



Hogan Personality Inventory Manual



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Chapter 1

Conceptual Background

Introduction

The Hogan Personality Inventory (HPI) is a measure of normal personality. It is designed primarily for use in personnel selection, individualized assessment, and career-related decision making. It provides detailed information regarding what we call the "bright side" of personality characteristics that appear in social interaction and that facilitate or inhibit a person's ability to get along with others and to achieve his or her educational and occupational goals. Chapter Four contains information regarding how to use the HPI for individualized assessment and Chapter Three presents data regarding the validity of the HPI for these purposes.

The HPI can also be used as a research instrument. Many research projects begin with the question, "What is the relationship between personality and X?", where X is leadership, creativity, integrity, academic performance, recidivism on parole, sales productivity, or some other performance outcome. If it is possible to develop a reliable quantitative index of individual differences in performance, then, in our experience, the HPI will usually predict it. More specifically, the parts of the HPI that are conceptually related to the performance variable will predict it. Chapter Six provides a guide for doing research with the HPI.

What to Measure

All personality assessment begins with the question, "What should we measure?" Historically this question was answered by practical concerns or by the test author's personal interests. Practical concerns led to the development of the Woodworth Personal Data Sheet, the prototype of psychiatric screening devices. The Woodworth PDS, like its modern successors, e.g., the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943) was used to identify soldiers who might break down under the stress of combat. On the other hand, personal interests led to the development of such widely used measures as the Locus of Control Scale (Rotter, 1966), the F Scale (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950), the Self-Monitoring Scale (Snyder, 1974), and many other less well-known scales and measures that appear in the research literature.

Sometimes the question "What should we measure?" is answered in a more theory-driven way. Projective tests such as the Thematic Apperception Test (TAT; Morgan & Murray, 1935) were developed to assess unconscious memories, desires, or complexes that, it is assumed, a person might be reluctant or unable consciously to reveal. The objective, multidimensional personality inventories developed in the 1940s and 1950s (e.g., the Sixteen Personality Factor Questionnaire and the Guilford-Zimmerman Temperament Survey) were designed to measure traits. Traits are hypothetical neuropsychic structures

that are believed to underlie individual differences in social behavior. These hypothetical psychic structures or traits are assumed to be somehow projected into a person's answers to questionnaire items.

We don't believe that theories about hypothetical psychic structures are the proper foundation for an assessment system. One of the oldest problems in philosophy concerns how to verify claims about the contents of other peoples minds, and the problem has not been solved. Consequently, psychologists know little in a scientific way about the nature of the psychic structures that guide behavior although it is an endlessly fascinating topic on which to speculate. We have our own ideas about psychic structures, but we didn't use them to decide what to measure. If we don't start with speculations about psychic structures, where then should we start? The next section presents one answer.

The Five Factor Model

The development of the Five Factor Model (FFM) (cf. Digman, 1990; Goldberg, 1992; John, 1990, p. 72; McCrae & Costa, 1987), based on 50 years of factor analytic research on the structure of peer ratings (cf. Thurstone, 1934; Tupes & Christal, 1961; Norman, 1963), suggests that we think about and describe one another in terms of five broad themes (see Table 1.1).

The FFM is a useful starting point for inventory construction. It is useful not because it reflects underlying psychic truth, but because it is a systematic method for classifying individual differences in social behavior. In fact, the evidence suggests that all existing

*Table 1.1
Components of the Five Factor Model*

Factor	Definition	ACL Marker Items (a)
I. Surgency	The degree to which a person needs	Quiet, Reserved, Shy vs. Talkative,
II. Agreeableness	The degree to which a person needs pleasant and harmonious relations with	Fault finding, Cold, Unfriendly vs.
III. Conscientiousness	The degree to which a person is willing to comply with conventional rules,	Careless, Disorderly, Frivolous vs. Organized,
IV. Emotional Stability	The degree to which a person experiences the world as threatening	Tense, Anxious, Nervous vs. Stable,
V. Intellect / Openness to Experience	The degree to which a person needs intellectual stimulation,	Commonplace, Narrow interest, Simple vs. Wide interest, Imaginative, Intelligent

(a) The objectives listed here were taken from John's (1990, Table 3.2) listing of factor loadings for selected

multidimensional personality inventories can be described, with little difficulty, in terms of these five dimensions (Wiggins & Pincus, 1992). Consequently, the FFM has become, in a sense, the paradigm for modern research in personality assessment.

Although the FFM is a logical starting point for inventory construction, the model also has some important limitations. For example, some significant dimensions of personality, i.e., masculinity-femininity are not included in the FFM (e.g., Hough, 1992; Kamp & Hough, 1986). In addition, the FFM concerns the structure of observer ratings; the structure of self ratings is necessarily more complex (J. Hogan & R. Hogan, 1991). Moreover, modern research on social cognition suggests that when we first meet another person, we automatically categorize that person in terms of his or her gender, age, ethnicity, and status. It is only after we know the person somewhat better, i.e., after talking for a minute or two that we begin to make the distinctions implied by the FFM. Finally, although people can describe themselves in terms of the FFM, they probably don't normally think of themselves in these terms. Rather, they tend to think about themselves in terms of their values, goals, aspirations, and fears.

The FFM is based on observers descriptions of others. In a real sense, therefore, the FFM concerns the structure of reputation because a reputation is based on social consensus regarding trends in a person's behavior. The concept of reputation has a bad reputation in personality psychology, due in part to Allport's (1961) view that reputations are a superficial phenomenon. We disagree. A person's reputation, as Shakespeare observed, is a person's most important possession. And it is a rich source of data. Reputations are publicly visible, they can be reliably assessed, they tell us about observable tendencies in the behavior of others, and they can be used to forecast future behavior (cf. Emler, 1990). Reputations are an invaluable source of information about another person's strengths and shortcomings, and reputations control the direction of careers.

What is it that creates a person's reputation? Behavior during social interaction. Of what does that behavior consist? It consists at least in part of actions designed to establish, defend, or enhance that person's identity (cf. Goffman, 1958). In our view, therefore, personality assessment measures or samples self-presentational behavior. An assessment device allows us to aggregate these behavior samples, to assign them numbers according to certain agreed-upon rules, and then to use these numbers or scores to make predictions about a person's future behavior.

How to Measure Personality

The word personality has two meanings (MacKinnon, 1944). On the one hand, it refers to structures inside a person that are known primarily by that person and only inferred by others; this is personality from the perspective of the actor. On the other hand, personality refers to the distinctive impression that a person makes on others; this is personality from the perspective of the observer. Personality from the observer's perspective is essentially the same as a person's reputation.

In order to measure personality, it is helpful to focus on those aspects that are observable so that our measurement claims can be verified by others. The most observable part of personality is that which is known by others, i.e., a person's reputation. As noted above, everyone's reputation can be described in terms of five dimensions that range from:

1. nervous and moody to calm and assured.
2. quiet and unassertive to active and outgoing.
3. impulsive and careless to conscientious and conforming.
4. hard nosed and tough to tactful and sensitive.
5. narrow and unimaginative to curious and imaginative.

One answer to the question, How to measure personality? is to measure the major components of reputation.

How to Build a Scale

Once we have decided on the aspects of personality that we want to assess, we can begin building the scales for our assessment device. Starting with a particular theme or concept, for example, Sociability, we ask what sorts of things might a person say or do so as to create the impression that he or she is either shy (the low end of Sociability) or extraverted (the high end). Then we write an item that reflects this judgment: "I hate speaking in front of a group" might be a shyness item; "I enjoy meeting new people" might be an extraversion item.

After we have written several items reflecting a common theme, we must then evaluate the degree to which this set of items forms a coherent statistical cluster and evaluate the degree to which scores based on this cluster predict reputation. This process is, in a sense, never finished. The personality inventory described in this manual is the product of over 15 years of more or less constant revision.

Item Response Dynamics

What happens when a person responds to an item on a personality inventory? Many people seem to believe that a person reads the item (I enjoy meeting new people), searches his or her memory for occasions that match the content of the item (i.e., a time when he or she met new people), compares the content of the item with his or her memory (i.e., was it fun?), then reports the results of the comparison either by endorsing or not endorsing the item. This view of how people respond to items has led psychologists to call personality inventories self-report measures.

We disagree with this view of how people respond to items for two reasons. First, it is based on an outdated model of how memory works. Memory is not like a stored video tape that we retrieve and review; rather, research says we construct our memories (cf. Bartlett, 1932) and the factors that shape the construction of memories including mood, circumstances, and experience are themselves part of personality.

Second, we believe that completing a personality inventory more closely resembles being interviewed by an anonymous person from whom we receive no feedback. The processes that shape responses to inventory items are the same as the processes that shape answers to questions during an interview. Thus, item responses are more like self-presentations than self-reports. People think about the question, they think about the kind of image that would be conveyed by a positive or negative response to the item, they think about what kind of an image they want to convey before this anonymous audience, then they endorse the item so as to convey that image. The process is, of course, much faster and less self-conscious

than we have just described in the same way that answers to interview questions are formed quickly and without a great deal of conscious planning. The reason the process is fast and relatively unselfconscious is because self-presentation in adulthood is well practiced and nearly automatic.

This view of item response dynamics makes moot the issue of faking responses on a personality inventory. Recall that the goal in assessment is not to measure a person's true self which he or she may sometimes refuse (or be unable) to disclose. Rather the goal is to sample a person's typical self-presentational style. Some people tend to present themselves in ways that deny the less attractive aspects of human nature which they necessarily share. Their overly conforming and unrealistically kind and cheerful style will cause them to answer true to such items as : "I have never hated anyone. Such persons will get elevated scores on special scales designed to detect faking. But such persons are not faking; rather, their excessively virtuous answers are part of their characteristic interpersonal style (see Chapter Four). From our perspective, any systematic pattern of responding is interpretable.

Socioanalytic Theory

The HPI was developed in the context of Socioanalytic theory (R. Hogan, 1983, 1986). Socioanalytic theory assumes that people are motivated in a deep biological sense to engage in social interaction. More specifically, people's social behavior is regulated by two broad and usually unconscious motives. The first motive impels us to seek the acceptance and recognition of our peers and to try to avoid their criticism and rejection. The second motive impels us to seek status and power relative to our peers and to try to avoid losing status and control. In this view, getting along with, and getting ahead of others become dominant themes in social life.

Over time people develop identities; identities are idealized self-images (e.g., athlete, scholar, lover, person of integrity), and these self-images tend to guide behavior during social interaction. People also develop repertoires of self-presentational behavior which they use to tell others about these idealized self-images. Identities and self-presentational behaviors are the basis on which social acceptance and status are awarded or withdrawn. That is to say, in the context of social interaction, others observe us; the amount of acceptance and respect that they give us depends on their reactions to us. And what are they reacting to? They are reacting to our behavior which, as we have suggested, consists in part of self-presentations guided by underlying, idealized self-images. Finally, in adults these processes are nearly automatic and go on outside of awareness. Consequently, personal development depends on: (a) becoming aware of how others are reacting to us; and (b) modifying what we do that may cause undesirable reactions.

The Inevitability of the Five Factor Model

Wiggins (1979) proposes that social interaction involves giving and withholding acceptance and status. Reputations are a rough index of the amount of acceptance and respect that a person has been given by his or her community. Because reputations are encoded in terms of the FFM, it follows that the FFM also concerns evaluations of acceptance and status.

More specifically, Socioanalytic theory suggests that people are predisposed to evaluate others in terms of the degree to which they will be an asset or a liability to their families or social groups. Again, the dimensions of the FFM concern individual differences in social

More specifically, Socioanalytic theory suggests that people are predisposed to evaluate others in terms of the degree to which they will be an asset or a liability to their families or social groups. Again, the dimensions of the FFM concern individual differences in social acceptance and status which are to some degree based on the contribution that a person tends to make to the operation of his or her social and occupational groups. In the context of human evolution, individual differences in these dimensions had implications for personal survival. In modern industrial society, individual differences in these dimensions are related to family and career success.

A Viewpoint on Measurement

Modern discussions of the FFM often concern the precise definition of the different dimensions. These discussions often have little to do with the primary goal of personality assessment. Concerning this goal, we would like to make five points.

First, assessment has a practical job to do; its job is to predict non-test behavior. Therefore, the primary criterion for evaluating an assessment device is the degree to which it predicts a range of significant non-test behaviors.

Second, personality assessment does not measure dimensions that exist inside people. Personality assessment samples characteristic features of a person's interpersonal style. When people respond to items on a personality inventory, they are essentially responding to questions from an anonymous interviewer. Consequently, answers to inventory items are self-presentations not self-reports.

Third, the scoring key for a scale on an inventory allows us to identify common themes in a set of items across respondents. For example, assume that a group of persons answer, in the same way, a set of items concerning being submissive. We then discover that their peers describe these people as wimpy, anxious, and indecisive. This does not mean that we have measured a trait for submissiveness; rather it means that we have developed a statistical procedure for identifying people who will be described by their peers as abject and unassertive.

Fourth, personality measurement is formally identical to measurement in petroleum geology: we know that certain critical signs covary with the presence or absence of certain desired characteristics or a behavioral tendency. The signs are assessed at a great distance from the researcher under the ground or inside the mind of another person. The presence of the critical signs means that there is some probability but no certainty that the desired characteristics will be present. In both kinds of measurement, the likelihood of misdiagnosis is always present.

Finally, the fact that a person gets a high score on a measure of, for example, submissiveness means that there is some possibility that a person's peers will describe him or her as timid and unassertive. It does not tell us why the person behaves so as to make others describe him or her as timid. The reason for the person's timidity must be determined by additional, idiographic research. But one should do that research only if scores on the scale are significantly associated with peer descriptions for submissiveness which brings us back to our first point.

Traditional Objections to Personality Assessment

Response Sets

Perhaps the most frequent criticism of personality measures in applied settings is that they are easily faked, that test takers can (and may in fact) substantially alter and improve their scores on such measures. There are three points to be made with regard to this criticism. First, the self-enhancing tendencies that operate when a person responds to a personality inventory also operate during a job interview or when responding to a biographical questionnaire. The second point is that, although self-enhancing tendencies may operate when a person responds to a personality inventory, it is an empirical question as to whether they do in fact operate. As always, it is important to distinguish between logical and empirical questions; self-enhancement is a logical possibility but is it an empirical fact? Third, even if a person engages in self-enhancement, is that an undesirable quality in an employee, coworker, or friend?

In our view, during interaction people try consciously or nonconsciously to tell others how they want to be regarded. In ordinary interaction, people usually try to claim the best possible identities for themselves, i.e., under normal circumstances most people are seriously, but usually nonconsciously, engaged in self-enhancement and individual differences in the ability to do this are related to social competence. Consequently, the ability to raise one's scores on the HPI should be an index of social skill, given that most people are already operating at or near the top of their capacities.

The faking issue has been evaluated empirically, and three findings consistently emerge. First, when instructed, some people can indeed alter their scores on personality measures. Again, however, the ability to raise one's scores on a measure of normal personality is a function of social competence; an improved score is valuable information in itself because a basic goal of personality assessment is to evaluate skill and effectiveness (cf. Canter, 1963; Dicken, 1959,1960; Grayson & Olinger, 1958). Second, the base rate of faking during the job application process is virtually nonexistent. This means that the frequency of faking in the actual employment process is rare and infrequent (Dunnette, McCartney, Carlson, & Kirchner, 1962; Hough, Barge, Houston, McGue, & Kamp, 1985). Moreover, even when faking is evident, it changes criterion-related validities only slightly (Hough, Eaton, Dunnette, Kamp, & McCloy, 1990). Finally as seen in Chapter Six, the HPI is demonstrably valid for personnel selection purposes in spite of any faking that may have occurred.

For those who remain convinced that social desirability is a problem, the HPI includes a HIC that detects socially desirable responding. The Virtuous HIC on the prudence scale detects attempts to present oneself in an overly favorable light and cautions the interpreter when response distortion appears to have occurred.

Response Styles

Cronbach (1955) distinguishes between response styles and response sets. Faking, or socially desirable responding is a response set; socially desirable responses are strategically designed to project a certain impression. Response styles, on the other hand, are merely general patterns of responding without regard to item content; they are nonstrategic.

The two most widely studied response styles are yea-saying and nay-saying, but random or careless responding can also be a problem in personality measurement. The seriousness of the problem of response styles has been a subject of debate for some time (Edwards, 1970; Jackson, 1967; Rorer, 1965), and remains unsettled. However, the Validity scale of the HPI will detect yea-saying, nay-saying, and random responding. When the Validity score does not reach a minimum level compared with random protocols, a person's scores are considered invalid (see Chapter Four for more information).

Summary

The HPI is based on Socioanalytic theory. The theory postulates two universal human motives (needs for social acceptance and status), distinguishes between the actor's view and the observer's view of personality, and suggests that, because we only see an actor's behavior, our measurement efforts should focus on reputation. Modern research indicates that reputations can be described in terms of about five broad dimensions. When people respond to items on a personality inventory, they provide self-presentations rather than self-reports. Self-presentations produce or cause reputations. Scoring keys allow us to aggregate aspects of self-presentations that are associated with dimensions of reputations. Profiles on well developed inventories of personality tell us about a person's reputation; the profiles do not tell us what the person is like way down deep. These profiles can be used to evaluate the manner in which a person is perceived by others. How a person is perceived has important consequences for his or her social acceptance and career success.

Chapter 2

Inventory Construction

Early Development

The original model for the HPI is the California Psychological Inventory (CPI; Gough, 1975). We worked with the CPI for over 25 years because we agree with its measurement goals. In brief, the CPI is designed to assess folk concepts aspects of social behavior that are cross-culturally significant and that non-psychologists intuitively understand. In addition, the CPI is not designed to measure traits. The most important feature of the CPI we believe, is that it is designed to predict important social outcomes; consequently, in the development of the CPI (and in the development of the HPI), formal psychometric considerations were used to facilitate prediction; they were not ends in themselves.

The HPI began in the late 1970's as a project in a graduate class in personality assessment. As noted in Chapter One, the two fundamental questions in personality assessment concern what to measure and how to measure it. We believed the literature on the FFM provided an answer to the first question.

With regard to the second question, we believed that Hase and Goldberg (1967) were correct when they argued that there is little to choose among the various methods of scale construction as long as the end product is evaluated in terms of empirical validity.

We suggested to our graduate class that, if the FFM is correct, and if the Hase and Goldberg argument is correct, then we have solid guidelines for constructing an inventory of normal personality that is, we know what to measure and how to measure it. As for the test items themselves, Socioanalytic theory provided a guide for item writing: taking each of the major dimensions of reputation in turn, one should ask what sorts of self-presentational behaviors might lead to high or low standing on that dimension as evaluated by others. Consider Factor V of the FFM Intellect/Openness to Experience. Persons with high scores on this factor seem bright, sophisticated, and aesthetically oriented. This suggests that an Intellect scale should contain items about the degree to which a person enjoys chess, opera, and trendy cuisine.

From a Socioanalytic perspective, we wrote items to reflect the standard FFM dimensions (cf. Goldberg, 1992) using the foregoing algorithm. In the process we made three discoveries. First, the standard FFM dimension called Surgency has two components that are conceptually unrelated. One component is Sociability, which concerns impulsivity and the need for social interaction—or a lack of shyness. The other component is Ambition, which concerns a desire for status, power, recognition, and achievement. Clearly there are shy people who are ambitious—Richard Nixon—and sociable people who are lazy—Falstaff. Second, we found that the FFM dimension called Intellect/Openness to Experience has two components; one component concerns an interest in culture and

ideas, and the other concerns academic performance. Our third discovery was that each of the primary scales breaks down into a group of related subthemes. For example, the Adjustment scale contains themes about anxiety, guilt, somatic complaints, moodiness, and irritability. Because the items in these subthemes clustered together, we called them Homogenous Item Composites (Zonderman, 1980) or HICs.

We wrote items for HICs within each dimension, and pilot tested them using undergraduate samples. We retained items that correlated highly with the other items on a HIC and discarded items that did not. We continued this process until we arrived at a reasonably coherent set of 45 HICs containing 420 items distributed across six scales.

Between 1979 and 1984 we tested over 1700 people, including students, hospital workers, U. S. Navy enlisted personnel, clerical workers, truck drivers, sales representatives, police officers, hourly and professional staff in a large insurance corporation, school administrators, and incarcerated felons. The ages in these samples ranged from 18 to 60. There were 470 women and 1159 men, 726 whites and 232 blacks. Some demographic data were missing. About 20% of the sample was college educated.

Later Development

In the spring of 1984, with the assistance of Stephen R. Briggs, we carefully refined the internal consistency of each HIC. In the process, we shortened the inventory to 225 items on 43 HICs; we retained 85 unscored items for research purposes, so that the HPI test booklet contained 310 items.

Between 1984 and 1992 we tested over 11,000 people, primarily employed adults in organizations around the country. In this sample, the ages ranged from 18 to 67 years. There were 7061 men and 3465 women, 5610 Whites, 1036 Blacks, 348 Hispanics, 231 Asians, and 253 Native Americans. Some demographic data were missing. About 20% of this sample was college educated. We conducted over 50 validity studies in various organizations and we gathered matched sets of data with other tests, inventories, and observer descriptions.

In 1990 we developed a scale called Unlikely Virtues; this scale was designed to identify persons who try to create an excessively favorable impression on the HPI by manipulating their responses. After working with this scale for two years, we decided to delete it; three reasons prompted this decision. First, the scale rarely disqualified a profile because the base rate for faking in the general population is low. Second, in those cases where a score on Unlikely Virtues raised a question about faking, the respondent was found to be the kind of person who in fact would get a high score on Unlikely Virtues—he or she was cautious, conforming, and moralistic. Finally, our clients—the persons in organizations who use the test to make personnel decisions—never understood the point of the scale. As a result, it created more problems in individualized assessment than it solved. The core of the Unlikely Virtues scale now appears on the Prudence scale in the form of a HIC called Virtuous.

In the spring of 1992, using all our archival data, we conducted a number of factor analyses of the HIC correlation matrix; we concluded that there are about eight factors underlying the matrix (see Table 2.1). These eight factors formed the basis of the present HPI scales. A few HICs had substantial loadings on two factors; we used this information to balance the

Table 2.1
Varimax Rotated Factor Matrix for HPI HICs

Scales HICs	I	II	III	IV	Factor V	VI	VII
Adjustment							
Empathy	.72						
Not Anxious	.71						
No Guilt	.66						
Calmness	.64						
Even Tempered	.63						
No Somatic	.51						
Complaints	.46						
Trusting	.44						
Good Attachment							
Ambition							
Competitive		.68					
Self Confidence		.60					
No Depression		.54					
Leadership		.52					
Identity		.49					
No Social Anxiety	.43	.42					
Sociability							
Likes Parties			.75				
Likes Crowds			.75				
Experience Seeking			.47				
Exhibitionistic			.38				
Entertaining			.31				
Likeability							
Easy to Live With				.66			
Sensitive				.62			
Caring				.59			
Likes People			.47	.43			
No Hostility	.55			.36			
Prudence							
Moralistic					.75		
Mastery					.67		
Virtuous					.54		
Not Autonomous					.71*		
Not Spontaneous					.61*		
Impulse Control					.41*		
Avoids Trouble					.36*		
Intellectance							
Science Ability						.70	
Curiosity						.68	
Thrill Seeking						.62	
Intellectual Games						.33	.37
Generates Ideas						.27	
Culture						.22	
School Success							
Education							.74
Math Ability							.67
Good Memory							.67
Reading							.31

* primary loading on factor 9

number of items on each scale, i.e., if a HIC had nearly the same loading on two factors, and one scale was defined by fewer HICs than the other, we assigned the HIC to the smaller factor so as to balance the scale length.

The 1992 HPI (revised edition) contains seven primary scales and a validity scale. These scales contain a total of 206 items arranged in 41 HICs. No items overlap on HICs and no HICs overlap on scales. The remainder of this chapter contains technical information regarding the HPI HICs and primary scales.

Definitions of the Scales

The seven primary scales of the inventory are:

Adjustment, which measures the degree to which a person appears calm and self-accepting or, conversely, self-critical and tense.

Ambition, which measures the degree to which a person seems socially self-confident, leaderlike, competitive, and energetic.

Sociability, which measures the degree to which a person seems to need and/or enjoy interacting with others.

Likeability, which measures the degree to which a person is seen as perceptive, tactful, and socially sensitive.

Prudence, which measures the degree to which a person seems conscientious, conforming, and dependable.

Intellectance, which measures the degree to which a person is perceived as bright, creative, and interested in intellectual matters.

School Success, which measures the degree to which a person seems to enjoy academic activities and to value educational achievement for its own sake.

In addition to the seven primary scales, the inventory contains a validity key. This scale, consisting of 14 items, is designed to detect careless or random responding. The scale was constructed rationally using items endorsed consistently “yes” or “no” by respondents ($n = 1,700$). For each Validity item, 99% of the research sample answered the same way. Therefore, an incorrect response to one of these items is an infrequent occurrence; an incorrect response to three of these items would place a person in the 4th percentile of our normative sample ($N = 11,262$). Over two-thirds (69%) of the research sample ($N = 11,262$) obtained a perfect score on this scale.

