,333	90.5%	

Note. P.I. = Pacific Islander; A.N. = Alaskan Native; No A.I. = No Adverse Impact.

Table 8.4 Regulation Adverse Impact Results

		Fail	%	Pass	%	A.I. ratio
Total		3,216	19.4%	13,319	80.6%	
Sex	Men	1,396	18.0%	6,355	82.0%	
	Women	768	23.1%	2,560	76.9%	No A.I.
Age	< 40	2,301	19.1%	9,750	80.9%	
	≥ 40	915	20.4%	3,567	79.6%	No A.I.
Race	Black	53	11.9%	394	88.1%	No A.I.
	Hispanic	59	16.8%	293	83.2%	No A.I.
	Asian American/P.I.	90	26.2%	253	73.8%	No A.I.
	American Indian/A.N.	10	14.5%	59	85.5%	No A.I.
	White	1,405	20.1%	5,593	79.9%	

Note. P.I. = Pacific Islander; A.N. = Alaskan Native; No A.I. = No Adverse Impact.

Table 8.5 Influence Adverse Impact Results

		Fail	%	Pass	%	A.I. ratio
Total		1,994	12.1%	14,541	87.9%	
Sex	Men	906	11.7%	6,845	88.3%	
	Women	457	13.7%	2,871	86.3%	No A.I.
Age	< 40	1,513	12.6%	10,538	87.4%	
	≥ 40	481	10.7%	4,001	89.3%	No A.I.
Race	Black	68	15.2%	379	84.8%	No A.I.
	Hispanic	45	12.8%	307	87.2%	No A.I.
	Asian American/P.I.	74	21.6%	269	78.4%	No A.I.
	American Indian/A.N.	9	13.0%	60	87.0%	No A.I.
	White	802	11.5%	6,196	88.5%	

Note. P.I. = Pacific Islander; A.N. = Alaskan Native; No A.I. = No Adverse Impact.

Table 8.6 Expressivity Adverse Impact Results

		Fail	%	Pass	%	A.I. ratio
Total		3,735	22.6%	12,800	77.4%	
Sex	Men	1,581	20.4%	6,170	79.6%	
	Women	923	27.7%	2,405	72.3%	No A.I.
Age	< 40	2,813	23.3%	9,238	76.7%	
	≥ 40	922	20.6%	3,560	79.4%	No A.I.
Race	Black	130	29.1%	317	70.9%	No A.I.
	Hispanic	96	27.3%	256	72.7%	No A.I.
	Asian American/P.I.	112	32.7%	231	67.3%	No A.I.
	American Indian/A.N.	18	26.1%	51	73.9%	No A.I.
	White	1,469	21.0%	5,529	79.0%	

Note. P.I. = Pacific Islander; A.N. = Alaskan Native; No A.I. = No Adverse Impact.

Table 8.7 Empathy Adverse Impact Results

		Fail	%	Pass	%	A.I. ratio
Total		3,366	20.4%	13,169	79.6%	
Sex	Men	1,432	18.5%	6,319	81.5%	
	Women	825	24.8%	2,503	75.2%	No A.I.
Age	< 40	2,438	20.2%	9,613	79.8%	
	≥ 40	928	20.7%	3,554	79.3%	No A.I.
Race	Black	66	14.8%	381	85.2%	No A.I.
	Hispanic	59	16.8%	293	83.2%	No A.I.
	Asian American/P.I.	89	25.9%	254	74.1%	No A.I.
	American Indian/A.N.	12	17.4%	57	82.6%	No A.I.
	White	1,442	20.6%	5,556	79.4%	

Note. P.I. = Pacific Islander; A.N. = Alaskan Native; No A.I. = No Adverse Impact.

8.3 Uses and Applications We recommend using the EQ Report to assess job applicants and incumbent employees for EQ-related issues. The Hogan EQ Report can be used in two ways: (1) to help companies make better hiring decisions with regard to applicants for socially sensitive or stressful jobs, and (2) to help companies gauge the extent to which their incumbent workforce is comprised of emotionally competent workers. This second use may inform training needs and initiatives, and should not be used to inform personnel decisions (e.g., termination) regarding incumbents. For personnel selection, it is critical that the company use the Hogan EQ Report for every applicant within a hiring cycle to ensure standardization and fairness in the selection process.