There is no item overlap among the primary scales and the validity scale. Items were screened repeatedly for content that might seem offensive or to invade privacy. There are no items concerning sexual preference, religious beliefs, criminal offenses, drug and alcohol incidents, or racial/ethnic attitudes. Finally, there are no items concerning physical or mental disabilities.

Readability statistics conducted on the 206 items indicated an average sentence length of 7.5 words, an average word length of 3.94 letters, and an average of 1.37 syllables per word. The Flesch-Kincaid reading level analysis shows that the inventory is written at the fourth grade level.

Composition of the Personality Scales

The analyses that led to these seven scales proceeded in several steps. First, we intercorrelated the scores on the original 43 HICs plus 8 experimental HICs using a sample of 2500 employed adults. We chose the number of components to be extracted from the matrix based on the size of the eigenvalues, a scree test (Cattell, 1966), and an examination of the comprehensiveness and comprehensibility of several alternative solutions. Finally, after deciding on the number of components to be extracted, we refined the components using orthogonal varimax rotation. Table 2.1 presents the results of this analysis.

The HICs with the highest loadings on factor I are Empathy and Not Anxious. These HICs reflect maturity, equanimity, and concern for others. The factor is also defined by significant loadings for No Guilt, Calmness, Even-Tempered, and No Somatic Complaints; these HICs suggest an absence of moodiness, irritability, and tendencies to worry. The moderate loadings for Trusting and Attachment expand the factor definition to include a lack of suspiciousness and positive attitudes toward authority. Overall, this factor appears to be a highly coherent syndrome of psychological maturity broadly defined. Based on this analysis alone, people with high scores on the first factor might be described by their peers as mature, self-confident, and stable. Conversely, persons with low scores might be described as anxious, insecure, moody, and hostile. We label this factor “Adjustment.”

The HICs with the highest loadings on factor II are Competitive and Confident. These reflect achievement orientation, self-assurance, and desire for success. Loadings for Not Depressed, Sense of Identity, and No Social Anxiety suggest a sense of direction and a positive interaction style. Finally, the single HIC, Leadership, adds an element of desire to direct and influence others. Overall, two themes seem implicit in this factor—ascendence and social self-confidence. Based on this analysis only, people with high scores on factor II should seem ambitious, leaderlike, forceful, and confident of their abilities. Conversely, people with low scores on this factor should seem unconcerned with personal advancement, happy to abide with the decisions of others, and uncomfortable making public presentations. We label this factor “Ambition”.

The HICs with the highest loadings on factor III are Likes Parties and Likes Crowds. These HICs reflect energy and the need for intensive social interaction. Loadings for Experience Seeking and Exhibitionistic suggest a need for stimulation and a desire to be the center of attention. Finally, the secondary loading for the Entertaining HIC reinforces the theme of wanting attention. Overall, this factor appears to combine the needs and tendencies that we associate with extraversion. Based on this analysis alone, people with high scores on the third factor might be described by their peers as sociable, energetic, and perhaps compulsively interactive. Their exhibitionism will lead them to create a vivid social impression. Conversely, people with low scores on this factor will be seen as anergic, shy, and reserved. We label this factor “Sociability”.

Table 2.2
HPI Scale and HIC Definitions and Sample Items

Adjustment	Measures the degree to which a person appears calm and self-accepting or conversely, self-critical, and overly self-reflective.	
HIC	Definition	Sample Item
Empathy Not Anxious No Guilt Calmness Even Tempered No Somatic Complaints Trusting Good Attachment	Emotional identification with others Absence of anxiety Absence of regret Lack of emotionality Not moody or irritable Lack of health concerns Not paranoid or suspicious Good relations with one's parents	I would rather not criticize people, even when they need it. I am seldom tense or anxious. I rarely feel guilty about some of the things I have done. I keep calm in a crisis. I rarely lose my temper. I almost always feel good. People really care about one another. No matter what happened I felt my parents loved me.
Ambition	Measures the degree to which a person is socially self-confident, leaderlike, competitive, and energetic.	
HIC	Definition	Sample Item
Competitive Self Confidence No Depression Leadership Identity No Social Anxiety	Being competitive, ambitious and persistent. Confidence in oneself Feelings of contentment Capacity for leadership Satisfaction with one's life tasks Social self confidence	I am an ambitious person. I am a very self-confident person. I am a happy person. In a group I like to take charge of things I know what I want to be. I don't mind talking in front of a group of people.
Sociability	Measures the degree to which a person seems to need and/or enjoy interactions with others.	
HIC	Definition	Sample Items
Likes Parties Likes crowds Experience Seeking Exhibitionistic Entertaining	Enjoys parties Finds large crowds exciting Preference for variety and challenge Exhibitionistic tendencies Being witty and entertaining	I would go to a party every night if I could. Being part of a large crowd is exciting. I like a lot of variety in my life. I like to be the center of attention. I am often the life of the party.
Likeability	Measures the degree to which a person is seen as perceptive, tactful, and socially sensitive.	
HIC	Definition	Sample Items
Easy to Live With Sensitive Caring Likes People No Hostility	Tolerant and easy going nature Tends to be kind and considerate Interpersonal sensitivity Enjoys social interaction Lack of Hostility	I work well with other people. I always try to see the other person's point of view. I am sensitive to other people's moods. I enjoy just being with other people. I would rather not criticize people, even when they need it.

The HICs with the highest loadings on factor IV are Easy-to-Live-With, Sensitive, and Caring. These HICs reflect themes of kindness, tactfulness, and interpersonal sensitivity. The HICs, Likes People and No Hostility, which have secondary loadings on this fac

Prudence	Measures the degree to which a person is conscientious, conforming, and dependable.	
HIC	Definition	Sample Item
Moralistic	Adhering strictly to conventional values	I always practice what I preach.
Mastery	Being hard working	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 probity	When I was in school I rarely gave the teachers any trouble.
Intellectance	Measures the degree to which a person is perceived as bright, creative, and interested in intellectual matters.	
HIC	Definition	Sample Item
Science	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 care driver.
Intellectual Games	Enjoys intellectual games	I enjoy solving riddles.
Generates Ideas	Ideational fluency	I am a quick-witted person.
Culture	Interest in culture	I like classical music.
School Success	Measures the degree to which a person seems to enjoy academic activities and values educational achievement for its own sake.	
HIC	Definition	Sample Item
Good Memory	Having a good memory.	I have a large vocabulary.
Education	Being a good student.	As a child, school was easy for me.
Math Ability	Being good with numbers.	I can multiply large numbers quickly.
Reading	Enjoys reading.	I would rather read than watch TV.

tor, extend the factor definition to include warmth and congeniality. Overall, this factor seems be a coherent syndrome involving agreeableness. Based on this analysis only, people with high scores on the fourth factor will be seen by their peers as easy going and concerned about the feelings of others. Conversely people with low scores will be seen as interpersonally insensitive, abrasive, and hostile. We label this factor "Likeability".

The HIC with the highest loading on factor V is Moralistic. This HIC reflects self-righteousness, rigidity, and prissiness. Moderate loadings for the Mastery and Virtuous HICs suggest a cautious concern for social appropriateness and traditional values. When these themes are combined with the four HICs with primary loadings on factor IX—Not Autonomous, Not Spontaneous, Impulse Control, and Avoids Trouble—the themes of conformity, self-control, and responsiveness to authority emerge. Overall, this factor appears to be a two-dimensional syndrome: one dimension involves conscientiousness, conventional values, and a degree of self-righteousness; the other dimension involves caution, control, and conformity. Based on this analysis only, persons with high scores on this

factor should be described as rule abiding and virtuous. Conversely, persons with low scores on this combined factor should be described as impulsive and non-conforming. We label this factor “Prudence”.

The 1986 version of the HPI contained a scale labelled Intellectance, and it included themes of cultural interests and educational achievement. However, the results of the analysis presented in Table 2.1 indicate that the original Intellectance factor is somewhat complex and probably contains at least two dimensions. The HICs with the highest loadings on factor VI are Science Ability and Curiosity. These HICs concern interest in how the world works. The moderate loading for Thrill Seeking reflects a desire for challenge, stimulation, and excitement. The modest loading for Intellectual Games along with secondary loadings for Generates Ideas and Culture suggest interest in intellectual matters. Overall, this factor appears to concern intellectual curiosity. Based on this analysis alone, people who have high scores on this factor should seem bright, creative, and well-educated. Conversely, people with low scores on this factor should seem conventional, unimaginative, and narrow. We label this factor “Intellectance”.

The HICs with the highest loadings on factor VII are Education and Math Ability. These HICs concern beliefs about one’s academic ability and academic achievement. The moderate loading for Good Memory further enhances the theme of academic achievement. Finally, the secondary loading for Reading adds an element of bookishness to the meaning of this factor. Overall, this factor concerns beliefs about educational performance. Based on this analysis alone, people with high scores on this factor should seem to enjoy academic pursuits and be good students. Conversely, people with low scores on this factor should seem uninterested in education. We label this factor “School Success”.

Table 2.2 presents the HPI scales, their constituent HICs, definitions of each HIC, and sample items. The largest scale is Adjustment, with 37 items distributed across 8 HICs; the smallest scale is School Success, with 14 items distributed across 4 HICs. The 7 primary scales contain a total of 41 HICs.

Table 2.3 presents the internal consistency and test-retest reliabilities for the seven primary scales and their component HICs. The internal consistency (coefficient Alpha; Cronbach, 1951) reliabilities are based on a sample of 960 employed males and females. The test-retest reliabilities are based on a sample of 150 male and female university students, tested over an interval of four weeks or more. Internal consistency reliabilities for the primary scales vary between .71 (Likeability) and .89 (Adjustment); the average Alpha is .80. Alpha reliabilities for the HICs vary between .29 (Sensitive) and .82 (Leadership). Thirty four of the 41 HICs have Alphas greater than .50. Test-retest reliabilities for the primary scales range between .74 (Prudence) and .86 (Adjustment), average $r_{tt} = .71$. Test-retest reliabilities for the HICs range between .34 (Not Autonomous) and .86 (No Somatic Complaints). Thirty-six of the 41 HICs have test-retest reliabilities above .50. These tables also include average interitem correlations and standard errors of measurement.

Table 2.4 presents the correlations among the primary scales of the HPI. As can be seen, Adjustment is correlated with all the other scales except Sociability. Ambition is moderately correlated with all the other scales. Sociability is, on the one hand, positively related to Intellectance, and, on the other hand, negatively related to Prudence. Beyond these correlations, Likeability is associated with Prudence and Intellectance is associated with School Success. Adjustment, Ambition, Prudence, and Likeability form one cluster of scales, Sociability is a second, and Intellectance and School Success form a weak third.

Table 2.3

Descriptive Statistics and Reliabilities for HPI Scales and HICs

Scale Hic	Number of Items	Mean	SD	Alpha	Inter- Item r	r _{tt}	SE
Adjustment	37	26.57	7.10	.89	.19	.86	2.62
Empathy	5	3.41	1.48	.65	.27	.70	.81
Not Anxious	4	2.29	1.47	.75	.43	.70	.80
No Guilt	6	3.98	1.72	.70	.28	.74	.87
Calmness	4	3.16	1.00	.51	.23	.66	.58
Even Tempered	5	3.78	1.31	.63	.26	.74	.67
No Somatic Complaints	5	4.43	.94	.55	.20	.86	.35
Trusting	3	2.10	.93	.47	.24	.63	.56
Good Attachment	5	3.42	1.62	.76	.39	.84	.66
Ambition	29	23.61	5.00	.86	.18	.83	2.09
Competitive	5	4.51	.87	.53	.19	.63	.53
Self Confidence	3	2.60	.82	.58	.34	.67	.47
No Depression	6	5.62	.91	.69	.27	.66	.53
Leadership	6	4.38	1.90	.82	.43	.70	1.05
Identity	3	2.38	1.01	.78	.54	.75	.51
No Social Anxiety	6	4.12	1.84	.76	.34	.81	.80
Sociability	24	13.47	4.86	.83	.17	.79	2.24
Likes Parties	5	2.40	1.28	.62	.24	.75	.65
Likes Crowds	4	2.17	1.50	.77	.46	.75	.75
Experience Seeking	6	4.30	1.51	.58	.19	.69	.84
Exhibitionistic	5	2.52	1.62	.73	.35	.70	.89
Entertaining	4	2.07	1.29	.65	.31	.71	.69
Likeability	22	19.62	2.36	.71	.12	.80	1.06
Easy To Live With	5	4.76	.62	.52	.19	.51	.44
Sensitive	4	3.53	.71	.29	.08	.65	.42
Caring	4	3.78	.52	.32	.15	.52	.36
Likes People	6	5.43	1.07	.67	.28	.82	.45
No Hostility	3	2.13	.88	.37	.17	.58	.57
Prudence	31	20.28	4.62	.78	.10	.74	2.38
Moralistic	5	2.20	1.38	.56	.20	.70	.75
Mastery	4	3.09	.98	.43	.17	.67	.56
Virtuous	5	3.43	1.13	.43	.13	.69	.63
Not Autonomous	3	2.11	1.06	.69	.44	.34	.86
Not Spontaneous	4	2.66	1.02	.41	.16	.51	.71
Impulse Control	5	2.77	1.46	.63	.25	.83	.61
Avoids Trouble	5	4.02	1.18	.56	.21	.53	.81
Intellectance	25	14.68	4.90	.78	.13	.83	2.03
Science Ability	5	3.13	1.49	.62	.25	.72	.79
Curiosity	3	2.42	.85	.61	.32	.66	.49
Thrill Seeking	5	2.49	1.73	.74	.37	.78	.82
Intellectual Games	3	1.87	1.00	.51	.25	.75	.50
Generates Ideas	5	3.27	1.44	.64	.26	.81	.62
Culture	4	1.91	1.33	.59	.26	.78	.63
School Success	14	8.66	3.14	.75	.18	.86	1.16
Education	3	2.25	.98	.65	.39	.75	.49
Math Ability	3	1.73	1.21	.76	.52	.83	.49
Good Memory	4	2.88	1.14	.54	.23	.84	.45
Reading	4	1.80	1.41	.68	.35	.82	.60
Validity	14	13.55	.80	.63	.12	.64	.48
(These HICs used in Occupational scales only)							
Self Focus	4	2.41	1.30	.64	.31	.69	.73
Impression Management	4	1.78	1.24	.53	.22	.63	.76
Appearance	4	2.40	.89	.39	.16	.59	.57

Table 2.4

HPI Scale Intercorrelations

	ADJ	AMB	SOC	LIK	PRU	INT	SCH
Adjustment	—						
Ambition	.51	—					
Sociability	-.09	.31	—				
Likeability	.47	.33	.18	—			
Prudence	.58	.28	-.28	.39	—		
Intellectance	.18	.35	.39	.18	.00	—	
School Success	.19	.29	.11	.11	.16	.33	—

Table 2.5

Raw Score Means and Standard Deviations for HPI Scales by Gender and Race

Scale	Male		Female		White		Black	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Adjustment	27.4	6.39	25.3	7.10	27.0	6.65	27.1	6.01
Ambition	24.1	4.64	22.4	5.32	23.6	5.00	24.1	4.12
Sociability	13.2	4.84	12.4	5.05	13.0	5.08	11.8	4.46
Likeability	19.3	2.50	19.7	2.35	19.5	2.49	19.4	2.20
Prudence	20.3	4.73	20.6	4.30	20.4	4.66	21.3	4.26
Intellectance	15.2	4.76	13.1	5.00	14.6	5.03	13.5	4.71
School Success	8.5	3.26	8.9	3.18	8.5	3.28	8.7	3.07
Validity	13.4	1.24	13.5	.99	13.5	1.10	13.3	1.30

N=21,613

Apart from these correlations, the scales are reasonably independent.

Table 2.5 presents means and standard deviations for each of the primary scales and the validity scale by gender and race. Normative data by scale for the total sample appear in Appendix A and normative data by scale for subgroups stratified by gender, race, and age appear in Appendix B. The striking feature of Table 2.5 is that there are no practical differences in scale scores' central tendency or variability measures by race. However, females score lower than males on Adjustment, Ambition, and Intellectance.

This chapter has described how the scales of the revision of the HPI were developed. The next chapter concerns the validity of these scales.

Chapter 3

Validity

How do we know what a test score means? We discover the meaning of a test score through the process of test validation. Evidence regarding the meaning of a scale can be developed in many ways, using a variety of methods. Historically, however, validity has been defined in terms of correlations between test scores and relevant criterion ratings. For example, we might validate the HPI Ambition scale by: (1) asking a group of people to complete the Ambition scale; (2) asking other people who know these people well, e.g., their roommates or coworkers to rate them for ambition; and (3) computing correlations between scores on the Ambition scale and peer ratings for ambition.

Correlations between scale scores and peer ratings for the same construct are important sources of validity information, but they are insufficient by themselves. For example, in the present case it turns out that people have trouble rating their peers for ambition; they seem unable to agree about what the defining behaviors are. Whatever the dimension or construct, however, there will be some kind of a problem with the rating. Actually, the problem is more general than that; whatever the criterion measure whether it is a rating or some other score there will be a question as to whether that criterion is really the right one. To answer this question, we must validate the rating data or other criterion measures that we want to use to validate our scale. And this process leads to an infinite regress as we try to validate the data that we are using to validate our scale, and so on.

The correlation between scale scores and scores on any single criterion measure is insufficient to evaluate the validity of that scale. Consequently, to understand the meaning of a test score, we must investigate as many nontest correlates of that score as we can find. Ideally, when we do this we will have a theory regarding the latent structure underlying both test scores and criterion measures (Campbell, 1990; R. Hogan & Nicholson, 1988). That is, we don't simply generate correlations between scores on a scale and scores on any quantitative index we can find. Rather, using our theory of what a scale measures, we predict what the scale is and is not related to, and then gather data to evaluate our predictions. For example, Ambition scores should be related to a person's status level in his or her occupation, but unrelated to his or her social security number. Seen in these terms, test validation is formally identical to the general process of theory construction in science (cf. R. Hogan & Nicholson, 1988).

The process that we have just described is called construct validation (Cronbach & Meehl, 1955; Loevinger, 1957). This chapter presents three types of evidence regarding the construct validity of the primary scales of the HPI: correlations with the scales of other well validated tests, correlations with peer ratings, and correlations with measures of organizational performance.

Correlations With Other Tests

Tables 3.1 through 3.9 present correlations between the HPI scales and other well known psychological measures. These tables include four categories of tests: measures of cognitive ability, motives and interests, normal personality, and dysfunctional personality.

The cognitive ability tests include the Armed Services Vocational Aptitude Battery (ASVAB; U. S. Department of Defense, 1984) and selected PSI Basic Skills Tests for Business, Industry, and Government (BST; Ruch, Weiner, McKillip, & Dye, 1985). The ASVAB is a 334-item group test of general knowledge and cognitive ability administered to all military recruits for selection and placement decisions in the armed forces. The ASVAB consists of 10 subtests from which occupational composites are computed. The samples who provided data for the ASVAB and the HPI were enlisted male and female personnel (N=359) assigned to Navy Basic Electricity and Electronic training and Army Missile Repair training. The BST consist of 20 tests of cognitive and perceptual abilities as well as typing performance. The tests are designed to assess skills and abilities important for clerical work; they are widely used because they are practical, short, and well-validated. A sample of female claims examiners (N=49) in a national health insurance company provided data for the HPI and four BSTs Reading Comprehension (#2), Computation (#4), Following Written Directions (#8), and Coding (#12).

The motives and interest inventories include the Myers-Briggs Type Indicator (MBTI; Myers & McCaulley, 1985), the Self-Directed Search (SDS; Holland, 1985b), and the Inventory of Personal Motives (IPM; R. Hogan & Jones, 1992). The MBTI is the most widely used assessment device in modern America; it is designed to assess the 16 types defined by Jungian theory (Jung, 1923). The types themselves are composed of combinations of four theoretically independent dimensions of cognitive style. A sample (N=53) of male and female psychology graduate students provided data for the HPI and the MBTI. The SDS is a self-administered vocational counseling measure used to assess the six occupational types proposed in Holland's (1985a) theory of careers. Each type is defined by a distinctive pattern of interests and abilities and, like Jungian theory, each is a personality type. The sample (N=231) used to compute correlations between the SDS and the HPI included male and female undergraduate students, graduate students, and cases gathered during individualized assessment. Finally, the IPM is designed to assess individual differences in the strength of 10 motives emphasized by motivational theorists from McDougall (1908) to McClelland (1985). The sample (N=1,806) who provided data for the HPI and the IPM were male and female job applicants.

The measures of normal personality include the Interpersonal Adjective Scales (IAS; Wiggins, 1991) and Big-Five factor markers (Goldberg, 1992). The IAS assesses 8 dimensions of interpersonal style defined by Wiggins (1991), drawing on earlier work by Leary (1957) concerning the psychology of interpersonal relationships. The sample (N=331) consisted of male and female applicants for entry-level firefighter jobs. The Big-Five factor markers consist of 100 unipolar terms that load in a specific way on each of the FFM dimensions. These terms provide univocal measures of the five domains underlying most English-language personality terms. These markers can be considered criterion indicators of the FFM. The sample (N=168) consisted of college students who completed the HPI and the 100 unipolar markers.

The measures of dysfunctional personality include the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Hathaway & McKinley, 1943; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) and the PROFILE (Jones, 1990). The original MMPI was developed to assess serious psychopathology. The original version and the latest revision, MMPI-2, are the most widely used tests of psychopathology in the world. The MMPI-2 includes three basic validity keys and 10 clinical scales. The sample (N=71) who provided data for the HPI and the MMPI-2 were male and female applicants for entry level police officer jobs. The PROFILE contains 11 scales that assess the standard DSM III, Axis 2 personality disorders. The names of the disorders have been relabelled so as to lessen their psychiatric stigmata. Personality disorders are dimensions of normal personality that have been extended past the point of adaptability. For example, the PROFILE scale called Perfectionism (DSM III Obsessive-Compulsive disorder) is the conscientiousness dimension of normal personality taken to extremes. The sample (N=3,298) who provided data for the HPI and the PROFILE consisted of male and female job applicants.

We will organize our discussion of these correlational data in terms of each HPI dimension taken in order.

Adjustment

Table 3.1 contains correlations between the HPI and the ASVAB occupational composites and subtests. We would expect only a small correlation between Adjustment and cognitive ability and that is what we find. Table 3.2 contains correlations between the HPI and four scales from the BST. Again, Adjustment has only modest correlations with these skill tests.

Table 3.3 concerns the relation between the HPI and the MBTI. The MBTI types are composed of combinations of four dimensions: (1) Extraversion-Introversion (EI) is defined by what one pays attention to, people or ideas and concepts; (2) Sensation-Intuition (SN) is defined by how one processes information, empirically or intuitively; (3) Thinking-Feeling (TF) is defined by how one reaches conclusions, logically or emotionally; and (4) Judging-Perceiving (JP) is an odd dimension that concerns structure and planning at the Judging end and flexibility and spontaneity at the Perceiving end. We would expect Adjustment to be moderately correlated with Extraversion because the two constructs (Extraversion and Adjustment) share the underlying construct of social self-confidence; this expectation is confirmed in Table 3.3 (high scores on Adjustment are correlated with low scores on EI). Table 3.4 contains correlations between the HPI and the SDS. Because Artistic types tend to be disaffected and critical of their culture, we expected a negative correlation between Adjustment and the SDS Artist scale; this expectation is not confirmed, i.e., the correlation is insignificant. Table 3.5 concerns relations between the HPI and the IPM. We expected a negative correlation between Adjustment and the Aesthetic scale for the same reason that we expected a negative correlation with the SDS Artistic scale. We expected a positive correlation with the IPM Affiliation scale because Adjustment and Affiliation share the underlying construct of social self-confidence. The correlation with Hedonism measure of pleasure seeking and self-indulgence was unexpected. It suggests that hedonistic people may be privately unhappy.

Table 3.6 contains correlations between the HPI and the IAS. We expected Adjustment to be correlated negatively with the dimensions of BC (Arrogant-Calculating), DE (Cold Hearted), and FG (Aloof-Introverted) because they share the underlying construct of empathy low scores on Adjustment and high scores on BC, DE, and FG reflect a lack of

Table 3.1

Correlations between the ASVAB Composites and the HPI Scales

	ADJ	AMB	SOC	LIK	PRU	INT	SCH
AFQT ^a	.11	.10	.06	.01	-.10	.20**	.31***
EL	.11	.08	-.04	-.00	.01	.28***	.19**
ST	.11	.07	-.02	-.02	-.03	.33***	.17**
MM	.06	.06	.03	.03	-.09	.24***	.09
CL	.10	.06	-.05	-.02	.01	.22**	.23**
GT	.09	.07	-.04	.02	.04	.21**	.23***
OF	.07	.07	.04	.02	-.09	.26***	.14*
GM	.00	.02	.00	.06	-.03	-.01	.05
SC	.09	.06	.01	.01	-.07	.27***	.13*
CO	.06	.06	.03	.03	-.08	.22**	.14*
FA	.08	.04	-.01	-.00	-.03**	.20	.18**
MK ^b	.08	.22**	.18*	.04	.00	.21**	.46***
EL	.12	.12	.00	-.15*	-.18*	.30***	.16*
MC	.14*	.20**	.13	-.03	-.23**	.30***	.27***
GS	.07	.10	.12	-.01	-.14*	.43***	.28***

Table 3.2

Correlations between the PSI Basic Skills Tests and the HPI Scales

	ADJ	AMB	SOC	LIK	PRU	INT	SCH
TEST 2 ^a	-.12	-.07	.18	-.05	-.22	.24*	.44***
TEST 4	-.18	-.03	.18	-.17	-.32*	.13	.33**
TEST 8	-.06	.16	.25*	.01	-.32*	.27*	.32*
TEST 12	-.10	-.05	.34**	-.01	-.27*	.29*	.30*

N = 49

^a TEST 2 = Reading Comprehension

TEST 4 = Computation

TEST 8 = Follow Written Directions

TEST 12 = Coding

* p < .05 ** p < .01 *** p < .001, one - tailed

Table 3.3

Correlations between the Myers-Briggs Type and the HPI Scales

	ADJ	AMB	SOC	LIK	PRU	INT	SCH
EL ^a	-.15	-.31*	-.55***	-.41***	-.03	-.34**	-.07
SN	-.08	.17	.52***	.18	-.32**	.20	-.18
TF	.01	-.01	-.19	-.23	-.26*	.03	-.25*
JP	.05	.07	.43***	.27	-.26*	.03	-.15

N = 53

^aEL = Extraversion-Introversion

SN = Sensing-Intuition

TF = Thinking-Feeling

JP = Judging-Perceiving

*p < .05 ** p < .01 *** p < .001 one-tailed

Table 3.4

Correlations between the Self-Directed Search and the HPI Scales

	ADJ	AMB	SOC	LIK	PRU	INT	SCH
Realistic	.03	.04	.03	-.07	-.07	.35***	-.04
Investigative	.09	.11	-.01	-.07	.04	.36***	.34***
Artistic	.01	.01	.21***	.09	-.13	.49***	.01
Social	.06	.31***	.27***	.47***	-.00	.15*	-.09
Enterprising	.05	.43***	.36***	.22***	-.03	.19***	-.04
Conventional	.02	.14*	-.02	.05	.21***	-.03	.01

N = 237 .12 to .18 = *; .19 to .21 = **; ≥ .22 = ***

*p < .05 ** p < .01 *** p < .001, one-tailed

Table 3.5

Correlations between the Inventory of Personal Motives and the HPI Scales

	ADJ	AMB	SOC	LIK	PRU	INT	SCH
Aesthetic	-.19***	-.05**	.22***	-.02	-.14***	.38***	.16***
Affiliation	.32***	.37***	.42***	.43***	.16***	.24***	.14***
Altruism	.14***	.07***	.03	.30***	.25***	.16***	.05**
Commercial	.12***	.30***	.25***	.11***	.19***	.24***	.21***
Hedonism	-.28***	-.11***	.32***	-.02	-.32***	.05**	-.09***
Power	.07***	.42***	.37***	.05**	.03	.30***	.23***
Recognition	-.13***	.16***	.51***	.01	-.18***	.24***	.05**
Scientific	.09***	.14***	.18***	.02	.04*	.54***	.31***
Security	.06***	-.06***	-.24***	.05**	.36***	-.13***	-.04*
Tradition	.09***	.10***	-.06***	.11**	.24***	.06***	.08***

N = 1,806

*p < .05 ** p < .01 *** p < .001, one-tailed

Table 3.6

Correlations between the Interpersonal Adjective Scales and the HPI Scales

	ADJ	AMB	SOC	LIK	PRU	INT	SCH
PA	.01	.49***	.39***	.02	-.07	.31***	.27***
BC	-.21***	.11*	.31***	-.26***	-.31***	.18***	.06
DE	-.22***	-.15***	-.12*	-.41***	-.22***	-.16**	-.12*
FG	-.29***	-.42***	-.28***	-.47***	-.27***	-.18***	-.14**
HI	-.16**	-.55***	-.34***	-.18***	-.03	-.30***	-.18***
JK	.12**	-.12**	-.27***	.19***	.22***	-.10*	-.04
LM	.15**	.08	.18***	.29***	.18***	.18***	.11*
NO	.19***	.34***	.35***	.40***	.17***	.27***	.17***

N = 331

PA = Assured-Dominant

BC = Arrogant-Calculating

DE = Cold-Hearted

FG = Aloof-Introverted

HI = Unassured-Submissive

JK = Unassuming-Ingenuous

LM = Warm-Agreeable

NO = Gregarious-Extraverted

Table 3.7

Correlations between the Big-Five Factor Markers and the HPI Scales

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

interpersonal sensitivity and responsiveness. Table 3.7 presents correlations between the HPI and the Big Five factor markers. Because the HPI was designed to parallel the five factors, we would predict that Adjustment would have its single highest correlation with Factor IV Emotional Stability and, in fact, the resulting .70 correlation is the highest in the matrix. This suggests that the HPI Adjustment scale can be a proxy for the FFM Emotional Stability dimension.

Table 3.8 contains correlations between the HPI and the newly revised MMPI-2. We expected substantial negative correlations between Adjustment and all the standard scales of the MMPI-2, but we expected the largest negative correlations would be with Hypochondriasis (Hs) and Psychasthenia (Pt), the MMPI scales most heavily saturated with neuroticism or negative affectivity (Watson & Clark, 1984). All of these expectations are confirmed. The very high negative correlation with Schizophrenia (Sc) was not predicted and suggests there is a strong component of neuroticism in the MMPI Sc scale. Table 3.9 contains correlations between the HPI and PROFILE. We predicted that Adjustment would be negatively correlated with every PROFILE scale except Perfectionism and that the largest correlations would be with Unstable Relationships and Fear of Failure because

Table 3.8

Correlations between the Minnesota Multiphasic Personality Inventory – 2 and the HPI Scales

	ADJ	AMB	SOC	LIK	PRU	INT	SCH
L	.61***	.39***	-.20*	.32**	.45***	.12	.09
F	-.21*	-.13	.13	-.12	-.12	.02	-.23*
K	.59***	.45***	-.07	.41***	.55***	-.01	.14
Hs	-.66***	-.31***	.04	-.18	-.19	-.14	-.13
D	-.48***	-.56***	-.33**	-.22*	.07	-.47***	-.05
Hy	-.30**	.00	-.04	.03	.13	-.07	.07
Pd	-.64***	-.33**	.03	-.40***	-.43***	-.11	-.36***
Mf	-.31**	-.27*	-.05	.05	.13	-.29**	.21*
Pa	-.47***	-.28**	-.06	-.19	-.14	-.09	.05
Pt	-.76***	-.63***	-.02	-.46***	-.50***	-.24*	-.26*
Sc	-.72***	-.51***	-.05	-.50***	-.51***	-.19	-.26*
Ma	-.41***	.05	.45***	-.15	-.50***	.30*	-.17
Si	-.42***	-.77***	-.49***	-.48***	-.21*	-.55***	-.06

N = 71

L = Lie

F = Infrequency

K = Subtle Defensiveness

Hs = Hypochondriasis

D = Depression

Hy = Hysteria

Pd = Psychopathic Deviate

Mf = Masculinity – femininity

Pa = Paranoia

Pt = Psychasthenia

Sc = Schizophrenia

Ma = Mania

Si = Social Introversion

* p < .05 ** p < .01 *** p < .001, one-tailed

these scales concern overtly neurotic behavior. As Table 3.9 shows, we were partially correct. Adjustment is indeed negatively correlated with every scale except Perfectionism, and the correlations with Unstable Relationships and Fear of Failure are two of the largest in the table. However, we did not expect the large correlations with the Argumentative and No Common Sense scales.

Table 3.9
Correlations between the PROFILE and the HPI Scales

	ADJ	AMB	SOC	LIK	PRU	INT	SCH
Interpersonal Insensitivity (Schizoid)	-.35***	-.40***	-.25***	-.40***	-.31***	-.15***	-.21***
Argumentative (Paranoid)	-.61***	-.42***	-.04*	-.34***	-.40***	-.16***	-.29***
Unstable Relationships (Borderline)	-.58***	-.46***	-0.01	-.28***	-.42***	-.16***	-.28***
No Common Sense (Schizotypal)	-.56***	-.37***	0.02	-.25***	-.41***	-.08***	-.25***
Attention Seeking (Histrionic)	-.50***	-.07***	.37***	-.13***	-.43***	0.04	-.11***
Arrogance (Narcissistic)	-.36***	-0.03	.27***	-.25***	-.38***	.08***	-.08***
Fear of Failure (Avoidant)	-.58***	-.52***	-.11***	-.25***	-.31***	-.22***	-.29***
Dependency (Dependent)	-.46***	-.61***	-.20**	-.20***	-.23***	-.22***	-.33***
Passive Aggression (Passive-Aggressive)	-.52***	-.36***	.04*	-.31***	-.52***	-.11***	-.27***
Perfectionism (Compulsive)	-0.02	.13***	-.04*	-0.01	.29***	.03*	.10***
Untrustworthiness (Antisocial)	-.35***	-.23***	.12***	-.25***	-.44***	-.07***	-.20***

N = 3,298

p < .05 ** p < .01 *** p < .001, one-tailed
 < .04 = no asterisks
 .04 = *
 < .04 = ***

Ambition

There is no reason to expect Ambition to be strongly correlated with measures of cognitive ability, and the results in Tables 3.1 and 3.2, in general, confirm this expectation.

On the other hand, Ambition is fulfilled by means of social interaction, and the relatively large correlation with the E-I scale of the MBTI shown in Table 3.3 was predicted. For Holland's SDS, we predicted the largest correlations for Ambition would be with Enterprising, then Social, and then Conventional interests. The correlations in Table 3.4 nicely confirm this prediction. We predicted that persons with high scores on Ambition are primarily motivated by Power, Commercial, and Affiliative motives. Table 3.5 supports this prediction.

As noted above, Ambition has a large component of social competence; we predicted, therefore, that Ambition should have positive correlations with the IAS Assured-Dominant and Gregarious-Extraverted scales, and negative correlations with Aloof-Introverted and Unassured-Submissive. These predictions are verified in Table 3.6. For the FFM, we proposed that Ambition and Sociability would be related to Factor I, Surgency. Table 3.7 shows that Ambition has its highest correlation with Factor I of the Big-Five markers, which ties it to such lexical themes as energetic, bold, assertive, and daring (Goldberg, 1992).

Again, because Ambition involves positive affectivity and social competence, we predicted negative correlations with the MMPI-2 scales for Social Introversion (Si) and Depression (D). Table 3.8 supports this prediction. The large negative correlations with Psychasthenia (Pt) and Schizophrenia (Sc) were unexpected and suggest that high scores on these scales reflect elements of unhappiness and social incompetence. In terms of the personality disorders, we expected the largest negative correlations to be with the Fear of Failure and Dependent scales because Ambition concerns confident, independent achievement. Table 3.9 supports these predictions.

Sociability

Because Sociability combines a need for social interaction with a need for stimulation, there is no reason to expect the scale to be associated with measures of cognitive ability. Tables 3.1 and 3.2 show that, in general, there is little relation between Sociability and cognitive measures.

The same construct underlies the HPI Sociability and the MBTI Extraversion-Introversion scale. Consequently, Sociability should have the highest correlation of all the HPI scales with E-I. Table 3.3 shows that this is indeed the case. In Holland's (1985a) theory of vocational interests, the Social and Enterprising types are the most extraverted. Consequently, Sociability should have its largest correlations with the SDS scales for Social and Enterprising; Table 3.4 indicates that this is so. The correlation with Artistic interests is unexpected. Because persons with high scores on Sociability need to interact and want to be noticed, Sociability should have its highest correlations with the Affiliation and Recognition scales of the IPM. Table 3.5 verifies this prediction. The correlation with Hedonism adds an impulsive and fun-loving component to the meaning of Sociability.

Because Sociability is at the core of interpersonal behavior, we expected the scale to be correlated with all of Wiggins' IAS dimensions, but to have its largest positive correlations with the Gregarious-Extraverted and Assured-Dominant scales. We expected the largest negative correlations to be with the Aloof-Introverted and Unassured-Submissive scales. As Table 3.6 shows, these expectations were correct. Similarly, we predicted that Sociability would have its highest correlation with Factor I (Surgency) of the Big-Five factor markers and results in Table 3.7 support this expectation. The impulsive and fun-loving theme is reflected in the negative correlation between Sociability and Factor III, Conscientiousness. The adjectival markers for this factor suggest that high Sociability scorers are disorganized, careless, inconsistent, and sloppy (Goldberg, 1992).

In terms of the standard MMPI-2 scales, we predicted that Sociability would have a strong, positive correlation with the Manic (Ma) scale and a large negative correlation with Social

Introversion (Si) scale. The correlation with Depression (D) in Table 3.8 is larger than expected; apparently extraverts tend not to be depressed. The personality disorders described by the Attention Seeking and Arrogance scales of PROFILE represent an unrealistic extension of the social skill dimension. We predicted that Sociability would be positively correlated with these scales and, as Table 3.9 reveals, we were correct.

Likeability

The Likeability construct concerns charm, tact, and interpersonal skill. Consequently, it should be relatively independent of cognitive ability. Tables 3.1 and 3.2 verify this expectation.

It is not clear that Likeability is an important part of any of the Jungian dimensions unless enjoying social interaction is part of the MBTI E-I construct at the Extraverted end. Table 3.3 suggests that this is the case. The HPI Likeability scale and the SDS Social type share the underlying construct of sympathy, tolerance, and warmth. As Table 3.4 shows, Likeability has its largest correlation with the SDS Social scale. As for the motivational base of Likeability, we predicted that persons with high scores on this scale should enjoy social interaction and should like to help others. Table 3.5 shows that Likeability is significantly correlated with Affiliative and Altruistic motives.

Because Likeability is a fundamental evaluative aspect of social interaction, we predicted that the scale would be significantly correlated with every IAS scale. Table 3.6 shows significant correlations with seven of the eight scales. The highest correlations are with Aloof-Introverted and Cold Hearted in the negative direction and with Gregarious-Extraverted in the positive direction. The correlation with Warm-Agreeable (.29), although significant, is somewhat lower than we expected. The Likeability scale was intended to be a proxy for the agreeableness dimension in the FFM; Table 3.7 indicates that Factor II Agreeableness is substantially correlated with Likeability scale scores.

Likeability concerns interpersonal charm; persons with high scores on the MMPI-2 dimensions of Pt, Sc, and Si are socially inept and therefore likely to be unlikeable. Table 3.8 shows that Likeability has its largest negative correlations with these scales. Similarly, the Interpersonal Insensitivity dimension of the PROFILE represents an extension of the Likeability dimension in the negative direction. We therefore expected a large correlation between Likeability and Interpersonal Insensitivity. Table 3.9 supports this expectation.

Prudence

The Prudence construct concerns cautiousness, attention to detail, and most of all, self-control. This dimension is typically related to academic performance, but it is not expected to be related to cognitive ability. Table 3.1 shows that it is unrelated to scores on the ASVAB composites, but is negatively related to the electronics, mechanics, and science primary scales. Table 3.2 shows a persistent pattern of negative correlations with the BST, suggesting that persons with low scores on Prudence will do better on these measures. We can only speculate as to the meaning of these negative correlations, perhaps guessing is rewarded in the scoring keys, and persons with low Prudence scores are more likely to guess than persons with high scores.

On the MBTI (see Table 3.3), the Sensation-Intuition dimension is a measure of creative tendencies. Because low Prudence is also associated with creativity (cf. Barron, 1965), we expected a negative correlation between these two measures. The Thinking-Feeling and the Judging-Perceiving scales also concern being flexible and open-minded at the low ends; again, we predicted negative correlations between Prudence and these scales. As Table 3.3 shows, these expectations were confirmed. On the SDS, the Conventional type should have the highest scores for Prudence, and the Artistic type should have the lowest scores. Although the correlations are quite modest, Table 3.4 confirms these predictions. In terms of the motivational basis of Prudence, persons with high scores should need Security and Tradition, and should deny Hedonistic needs. Table 3.5 supports these predictions. The positive correlation with Altruistic motives is a surprise and somewhat softens the interpretation of high Prudence scores.

In terms of the IAS, the psychopathic tone of the Arrogant-Calculating scale suggests it should be negatively correlated with Prudence. Table 3.6 shows that the largest correlation for Prudence (-.31) is with this scale. The other correlations are less theoretically meaningful and have less bearing on the construct validity of the Prudence scale. In Table 3.7, Prudence has its highest correlation with Factor III Conscientiousness of the Big-Five factor markers. Adjectival markers for this factor are organized, systematic, thorough, and neat (Goldberg, 1992).

The Pd and Ma scales of the MMPI are traditionally associated with antisocial behavior; consequently, these scales should have large negative correlations with Prudence. Table 3.8 shows that, although the correlations are in the predicted direction, the Pt and Sc scales have slightly larger negative correlations with Prudence. The correlations between Prudence and the L and K scales reflect the conforming and self-righteous themes underlying all three scales. From PROFILE, we reasoned that low Prudence, Passive-Aggression, and Untrustworthiness share a common underlying theme of hostility. We therefore expected Prudence to have its largest correlation with these PROFILE scales, and, as Table 3.9 shows, we were essentially correct.

Intellectance

The construct of Intellectance contains a component of intellectual talent in the sense that persons with high scores seem bright. Consequently, we would expect modest positive correlations between Intellectance and measures of cognitive ability. Tables 3.1. and 3.2 support this expectation.

On the MBTI, Introversion (I) concerns interest in ideas, and Intuition (N) concerns creativity. Consequently, we expected Intellectance to be correlated negatively with E-I, and positively with S-N. Table 3.3 shows that this is the case. In terms of Holland's (1985a) theory, the Investigative and Artistic types are the most creative of the six types. We predicted the largest positive correlations would occur between Intellectance and the I and A scales of the SDS. Table 3.4 supports this prediction. The correlation with Realistic (R) interests suggests that R types are more imaginative than we imagined. We expected persons with high scores on Intellectance to be motivated primarily by Aesthetic and Scientific interests. Table 3.5 shows that Intellectance indeed has its highest correlations with these two IPM scales.

Intellectance is not necessarily or primarily a dimension of interpersonal performance. As a result, we made no predictions concerning correlations between Intellectance and

the personality scales of the IAS. As Table 3.6 shows, persons with high scores on Intellectance tend to be described as Assured-Dominant and as Gregarious-Extraverted. This probably reflects the underlying link between Intellectance and Ambition. On the other hand, we expected both the Intellectance scale and the School Success scale from the HPI to correlate with Factor V Intellect of the Big-Five factor markers and results in Table 3.7 show this is the case. Adjectival descriptors associated with high scores on Factor Five include intellectual, creative, complex, and imaginative (Goldberg, 1992).

The correlations with the Assured-Dominant and Gregarious-Extraverted scales of the IAS may help explain the correlations between Intellectance and the MMPI-2 scales for Depression (D), Manic (Ma), and Social Introversion (Si). That is, there seems to be an element of social effectiveness and self-confidence associated with high Intellectance scores. We predicted a significant negative correlation with Masculinity-Femininity because creative people often receive elevated scores on *Mf*. Table 3.8 does not confirm this prediction. On PROFILE, we predicted that Intellectance would be associated with No Common Sense because they share the underlying theme of creativity. This prediction was not supported as seen in results of Table 3.9. However, the consistent negative correlations suggest that openness and curiosity (HPI Intellectance) is associated with a general absence of dysfunctional personality characteristics.

School Success

School Success concerns interest in and aptitude for school work. Intelligence and diligence are the major requirements for academic performance and we expected School Success to be correlated with indices of these two constructs. Tables 3.1 and 3.2 show that School Success is steadily and moderately correlated with measures of cognitive ability.

In terms of the scales of the MBTI in Table 3.3, School Success is modestly correlated with the planful and inflexible end of the MBTI scales. On the SDS, the Investigative type is concerned with academic performance. The only significant correlation in Table 3.4 is between School Success and the *I* scale of the SDS. We thought that the motivational basis for School Success would be a need for achievement and, perhaps, intellectual curiosity. These two needs are reflected in the IPM scales for Power and Science. Table 3.5 shows that School Success has its largest correlations with these two motive measures.

The School Success construct has only minimal interpersonal implications. Table 3.6 shows that, other than a modest .27 correlation with the IAS Assured-Dominant scale, School Success is unrelated to Wiggins' (1991) dimensions of interpersonal style. Similarly, Table 3.7 shows that School Success is related to Factor V (Intellect) of the Big-Five factor markers.

In terms of the standard scales of the MMPI-2, we thought School Success might be moderately and negatively related to *Pd*, the MMPI measure of impulsivity and lawlessness. Table 3.8 confirms this expectation. Finally, we thought School Success would be primarily correlated with the Perfectionism scale of the PROFILE. Table 3.9 shows that we were wrong; instead, School Success correlates $-.29$ with Fear of Failure and $-.33$ with Dependent. This suggests that persons with high scores for School Success tend to be decisive and independent.

Correlations Between the HPI and Peer Descriptions

A primary goal of HPI is to predict how a respondent will be described by others who know him or her, i.e., to predict his or her reputation (see Chapter One). If certain descriptive terms are reliably associated with HPI scale scores, then this helps us understand the meaning of the scores. In addition, we can use those scores to predict how peers will describe others with comparable scores and to predict how they will behave in non-testing situations because a person's characteristic social behavior generates his or her reputation and reputation is reflected in peer descriptions.

According to Socioanalytic theory, the same process underlies social interaction and responding to the HPI or any other assessment procedure. In theory this is the reason why certain scale scores are linked to certain peer descriptions (Mills & Hogan, 1976). Thus, finding correlations between peer descriptions and HPI scores allows us to evaluate the validity of the HPI and to evaluate the theory of personality on which the HPI rests.

Undergraduate and graduate student volunteers (N=128) completed the HPI; they also gave personality rating forms to two persons who had known them for at least two years. The peer rating form was organized in three sections. The first section contained items that paralleled the content of the 43 HICs on the HPI. For example, the Ambition scale has a HIC entitled Leadership. We developed a rating item for the Leadership HIC that reads, This person is a leader, not a follower. Respondents rated the target person on the 43 items (corresponding to the 43 HICs) using a 5-point Likert scale, where "1" indicated strongly disagree and "5" indicated strongly agree.

The second section of the rating form contained 21 California Q-Set (Block, 1961) items that correlated above .5 with markers for the Five Factor Model (FFM) in research conducted by John (1990); these Q-Set items are proxies for the dimensions of the FFM. Respondents described the target person by checking "yes" or "no" to each Q-Set item (e.g., arouses liking in others). The third section contained 112 adjectives from Gough and Heilbrun's (1983) Adjective Check List (ACL); John (1990) identified these adjectives as prototypical markers of the dimensions of the FFM. The response format was the same as that used in the previous section. We assigned the subjects scores for the primary HPI scales. We combined the ratings of the two respondents on the rating forms and computed scores for the rating dimensions in each section of the form.

The 7 HPI-based peer rating scales in the first section were labelled Rated Adjustment (RTADJ), Rated Ambition (RTAMB), Rated Sociability (RTSOC), Rated Likeability (RTLK), Rated Prudence (RTPRU), Rated Intellectance (RTINT), and Rated School Success (RTSCH). In the second section of the peer rating form, we formed the following FFM scale scores: Q-Set Adjustment (QSADJ); Q-Set Ambition (QSAMB); Q-Set Sociability (QSSOC); Q-Set Likeability (QSLK); Q-Set Prudence (QSPRU); and Q-Set Intellectance (QSINT). The ACL scales in the third section were labelled Emotional Stability (EMOTS), Extraversion (EXTRA), Agreeableness (AGREE), Conscientiousness (CONSC), and Intellectual Openness (INTOP).