The Hogan EQ Report consists of scales derived from the HPI and HDS. Users should expect the same psychometric qualities as the HPI and HDS – validity and reliability – qualities that will assist in building a socially adept and productive workforce. *The Hogan Personality Inventory Technical Manual* (R. Hogan & J. Hogan, 1995, 2007) and *Hogan Development Survey Manual* (R. Hogan & J. Hogan, 1997, 2009) describes the psychometric properties of the HPI and HDS, respectively.

The following procedures will help employers use the Hogan EQ Report. First, pass rates require monitoring to determine if established cutoff scores allow enough people to pass and identify individuals who are prone to insensitive or ineffective work behaviors. Cutoff scores where everyone fails are just as ineffective as those where everyone passes. Second, employers should maintain records of scores by demographic group to monitor the possibility of adverse impact resulting from the use of the Hogan EQ Report. Finally, we recommend conducting follow-up analyses on applicants and employees assessed using the Hogan EQ Report to examine the utility and bottom-line impact of the assessment.

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

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8.4 Accuracy and Completeness We attest to the accuracy of the data collection, analysis, and reporting procedures used in this study. We entered the data into a database and computed results using SPSS/V.19 statistical software.

To develop EQ scales, we reviewed an archival research database with previously conducted criterion-related validation studies, and identified studies using job performance measures mapping to emotion-related competencies. We used these data to develop scoring algorithms through both a qualitative, theoretical approach and a quantitative, empirical approach. Then, we tested alternative algorithms to maximize predictive validity and minimize scale overlap. We derived results strictly from data and archived study results and did not embellish, falsify, or alter results in any manner.

9 Compilation of Norms

9.1 Importance of Norms for Interpretation and Decision-making According to Nunnally (1967, p. 244), "norms are any scores that provide a frame of reference for interpreting the scores of particular persons." As such, norms are vital for providing meaningful context for interpreting assessment scores. However, the quality of those norms is of particular importance. By using accurate and up-to-date norms, users can examine one person's scores against a suitable comparison group, thereby allowing us to better predict that person's future behavior.

9.1.1 Presentation of Normative Data Assessment providers use a variety of formats to present normative data. The three most prevalent are: (a) raw scale scores, (b) standardized scores, or (c) percentile ranks (Nunnally, 1967). Although raw scale scores directly link to the assessment, they are difficult to interpret because total possible scores may vary. For example, a raw scale score of 8 is difficult to interpret because the total possible score could be 10, 50, 100, 1,000, or any other score. Depending on the total possible score, one would interpret a raw scale score of 8 in vastly different lights.

To address these problems, some assessment publishers provide norms in the form of standardized scores. Standardized scores are expressed using a mean and a standard deviation, although these vary depending on the type of standardized scores used. For example, *z-scores* use a mean of 0 and standard deviation of 1. Alternatively, *T-scores* use a mean of 50 and standard deviation of 10. *Sten scores* may use a variety of formats, such as a mean of 5.5 and standard deviation of 2. As these examples illustrate, standardized scores transform an individual's raw scale score into a ranking metric, but these score ranges vary and, like raw scores, are not easily understood.

We recommend interpreting HPI and HDS scores using percentile ranks. Like standardized scores, percentiles place an individual's raw scale score on a ranking metric where users can compare one person's scores against others' scores. However, unlike standardized scores, percentile ranks always use a 0 to 100% range, which is often more commonly understood and easily interpreted by the general public. For example, a raw Adjustment scale score may correspond to a z-score of 1.1. However, it is difficult to interpret this standardized score. That same scale score may correspond to a percentile score of 85%, indicating that the person's score is equal to or higher than 85% of others on that scale. As we used HIC-level data from the HPI and scale-level data from the HDS to develop scoring algorithms for the Hogan EQ Report, we remain consistent with Hogan norming conventions and report scores using percentiles.