Table 3.10

Characteristics of Rated Personality Description Scales

Peer Rating Scales	Mean	Standard Deviation	Number Of Items	Alpha	Interrater Reliability
HPI Ratings					
RTADJ	37.3	6	5	0.72	0.25
RTAMB	46.1	6.8	6	0.65	0.45
RTSOC	24.5	6	4	0.71	0.55
RTLK	44.8	5.2	6	0.61	0.42
RTPRU	36.2	5.9	5	0.61	0.59
RTINT	38.7	4.7	5	0.57	0.38
RTSCH	37.7	6.2	5	0.6	0.56
Q-Set Ratings					
QSADJ	4.5	1.5	3	0.46	0.08
QSAMB	3.4	1	2	0.38	0.26
QSSOC	6.5	1.6	4	0.53	0.32
QSLK	6.8	1.3	4	0.41	0.15
QSPRU	4.5	1.4	3	0.47	0.39
QSINT	5.5	2.1	5	0.41	0.34
ACL Ratings					
EMOTS	25.8	5.6	18	0.78	0.24
EXTRA	29.4	6.9	21	0.86	0.53
AGREE	50.7	6.7	28	0.9	0.33
CONSC	33.4	6.9	20	0.89	0.68
INTOP	41.7	6.6	25	0.82	0.4

Table 3.10 presents means, standard deviations, coefficient alphas (Cronbach, 1951), and interrater reliabilities for each peer description variable. Note that the ACL-based scales yielded the highest alphas and the Q-Set scales had the lowest alphas. Note also that the adjustment descriptors consistently had the lowest reliabilities, whereas the conscientiousness (prudence) ratings consistently had the highest. This means that it is relatively easier to rate prudence than adjustment.

We computed correlations between HPI scale scores and all the peer rating scale scores. Correlations were corrected for the unreliability of the peer ratings using methods discussed by Spearman (cf. Ghiselli, Campbell, & Zedeck, 1981, p. 290), and these results appear in Table 3.11. The correlations between test-nontest measures of the same construct should be positive, significant, and larger than the other possible correlations. As Table 3.11 indicates, this pattern occurs in 19 of 21 cases, and this pattern clearly supports the construct validity of the primary HPI scales.

We then computed correlations between individual ACL items and the HPI scales. Table 3.12 lists the ten adjectives most highly correlated with each scale. These adjectival correlates are a major source of information regarding the meaning of the HPI scales.

Table 3.11

HPI Scale Correlates of Rated Personality Descriptions

Rated Personality ^a	ADJ	AMB	SOC	LIK	PRU	INT	SCH
HPI-based							
RTADJ	.74	.37	.17	.43	.33	.45	.12
RTAMB	.46	.67	.45	.10	.19	.53	.18
RTSOC	.06	-.18	.74	.12	-.64	-.06	-.09
RTLK	.41	.04	.16	.73	.20	-.08	.12
RTPRU	.08	-.07	-.42	.21	.79	-.06	.01
RTINT	.31	.40	.43	.36	.11	.77	.32
RTSCH	.04	.09	-.26	.05	.59	.46	.68
Q-SET-based							
QSADJ	.55	.57	.34	.69	.41	.66	.46
QSAMB	-.06	.37	.18	-.12	-.19	.41	.34
QSSOC	.26	.40	.82	.72	-.29	.19	-.06
QSLIK	.51	-.22	.11	.94	-.30	.13	-.22
QSPRU	.06	-.44	-.44	.00	.45	.09	-.14
QSINT	.22	.43	.17	.24	.18	.42	.45
ACL-based ^b							
EMOTS	.69 ^c	.33	.33	.52	.40	.34	-.01
EXTRA	.11	.44	.62	.27	-.45	.19	-.03
AGREE	.34	-.03	.04	.81	.32	.02	-.15
CONSC	-.13	.07	-.21	.05	.54	.09	.06
INTOP	.15	.39	.07	.44	.42	.66	.43

NOTE: Critical value $r = .23$, $p = .01$, one-tailed test ($N = 100$)

^aSample sizes: HPI-based ($N = 108$); Q-SET-based ($N = 105$); ACL-based ($N = 100$)

^bEMOTS (Emotional Stability); EXTRA (Extraversion); AGREE (Agreeableness); CONSC (Conscientiousness); INTOP (Intellectual Openness)

^cCorrelation is uncorrected; correction yielded a coefficient in excess of 1.00.

Table 3.12

Adjectival Correlates of the Hogan Personality Inventory Scales

Adjustment		Ambition		Sociability	
Tense	-.53	Outgoing	.32	Quiet	-.45
Worrying	-.49	Shy	-.31	Talkative	.48
Moody	-.46	Retiring	-.30	Shy	-.42
Unstable	-.43	Assertive	.28	Outgoing	.37
Self Pitying	-.39	Spunky	.28	Silent	-.37
Temperamental	-.39	Polished	.28	Reserved	-.35
Nervous	-.37	Silent	-.27	Show-off	.33
Fearful	-.37	Active	.26	Spunky	.32
Self Punishing	-.36	Sociable	.26	Outspoken	.32
High Strung	-.35	Forceful	.24	Withdrawn	-.32
Likeability		Prudence		Intellectance	
Sympathetic	.44	Noisy	-.43	Narrow Interests	-.42
Praising	.44	Thorough	.38	Ingenious	.34
Outgoing	.43	Wise	.37	Artistic	.31
Soft-hearted	.37	Precise	.37	Imaginative	.30
Enthusiastic	.37	Irresponsible	-.36	Inventive	.30
Sociable	.37	Stable	.30	Sharp-witted	.30
Friendly	.36	Show-Off	-.34	Active	.29
Polished	.33	Cautious	.30	Energetic	.26
Sensitive	.33	Efficient	.31	Witty	.26
Pleasant	.31	Practical	.31	Original	.25
School Success					
Narrow Interests	-.26				
Insightful	.24				
Ingenious	.23				
Foresighted	.22				
Clever	.21				
Good Natured	-.22				
Thorough	.19				
Precise	.18				
Touchy	-.17				
Painstaking	.16				

HPI Correlates of Organizational Behavior

This section examines the relationship between HPI scale scores and various aspects of organizational behavior. We are concerned with how the HPI scale scores are related to non-test behaviors, where the construct of interest is hypothesized to underlie both the HPI scale and the criterion behavior. Earlier research concerning the relationship between personality and occupational performance often failed to distinguish correctly between the various components of personality, e.g., because Adjustment and Prudence are both measures of personality, they were thought to be somehow interchangeable.

The earlier research also failed on many occasions to use measures that were appropriate for the non-test criteria in terms of the underlying construct, e.g., measures of adjustment might be used to predict training performance. Results presented by Hough et al.

Figure 3.1

Performance Implications of the Five Factor Model

Dimension	Criteria
Adjustment	Supervisors Rating Health Incidents Reported Stress
Ambition/Sociability	Leadership/Upward Mobility
Likeability	Quality of Social Interaction Job Satisfaction
Prudence	Disciplinary Problems/Honesty Carelessness
Intellect6ance/School Success	Creativity/Training/Academic Performance

(1990) illustrate the point. When any personality scale is used to predict any criteria, virtually no relationships emerge (see also Pearlman, 1985). Using measures of single constructs to predict any criteria leads to modest results. However, when measures of single constructs are used to predict relevant criteria, the correlations improve substantially. The results described by Hough et al. (1990) provide empirical support for Campbell's (1990) point that meaningful test-nontest correlations can only be found when the latent structure underlying both the predictor and the criterion constructs is similar.

Figure 3.1 describes the performance implications of the five major dimensions of personality. In the figure, the seven HPI scales are organized in terms of the FFM and the performance criteria for each dimension is specified. For example, the HPI Intellectance and School Success scales measure the FFM culture factor. These scales should be related to training and academic performance because persons with high scores on measures of culture are curious, have wide interests, and enjoy education for its own sake; conversely, persons with low scores are practical, concrete-minded, and have narrow interests. We used this method to specify the performance domain for each of the other factors. Each of the proposed relations in Figure 3.1 are testable.

We now describe some research that evaluates these hypotheses; this research provides further evidence for the construct validity of the primary HPI scales.

Emotional Stability Factor: Adjustment

J. Hogan and Arneson (1991) studied habilitation therapists at the Idaho State School and Hospital. Habilitation therapists provide direct care to developmentally disabled residents; some residents were both mentally retarded and mentally ill. Habilitation therapists (N = 175) completed the HPI, the Short Employment Test (verbal), and the physical lift test of the Jackson Evaluation System. The researchers collected subjective as well as objective criterion data, some of which was available through the state insurance commission. The HPI Adjustment scale correlated $-.25$ ($p < .01$) with number of compensable injuries reported during the previous two years and $-.16$ ($p < .02$) with number of days compen-

sated for injury over the previous two years. We concluded that persons with low scores on the Adjustment scale found the process of caring for severely retarded and, in some cases, dangerous individuals to be stressful and, as a result, had more on-the-job accidents and stress related illness than did persons with high scores.

Surgency Factor: Ambition and Sociability

R. Hogan, J. Hogan and Griffith (1985) studied three levels of managers in a large trucking company. At the bottom were first line supervisors ($n = 218$), who managed a terminal's freight and personnel during each shift. In the middle were terminal managers ($n = 83$) who were responsible for all operations and personnel at a terminal. At the top were regional managers ($n = 10$) who were responsible for coordinating operations in the region. All managers completed the HPI and the scale scores were correlated with managerial status (dummy coded using managerial level) in the company. The HPI Ambition and Sociability scales correlated $.30$ ($p < .01$) and $.18$ ($p < .01$), respectively, with managerial status.

Merrill (1992) studied the performance of 67 advertising sales representatives. The group was dichotomized on the basis of advertising revenue generated over a uniform period of time. All sales representatives completed the HPI and scale scores were correlated with sales revenue, high vs. low (dummy coded). The correlation between Sociability and sales revenue was $.51$ ($p < .01$); for Ambition the correlation was $.35$, ($p < .01$).

Agreeableness Factor: Likeability

Muchinsky (1987) studied customer service representatives in a rapidly expanding telecommunications company. Customer service personnel provided information and assistance about residential, business, and repair services for communication equipment. Customer service employees ($n = 102$) completed a cognitive ability test and the HPI. Supervisors evaluated each employee for quantity of work, quality of work, and team work, and rated them as excellent, acceptable, or poor. Scores on the HPI were correlated with the (dummy coded) supervisors' evaluations of job performance. The HPI Likeability and Sociability scales correlated $.18$ ($p < .05$) and $.21$ ($p < .05$), respectively with the criterion of quality of work. Likeability was unrelated to quantity of work. The teamwork criterion was uncorrelated with either the cognitive ability test or any of the HPI scales. These results suggest that Likeability is associated with pleasant or high quality social interaction, but is unrelated to the amount of work accomplished.

C. Wilson, M. Wilson, Booth, & Shipper (1992) asked 924 men and women in the Arkansas National Guard to complete the Likeability scale. They trichotomized the sample on Likeability. These people were then rated by their subordinates using Wilson's (1984) Survey of Management Practices. An analysis of variance on these ratings showed that the three groups were significantly different on 8 of the 14 Survey scales, including Approachability ($F=44.0$), Teambuilding ($F=22.9$), Recognition ($F=17.5$), and Encouraging Participation ($F=16.1$). Thus, Likeability is a significant component of managerial performance.

Conscientiousness Factor: Prudence

R. Hogan, Jacobson, J. Hogan, and Thompson (1987) used the HPI to study the performance of service dispatchers. Service dispatchers handled telephone complaints from customers regarding computer equipment malfunctions; they recorded pertinent information in a computer system, and then contacted field engineers to repair the faulty equipment. The dispatchers interacted constantly with dissatisfied customers and repair personnel, usually under time pressure, and there was high turnover and absenteeism in the job. Seventy-seven dispatchers completed the HPI; the researchers then gathered both subjective and objective measures of job performance. The organization recorded weekly summaries of hours absent and errors in recording customer complaints for each of these employees. The Prudence scale correlated $-.40$ ($p < .01$) and $-.24$ ($p = .02$) with hours absent and error rates, respectively. The Prudence scale also correlated $.22$ ($p = .02$) with supervisors' ratings of conscientiousness.

Culture Factor: Intellectance and School Success

Driskell, J. Hogan, Salas, and Hoskins (in press) used the HPI in conjunction with a cognitive measure to predict success in the Naval basic electronics training school. All students ($N=155$) who entered training during a two month period completed the HPI and the ASVAB. Students were followed through a self-paced, 26-module training course, and criterion data were collected for both academic (e.g., grades) and non-academic (e.g., military infractions) training performance. Intellectance correlated $.34$ ($p < .01$) with a composite score for academic success consisting of grades, number of modules completed, and time to complete modules. The ASVAB mathematics knowledge scale correlated $.41$ with the same criterion.

Gregory (1992) used the HPI to predict the performance of Army enlisted personnel in training to maintain the TOW and DRAGON missile systems. These students had been selected for training on the basis of their ASVAB scores. Immediately prior to beginning the course they ($n = 182$) completed a battery of noncognitive measures, including the HPI. These students were followed through training and grades for academic performance were obtained at the end of the course. Gregory split the group into a primary sample ($n = 57$) and a hold-out sample ($n = 59$) for cross-validation. For the primary sample, the best predictor of academic training performance was School Success ($r = .55$, $p < .01$), while School Success correlated $.34$ ($p = .01$) in the hold-out sample.

The foregoing information supports the construct validity of the primary scales of the HPI. This information is also important for interpreting the meaning of the HPI scales. The next chapter concerns how to interpret the inventory when using it for individualized assessment.

Chapter 4

Interpreting and Using the HPI

How to Interpret the HPI

Three general guidelines apply to the interpretation of all multidimensional personality inventories. The first is that the quality of an interpretation is a function of the validity of the inventory and the experience that the interpreter has had with that inventory. Test interpretation is a skill that depends on experience and judgment, for which there are no real substitutes.

Second, scales should not be interpreted in isolation. The meaning of a single scale score depends on the scores on the other scales of the inventory. For example, a low score on the HPI Prudence scale in conjunction with high scores on Intellectance and Ambition suggests creative potential. But a low score on Prudence in conjunction with a low score on Adjustment and a high score on Sociability suggests delinquent potential.

Third, what counts as high or low score is often a matter of judgment. Our rule of thumb is to call scores above the 65th percentile high and scores below the 35th percentile low. High and low scores have diagnostic meaning; sometimes high scores are desirable, sometimes low scores are desirable Ñ depending on the decision context.

Table 4.1 contains guidelines for interpreting the HPI. The table is based on item content, correlations with other well-validated tests and measures, and peer descriptions of persons with high and low scores on the scales.

Scale by Scale Interpretation

Validity

To interpret a profile, first look at the score for Validity. The purpose of the Validity scale is to detect erratic, unusual, and inattentive responding and it does this. High and low scores also have psychologically meaningful interpretations. People scoring at the 100th percentile (raw score = 14) are careful, conscientious, and cooperative. As raw scores decline from 13 through 10, people become progressively more uncooperative, careless, and unmotivated. Persons with raw scores on Validity that are less than 10 have usually completed the inventory in so careless a manner that the profile is invalid.

Table 4.1

A Guide for Interpreting the HPI

Scale	Low Scores are seen as:	High Scores are seen as:
Adjustment	Tense, moody, temperamental, unhappy and easily stressed	Calm, self-confident, upbeat, even tempered, and handling pressure well
Ambition	Quiet, unassertive, not energetic, and not interested in advancement	Energetic, competitive, self-assured, leaderlike, and eager to advance
Sociability	Shy and withdrawn, aloof, and keeping others at a distance	Outgoing, colorful, gregarious, and enjoying social attention
Likeability	Unresponsive, critical, and tough	Friendly, warm, and popular
Prudence	Undependable, disorganized, careless, impulsive, but flexible and accepting of change	Dependable, organized, easy to supervise, but somewhat inflexible and resistant to change
Intellectance	Unimaginative, narrow, tolerant of boredom, and not needing much stimulation	Imaginative, inventive, and quick witted, but easily bored and inattentive to detail
School Success	touchy, restless, and impulsive	foresighted, thorough, and painstaking

To determine whether low Validity scores mean uncooperativeness as opposed to careless responding, look at the person's score for Prudence. If the Prudence score is at or below the 35th percentile, then the low Validity score probably means the person is characteristically inattentive to details and careless about rules.

Adjustment

The HICs on the Adjustment scale form the largest and most coherent factor in the inventory. At the low end the scale is a relatively pure measure of neuroticism or negative affectivity (cf. Watson & Clark, 1984). As a result, Adjustment is a moderator variable for careers: persons with high scores do better in their careers than their talent might predict, and persons with low scores do worse (Hobert, 1965). The reason for this may be that supervisors and coworkers tend not to like persons with low scores—because they are moody, dysphoric, fretful, and insecure. Beyond this generalization, scores on Adjustment have no specific career implications.

Low scores on Adjustment sometimes reflect the fact that a person is going through difficult times; more often, however, low scores reflect a general tendency to be self-

critical, remorseful, unhappy, and stress prone. Persons with scores below the 10th percentile may be candidates for professional assistance.

High scores on Adjustment have generally positive implications. Persons with high scores seem stable and calm, and appear to handle pressure well. They also tend to be well-liked because their moods are so consistent. Very high scores—those above the 95th percentile—suggest the possibility of an inability to be self-critical (cf. Raskin, Novacek, & R. Hogan, 1991). This possibility should be verified by further questions during an interview.

Ambition

The Ambition scale is designed to assess the degree to which a person seems competitive, leaderlike, and upwardly mobile. Ambition resembles Sociability in that persons with high scores are gregarious and outgoing, and persons with low scores are shy, quiet, and socially reticent. But Ambition differs from Sociability in that persons with high scores seem hard working and achievement oriented; rather than enjoying the company of others for its own sake, they often have an agenda for their interaction. Ambition is important for careers in sales or management; persons with high scores want to get ahead. Persons with high scores on Ambition who are in jobs with little chance for upward mobility will be restless and unhappy. Among blue collar workers, ambitious people may start or join unions—as a way of getting ahead. Persons with average to low scores seem more content with their lives.

There are three components to ambition which are entailed by the concept and reflected in our scale. These concern having high aspirations, working hard, and being willing to test one's skills. The process of testing one's skills may involve competing with others. Psychologists tend to regard competitiveness as an undesirable characteristic. Our Ambition scale is defined by a HIC for competitiveness; contrary to conventional psychological wisdom, we find that the Competitive HIC is positively correlated with a variety of measures of adjustment and maturity.

Sociability

Persons with high scores on Sociability seem outgoing, gregarious, attention-seeking, and impulsive. They take a high profile during interaction and seem to need to be the center of attention; they don't merely want to be with others, they want to be recognized and attended to. Persons with low scores seem reserved, quiet, and possibly shy.

Sociability scores should be interpreted in the context of a person's scores on Ambition and Likeability. Persons with high scores on Sociability and Ambition make a very strong interpersonal impression; they seem dynamic, energetic, and charismatic. This is a desirable combination of scores for sales work. It is a less desirable combination for managers—persons with high scores for Ambition and Sociability may tend to compete with their subordinates. We tested an attorney who represents a very large coal company and who, as a result, is involved in frequent litigation with labor unions. He received a very high score for Ambition and a low score for Sociability; this pattern of scores mirrors his tendency not to say anything until he knows where his adversary stands on the issues in dispute; he is a quiet, uncharismatic, competitive, and very effective negotiator.

Persons with high scores on Sociability and Likeability are delightful and entertaining. Conversely, persons with high scores on Sociability and low scores on Likeability seem loud and overbearing. We suspect that they experience a certain degree of stress in their lives because, on the one hand, they seem compelled to interact and, on the other hand, people don't like them very much. As a result, interaction may become for them a classic approach-avoidance conflict.

Likeability

Persons with high scores on the Likeability scale seem pleasant, affable, relaxed, and engaging, and they tend to arouse liking and trust in others. They get along well with most people, and succeed in jobs that require positive social interaction. Because they are well liked, they tend to rise in organizations, but their performance as managers will depend on their scores on Ambition. Persons with high scores on Likeability and average to low scores on Ambition may be unwilling to confront poorly performing subordinates—because maintaining good relations with others is the first priority in their lives.

Persons with low scores on Likeability seem skeptical, critical, dominant, and possibly cold or hostile. These persons do well in occupations that involve giving others negative feedback—law enforcement, quality control engineering, coaching, and military drill instruction. Managers with high scores for Ambition and low scores for Likeability tend to be task oriented and to generate stress in their subordinates.

Prudence

Persons with high scores on Prudence seem reliable, thorough, dignified, cautious, and responsible. They are conscientious and attentive to detail, they readily follow organizational procedures, and they tend to be good students. They also tend to be well-liked as managers because their subordinates trust them. On the other hand, they may seem formal, reserved, inflexible, and perhaps overly conforming. What they lack in spontaneity and creativity they make up for in reliability and thoroughness.

Persons with low scores on Prudence seem unconventional, noisy, impulsive, and even irresponsible. They tend to be impatient with details, and careless about rules. On the other hand, they also tend to be flexible, venturesome, and open minded. Very low scores on Prudence—scores at or below the 5th percentile—raise the possibility of delinquent tendencies. If there is a concern about the delinquency issue, the quickest way to clarify the point is to examine the person's score on the Prudence HIC labelled Avoids Trouble. Raw scores of 2 or less are a strong indication of delinquent tendencies.

With regard to the career implications of the Prudence scale, if the job requires attention to detail and careful adherence to standardized procedures—accounting, bomb disposal, data processing, computer chip manufacturing—then higher scores are desirable. If the job requires flexibility, imagination, and the ability to adapt quickly to changing conditions—sales, marketing, advertising, consulting—then lower scores are desirable.

Again, we emphasize the fact that high and low scores entail both desirable and

undesirable characteristics. High scores are associated with reliability, conscientiousness, and inflexibility; low scores are associated with nonconformity, unconventionality, and creativity.

Intellectance

The term “Intellectance” was coined by George Welsh (1975) to denote the cognitive and interpersonal style that causes people to be perceived as bright. As Table 4.1 suggests, persons with high scores on Intellectance are seen as imaginative, inventive, and artistic, which is consistent with a theme of creativity. But, in addition, Intellectance correlates about .40 with the Power scale of the Inventory of Personal Motives, and .30 with the Commercial scale. Moreover, persons with high scores also seem witty, active, and energetic. Consequently, the scale combines elements of intellectuality with upward mobility, and these themes characterize persons with high scores. Conversely, persons with low scores on Intellectance seem narrow, conventional, lacking in curiosity or imagination, and contented with their life styles.

Higher scores on Intellectance are associated with success in all the professions—accounting, engineering, science, art, teaching, law, sales, and management. On the other hand, many entry-level and mid-level jobs require close attention to detail and the ability to tolerate boredom—air traffic controller, nuclear power plant operator, locomotive engineer. For these kinds of jobs, average to low scores on Intellectance may be desirable.

School Success

Intellectance and School Success were originally one scale, but the HICs on the two scales consistently load on different factors. Intellectance is associated with creativity; School Success is associated with academic performance.

Persons with high scores on School Success seem to enjoy school and value education for its own sake. They seem well-adjusted, planful, and careful. Persons with low scores seem to regard schooling as something to be endured. Others describe them as having narrow interests and as being somewhat irritable and touchy.

Syndromes

Delinquency

The Prudence scale is the best single indicator of delinquent tendencies on the HPI. Although all delinquents will have low Prudence scores, not everyone with a low Prudence score will be delinquent. By considering scores on Adjustment and Sociability, a much more accurate judgment can be made (cf. J. Hogan & R. Hogan, 1989).

Specifically, the combination of low scores for Adjustment and Prudence and a high score for Sociability suggests a person who is alienated and unhappy (low Adjustment), hostile to rules and authority (low Prudence), but impulsive and attention-seeking (high Sociability). The syndrome itself is relatively infrequent in normal (e.g., non-prison) populations; when it occurs, it signals a person whose identity includes being tough, defiant, and scornful of the normal rules and conventions of society (cf. R. Hogan & Jones, 1983).

The Hollow Core

There is a kind of person who meets the public well, who seems chipper, self-confident, and upbeat, and who will do very well in an interview but who, nonetheless, is privately self-doubting and unhappy. An example might be the movie star Marilyn Monroe whose wealth, public success, and acclaim were insufficient to counter her private feelings of despair and whose life ended in suicide. We call this the hollow core syndrome. Persons with this syndrome are neither neurotic nor delinquent, but they have problems that will interfere with their performance. Once again, however, these problems will be very hard to detect in an interview.

The possibility of the Hollow Core syndrome is signalled by scores on Ambition and Sociability at or above the 60th percentile, and scores on Adjustment at or below the 35th percentile. With this pattern of scores in mind, next check the persons' raw scores on the HICs for No Depression and No Social Anxiety on the Ambition scale; look for raw scores of 5 or 6 on both HICs. Then check the person's raw scores on the HICs for Not Anxious and No Guilt on the Adjustment scale and Self Confidence on the Ambition Scale. If the scores on these HICs are 0 or 1, then the presence of the Hollow Core syndrome is essentially confirmed.

Arrogance

Persons who score above the 90th percentile on Intellectance, Adjustment, Ambition, and Likeability and above the 65th percentile on Prudence, will seem very competent and will make an excellent impression on others. Above and beyond their competencies, however, they may be somewhat arrogant. They may see themselves as more competent than others see them, they may promote their own career goals at the expense of the organization with and for whom they work, they may ignore negative feedback, and they may be insensitive to the needs and expectations of others, especially subordinates. Not surprisingly, should you give them this feedback, they may ignore it.

Creativity

The creativity syndrome is defined by scores above the 65th percentile for Intellectance and Ambition, and scores below the 35th percentile for Prudence. Intellectance reflects the cognitive style associated with creativity; low Prudence reflects the necessary flexibility and willingness to challenge convention; high Ambition reflects the energy necessary to bring one's tasks to completion (cf. Barron, 1965).

Sales

The sales syndrome builds on the creativity syndrome. Good sales personnel must be flexible problem solvers; hence the need for creativity—high Intellectance, low Prudence, high Ambition. In addition, they must have good social skills—i.e., they must be able to establish and maintain relationships with clients. Sociability concerns starting relationships; Likeability concerns maintaining relationships. High performing sales personnel are also energetic and competitive; these tendencies are reflected in the Ambition scale. It is useful but not essential that a sales person have high scores on Ambition; it is important, however, that such persons have a high score (raw score of 5) for the Competitive HIC on the Ambition scale. Persons typified by high scores for Intellectance, Ambition, Sociability, and Likeability, and low scores for Prudence seem imaginative, spontaneous, self-confident, sociable, outgoing, warm, and congenial. Moreover, this pattern of scores is empirically linked to sales performance.

Because persons characterized by the sales syndrome are colorful and attractive, they are often promoted into managerial positions. However, they tend to be less effective as managers, and there are two reasons for this. First, their creativity makes them impatient with rules and bureaucratic procedures; this is a problem because managers are often responsible for enforcing rules and procedures. Second, high Sociability is a necessary part of the sales syndrome, but managers with high scores for Sociability may have trouble listening to their subordinates and they may tend to compete with them.

Management

The managerial job is complex. On the basis of detailed job analyses, one leading management consulting firm suggests that there are at least 28 important dimensions of managerial performance, which are, in turn, embedded in 8 larger skills (cf. Davis, Hellervik, & Sheard, 1989). Because managerial effectiveness requires such a variety of skills, every HPI scale is relevant to some aspect of performance.

The ability to handle stress is associated with Adjustment. Adjustment is also related to self-confidence, to the willingness to make decisions on one's own, and to rely on one's own judgment when necessary.

Ambition is related to the desire to influence others, to motivate subordinates, and to handle group meetings. It is also associated with the energy necessary to keep others in the organization informed. Finally, Ambition is related to the aspirations, drive, and energy necessary to get ahead.

The ability to listen is associated with Likeability and low Sociability. Likeability is also involved in the willingness to develop subordinates, and is the core of all human relations skills.

The managerial tasks of planning and organizing, scheduling one's own activities, as well as handling details and being conscientious are all related to Prudence.

Intellectance is an important component of the ability to plan, to communicate effectively with others, being flexible and willing to reevaluate policies, plans, and procedures, being innovative and resourceful, and having the curiosity necessary to keep up with the technical and legal developments that might influence one's business. Finally, Intellectance is associated with the cognitive capacity necessary to handle the complexities of one's business.

Putting the foregoing together, the managerial syndrome is defined by high scores (i.e., scores above the 65th percentile) for Intellectance, Adjustment, Prudence, Ambition, and Likeability, and low scores (i.e., below the 50th percentile) for Sociability. Managers and sales personnel differ in terms of Prudence and Sociability; good sales people have low scores on Prudence and high scores on Sociability; the pattern is reversed for managers.

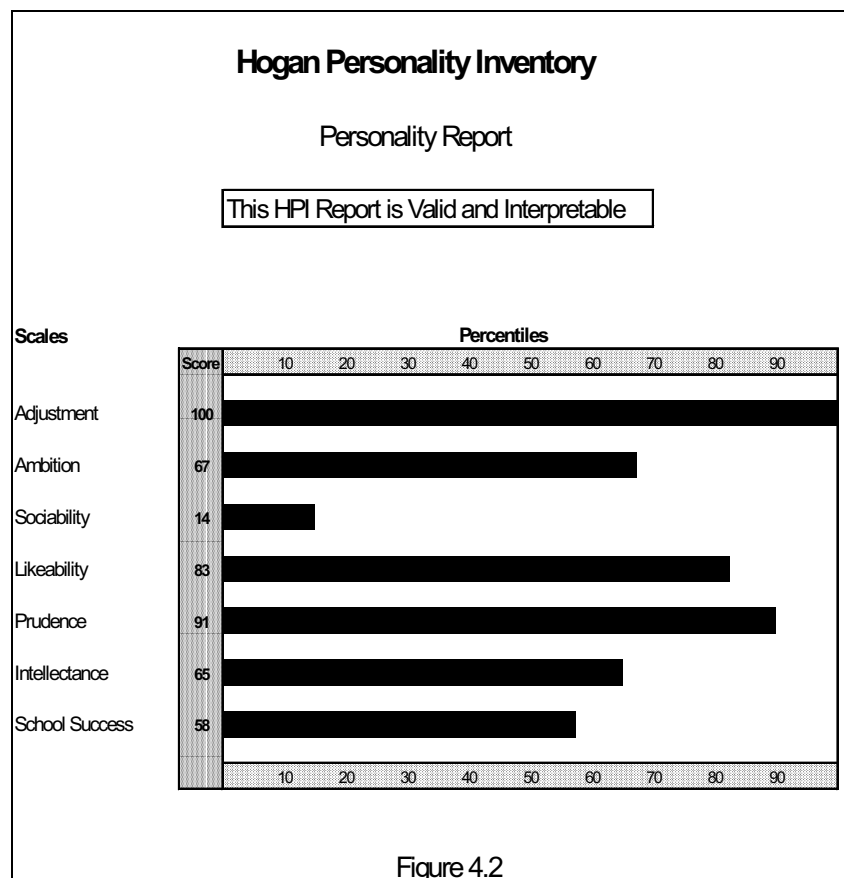
Sample Profile Interpretations

We now present and interpret 6 HPI profiles. They are prototypes of each of Holland's (1985a) occupational types; Holland's model is an exhaustive taxonomy of the kinds of people found in the world of work and therefore provides a systematic method for sampling profiles.

A Realistic Profile

In Holland's theory, Realistic types are practical, concrete, action oriented, and traditionally masculine—think of John Wayne as an engineer, an Army sergeant, or a football coach. They are down-to-earth, technically-oriented, compliant, and a bit introverted.

Figure 4.2 is the profile of a fire fighter who was the top student in a class of 100 at the Fire Academy in a medium sized southwestern city. His profile is, of course, valid. He is a confident, poised, and self-as-



assured young man who will seem calm under pressure (Adjustment). He is energetic and hard working (Ambition and Prudence) but not overly ambitious; he will be willing to work at his job and accept such promotions as come his way. He will not be disposed to challenge the existing authority structure (Ambition and Prudence). He is bright but not a strong candidate for further education (Intellectance and School Success). He is a quiet, not self-promoting, and exceptionally pleasant young man (Sociability and Likeability) whom people will naturally trust because of his even temper (Adjustment) and reliability (Prudence). Although he will work well with others, he will enjoy working alone on equipment (Likeability and Sociability). He is, in short, ideally suited for working in Realistic jobs.

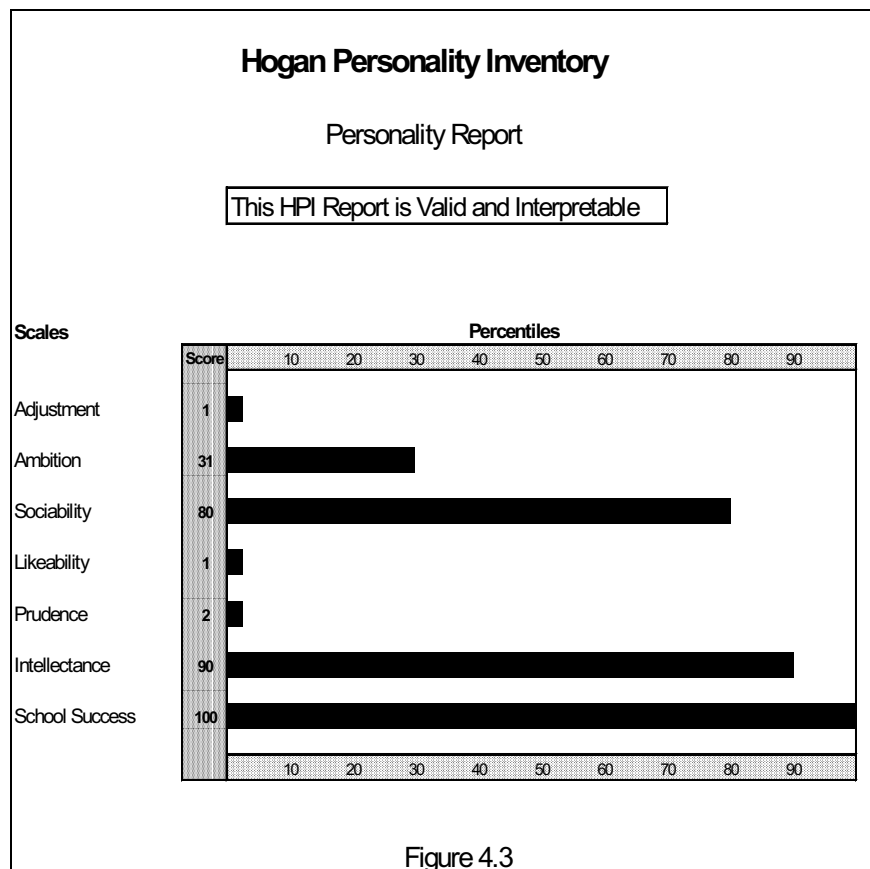
An Investigative Profile

In Holland's model, Investigative types are academics, researchers, people who are interested in ideas, principles, and abstractions. They tend to be somewhat introverted, rebellious, and, hopefully, creative.

Figure 4.3 is the profile of a young man with a Ph. D. in nuclear physics from a distinguished research university. His Validity score is very low, but because his scores for Adjustment and Prudence are so low, this probably means that he sees the world in an odd and idiosyncratic way—and that he is somewhat careless.

He will make a positive impression during

an interview because he is bright, imaginative, open-minded, well-educated, and sociable (Intellectance, School Success, and Sociability). He will be a bit abrasive (Likeability), but people will tend to see that as part of his scientific training—i.e., that he was trained to be critical and skeptical.



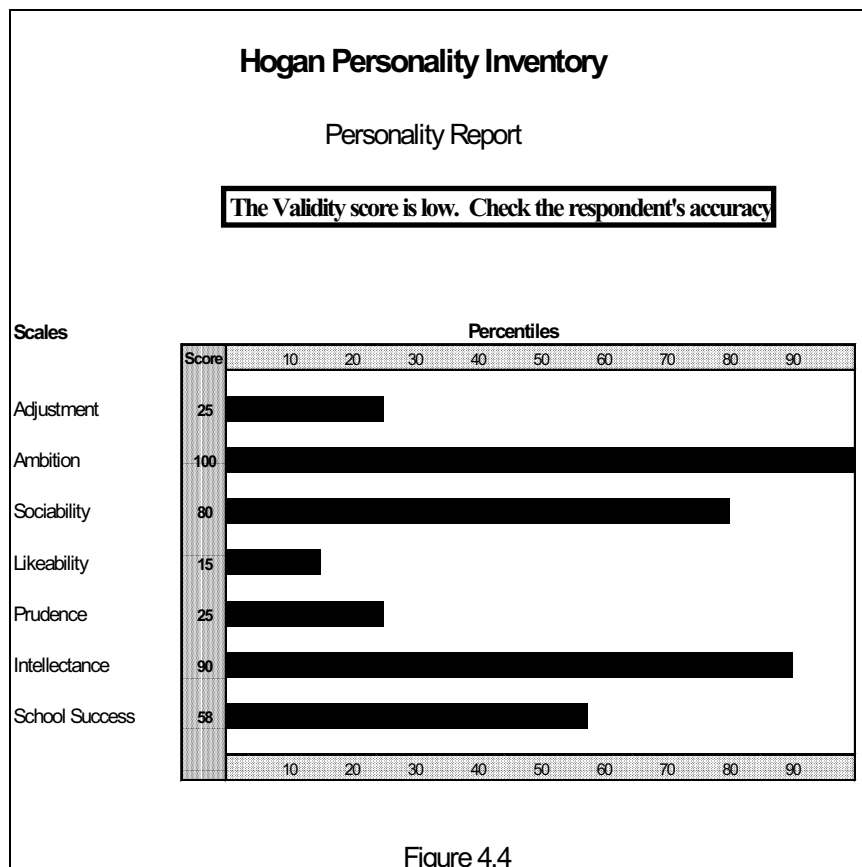
Like many Investigative types, he is not particularly interested in worldly success (Ambition), although in this case he was a varsity tennis player and he received the maximum score on the Competitiveness HIC of the Ambition scale.

The point we would like to stress about this profile is that the young man will make a good impression during an interview: he is physically fit, bright, creative, verbally fluent, and quite sociable. For these reasons, his very low score on Adjustment won't be apparent in an interview. Low Adjustment scores typically predict career problems; in this case, he had a great deal of trouble finishing his dissertation—he had problems concentrating and he quarreled with his advisor—and he seems incapable of deciding what to do when he grows up. Because he interviews well, he is readily hired; but because he is so unfocused, dysphoric, and insecure, he is soon fired. He currently drifts from one (well-paying) technical job to another, and that may be the story of his life.

An Artistic Profile

According to Holland's theory, Artistic types—writers, architects, poets, painters—are unconventional, often somewhat troubled, and more interested in self-expression than money, power, or social acceptance.

Figure 4.4 is a good example of an Artistic profile. First his Validity score is low; because Adjustment and Prudence are low, the Validity score reflects odd and unusual way of looking at the world—and it also reflects impulsivity and inattention to detail. This person will seem imaginative, wide ranging, and original (Intellectance), forceful, energetic, and colorful (Ambition and Sociability), but also abrupt, outspoken, and perhaps overbearing (Likeability).



However, the most important feature of this profile is the creativity syndrome—high Intellectance, low Prudence, and high Ambition. In this case the

syndrome is so pronounced as to be exaggerated. This bright, exuberant, imaginative, and somewhat difficult man is the talented and prize winning Vice President and Artistic Director of a very successful advertising and marketing company.

A Social Profile

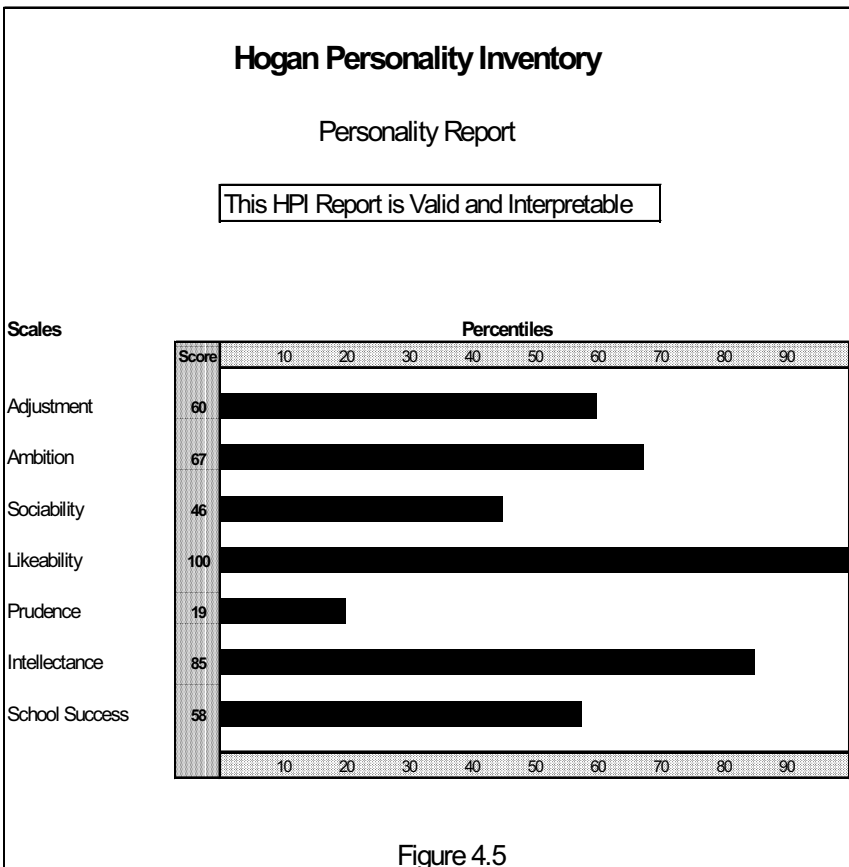


Figure 4.5 is the profile of a Social type. Social occupations are concerned with helping others and providing service; social types are altruistic, idealistic, unconventional, and often somewhat self-sacrificing—think of Mother Teresa. Very successful Social types—e.g., multi-millionaire evangelists—are in fact Enterprising types who are discussed below. The quintessential Social person will not be ambitious or hungry for power; rather he or she will be concerned with social injustice and helping the needy.

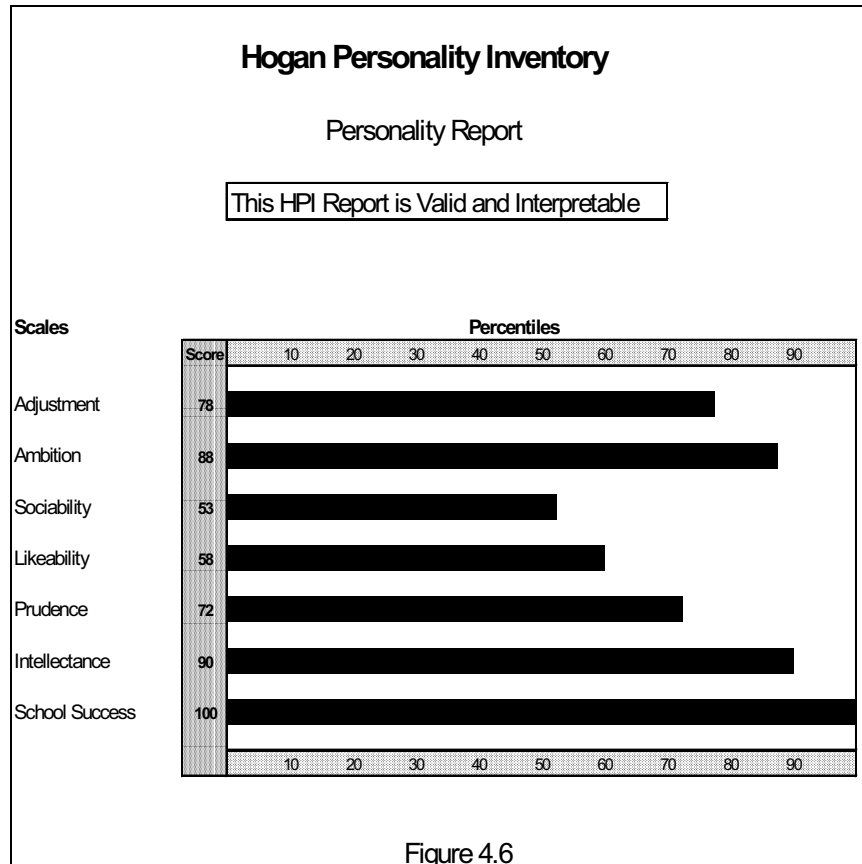
Figure 4.5 is the profile of a woman who has been a successful travel agent—

which is a combination of Artistic and Social interests—and a family counselor—which is a pure social occupation. The most distinctive feature of her profile is her score for Likeability, which suggests that she is kindly, sympathetic, warm, and friendly. The below average score on Sociability means that she will be willing to listen to others rather than requiring them to listen to her. Although interested in ideas, she is not especially creative—rather she tends to be careful, thorough, and precise (Validity and School Success). Neither overly ambitious nor self-promoting (Ambition and Sociability), she is an ideal Social type—pleasant, calm, and sensitive to the needs of others (Likeability).

An Enterprising Profile

Enterprising people, according to Holland, are ambitious, upwardly mobile, socially skilled, and somewhat conforming. They are achievement oriented, and they enjoy being in charge of others.

Figure 4.6 is the HPI profile of an unusually effective manager. A perfect score on the validity scale suggests a person who sees the world realistically and who pays attention to detail. She seems bright, well educated, and interested in education (Intellectance and School Success). She is also self confident, steady and stable, and very hard working (Adjustment, Prudence, and Ambition).



To round out her qualifications as a manager, she is pleasant and tactful (Likeability), and her average score on Sociability means she won't compete with her subordinates.

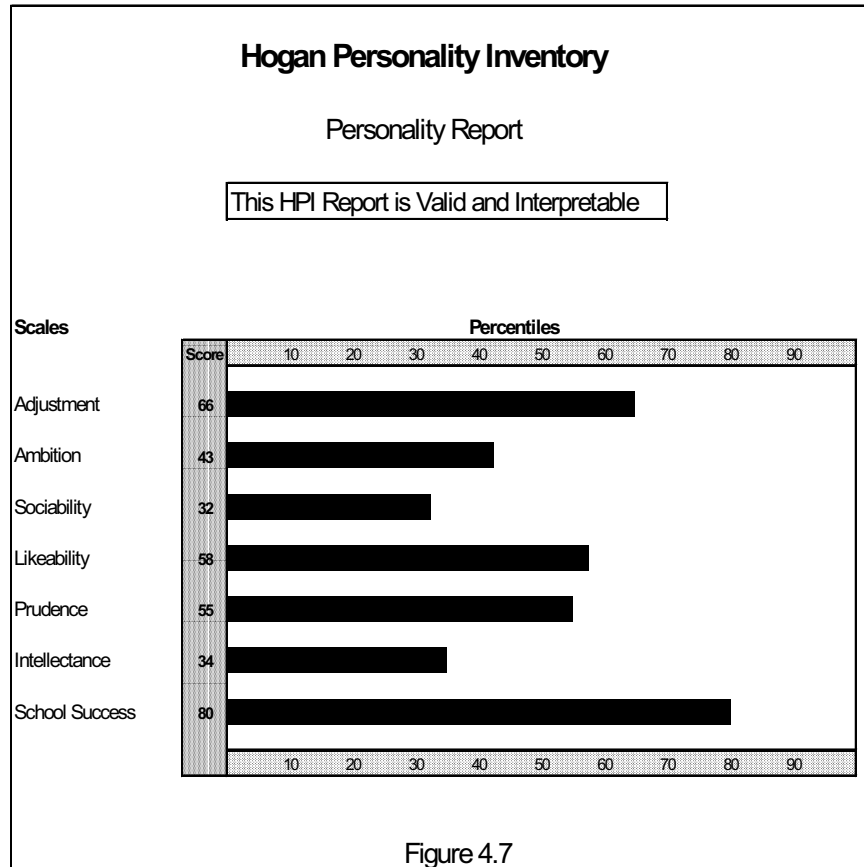
The high score for Prudence suggests that she will be comfortable with rules and procedures, and that she will be perceived as a person of great integrity. At the same time, she will "go by the book" and be more of an implementer than an innovator. The most distinctive feature of the profile, however, is its overall elevation, which suggests that this person should be very well organized and productive.

This person is a former superintendent of schools and the founding President of an experimental high school for students gifted in science and mathematics. Starting up the school required dealing with reluctant politicians, jealous school officials, an unresponsive state government, an indifferent federal bureaucracy, a hostile local press, and many skeptical parents; against quite formidable odds, she has established what is arguably the best school for the gifted in the United States. And in her "spare time" she manages a small but profitable cattle business.

A Conventional Profile

Conventional people, according to Holland, are in many ways the mirror opposite of Artistic types. They are careful, conforming, attentive to detail, and willing to follow instructions.

Figure 4.7 is a good example of a Conventional type. Her Validity score is within normal bounds. She will seem quiet, reserved, and not self-dramatizing (Sociability), rather conventional, attentive to detail, and not easily bored (Intellectance). She takes directions easily and is a team player (Ambition and Likeability). Although not a forceful person (Ambition and Sociability), she will be friendly, stable, even tempered, and calm under pressure (Adjustment and Likeability).



This exceedingly pleasant and congenial woman is the past president of Professional Secretaries International.

Ideal Uses of the HPI

Career Counseling and Individualized Assessment

Because the HPI assesses the major components of normal personality, it is a helpful counseling aid; as a counseling aid, it is most valuable when used in conjunction with a vocational interest measure. Vocational interest measures describe the kind of work a person will find interesting or congenial, but they provide no information about whether the person has the interpersonal talent and resources necessary to succeed in that line of work.

Modern research suggests that the personality characteristics that predict career success depend on the occupational type (cf. Holland, 1985a) in terms of which the career can be classified. This means that the personality characteristics associated with a successful career in sales will be different from those associated with a successful career in art, transportation, or finance. For example, successful salespeople tend to be sociable and entertaining, successful artists tend to be experience seeking and independent, and successful truck drivers tend to be conscientious and introverted.