9.1.2 Professional Standards for Norm Development Cronbach (1984) noted that the norms for many personality assessments are "notoriously inadequate" and emphasized the importance of using appropriate samples when calculating norms. To provide norms, test publishers collect data from "suitable and representative" individuals in the assessment's intended population(s). Specifically, Cronbach (1984) recommended four standards for developing adequate norms, stating that they should (a) consist of individuals for whom the assessment was intended and against whom examinees will be compared, (b) represent

the referent population, (c) include a sufficient number of cases, and (d) be appropriately subdivided. Also, practical and professional considerations encourage assessment providers to establish and maintain norms. For example, Standard 4.6 of the *Standards* (AERA, APA, & NCME, 1999) states:

> Reports of norming studies should include precise specification of the population that was sampled, sampling procedures and participation rates, any weighting of the sample, the dates of testing, and descriptive statistics. The information provided should be sufficient to enable users to judge the appropriateness of the norms for interpreting the scores of local examinees. Technical documentation should indicate the precision of the norms themselves. (p. 55)

We present normative data for the Hogan EQ Report using a sample that is representative of the intended audience for the assessment. As we developed the Hogan EQ Report for global use, the normative dataset represents multiple languages, cultures, and geographic regions. The primary concern with multi-language norms is the appropriateness of combining data derived from multiple translations. Schmit, Allik, McCrae, and Benet-Martinez (2007) summarize this issue, stating:

> ...when comparing the mean scores of different cultures on a personality trait scale, any observed differences may exist not only because of a real cultural disparity on some personality trait but also because of inappropriate translations, biased sampling, or the non-identical response styles of people from different cultures. (p. 175)

Meyer and Foster (2008) outline three potential sources of mean score differences: (a) sample differences, (b) translation differences, and (c) cultural differences. We account for potential sample and translation differences by (a) following rigorous guidelines when creating new translations and (b) testing both item- and scale-level equivalence when enough data are available for a language. *The Development and Technical Review of Translations for the HPI, HDS, and MVPI* (Hogan Assessment Systems, 2009) outlines our procedures for developing and reviewing translations and presents results for all translations conducted to date. These results show that current translations of the HPI and HDS produce similar distributions. Although no two translations are perfectly equivalent, such similarity across translations (a) demonstrates that cultural differences have little impact on score distributions, and (b) supports the use of combining data from multiple languages into a single normative dataset.

9.2 Norm Composition We developed the EQ Report primarily as a tool for identifying people with talent for jobs that require effective social interaction. To facilitate the global application of the EQ Report, we used a sub-sample of our Global Normative dataset (Hogan Assessment Systems, 2012). The following table describes the sample in terms of gender, age, and job family.

Table 9.1 Hogan EQ Normative Sample (N = 66,950)

Category	Sample N	Sample %
Gender		
Male	37,871	56.6%
Female	22,673	33.9%
Not Reported	6,406	9.6%
Age		
Under 30	10,018	15.0%
30 – 39	22,062	33.0%
40 – 49	18,481	27.6%
50 +	7,299	10.9%
Not Reported	9,090	13.6%
Application		
Selection	18,827	28.1%
Development	26,350	39.4%
Not Reported	21,773	32.5%
Job Family		
Managers & Executive	20,763	31.0%
Professionals	9,831	14.7%
Technicians & Specialists	3,909	5.8%
Operations & Trades	4,183	6.2%
Sales & Customer Support	1,663	2.5%
Administrative & Clerical	4,760	7.1%
Service & Support	3,323	5.0%
Not Reported	18,518	27.7%

Note. Sample N = number of cases in sample; Sample % = percentage of cases in sample.

9.3 Descriptive Statistics of the Norming Sample Table 9.2 presents means and standard deviations for the Hogan EQ Report scales for the total normative sample categorized by selected demographic groups. Appendix B presents raw score to percentile conversions for the total sample.

Table 9.2 Norming Sample Scale Means and Standard Deviations

Component		Males	Females	< 40	≥ 40	Total
N		37,871	22,673	32,080	25,780	66,950
Awareness	M	29.95	29.92	30.09	29.80	29.90
	SD	3.74	3.76	3.79	3.69	3.75
Detection	M	24.46	23.97	23.86	24.76	24.30
	SD	3.43	3.49	3.50	3.35	3.46
Regulation	M	29.02	28.17	28.21	29.35	28.67
	SD	5.63	6.20	6.01	5.60	5.82
Influence	M	29.20	29.38	28.74	29.98	29.22
	SD	4.91	4.93	5.01	4.71	4.93
Expressivity	M	28.39	27.82	28.00	28.45	28.07
	SD	3.67	3.81	3.81	3.60	3.74
Empathy	M	26.89	26.00	26.08	27.22	26.52
	SD	4.62	5.16	4.92	4.67	4.81

Note. N = Number of cases; M = Mean; SD = Standard Deviation.

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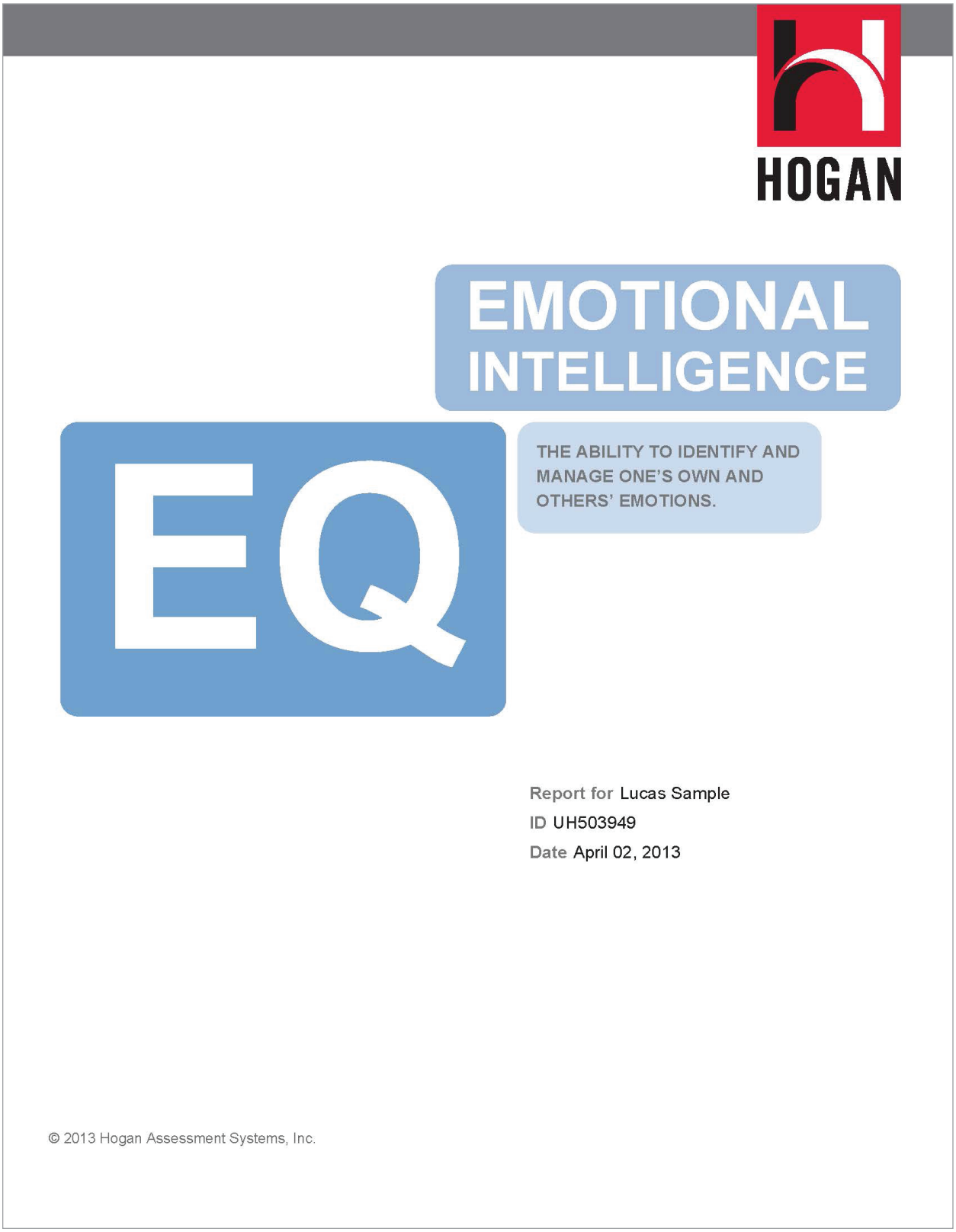
APPENDIX A: Sample Hogan EQ Report