Moreover, the characteristics associated with success in one occupation may be a liability in another; artists who are conforming and conscientious are likely not to be very creative, and adventurous truck drivers may be dangerous on the road. By combining HPI data with vocational interest information, a counselor can help clients match their talents to a set of occupational goals in a realistic manner.

Specifically, a counselor should compare a client's stated vocational interests with his or her HPI profile. If the client lacks the personal attributes associated with successful performance in his or her chosen field, then the counselor can recommend an alternative career pattern or a course of personal skill enhancement to help prepare the client for his or her career choice. The HPI provides essential information regarding a person's strengths and shortcomings, and this information is the foundation on which any legitimate program of career development should be based.

Some persons who seek vocational counseling may need more in-depth psychiatric counseling. The HPI Adjustment scale is a good proxy for the first factor of the MMPI—i.e., it assesses negative affectivity or neuroticism. Because persons with low scores on the Adjustment scale are often experiencing significant psychological discomfort, a low Adjustment score should warn a counselor that additional testing and careful intervention may be necessary.

The HPI can also be useful in counseling contexts where a person is concerned about, or interested in discovering, how he or she is perceived by others. As discussed earlier, the HPI is based on the Five Factor model of normal personality, and scores on the inventory reflect a PERSON's reputation—i.e., how he or she would be described by others (see Chapter Three for empirical support for this claim). HPI profiles often reveal important features of a person's interactional style of which he or she may be unaware, and which may be sources of personal or occupational difficulty. With the assessment offered by the HPI and a counselor's help, people may begin to enhance their interpersonal competencies.

Personnel Selection

The characteristics of successful organizations are reasonably well known (Peters & Waterman, 1982), and these characteristics can be summarized in one statement: Organizations are successful largely because good people work for them. Consequently, the quickest way to improve organizational effectiveness is to improve the quality of the people in the organization. Personnel quality can be improved through training or selection, and each approach has its strengths and shortcomings. Most of our experience has been with selection, and we usually start with two questions: (1) What kinds of people will perform well in various roles in an organization? and (2) How can these people be identified? Drawing on developments in personality psychology since the 1960's, we

believe that these questions can be answered by assessing the core dimensions of normal personality. Moreover, when done correctly, personality assessment leads to selection decisions that are valid, reliable, and fair.

Job analyses routinely reveal that different jobs require different personality characteristics (e.g., Gottfredson, Holland, & Ogawa, 1982; J. Hogan & Arneson, 1987; Viernstein, 1972). Moreover, the performance appraisal procedures used in many jobs to evaluate employees focus on their interpersonal behavior—which means that these evaluations concern personality from the observer’s perspective. Consequently, these evaluations are necessarily related to the Five Factor Model. Because the HPI systematically assesses the FFM, it is ideally suited for predicting success in jobs where interpersonal qualities affect performance appraisal and where interpersonal success leads to job success.

At the beginning of this section, we noted that an organization’s success depends in part on the answer to two questions. The first concerns what kinds of people will perform best in the various roles in the organization. A general answer to this question is that those people whose personality characteristics are compatible with the requirements of their jobs will be more likely to succeed. The second question concerns how to identify the people who will perform well in a particular organizational role. Traditionally, most organizations answer this question by using interviews to select employees. Because the interview is a long-standing and deeply-entrenched part of the selection process, many people assume that interviews work well and are legally sound. However, recent reviews of the interview literature (e.g., Arvey & Campion, 1982) reveal many possible biases and problems with them.

Concerning the comparative advantages of tests, including the HPI, over interviews as selection procedures, three points should be considered:

1. The *Uniform Guidelines on Employee Selection Procedures* (Equal Employment Opportunity Commission, Civil Service Commission, Department of Labor, & Department of Justice, 1978) apply to interviews as well as standardized tests. Given the well-documented biases that affect interviews and given their potential for adverse impact, the probability that an employer will be able to defend interviews successfully is less than the probability of being able to defend a well-validated test.
2. The HPI scales are reliable, valid (that is, they predict job performance), and they yield no significant race differences in research to date (see Table 2.5). The reliability and validity of an interview is almost always unknown, and interviewer objectivity is always an open question.
3. Data (J. Hogan & Zenke, 1986) indicate that the HPI is much cheaper to use than interviews or assessment centers.

As a practical matter, most companies (and especially the designated interviewers) will insist on using employment interviews. For those companies we suggest using the HPI as part of a multiple hurdle selection process in which the interview is the final step. The entire employment process can become more cost effective and more successful (valid) if the HPI is used in the first step to define a qualified applicant pool. More lengthy and expensive procedures (e.g., interviews, background checks) can then be used to select a final set of applicants.

Placement

Placement includes both lateral job moves and realignment of people with jobs. For example, an employee in accounting may want (or be encouraged) to transfer to sales or customer service. There are any number of reasons why an employee who is loyal and well-liked, who arrives at work on time, and who is a team player, may still prefer to move to a different work setting within the company (e.g., to develop managerial expertise). The HPI will help verify the advisability of such transfers by examining the fit between a person and his or her present and aspired-to alternative position.

Promotion

Promotion within a company, much like selection from outside the company, should match applicant characteristics with job requirements. The primary difference between selection and promotion is that companies generally have much more information on which to base a promotion decision. The ideal way to use the HPI in this instance would be first to screen the job performance records and qualifications of the candidates, then to administer the HPI to those who are qualified on paper, and finally to interview those persons with the personal qualities and qualifications needed for the new job.

A manager may often have someone in mind for a promotion. The process outlined above prevents favoritism from overriding objectivity in the promotional process. The HPI will help confirm or challenge a manager's preferred candidate, and will help ensure that the most qualified candidate receives the promotion.

Succession Planning

Succession planning helps identify persons who deserve special consideration for advancement in an organization. The HPI is valuable in this context for two reasons. First, it offers a reliable, objective, and comprehensive portrait of a person's strengths and shortcomings. Such an evaluation may not be available from the interviews, performance appraisals, or observations of on-the-job behavior that are typically used in succession planning. In this context, therefore, the HPI provides an additional perspective on the evaluation process. Second, because the HPI provides a comprehensive appraisal of normal personality, an early assessment of the persons considered for the succession plan, combined with appropriate feedback regarding their strengths and shortcomings, will significantly aid the management development process. That is, the HPI will reveal a person's interpersonal strengths and weaknesses. That information, combined with appropriate developmental activities, will allow individuals to plan their career development and find opportunities to modify weaknesses and develop strengths.

Summary

The foregoing discussion provides guidelines for interpreting the HPI. Once again, however, in learning to interpret any multidimensional inventory, there is no substitute for experience. And the experience comes from using the inventory to provide another person with feedback regarding his or her unique strengths and shortcomings. The feedback process is a never-ending source of new information regarding the meaning of scale scores, information that will deepen and enrich one's understanding of people and the inventory.

Chapter 5

Administering and Scoring

The HPI can be administered to individuals or groups using either paper-and-pencil materials or computer software. Administration procedures depend on mode of testing.

Testing time requires 20 minutes or less, depending on the testing mode and the test taker's reading speed. Although the inventory is written at a fourth grade reading level, it is intended to be used with people who are sixteen years and older.

How to Administer Paper-and-Pencil HPI Forms

Materials

The HPI is self-administered and consists of a 206-item booklet and an optically scannable answer sheet. Test takers should use a No. 2 pencil to complete the answer sheet. No responses are made in the test booklet; therefore, it is reusable. Items appear in blocks of five in the booklet and these correspond to the response groups on the answer sheet. This allows the respondent to keep track of his or her progress.

Completing the Answer Sheet

The answer sheet is two-sided and information on both sides should be completed. The respondent should complete the name or identification (ID) grid, or both. If names are to be used, the respondent must print the name in the name grid and fill in the corresponding response circles on the answer sheet. If an ID number is used, the name grid can be omitted and the ID numbers placed on the back of the sheet under "Social Security Number." The circles corresponding to the ID numbers must be filled. Although both names and IDs can be used, answer sheets with neither will not be identifiable and the reports will contain no identifying information.

If desired, the respondent should complete the grids for race, sex, and age. These grids are located on the back of the answer sheet. Information contained in these grids cannot be used to make personnel decisions. It should be kept separate from the results of the inventory; HPI interpretive reports which eliminate age, gender, or race information can be requested.

Conducting the Testing Session

Either individuals or groups may take the paper-and-pencil form of the HPI. The time required to complete the inventory in this form is approximately 20 minutes. There are no

basic differences between individual and group administration other than encouraging “no talking” in the latter case. Just a few common-sense steps are required to conduct a productive paper-and-pencil testing session. Because the quality of the test results depends to a substantial degree on the attitude with which an individual approaches the test, the test administrator should try to build rapport with the test taker(s). Physical testing conditions should be comfortable and free from distractions. The administrator begins the paper-and-pencil session by distributing the materials and asking respondents to complete the name grid and, if desired, other information on the back of the answer sheet.

Administrator’s Script for Conducting a Testing Session

The administrator begins the paper-and-pencil session by distributing the materials and going over the answer sheet with the respondents to familiarize them with the format. As noted, there are grids on the answer sheets for name, social security number (or employee identification number), age, race, and sex. You may or may not want respondents to complete all of this information depending upon how you are using the inventory. The demographic information is useful for equal employment opportunity research purposes and should not be used in any decision making. In any case, you should explain to the respondents how the information will be used and who will have access to it. Also on the answer sheet, it is important that they fill-in some form of identification—either a name or an identification number (such as social security or employee identification).

A sample script follows that could be used by someone administering the HPI to a group of respondents. Directions for the administrator to read out loud follow the capitalized ADMINISTRATOR and are set in boldface type. Instructions to the administrator are in parenthesis (). Administrators should maintain a courteous, pleasant tone of voice throughout the session.

Script begins:

ADMINISTRATOR: Good morning/afternoon. I’m (name). I want to welcome you to today’s assessment session. To complete the assessment today, you will need a No. 2 pencil, an assessment booklet, and an answer sheet. The first thing I will do is pass out these items. Please do not start looking at the questions in the booklet until I have said to begin. Although this inventory is not timed, we will probably need about twenty minutes to complete everything.

(Pass out an answer sheet and a couple of sharpened No. 2 pencils to each respondent.)

ADMINISTRATOR: On the upper left section of the answer sheet, please print your last name first. Then print your first name using the last 10 spaces. Look below your name, and fill in the circles that match the letters in your name. Note that there is a circle to complete for each blank box. Please make only one mark in each column of letters and use a heavy dark mark that completely fills the chosen response circle. These response circles appear in all areas of the answer sheet. By filling in the circles carefully, you ensure that the information on the answer sheet will be correctly recognized in the scanning and scoring process. If you make an error or change your mind, erase your initial choice carefully and thoroughly. Then fill in the correct circle.

(Now, if applicable:)

ADMINISTRATOR: Fill in the [social security/identification number]. This number is being used to identify your results and to match your HPI results with other information you have completed.

ADMINISTRATOR: Please fill in the grids for race, sex, and age. This information is for EEOC research purposes only.

ADMINISTRATOR: (Next, read aloud the instructions contained in the test booklet.) Please follow along with me silently while I read the instructions found on the inside cover of the test booklet. If you have any questions, please raise your hand or come up to me after we've finished reading the instructions.

ADMINISTRATOR: (after you have finished reading the booklet instructions) Are there any questions? If not, please note that this inventory contains 200 statements to which you should respond. These statements appear in blocks of five in the booklet and the response options on the answer sheet are also in blocks of five. So, as you respond to each statement, make sure the number in the booklet is the same as the number on the answer sheet. Please respond to all of the statements, taking care to fill in the appropriate response circle and complete the entire answer sheet. When you finish, please give me your materials. I would like to thank you for your participation today. You may now begin.

(At the end of 15 minutes) As you finish, take a moment to check your answer sheet for completeness. Please check each statement, the name field, and the demographic fields.

Script ends.

Anticipate that questions may arise. Some common ones include:

—“Can I get a copy of my results?” The usual answer for job applicants is: “No. This inventory is being used by the company to forecast job success and is not presented for purposes of feedback or counseling.” Otherwise tell the respondent the type of feedback to be given and where results can be obtained. Also for non-employment applications, explain how the individual can receive more information about test results.

—“Do I have to respond to all of the statements?” Answer: “Try to answer as many as you can. Leave blank the statements that you feel you cannot answer.”

—“What does statement ___ mean?” Answer: “It is better that you decide for yourself. If you cannot answer it, leave it blank.”

As testing proceeds, your role as administrator is to monitor the examination process. This includes eliminating distractions, helping individuals with questions, and collecting all completed materials. For security purposes, make sure you obtain all materials originally distributed. You should scan each completed answer sheet for neatness and completeness. Erase stray marks and make sure the circles chosen by the respondent are filled in completely and that identification appears. As the completed answer sheets are turned in, thank each respondent for participating.

How to Administer Computer On-Line Testing

Materials

The HPI can be taken directly on the computer. In this mode, the respondent uses the keyboard to complete the information requested on the computer screen. Each inventory question is displayed on the screen and the test taker selects and keys in a response using "1" for true and "0" for false.

The on-line testing system requires an IBM PC/XT/AT/PS2¹ or compatible computer with at least one floppy diskette drive, a 10 megabyte hard drive, 512 kilobytes of RAM, and 1 parallel port. The system was developed under MS-DOS version 3.3², however, it will operate under any DOS version 2.10 or later. A keyboard is required, but a mouse is not needed.

Software for the HPI on-line testing, scoring, and report generating system must be installed on the computer system's hard drive in order to operate the system. This software is available on either 5.25 inch or 3.5 inch floppy diskettes. Instructions for installation and operation of the system are available.

If printed reports are desired, a printer will be needed. The type of printer must be defined during the installation of the software. Refer to the HPI software user's manual for more information.

Using the On-line System

The test administrator initiates the program for on-line HPI administration. First, the test taker will see the title screen displayed and the first entry window. Using the keyboard, the test taker types in the name and ID number. Following this, instructions to complete the inventory are displayed. Using the space bar and the cursor control keys, the respondent moves through the inventory as one item at a time is displayed on the screen. The respondent may scroll back to previous items. When the test taker completes the inventory, the screen prompts the test taker to inform the administrator.

The test administrator can score the data file created using the scoring utility that is also part of the system. From the scored data, the test administrator can choose to print scores from the HPI scales, graphs of the scales, or interpretive reports. The test scores will be stored in an archive file and may be recovered from this file later.

¹Registered trademark of International Business Machines

²Registered trademark of Microsoft Corporation

How to Score the HPI Answer Sheets

The HPI answer sheets can be scored using any of three methods. Each of these methods is computerized and requires the use of software which scores the inventory and generates the type of report specified. Both on-site and mail-in scoring services are available. For test security, there are no hand scoring keys. Scoring methods are described next.

Keyed Data Entry

Users can score answer sheets on their own computers with HPI scoring software, including a “Key” diskette that controls the number of tests scored. Data from the HPI answer sheet are entered into a computer by an operator who keys in each of the 206 item responses. The system provides for multiple score sheets to be key entered and the data stored. Then, all cases are scored, and reports are generated and written to a file. When scoring is complete, the program will display the number of inventories processed, and the printing status of the report.

This method allows the user complete control of processing test results. The answer sheets are maintained at the user’s office and only the user has access to the test information. Results are immediate and printed in the user’s office.

Optical Scanning of Answer Sheets

Users may score their own HPI answer sheets by means of a computer and a scanner available from National Computer Systems. With this equipment, completed HPI answer sheets are loaded into the scanner tray and an operator activates the scanning program. With this system, the operator does not key in the test responses. The scanner reads the marked answers and sends the data to a computer file.

Mail-in or FAX Scoring

For users who do not score tests on-site, answer sheets can either be mailed or FAXed to Hogan Assessment Systems for processing. For mailing, answer sheets should not be folded; they should be properly marked with a No. 2 pencil, and in good condition. Tests will be processed the business day they are received and reports will be returned according to the user’s instructions. For FAXed answer sheets, the user should transmit a cover sheet with report return instructions followed by a copy of the front of the HPI answer sheet and then a copy of the back of the answer sheet. If you FAX more than one answer sheet, include some form of identification on both sides of each form. Answer sheets should be completed using clear, dark marks. FAX transmissions will be processed the business day they are received and reports will be returned according to the user’s instructions. An order form will be sent to you for future scoring services or materials ordering.

To request test scoring from Hogan Assessment Systems, include the company name, complete address, contact person, and telephone number along with the answer sheets to be scored. Send completed answer sheets with scoring instructions to:

Hogan Assessment Systems, Test Scoring Services
2622 E. 21st Street, Suite 14
Tulsa, OK 74114

FAX transmissions to:
 Hogan Assessment Systems, 918-749-0635

Contact Hogan Assessments Systems for more details at 918-749-0632.

Testing Disabled Individuals

The Americans with Disabilities Act of 1990 (ADA) is the most significant, recent employment law. It prohibits discrimination against qualified individuals with disabilities in employment. This law has important implications for employers' procedures used in interviewing, testing, and hiring new employees. For pre-employment testing, the ADA specifies that employers must provide alternate forms of employment testing that "accurately (assess) the skills, aptitudes, or whatever other factor of such applicant or employee that such test purports to measure, rather than reflecting the impaired sensory, manual or speaking skills of such employee or applicant" Sec. 102(b)(7), 42 U.S.C.A. Sec. 12112.

Although job applicants cannot be asked to reveal information about their disabilities, employers who use job-related pre-employment tests may ask applicants to request any necessary accommodations needed to take the tests. The HPI can be administered in three different ways that may accommodate qualified disabled individuals. These modes of administration include paper-and-pencil, on-line computer, and verbal. We evaluated the reliability of the results of tests administered using these modes because we were concerned that the mode could affect test results. Using male and female undergraduate students, one sample (n=34) completed the HPI in the paper-and-pencil version and in the verbal form using a reader who read the items and recorded the responses. In a second sample (n=30), the HPI was administered in the paper-and-pencil version and in the on-line computer program. All administrations were counterbalanced and were separated by a two-month interval. Table 5.1 presents the correlations between the paper-and-pencil administration and the other modes. As can be seen, HPI scale scores between administration modes converge nicely, suggesting that test results are reliable and nearly identical regardless of test administration form.

Employers who are concerned about accommodating applicants in the pre-employment testing process can be assured of accurate results even when it is not possible to use traditional paper-and-pencil test administration.

Table 5.1							
Correlations between Alternative Forms of HPI Administration							
Modes	ADJ	AMB	SOC	LIK	PRU	INT	SCH
On-line ^a	.80	.91	.90	.87	.82	.91	.92
Verbal ^b	.87	.97	.85	.82	.81	.90	.88
^a N = 30 ^b N = 34							

Chapter 6

Occupational Scales and Validation Research

Introduction

Skepticism regarding the usefulness of personality measurement for personnel selection reached a peak during the late 1960's. Two critiques were particularly influential. The first was Mischel's (1968) book which claimed that (1) there is no evidence that personality is consistent over time and that (2) measures of personality explain only a trivial amount of the variance in social conduct. The second was a review by Guion and Gottier (1965) that concluded there was no evidence for the validity of personality tests. On closer analysis and with additional research, these conclusions have been largely reversed.

The renewed interest in personality assessment is based on both qualitative (Goldberg, 1992; R. Hogan, 1991; Schmidt & Ones, 1992) and quantitative (Barrick & Mount, 1991; Tett, Jackson, & Rothstein, 1991) reviews which conclude that personality measures, when organized in terms of the FFM, are consistently related to relevant job performance criteria. Several developments have helped reverse professional opinion on this subject. First, because measures of normal personality, rather than measures of psychopathology, were used in the validity analyses, validities were enhanced. Second, the FFM provides a taxonomic structure for organizing personality scales and when this structure is used to select measures in validation research, correlations with job-related criteria improve. Third, when latent performance constructs are used to align predictors and criteria, the validities associated with personality measures approximate the validities associated with cognitive tests. Finally, unlike cognitive tests, personality measures have no adverse or differential impact on protected groups.

Although other personality inventories based on the FFM have been recently developed (cf. Costa & McCrae, 1985, 1989; Goldberg, 1992; Wiggins, 1991), the HPI is uniquely designed to forecast performance in real world settings. It has been used in over one hundred research studies to predict job performance. This research shows that several scales are consistently related to the performance requirements that are common to many jobs. Three of the six occupational scales assess broad dimensions of organizational effectiveness—Service Orientation, Reliability, and Stress Tolerance. The remaining three scales predict potential success in clerical, sales, and management jobs. These six scales were developed and validated for use in personnel selection.

The occupational scales are composed of HICs from the personality scales. HICs were combined empirically to predict non-test criteria in organizations. Because the occupational scales use the same HICs as the personality scales, they share the same psychometric properties. Therefore, the HIC descriptions presented in Table 2.2 and the reliabilities presented in Table 2.3 apply to the occupational scales. Note, however, the personality scales were constructed through factor analysis of the 41 HICs and that procedure optimizes the internal consistency reliability of the scales. When we recombine HICs to form new occupational scales, their statistical independence reduces the internal consistency of the new scale. The internal consistency of the six occupational scales ranges from .69 to .86 (N=7,583). In our judgment, however, test-retest reliabilities are the estimates that matter in practical application and these range from .77 to .87 (N=150). The following section summarizes the development of each occupational scale.

Description of the Occupational Scales

Service Orientation Scale

Purpose: To identify persons who are pleasant, courteous, cooperative, and helpful in dealing with customers, clients, and co-workers.

Technical Description: The scale consists of 14 items from three HICs which appear on the Adjustment, Likeability, and Prudence scales. Sample items include:

- I do my job as well as I possibly can.
- I am a relaxed easy going person.
- I always try to see the other person's point of view.

Total group scale means and standard deviations appear in Table 6.1. The internal consistency reliability (Cronbach, 1951) of this scale is .69. This moderate internal consistency reflects the fact that Service Orientation is composed of HICs taken from three independent personality scales (Table 2.1). The reliability of the Service Orientation scale, estimated by test-retest reliability over a four-week period is .78.

Normative data are available by total group in Appendix A and by gender, race, and age in Appendix B. To comply with provisions of the Civil Rights Act of 1990, we recommend that total group norms presented in Appendix A be used to convert raw scale scores into percentiles when making personnel decisions.

Developmental Validation Research. The initial concurrent validation research on the Service Orientation scale appears in R. Hogan, J. Hogan, and Busch (1984). A sample of 101 nursing aides at a large Baltimore hospital completed the HPI and were rated by their supervisors' for service orientation on the job. Reliability of the supervisors' ratings was .51. HPI HICs were correlated with supervisors' ratings and HICs from the Adjustment, Sociability, and Likeability scales were significantly related to the criterion measure. These HICs were combined into a single scale, which correlated .61 ($p < .001$) with supervisors' ratings. The current Service Orientation scale is a shortened version of the original 87-item scale. The correlation between the original scale and the revised 14-item scale is .71.

Table 6.1
Descriptive Statistics and Reliability for HPI Occupational Scales

Scale	Number of items	Mean	SD	Alpha	Interitem r	r ^{tt}	SE
Service Orientation	14	10.36	2.52	.69	.13	.78	1.18
Stress Tolerance	25	19.48	4.53	.86	.20	.87	1.65
Reliability	18	12.35	3.42	.75	.14	.83	1.43
Clerical Potential	24	18.91	3.41	.72	.09	.77	1.64
Sales Potential	67	40.77	8.88	.82	.07	.85	3.43
Managerial Potential	37	30.68	4.63	.79	.10	.83	1.93

Table 6.2 lists additional validation studies using Service Orientation in the predictor battery. This table includes the reference sources, samples studied, criteria used, and validity coefficients for Service Orientation.

Table 6.3 contains adjectival descriptors that correlate with scores on the Service Orientation scale. These data were generated from the peer description validation research presented in Chapter Three (page 19). In this study, subjects (N=128) completed the HPI and two peers who knew each subject well rated the subject using 112 adjectives from Gough and Heilbrun's (1983) Adjective Check List (ACL). As seen in Table 6.3, service oriented persons are described as calm, praising, and soft-hearted and they are not seen as worrying, fault-finding, or bossy.

Stress Tolerance Scale

Purpose: To identify persons who handle pressure well and are not tense or anxious.

Technical Description: The scale consists of 25 items from five HICs which appear on the Adjustment and Ambition scales. Sample items include:

- I keep calm in a crisis.
- I am seldom tense or anxious.
- I am a happy person.

Total group scale means and standard deviations appear in Table 6.1. The internal consistency reliability (Cronbach, 1951) of this scale is .86. This is the highest coefficient alpha among the occupational scales and it reflects the large contribution of Adjustment scale HICs. The reliability of the Stress Tolerance scale, estimated by test-retest reliability over a four-week period, is .87.

Normative data are available by total group in Appendix A and by gender, race, and age in Appendix B. To comply with provisions of the Civil Rights Act of 1990, we recommend that total group norms presented in Appendix A be used to convert raw scale scores into percentiles when making personnel decisions.