APPENDIX A: Sample Hogan EQ Report (continued)

HOGAN

Introduction

The Hogan EQ assessment measures emotional intelligence, the ability to identify and manage one's own and others' emotions. This report provides an overall score, as well as scores and feedback for six EQ scales:

Awareness
The degree to which a person seems in touch with his or her own emotions

Detection
The degree to which a person seems aware of others' emotions and thoughts

Regulation
The degree to which a person seems able to maintain positive emotional states

Influence
The degree to which a person seems able to intentionally affect others' moods, thoughts, and behaviors

Expression
The degree to which a person seems able to effectively communicate desired emotional states to others

Empathy
The degree to which a person seems able to feel what others are feeling

EQ and the workplace

Individuals with higher EQ scores have four key advantages at work:

1. They have good interpersonal skills and quickly understand what others feel and why they behave in a certain way.
2. They are rewarding to deal with and are rarely moody or argumentative.
3. They remain calm in stressful situations and handle pressure well.
4. They are enthusiastic about work and remain optimistic.

Using this report

This report provides a total EQ score, which reflects respondents' overall emotional intelligence. The higher the score, the higher one's EQ.

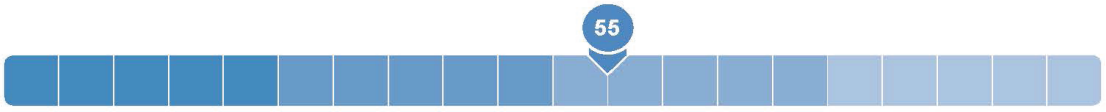
Results are also presented on a scale-by-scale basis. For each scale, this report provides discussion points, interpretation information, a bulleted summary of likely behaviors, and a pros-and-cons list of the score as it relates to leadership, teamwork, and employability.

As all jobs require interacting with others, EQ is an important determinant of career success. Those who can build, inspire, and maintain high-performing teams can become effective leaders. Thus, higher EQ also means greater leadership potential.

APPENDIX A: Sample Hogan EQ Report (continued)

Total EQ score

Mr. Sample's total EQ score of 55 indicates his emotional intelligence is **above average**.



Scores from 0-25 are considered **low**

Scores from 26-50 are considered **below average**

Scores from 51-75 are considered **above average**

Scores above 76 are considered **high**

The total EQ score is the average of the six EQ scale scores summarized below. The scores indicate the proportion of the population who score at or below Mr. Sample. For example, a score of 75 on a given scale indicates that Mr. Sample's score is higher than approximately 75% of the population.

Scale	Score	Rating
Awareness	**96**	High
Detection	**9**	Low
Regulation	**79**	High
Influence	**55**	Above average
Expression	**41**	Below average
Empathy	**50**	Below average

APPENDIX A: Sample Hogan EQ Report (continued)

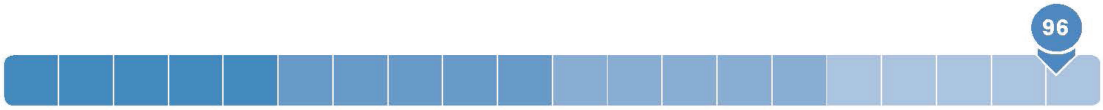
HOGAN

Awareness

The degree to which a person seems in touch with his or her own emotions

Low scorers tend to be:
Uninterested in self-analysis
Indifferent to own emotions
Unreflective

High scorers tend to be:
Self-aware
In touch with own emotions
Introspective



Mr. Sample's score on the Awareness scale is **high**. He should seem:

- Very aware of the impression he makes on others
- Very aware of own strengths and limitations
- Willing and able to reflect on own performance
- Understands the impact he has on others
- Predicts how events will impact his emotions

Potential pros and cons of Mr. Sample's score as it relates to leadership, teamwork, and employability:

	Leadership	Teamwork	Employability
Pros	Holds an accurate view of what subordinates think of him	Likely to accept negative feedback and criticism from team members	Identifies suitable career paths and ensures good fit with employer
Cons	May adopt popular decisions to be liked by subordinates	May care too much about what other team members think of him	May hesitate between too many viable career options

Things to discuss with Mr. Sample:

- How often do you evaluate your own moods, thoughts, and behaviors?
- How important is it for you to know what others think of you?
- Do you adjust your behaviors to conform to others' expectations of you?
- In what ways could you improve your understanding of how others see you?

APPENDIX A: Sample Hogan EQ Report (continued)

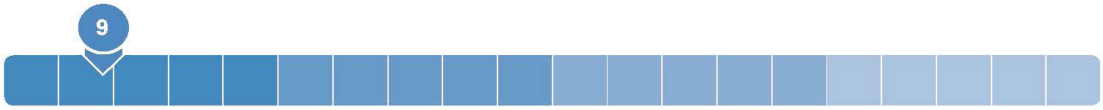
HOGAN

Detection

The degree to which a person seems aware of others' emotions and thoughts

Low scorers tend to be:
Unperceptive
Unobservant
Overly logical

High scorers tend to be:
Perceptive
Socially insightful
Intuitive



Mr. Sample's score on the Detection scale is **low**. He should seem:

- Unperceptive of social cues
- Indifferent to social etiquette
- Unaware of when to speak and when to remain quiet
- Unskilled at reading others
- Unaware of others' body language

Potential pros and cons of Mr. Sample's score as it relates to leadership, teamwork, and employability:

	Leadership	Teamwork	Employability
Pros	Focuses on transactional relationships with subordinates; unlikely to spend much time evaluating their needs or moods	Capacity to remain focused on tasks and avoid wasting time on team politics	Has difficulty understanding the needs of colleagues or bosses which may encourage him to seek clarification
Cons	Has difficulty identifying and understanding subordinates' needs	Likely to misjudge the needs, skills, and limitations of team members	May have difficulty understanding what bosses want, even when they state it clearly

Things to discuss with Mr. Sample:

- How do you attempt to better understand others' emotions or behaviors?
- How much time do you spend trying to evaluate others' thoughts or emotions?
- Can you think of a work situation in which you benefited from accurately interpreting colleagues' or bosses' behaviors?
- What are the most challenging aspects of trying to understand what other people think or feel?

APPENDIX A: Sample Hogan EQ Report (continued)

HOGAN

Regulation

The degree to which a person seems able to maintain positive emotional states

Low scorers tend to be:
Pessimistic
Defensive
Temperamental

High scorers tend to be:
Optimistic
Cool-headed
Even-tempered

Mr. Sample's score on the Regulation scale is **high**. He should seem:

- Handles pressure without becoming upset, moody, or anxious
- Cool-headed and calm, even under stress
- Keeps emotions under control, even in challenging situations
- Patient with colleagues, subordinates, and managers, even when they make mistakes or act unfairly
- Remains resilient, even in the face of adversity

Potential pros and cons of Mr. Sample's score as it relates to leadership, teamwork, and employability:

	Leadership	Teamwork	Employability
Pros	Acts as calming influence on subordinates during stressful times	Avoids arguments and conflicts with other team members	Rewarding to deal with, dependable, and easy to manage
Cons	May not empathize with anxious or insecure subordinates	May appear to lack passion or motivation	Unresponsive to coaching because he is too content with himself

Things to discuss with Mr. Sample:

- How often do you make emotional decisions?
- Do work colleagues and bosses find you unpredictable?
- In what ways could you improve your emotional response to others?
- Do you adjust your behavior or emotions around others?

APPENDIX A: Sample Hogan EQ Report (continued)

HOGAN

Influence

The degree to which a person seems able to intentionally affect others' moods, thoughts, and behaviors

Low scorers tend to be:
Non-charismatic
Unable to influence
Reserved

High scorers tend to be:
Charming
Persuasive
Enthusiastic networkers

Mr. Sample's score on the Influence scale is **above average**. He should seem:

- Makes favorable impressions on most people
- Usually able to instill trust and confidence in others
- Willing to learn social cues to better influence people
- Pleasant and easygoing
- Fairly friendly and charming to others

Potential pros and cons of Mr. Sample's score as it relates to leadership, teamwork, and employability:

	Leadership	Teamwork	Employability
Pros	Often persuades and changes subordinates' feelings, thoughts, and behaviors	Is often able to persuade and convince team members	Uses self-promotion effectively for own career progression
Cons	May use charisma to advance own popularity at times	May use persuasion techniques on team members for own benefit	Tends to rely too much on self-promotion tactics

Things to discuss with Mr. Sample:

- How easy is it for you to convince others of your ideas and opinions?
- Do you often dominate group discussions when you are in a team setting?
- How important is for you to alter others' behaviors or opinions?
- In what ways can you improve your ability to influence others?