Table 6.2

Additional Validation Studies for Service Orientation, Stress Tolerance, and Reliability

Service Orientation			
Source	Sample	Criteria	r
Hogan, Hogan, & Busch (1984)	37 nursing students	Faculty ratings	.31*
	30 nursing home aides	Supervisor ratings	.42**
Raza, Metz, Dyer, Coan, & Hogan (1986)	201 hospital service workers	Times counseled for aberrant behavior	-.15*
Montgomery, Butler, & McPhail (1987)	122 nuclear power plant workers	Supervisor ratings of punctuality	.23**
Hogan, Jacobson, Hogan, & Thompson (1987)	76 service operations dispatchers	Number of absences above allowable	-.40**
Muchinsky (1987)	102 customer service representatives	Supervisor ratings of quantity	.21*
		Supervisor ratings of quality	.28*
Muchinsky (1987)	145 telemarketers	Sales performance	.31*
		Lead generation	.30*
		Fund raising	.24*
Muchinsky (1987)	44 field sales representatives	Supervisor ratings of overall performance	.27*
Muchinsky (1987)	50 office managers	Supervisor ratings of follow-through	.33*
		Supervisor ratings of adaptability	.26*
		Supervisor ratings of overall performance	.29*
		Supervisor ratings of planning	.29*
Cage (1989)	20 nannies	Supervisor ratings of appearance	.43*
		Supervisor ratings of common sense	.37*
		Supervisor ratings of overall effectiveness	.38*
Hogan & Arneson (1991)	178 habilitation therapists	Disciplinary notations	-.30**
Curphy, Gibson, Asiu, Horn, & Macomber	312 military attaches	Supervisor ratings of performance	.32*
Muchinsky (1993)	109 insurance employees	Supervisor ratings of interpersonal skills	.25*
		Supervisor ratings of organization	.26*
Hogan & Hogan (1993)	163 truck drivers	Accident rates	-.48**
Hayes, Roehm, & Castellano (1994)	130 machine operators	Supervisor ratings of effectiveness	.61**
Hogan, Hogan, & Brinkmeyer (1994)	255 truck drivers	Supervisor ratings of overall performance	.40**
Landy, Jacobs, & Associates (1994)	588 bus operators	Supervisor ratings of courtesy	.14*
Hogan & Gerhold (1995a)	27 financial consultants	Number of new accounts (annually)	.43*
Klippel (1995)	29 service operations coordinators	Supervisor ratings of social skill	.37*
Gerhold (1995)	23 financial consultants	Annual commission	.51*
Stress Tolerance			
Guier (1984)	65 psychiatric counselors	Supervisor ratings: overall job performance	.25*
Hongan, Peterson, Hogan, & Jones	110 line-haul truck drivers	Number of commendations received	.17*
		Number of claims filed for equipment failure	-.25**
Montgomery, Butler, & McPhail (1987)	122 nuclear power plant workers	Supervisor ratings of dependability	.22**
		Supervisor attitude ratings	.18*
		Supervisor ratings of punctuality	.30**
Hogan, Jacobson, Hogan, & Thompson (1987)	76 service operations dispatchers	Number of absences above allowable	-.27**
Muchinsky (1987)	102 customer service representatives	Supervisor ratings of quantity	.24*
		Supervisor ratings of quality	.30*
		Supervisor ratings of teamwork	.35*
		Supervisor ratings of overall performance	.31*
Muchinsky (1987)	145 telemarketers	Sales performance	.29*
		Fund raising	.33*
Muchinsky (1987)	44 field sales representatives	Supervisor ratings of overall performance	.25*
Muchinsky (1987)	50 office managers	Supervisor ratings of follow-through	.37*
		Supervisor ratings of adaptability	.39*

Stress Tolerance (cont.)

Source	Sample	Criteria	r
Salas, Hogan, Driskell, & Hoskins (1988)	135 Navy electronic students	Academic performance	.19*
Cage (1989)	20 nannies	Training completion	.19*
		Supervisor ratings of appearance	.43*
		Supervisor ratings of common sense	.39*
		Supervisor ratings of overall effectiveness	.42*
Hogan & Hogan (1993)	163 truck drivers	Low accident rates	.42**
Brinkmeyer (1994)	49 job applicants	Recruiter ratings of interpersonal performance	.29*
Hogan & Gerhold (1994)	24 certified nurses aides	Supervisor ratings of overall performance	.50*
Hayes, Roehm, & Castellano (1994)	130 machine operators	Supervisor ratings of effectiveness	.71**
Hogan, Brinkmeyer, & Kidwell (1994)	30 tank truck drivers	Supervisor ratings of overall performance	.30*
Gerhold (1995)	23 financial consultants	Annual commission	.52*
Reliability			
Hogan, Hogan, & Briggs	56 truck drivers	Number of commendations received	.51*
Hogan, Peterson, Hogan, & Jones (1982)	110 line-haul truck drivers	Number of claims filed for equipment failure	-.25**
		Number of commendations received	.25**
Raza, Metz, Dyer, Coan, & Hogan (1986)	201 hospital service workers	Times counseled for aberrant behavior	-.18*
Hogan, Arneson, Hogan & Jones (1986)	178 habilitation therapists	Number of injuries sustained	-.17*
		Hours lost to job injury	-.17*
Montgomery, Butler, & McPhail (1987)	122 nuclear power plant workers	Supervisor ratings of dependability	.19*
		Supervisor ratings of punctuality	.23**
		Supervisor ratings of accuracy	.16*
Hogan, Jacobson, Hogan, & Thompson (1987)	76 service operations dispatchers	Number of absences above allowable	-.49**
Salas, Hogan, Driskell, & Hoskins (1988)	135 Navy electronic students	Course completion time	.16*
Muchinsky (1987)	102 customer service representatives	Supervisor ratings of quantity	.18*
		Supervisor ratings of teamwork	.24*
		Supervisor ratings of overall performance	.19*
Muchinsky (1987)	145 telemarketers	Sales performance	.26*
		Fund raising	.30*
		Lead generation	.34*
Muchinsky (1987)	44 field sales representatives	Supervisor ratings of overall performance	.29*
Muchinsky (1987)	50 office managers	Supervisor ratings of follow-through	.38*
		Supervisor ratings of adaptability	.35*
		Supervisor ratings of overall performance	.25*
Woolley (1990)	131 male students	Counterproductivity at work	-.36*
		Counterproductivity at school	-.22*
	158 female students	Counterproductivity at work	-.33*
		Counterproductivity at school	-.38*
Hogan & Hogan (1993)	163 truck drivers	Low accident rates	.48**
Brinkmeyer (1994)	49 job applicants	Recruiter ratings of social skill	.24*
Hogan & Gerhold (1994)	24 certified nurses aides	Supervisor ratings of overall performance	.52*
Hayes, Roehm, & Castellano (1994)	130 machine operators	Supervisor ratings of effectiveness	.65**
Hogan, Brinkmeyer, & Kidwell (1994)	30 tank truck drivers	Supervisor ratings of overall performance	.61*
Nolan, Johnson, & Pincus (1994)	320 adults	Rated severity of alcoholism	-.62**
Hogan, Hogan, & Brinkmeyer (1994)	255 truck drivers	Supervisor ratings of overall performance	.43*
Landy, Jacobs, & Associates (1994)	588 bus operators	Supervisor ratings of safety	.15*
Hogan & Gerhold (1995b)	90 convenience store managers	Supervisor ratings of overall performance	.27**
Klippel (1995)	20 service operations coordinators	Work attendance	.51*
		Supervisor ratings of professional courtesy	.47*

Table 6.3

Adjectival Correlates of the HPI Occupational Scales^a

General Occupational Scales

Service Orientation		Stress Tolerance		Reliability	
Moody	-.38	Tense	-.47	Self-pitying	-.38
Tense	-.37	Moody	-.42	Stable	.32
Worrying	-.37	Unstable	-.42	Noisy	-.32
Anxious	-.34	Worrying	-.41	Fault-finding	-.31
Fault-finding	-.33	Self-pitying	-.38	Affectionate	.30
Calm	.32	Nervous	-.35	Curious	-.30
Praising	.31	High-strung	-.35	Irresponsible	-.29
Bossy	-.31	Fearful	-.34	Soft-hearted	.28
Soft-Hearted	.30	Temperamental	-.33	Praising	.28
Self-pitying	-.29	Self-punishing	-.32	Unstable	-.27

Specific Occupational Scales

Clerical		Sales		Manager	
Active	.39	Talkative	.45	Active	.32
Tense	-.31	Shy	-.40	Polished	.31
Nervous	-.30	Outgoing	.39	Precise	.30
Energetic	.30	Quiet	-.35	Ingenious	.30
Outgoing	.29	Assertive	.33	Wise	.29
Moody	-.27	Reserved	-.33	Planful	.27
Cold	-.27	Spunky	.33	Outgoing	.26
Fearful	-.27	Retiring	-.32	Efficient	.25
Unstable	-.26	Outspoken	.32	Irresponsible	-.25
Polished	.25	Noisy	.31	Unstable	-.25

^aThese correlations are based on data from the peer description validation research presented in Table 3.10, 3.11, and 3.12. All correlations are $p < .01$.

N = 128

Developmental Validation Research. The initial validation research on the Stress Tolerance scale appears in J. Hogan, R. Hogan, and Briggs (1984). A sample of 56 truck drivers employed by a large east coast motor freight company completed the HPI. The employee service file of each driver was reviewed and job performance data from the previous eighteen months were coded and used as criterion measures. The Stress Tolerance scale, composed of HICs from the Adjustment, Prudence, and Ambition scales, correlated with number of days a driver missed work for medical reasons ($r = -.51$, $p < .001$) and number of commendation letters received ($r = .42$, $p = .002$).

The current Stress Tolerance scale is a shortened version of the original 55-item scale. The correlation between the original scale and the revised 25-item scale is .85. McDonald, Beckett, and Hogdon (1988) extended the construct validity of this scale in a study of fitness and performance in male and female personnel on active duty in the U.S. Navy (N=102). Subjects completed the HPI and the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971) and the Tennessee Self Concept Scale (TSCS; Fitts, 1965). The Stress Tolerance scale correlated -.24, -.28, .25, and -.30 respectively with the POMS scales of Tension, Depression, Vigor, and Confusion ($p < .05$). In addition, the Stress Tolerance scale correlated .33 and .63 with the TSCS subscales of physical self-concept and total self-concept ($p < .01$).

Table 6.2 lists additional validation studies using Stress Tolerance. This table includes the reference sources, samples studied, criteria used, and validity coefficients for Stress Tolerance.

Table 6.3 contains adjectival correlates of scores on the Stress Tolerance scale. As seen, persons with low scores on Stress Tolerance are described as tense, moody, and unstable. Persons who score high on the Stress Tolerance scale are seen as stable and even-tempered.

Reliability Scale

Purpose: To identify persons who are honest, dependable, and responsive to supervision.

Technical Description: The scale consists of 18 items from four HICs which appear on the Adjustment, Likeability, and Prudence scales. Sample items include:

- I rarely do things on impulse.
- When I was in school, I rarely gave the teachers any trouble.
- I am rarely irritated by faults in others.

Total group scale means and standard deviations appear in Table 6.1. The internal consistency reliability (Cronbach, 1951) of this scale is .75. The reliability of the Reliability scale, estimated by test-retest reliability over a four-week period is .83.

Normative data are available by total group in Appendix A and by gender, race, and age in Appendix B. To comply with provisions of the Civil Rights Act of 1990, we recommend that total group norms presented in Appendix A be used to convert raw scale scores into percentiles when making personnel decisions.

Developmental Validation Research. The initial validation research on the Reliability scale appears in J. Hogan and R. Hogan (1989). Four groups of subjects completed the HPI: (a) 40 incarcerated delinquent persons from Arizona, who had been arrested for drug-related offenses; (b) 103 working-class nurse aides from an inner-city hospital; (c) 38 police cadets from a suburban department; and (d) 145 college students. The delinquents were assigned a score of 0, the non-delinquents were given a score of 1. In addition, the college students completed a questionnaire asking about their past delinquent behavior (e.g., drug use, promiscuity, arrests); the questionnaire was scored by summing the number of nondelinquent items endorsed. Nineteen HICs were correlated with the delinquency criteria, 9 of these were chosen on the basis of their correlations with the delinquency criteria and their conceptual correspondence to the structure of deviancy. Although each component HIC correlated with the delinquency criteria, the "Avoids Trouble" HIC had the highest correlation, with r 's ranging from .68 to .73 ($N=143$). The current Reliability scale is a shortened version of the original 69-item scale. The correlation between the original scale and the revised 18-item scale is .72.

Interest in integrity testing has increased recently due to the expense of counterproductive behaviors in organizations and the national trend toward cost-cutting. Sackett, Burris, and Callahan (1989) distinguish overt integrity tests from personality-based tests, with the former containing transparent items (e.g., "I stole more than \$5,000 from my last

employer.”) and the latter containing genotypic responsibility and conscientiousness items (e.g., “People respect my integrity”). The HPI Reliability scale is a personality-based measure of integrity.

Woolley and Hakstian (1992) examined the construct validity of the two types of integrity measures using the HPI Reliability scale, the Personnel Reaction Blank (PRB; Gough, 1972), the Personnel Decisions, Inc., Employment Inventory (PDI-EI; Personnel Decisions Inc., 1985), and the Reid Report (Reid, 1967)—all except the Reid Report are personality-based integrity measures. The correlations among the various scales indicated that the personality-based measures substantially converged. The correlations between the personality-based measures and the Reid Report scales, which are overt integrity measures, were consistently lower than correlations between the personality-based measures. The Reid Report Punitive scale was unrelated to the personality-based measures, suggesting that attitudes toward punishing others is unrelated to responsibility and conscientiousness. Factor analysis of Reliability, PRB, PDI-EI, Reid Report, CPI Class II scales, selected 16 PF scales, and NEO-PI scales yielded four factors. The largest of the four was “Socialized Control,” a dimension the authors concluded was the core of what Sackett et al. (1989) referred to as integrity. The Reliability scale loaded .75 on this factor which also included loadings of .76, .48, and .08 for the PRB, PDI-EI, and Reid Report scales, respectively. Woolley and Hakstian conclude that personality-based and overt measures of integrity are factorially and conceptually distinct.

The Reliability scale has been used in a number of meta-analytic reviews—cf. Barrick and Mount (1991), Ones (1992), and Tett et al. (1992). Ones (1992) estimated that the average criterion-related validity of the Reliability scale when predicting counterproductive behaviors is .45, a figure that is somewhat higher than those reported for Conscientiousness measures in general. In their meta-analysis of personality-based integrity measures, Barrick and Mount (1991) conclude, “...the results suggest that if the purpose is to predict job performance based on an individual’s personality, then those measures associated with Conscientiousness (Factor III in the five-factor model) are most likely to be valid predictors for all jobs. In fact, it is difficult to conceive of a job in which the traits associated with the Conscientiousness dimension would not contribute to job success” (pp. 21-22).

Table 6.2 lists several studies in which the Reliability scale was used to predict job performance. This table includes the reference sources, samples studied, criteria used, and validity coefficients for Reliability.

Table 6.3 contains adjectival correlates of the Reliability scale. As can be seen, persons with high scores on the Reliability scale are described as stable, affectionate, and praising, while persons with low scores are described as self-pitying, fault-finding, and irresponsible.

Clerical Potential Scale

Purpose: To identify persons who are attentive to detail, congenial, and industrious.

Technical Description: The scale consists of 24 items from five HICs which appear on the Adjustment, Ambition, Likeability, and Prudence scales. Sample items include:

In a group, I like to take charge of things.

When I was in school, I rarely gave the teachers any trouble.

I am sensitive to other people's moods.

Total group scale means and standard deviations appear in Table 6.1. The internal consistency reliability (Cronbach, 1951) of this scale is .72. The reliability of the Clerical Potential scale, estimated by test-retest reliability over a four-week period is .77.

Normative data are available by total group in Appendix A and by gender, race, and age in Appendix B. To comply with provisions of the Civil Rights Act of 1990, we recommend that total group norms presented in Appendix A be used to convert raw scale scores into percentiles when making personnel decisions.

Developmental Validation Research. The initial concurrent validation research on the Clerical Potential scale appears in J. Hogan and R. Hogan (1986). Women (N=107) in 44 different clerical positions in a large insurance company completed the HPI and were rated for overall job performance by two supervisors. These two sets of ratings correlated .60. Five HICs had the following correlations with the supervisors' ratings: Not Anxious (.26), No Somatic Complaint (.25), Avoids Trouble (.26), Leadership (.12), and Caring (.22). These HICs were combined to form a single scale that correlated .47 with rated performance in one half of the sample, .37 in the second half, and .42 overall (correlations corrected for attenuation).

If an organization uses formal, structured assessments of potential clerical employees, these evaluations will typically be performance tests and paper-and-pencil measures of basic cognitive abilities. To determine whether the Clerical Potential scale adds to the prediction of job performance beyond the variance accounted for by more traditional performance assessments, we correlated the Clerical Potential scale with four subtests of the PSI Basic Skills Tests (shown in Table 3.2) and found no significant relationships. This indicates that the Clerical Potential scale is independent of the cognitive and skill-based assessments typically used to select clerical employees. Rosse, Miller and Barnes (1991) used the Clerical Potential scale to study hospital clerks whose jobs involve patient contact. Clerical Potential correlated .25 and .27 ($p < .05$, corrected for criterion unreliability and restriction in range of predictors) with supervisors' ratings of service and overall job performance.

Table 6.3 contains adjectival correlates of scores on the Clerical Potential scale. As seen, persons with high scores on Clerical Potential are described as active, outgoing, and polished, while persons with low scores are described as nervous, moody, and cold.

Sales Potential Scale

Purpose: To identify persons who are socially skilled, self-assured, assertive, and can create interest in products and services.

Technical Description: The scale consists of 67 items from 14 HICs which appear on the Adjustment, Ambition, Likeability, Sociability, Prudence, and Intellectance scales. Sample items include:

I am a quick-witted person.
I would go to a party every night if I could.
I work well with other people.

Total group scale means and standard deviations appear in Table 6.1. The internal consistency reliability (Cronbach, 1951) of this scale is .82. The reliability of the Sales Potential scale, estimated by test-retest reliability over a four-week period, is .85.

Normative data are available by total group in Appendix A and by gender, race, and age in Appendix B. To comply with the provisions of the Civil Rights Act of 1990, we recommend that total group norms presented in Appendix A be used to convert raw scale scores into percentiles when making personnel decisions.

Developmental Validation Research. The initial validation research on the Sales Potential scale was conducted by Merrill (1992). A sample of executives and top sales representatives (N=67) from a large international trade magazine and publishing company completed the HPI. The sales representatives were the top advertising revenue producers in the company, all had at least five years tenure and their annual accounts revenues exceeded one million dollars. Merrill coded sales representatives as "2" and other executives as "1" and correlated the HPI with this dummy coded criterion. Fourteen HICs were correlated with sales criterion and the zero order correlations ranged from .24 to .41. These 14 HICs, mostly from the Ambition, Sociability, and Prudence (scored negatively) scales, were combined into a 67-item scale and the total score correlated .65 ($p < .001$) with the sales criterion.

Table 6.3 contains the adjectival correlates of scores on the Sales Potential scale. As seen, persons with high scores on Sales Potential are described as talkative, outgoing, and assertive, while persons with low scores are described as shy, quiet, and reserved.

Managerial Potential Scale

Purpose: To identify persons who can supervise others in a pleasant and effective fashion.

Technical Description: The scale consists of 37 items from eight HICs which appear on the Adjustment, Ambition, Prudence, and School Success scales. Sample items include:

I strive for perfection in everything I do.
I know what I want to be.
In a group, I like to take charge of things.

Total group scale means and standard deviations appear in Table 6.1. The internal consistency reliability (Cronbach, 1951) of this scale is .79. The reliability of Managerial Potential, estimated by test-retest reliability over a four-week period is .83.

Normative data are available by total group in Appendix A and by gender, race, and age in Appendix B. To comply with provisions of the Civil Rights Act of 1990, we recommend that total group norms presented in Appendix A be used to convert raw scale scores into percentiles when making personnel decisions.

Developmental Validation Research. The initial validation research for the Managerial Potential scale was conducted at a large east coast motor freight company (J. Hogan, R. Hogan, & Murtha, 1993). This company has a policy of promoting from within so that drivers become coordinators (first-line supervisors who coordinate work on the loading docks), who may become terminal managers, who then may become regional managers. Employees (N=372) completed the HPI, including 56 drivers, 219 coordinators, 83 terminal managers, and 14 regional managers. Drivers were assigned a score of 1; coordinators a score of 2; terminal managers, 3; and regional managers, 4. This variable was called Organizational Status, and it was assumed to reflect overall managerial potential. In addition, managers were rated for performance by their supervisors. Correlations were computed between HPI scores and Organizational Status for all cases (N=372). Eleven HICs, primarily from the Adjustment and Ambition scales, were combined to form a single scale which correlated .66 ($p < .001$) with the Organizational Status criterion and .25 ($p < .01$) with the overall supervisors' ratings.

It is often suggested that the characteristics associated with managerial potential are situation or industry specific. Data using the Managerial Potential scale suggest that the characteristics assessed by this measure predict managerial performance across settings. The Managerial Potential scale is associated with: (1) city police officer's performance ($r = .39$, $p < .01$) (Quigley, Millikin-Davies, Francis, & J. Hogan, 1989); (2) superintendents' ratings ($r = .28$, $p < .01$) of school principals (J. Hogan & Zenke, 1986); (3) supervisors' composite evaluations of ($r = .39$, $p < .01$) long-distance telephone company managers (Muchinsky, 1987); (4) supervisors' ratings ($r = .26$, $p < .01$) of insurance underwriters and claims analysts with managerial responsibilities (Muchinsky, 1993); and (5) supervisors' performance ratings ($r = .22$, $p < .01$) of convenience store managers (R. Hogan, J. Hogan, Lock, & Brinkmeyer, 1994).

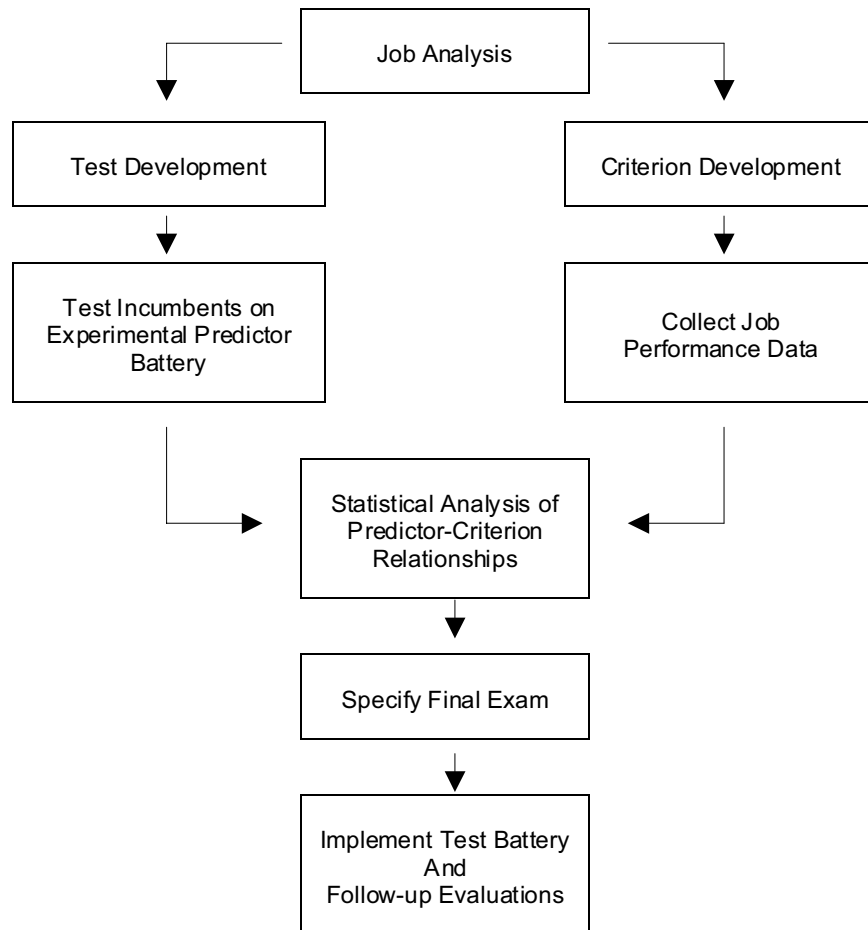
Table 6.3 contains adjectival correlates of the Managerial Potential scale. As seen, persons with high scores on Managerial Potential are described as polished, ingenious, wise, and playful, while persons with low scores are described as irresponsible and unstable.