APPENDIX A: Sample Hogan EQ Report (continued)

HOGAN

Expression

The degree to which a person seems able to effectively communicate desired emotional states to others

Low scorers tend to be:
Emotionally volatile
Indifferent communicators
Emotionally restrained

High scorers tend to be:
Able to appropriately display emotions
Engaged communicators
Emotionally expressive

Mr. Sample's score on the Expression scale is **below average**. He should seem:

- Often unenthusiastic about positive work events
- Unlikely to display compassion or warmth when necessary
- Slightly unmotivated and somewhat unenergetic
- Dispassionate and somewhat lethargic
- Occasionally unable to hide negative emotions

Potential pros and cons of Mr. Sample's score as it relates to leadership, teamwork, and employability:

	Leadership	Teamwork	Employability
Pros	Objectively communicates messages to subordinates	Communicates fairly well with team members over short periods of time	Employers may be unable to read his true intentions
Cons	At times, subordinates may perceive a lack of emotion in his communication style	Often unable to communicate important emotions when team politics are involved	Colleagues may misinterpret his feelings

Things to discuss with Mr. Sample:

- How easy is it for others to understand what you feel?
- How often do you allow your emotions to be visible to others?
- Do you adjust your emotions depending on whom you are with?
- In what ways could you better convey your emotions to others?

APPENDIX A: Sample Hogan EQ Report (continued)

HOGAN

Empathy

The degree to which a person seems able to feel what others are feeling

Low scorers tend to be:
Unconcerned with others' feelings
Blunt and direct
Indifferent to others' moods

High scorers tend to be:
Attuned to others' feelings
Tactful
Responsive to others' moods

Mr. Sample's score on the Empathy scale is **below average**. He should seem:

- Largely indifferent to others' emotions
- Uninterested in others' needs
- Occasionally selfish and rarely supportive of others
- Unlikely to calm others
- More individualistic than a team player

Potential pros and cons of Mr. Sample's score as it relates to leadership, teamwork, and employability:

	Leadership	Teamwork	Employability
Pros	Makes objective decisions that may be unpopular	Rarely unduly influenced by other team members	Strikes a good balance between showing interest in others while pursuing own interests
Cons	At times can be insensitive to subordinates' problems or not attuned to their needs	At times may prioritize own interests over those of the team	May be seen as self-centered and unapproachable by colleagues and managers

Things to discuss with Mr. Sample:

- When were you last deeply affected by someone else's sadness?
- How often do the feelings or moods of others influence you?
- How important is it for you to put yourself in other people's shoes?
- Do others see you as caring and altruistic?

APPENDIX B: Norms for the Total Sample

Hogan EQ Report Norms

Raw	Awareness	Detection	Regulation	Influence	Expressivity	Empathy
0	0	0	0	0	0	0
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	1	0	0	0
11	0	0	1	0	0	1
12	0	0	1	0	0	1
13	0	0	2	0	0	2
14	0	1	2	1	0	2
15	0	1	3	1	0	3
16	0	2	4	2	0	4
17	0	3	5	2	1	6
18	1	5	7	3	1	7
19	1	9	8	4	2	10
20	2	13	10	6	3	12
21	3	20	13	8	5	15
22	4	29	15	10	8	19
23	6	39	18	13	11	23
24	8	50	21	17	17	28
25	12	62	25	21	23	34
26	17	73	30	26	32	42
27	23	83	35	32	41	50
28	32	90	41	39	52	60
29	42	94	48	47	63	70
30	53	97	55	55	73	80
31	64	99	62	63	82	88
32	75	100	70	71	89	94
33	84	100	79	80	94	97
34	91	100	87	87	97	99
35	96	100	93	93	99	100
36	98	100	96	97	100	100
37	99	100	99	99	100	100
38	100	100	100	100	100	100
39	100	100	100	100	100	100
40	100	100	100	100	100	100

Note. N = 66,950.