How to Conduct Validation Research Using the HPI

This section offers some recommendations that might be useful for persons who are unfamiliar with personality constructs and their measures but who want to use the HPI in test validation research. With personality variables in mind, we will discuss (1) job analysis; (2) test specification; (3) criterion measures; (4) statistical analyses; and (5) implementation. Figure 6.1 illustrates the sequence and relation of these steps. Our discussion assumes the use of an empirical validation strategy because content validity is inappropriate for demonstrating job-relatedness of a personality measure (Equal Employment Opportunity Commission, Civil Service Commission, Department of Labor, and Department of Justice, 1978, p. 38302). In addition, recommendations are consistent with the Uniform Guidelines on Employee Selection Procedures (Equal Employment Opportunity Commission, Civil Service Commission, Department of Labor, and Department of Justice, 1978), Principles for the Validation and Use of Employment Testing Procedures (Society for Industrial and Organizational Psychology, Inc., 1987) and Standards for Educational and Psychological Testing, (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1985).

Figure 6.1

Concurrent Validation Strategy



Job Analysis

Themes involving personality constructs inevitably emerge during job analysis, however, most structured job analysis procedures will not capture them (Guion, 1992). Incumbents and supervisors typically describe effective and ineffective job performance in terms of personality characteristics. In the past, job analysts have deliberately ignored such information because the descriptions do not refer directly to observed behavior. In fact, an entire strategy of job analysis focuses on “job-oriented” as opposed to “worker-oriented” job requirements. Nevertheless, when the job information provided by incumbents and supervisors is recorded, it will inevitably contain information about personal characteristics that are associated with varying degrees of effective job performance.

Many job analysis procedures first identify tasks of the job—what the job requires—and then identify the knowledge, skills, and abilities (KSA’s) necessary to perform the tasks. The importance of these tasks and KSA’s for job performance are evaluated using questionnaire methods. This leads to a final set of task and KSA items that, when analyzed through a linkage process, provide the data important for test and criterion specification.

It is in the process of identifying the abilities required for task performance that personality or personal characteristics emerge. For example, when fire fighters are asked about the abilities necessary to extinguish fires, they say such things as “You have to stay calm under pressure,” or “You have to be able to trust your partner” (J. Hogan & Stark, 1992). Similarly when asking sales representatives about the abilities necessary for calling on prospective customers they report “You have to be persuasive about the product,” or “You have to be confident about your pitch,” or “You can’t let those rejections get you down.” All of these statements concern personality, and are essential for performance of job tasks.

Figure 6.2 presents some ability statements that reflect the personality dimensions associated with the FFM. We included these statements in numerous job analysis questionnaires for jobs ranging from police officer to secretary and the results are very similar. The noncognitive abilities—personality—are among the most frequently endorsed as critical for job performance.

J. Hogan and Arneson (1987) evaluated the usefulness of personality characteristics in job analysis and concluded (1) personality characteristics could be reliably evaluated by incumbents; (2) the FFM provided an adequate taxonomy of characteristics related to job performance; (3) personality characteristics were differentially associated with different occupations; and (4) if important personality characteristics are identified in a job analysis, that information leads to tests that are valid predictors of job performance. It is important to note that a job analysis should provide information about valid job requirements. The researcher then finds measures or develops tests that assess individual differences in the performance of these job requirements.

Figure 6.2

Personality-related Job Analysis Abilities

Adjustment	Ability to stay calm under pressure and deal with stress.
Ambition	Ability to assume responsibility and take charge in ambiguous situations.
Sociability	Ability to interact with a variety of people.
Likeability	Ability to tolerate provocative and/or difficult people.
Prudence	Ability to follow and carry out orders promptly.
Intellectance	Ability to generate useful ideas for completing work and problem solving
School Success	Ability to learn new material quickly.

Test Specification

When the results of a job analysis indicate that noncognitive abilities—such as those in Figure 6.2—are important, then the HPI personality scales and their constituent HICs will be appropriate experimental predictors. Using all the scales of the HPI, rather than one or two, will allow one to use the full range of the FFM for prediction; this strategy also will allow one to use combinations of predictor variables—assuming an adequate sample size. The predictor domain of the HPI contains seven personality scale variables and 41 HIC variables. In addition, combinations of HICs from the primary scales predict specific syndromes of occupational performance. These scales are described in the previous section.

The results of a job analysis often suggest other predictors of job performance. Personality, as assessed by the HPI, is relatively unrelated to cognitive abilities and therefore will not be useful for predicting learning, memory, computational, or analytic abilities. Nor will personality be the best predictor of interests, motivation, or specialized occupational skills. Finally, measures of normal personality will not be useful for screening out aberrant job-related personality disorders or psychopathological tendencies. The predictor battery for empirical validation research should be chosen on the basis of a careful linkage of job requirements to the individual difference measures most appropriate for evaluating those requirements.

Criterion Measures

In a discussion of the performance domain, Campbell (1990) emphasizes that the latent structure of constructs should extend across both the predictor and the criterion space. In short, job requirements that drive the choice of predictors should also drive the choice of criteria that best reflect job performance. Although it is logical to expect that the same constructs that underlie predictor measures will underlie job performance measures, this is frequently not the case. Researchers typically review experimental tests rather carefully but, job performance criteria are often chosen on the basis of convenience, without much concern for what is really being assessed. When this happens, the constructs underlying the predictor domain will be unrelated to the constructs underlying the job performance domain and the result is that there will be no relation between test measures and job performance criteria. Then researchers often conclude that the test “doesn’t work.”

In personality research, a major task is to identify and assess, with good psychometric quality, relevant indices of job performance. Figure 3.1 in Chapter 3 provides examples of criteria appropriate for the FFM constructs. Using this table, we can surmise that if one wants to predict managerial potential, one should assess ambition, competitiveness, persuasiveness, and the ability to get along with others. Appropriate criterion measures might include supervisor, peer, and subordinates ratings of leadership, ability to build a team, good judgment, and the desire to succeed. Matching test and criterion measures on the basis of a common construct is the key to maximizing the prediction of job performance.

If a number of relevant and reliable criterion variables could be included in a validity study, then the researcher might consider factor analyzing the variables of interest and developing criterion scores from the factors that emerge. Using the factor scores as dependent variables will result in non-redundant, reliable, and comprehensive coverage of the criterion space.

Statistical Analysis

Pearlman (1985) reviewed average validity coefficients for a number of predictor types and reported that the average validity of personality measures is .10. In this review, he made no distinction among the constructs evaluated by the personality or the job performance measures. Research by Hough, Eaton, Dunnette, Kamp, and McCloy (1990) evaluates the statistical consequences of aligning predictor and criterion measures of the same construct. Hough and her colleagues show that as constructs and their measures become better defined and delineated, validity coefficients increase. They found that, in military performance, aggregated personality scales predicted general criteria on the order of .20. With refinements in the predictor and criterion measures, validity coefficients increased to about .40. In a sense, the correlation coefficient is a conservative estimate of the latent structure similarity between the predictor and criterion construct.

Correlational analyses using the HPI should first select valid cases where the VALIDITY scale scores are 10 and above. Next, specify all HIC variables followed by all personality and occupational (if desired) scale variables. The scoring program for the HPI produces a variable list ordered in this sequence. Therefore, correlations analysis using a statistical package such as SPSS need only to specify OEMP to MANAGERÓ to identify 41 HIC variables, a validity scale, seven primary scales, and six occupational scales. Figure 6.3 provides the variable listing, variable names, variable order, and data definition.

Similarly, it is useful to specify individual criterion measures as well as composites. Composites might be factor scores or ratings of "overall job performance." Then Pearson product-moment correlations can be computed between all HPI HICs and scales and all individual and composite criterion measures.

This analysis will show which HPI scales best predict the various criteria. Alternatively, a salient and reliable criterion can be specified and the HPI HICs can be regressed against it to define an optimal composite of personality predictors. Using the HICs rather than the scales will yield higher validity coefficients but reduced predictor homogeneity. The increased validity is a function of the heterogeneity of the test components (the range of FFM reflected in the 41 HICs) which allows the prediction of complex, multidimensional criterion syndromes. On the other hand, combining HICs across the HPI personality scales using regression will, by definition, reduce the internal consistency of the predictors entering the equation. Consequently, cross validation is always desirable.

If regression analyses are used, the HICs should be unit weighted unless the sample size is large and cross validation supports the beta weights. Cutoff scores should be set at a y value that reflects acceptable levels of proficiency in the workplace.

Implementation

Cut off Scores. At the conclusion of the statistical analysis one must decide how to set cut-off scores. Essentially, there are two choices, either of which is acceptable under the Uniform Guidelines provisions for criterion-related validation studies. Because higher test scores are associated with higher levels of job performance (and vice versa), candidates can be rank-ordered by test scores and then chosen in that order. This strategy is useful

Figure 6.3
Data File Variable Specifications

Raw Data File			
Record	Variable	Columns	Coding Values
All	Case #	3-Jan	
All	Record #	6-May	
1	Name	Aug-37	Last name, First name, no comma, no middle initial, all caps
1	Id Number	38-46	Social security number, 9 digits only
1	Gender	48	1 = Male, 2 = Female
1	Age	50-51	2 digits
1	Race	53	A = American Indian, 2 = Asian, 3 = Black 4 = White, 5 = Hispanic, 6 = Other
2	I1 to I52	Aug-59	0 = False,
3	I53 to I104	Aug-59	1 = True,
4	I105 to I156	Aug-59	blank = Missing.
5	I157 to I206	Aug-57	

Scored Data File			
Record	Variable	Columns	Coding Values
1			(Same as above) (Same as above) (Same as above)
2	VALID EMP ANX GUILT CALM EVT SOM TRUST ATT COMPETE CONF DEPR LEAD IDEN SAX	8-67	HIC Scores
3	PARTIES CROWDS EXS EXH ENT EASY SENS CARE PEOPLE HOST MORAL MAST VIRT AUTON SPONT	8-67	HIC Scores
4	IMPCON TRO SCI CUR THS GAMES IDEAS CUL EDUC MATH MEM READ FOCUS IMPMAN APP	8-67	HIC Scores
5	VAL ADJ AMB SOC LIK PRU INT SCH SOI STR REI CLERK SALES MANAGER	8-63	Scale Scores
6	PVAL PADJ PAMB PSOC PLIK PPRU PINT PSCH PSOI PSTR PREL PCLERK PSALES PMANAGER	8-63	Scale Score Percentiles

Figure 6.3 (cont.)

HIC and Scale Score Variable Names & Labels

<u>HIC Labels</u>		<u>Scale Labels</u>	
VALID	Validity	VAL	Validity
EMP	Empathy	ADJ	Adjustment
ANX	NotAnxious	SOC	Sociability
GUILT	NoGuilt	LIK	Likeability
CALM	Calmness	PRU	Prudence
EVT	EvenTempered	INT	Intellectance
SOM	NoSomaticComplaints	SCH	School Success
TRUST	Trusting	SOI	Service Orientation
ATT	GoodAttachment	STR	Stress Tolerance
COMPET	Competitive	REL	Reliability
E			
CONF	SelfConfidence	CLERK	Clerical Potential
DEPR	NoDepression	SALES	Sales Potential
LEAD	Leadership	MANAGER	Managerial Potential
IDEN	Identity	PVAL	Validity
SAX	NoSocialAnxiety	PADJ	Adjustment
PARITES	LikesParties	PAMB	Ambition
CROWDS	LikesCrowds	PSOC	Sociability
EXS	ExperienceSeeking	PLIK	Likeability
EXH	Exhibitionistic	PPRU	Prudence
ENT	Entertaining	PINT	Intellectance
EASY	EasyToLiveWith	PSCH	School Success
SENS	Sensitive	PSOI	Service Orientation
CARE	Caring	PSTR	Stress Tolerance
PEOPLE	LikesPeople	PREL	Reliability
HOST	NoHostility	PCLERK	Clerical Potential
MORAL	Moralistic	PSALES	Sales Potential
MAST	Mastery	PMANAGER	Managerial Potential
VIRT	Virtuous		
AUTON	NotAutonomous		
SPONT	NotSpontaneous		
IMPCON	ImpulseControl		
TRO	AvoidsTrouble		
SCI	ScienceAbility		
CUR	Curiosity		
THS	ThrillSeeking		
GAMES	IntellectualGames		
IDEAS	GeneratesIdeas		
CUL	Culture		
EDUC	Education		
MATH	MathAbility		
MEM	GoodMemory		
READ	Reading		
FOCUS	SelfFocus		
IMPMAN	ImpressionManagement		
APP	Appearance		

for public jurisdictions who test large numbers of candidates periodically and then develop an eligibility list for hiring over a one to three year time frame. On the other hand, this is a difficult strategy for organizations that evaluate candidates daily in multiple locations and hire personnel on a need basis.

An alternative to ranking candidates is use of an expectancy analysis to determine appropriate cutoff scores. Consider the following example: Expectancy tables developed by Taylor and Russell (1939) allow us to determine the expected proportion of successes among persons hired on the basis of test scores, given the validity of the selection procedure, the selection ratio, and the base rate of success.

Examination of expectancy tables reveals several trends. First, regardless of the base rate or validity, the use of selection procedures is least helpful when most of the applicants will be hired anyway (i.e., the selection ratio is high) and most helpful when only a few applicants are to be hired (i.e., the selection ratio is low). As validity increases, the expected proportion of successful employees generally increases. The rate of increase is greatest when both the base rate and selection ratio are low; it is least when the base rate is low and the selection ratio is high. When validity is low, the proportion of successful new hires grows as the selection ratio decreases and the base rate increases.

Hypothetical examples, using actual validity data presented earlier in this chapter, illustrate how the HPI occupational scales can be useful in personnel selection. First, consider a trucking company that wants to hire 25 drivers. The 60 applicants for the positions have taken the HPI. Employment records indicate that 60% of the drivers hired in the past five years have been successful employees, with the criterion of success being at least one commendation for good job performance. The company has decided to use the Reliability scale to select new drivers. The Reliability scale scores correlate .51 with commendations in a sample of 56 truck drivers. The Taylor-Russell table for a base rate of .60 is used to estimate how helpful the Reliability scale will be in hiring successful drivers. Using a selection ratio of .40 ($25/60=.41$) and a validity coefficient of .51, the table indicates that 79% of the 25 drivers selected on the basis of Reliability scores will be successful. This can be compared with the base rate expectancy that 60% of those selected would be successful using the company's previous selection procedures. Use of the Reliability scale leads to a 19% increase in the expected proportion of success and it represents the scale's incremental validity.

Another example using actual validity data shows that even scales with relatively low validity can contribute to the selection process. Assume that a large corporation needs to hire 10 secretaries from a pool of 200 applicants. All applicants have taken the HPI which is scored for the Clerical Potential scale, and all have demonstrated adequate typing and filing skills. In addition to secretarial skills, the job requires the ability to represent the company favorably to the public. A review of past employment evaluations of the secretarial staff indicates that only 40% received a "favorable" or better rating for interacting with the public. Therefore, the organization decides to incorporate the Service Orientation scale into the selection process. The correlation between this scale and supervisors' job performance ratings of 100 clerical personnel is .25.

For this situation, the Taylor-Russell table for a base rate of .40 should be used to determine the proportion of the 10 hired who could be expected to be successful. Given a selection ratio of .05 ($10/200$) and a validity of .25, 61% (six of the ten hired) could be

expected to represent the company effectively when dealing with the public. This percentage compares favorably with the base rate expectation that only four of the ten would be successful if the Service Orientation scores were ignored. Thus, using the Service Orientation scale in the selection process leads to a 20% increase in the proportion of success among those selected.

Note that the group used to establish the base rate and the group used to establish the validity of the selection procedure to be used in the selection process must be similar to obtain an accurate evaluation of the selection procedure's utility. In other words, in addition to taking the HPI, applicants should go through the same selection procedures as those in the base rate group (e.g., personal interviews, reference checks).

Multiple Hurdles. A second set of decisions concerns the sequence of the decision making process for evaluating applicants. We recommend a multiple hurdle approach in which the most valid and least expensive selection tools are used near the beginning of the decision making process and the more expensive and time consuming procedures used at the end of the process. The candidates who must be screened using the final procedures will be a more highly qualified subset of the original applicant pool, therefore fewer candidates who are acceptably well-qualified will complete the more expensive procedures of the selection process.

Costing the Selection Process. Methods for estimating the costs and benefits of personnel programs and personnel selection procedures were developed in the late 1940s (Brogden, 1949); however, these methods have been virtually unused until recently. With a greater emphasis on the "bottom line," Brogden's work, which allows us to measure the cost of human resources in financial terms, has been rediscovered. These computations are termed "utility analyses," and Cascio (1982, p. 127) defines the concept as "the determination of institutional gain or loss (outcomes) anticipated from various courses of action."

We conducted four utility analyses using the HPI occupational scales in order to answer this question: What are the financial consequences to an organization of valid employment tests such as the HPI? (J. Hogan & R. Hogan, 1986, p. 20). Because all the analyses use the same formula, only the values for the terms in the equation differ.

We used procedures described by Cascio (1982) to estimate total dollar gains in improved performance over random selection. We adopted the Brogden-Cronbach-Gleser model (Brogden, 1949; Cronbach & Gleser, 1965) because this procedure integrates dollars gained or lost into the evaluation. Data necessary to determine utility include the validity of the selection procedure (concurrent validity), the selection ratio (the ratio of applicants hired to total applicants), and the standard deviation of job performance estimated in dollars. The most difficult term to obtain is the standard deviation of the dollar value of job performance (cf. Roche, 1961; Weekly, Frank, O'Connor, & Peters, 1985). Several investigations consider alternatives to time-consuming cost-accounting procedures (Bobko, Karren, & Parkington, 1983; Cascio & Silbey, 1979; Schmidt, Hunter, McKenzie, & Muldrow, 1979). Hunter and Schmidt (1983) conclude that the standard deviation of the dollar value of job performance can be estimated conservatively as 40% of the average entry-level annual salary. This finding and the use of a "salary percentage" have promoted the use of utility analysis in personnel selection and human resources

decision making. The utility of the HPI occupational scales over random selection can be calculated using the following equation (Cascio & Ramos, 1986):

$$\Delta\mu = N_s r_{xy} SD_y \gamma / \phi - N_s C_y / \phi$$

Where $\Delta\mu$ = total gain in utility from use of the procedure over random selection; N_s = number of applicants selected; r_{xy} = validity coefficient of the selection procedure; SD_y = standard deviation of the job performance criterion in terms of dollars; γ = ordinate of the normal curve at the cutting score of the test procedure; ϕ = selection ratio; and C_y = cost of putting one person through the selection procedure.

Table 6.4

Same Utility Results for HPI Occupational Scales

Equation Components for Four Selection Methods: $^a \Delta\mu = N_s r_{xy} SD_y \gamma / \phi - N_s C_y / \phi$

Terms	Service Orientation (Combination Driver)	Reliability (Line-haul Driver)	Sales Potential (Salesperson)	Managerial Potential (School Principal)
N^s	200	3	15	7
r_{xy}	.34	.25	.71	.28
SD_y	10,920	15,400	14,850	13,800
γ	.10	.04	.20	.12
ϕ	.05	.01	.125	.06
C_y	325.00	142.06	300.00	5.00
Utility per Selectee ^a	\$926.00	\$1,194.00	\$14,470.00	\$7,085.00

$\Delta u / N_s$

Results using this formula for four jobs and individual HPI scales are presented in Table 6.4. The data for the terms in the equations are based on a single hiring year. We used the 40% statistic to calculate standard deviation of the dollar-value of job performance and the criterion relationships. Validities ranged from .18 for the Reliability scale to .71 for Sales Potential. The dollar-value of job performance also varied with estimated standard deviations ranging from \$10,920 for truck drivers to \$14,850 for sales representatives. These two terms are directly related to utility. In each example, the gains are impressive, ranging from \$926 to \$14,470 per new hire. Moreover, even with modest validity coefficients, the economic benefits of valid selection procedures over random methods are considerable. Also worth noting is that, in most instances, the cost of the testing materials represented only a small fraction of the total cost of the selection process.

Finally, no system of personnel decision making is perfect. Decision errors will occur because neither tests nor people are perfect actuarial devices. Therefore, the need to maintain records and follow-up on both hits and misses in the decision making process is crucial to continual improvement of the evaluation process.

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Appendix A

Norms for the Total Sample

N=21,573

<i>Personality Scales</i>							
	Adjustment	Ambition	Sociability	Likeability	Prudence	Intellectance	School Success
Raw Score	Norms	Norms	Norms	Norms	Norms	Norms	Norms
0	0	0	0	0	0	0	0
1	0	0	1	0	0	0	2
2	0	0	1	0	0	1	4
3	0	0	2	0	0	1	8
4	0	0	4	0	0	2	13
5	0	0	7	0	0	3	19
6	0	1	10	0	0	5	27
7	1	1	14	0	1	8	36
8	1	1	19	0	1	12	46
9	2	2	25	1	2	17	58
10	2	2	31	1	3	22	69
11	3	3	38	2	4	27	79
12	4	4	44	2	6	32	88
13	5	5	52	3	9	39	95
14	6	6	59	5	12	46	100
15	8	8	66	7	16	54	
16	9	10	73	11	21	62	
17	12	13	79	16	27	69	
18	14	16	85	26	34	76	
19	16	19	89	39	42	83	
20	19	24	93	60	50	88	
21	23	28	96	83	58	91	
22	26	33	98	100	67	95	
23	30	40	100		75	98	
24	34	47	100		82	99	
25	39	55			88	100	
26	44	64			92		
27	49	74			96		
28	55	87			98		
29	60	100			99		
30	66				100		
31	72				100		
32	78						
33	84						
34	89						
35	94						
36	98						
37	100						

<i>Occupational Scales</i>						
	Service Orientation	Stress Tolerance	Reliability	Clerical Potential	Sales Potential	Managerial Potential
Raw Score	Norms	Norms	Norms	Norms	Norms	Norms
0	0	0	0	0	0	0
1	0	0	0	0	0	0
2	0	0	1	0	0	0
3	1	0	1	0	0	0
4	2	0	2	0	0	0
5	4	1	4	0	0	0
6	8	1	7	0	0	0
7	13	2	11	0	0	0
8	21	2	16	1	0	0
9	31	3	22	1	0	0
10	44	5	30	2	0	0
11	60	6	39	3	0	0
12	77	9	49	6	0	0
13	92	11	59	9	1	1
14	100	15	71	13	1	1
15		19	82	18	1	1
16		23	91	26	1	1
17		29	97	35	2	2
18		36	100	44	2	2
19		43		55	2	3
20		52		66	3	4
21		61		77	4	6
22		72		86	5	7
23		82		95	6	9
24		93		100	7	12
25		100			8	15
26					10	19
27					12	24
28					14	29
29					16	36
30					19	43
31					22	51
32					25	60
33					28	70
34					32	79
35					36	89
36					40	96
37					43	100
38					48	
39					52	
40					56	
41					60	
42					64	
43					68	
44					72	

<i>(Continued)</i>						
	Service Orientation	Stress Tolerance	Reliability	Clerical Potential	Sales Potential	Managerial Potential
Raw Score	Norms	Norms	Norms	Norms	Norms	Norms
45					76	
46					80	
47					83	
48					86	
49					89	
50					91	
51					93	
52					95	
53					97	
54					98	
55					99	
56					99	
57					100	
58					100	
59					100	
60					100	
61					100	

Appendix B

Norms for Selected Stratified Subgroups

<i>Validity</i>								
Score N =	Total 22,023	Sex		Race			Age	
		Male 11,762	Female 5,534	Black 1,719	White 9,492	Other 1,442	<40 18,540	40+ 3,513
0	.0	.1	.0		.1	.1	.0	.2
1	.1	.1	.1	.1	.1			.3
2	.1	.1	.1		.1			.3
3	.1	.1	.1				.0	
4	.1	.1	.1		.1		.1	
5	.2	.2	.1	.3	.1	.3	.1	
6	.3	.4	.1	.5	.2	.6	.3	.4
7	.6	.7	.4	.8	.5	.8	.6	.5
8	1.1	1.3	.5	1.6	.9	1.3	1.1	.8
9	1.9	2.2	1.0	2.9	1.5	2.4	2.0	1.1
10	3.2	3.7	1.9	4.3	2.5	5.2	3.4	2.1
11	5.7	6.3	3.7	7.1	4.5	9.9	6.2	3.5
12	12.2	13.3	9.0	14.1	10.1	19.5	12.8	9.3
13	32.9	33.9	29.5	35.4	30.2	43.2	33.6	29.0
14	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Adjustment</i>								
Score N =	Total 21,609	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 3,470
0	.0		.0		.0		.0	
1	.0							
2	.0		.1		.0		.0	.0
3	.1	.0	.1		.1		.0	.1
4	.1	.0	.2	.1	.1	.1	.1	.1
5	.2	.1	.4		.2	.2	.2	.2
6	.4	.2	.6	.2	.3	.4	.3	.3
7	.6	.3	1.1		.6	.9	.6	.4
8	1.0	.6	1.6		1.0	1.7	1.0	.7
9	1.5	.8	2.3	.4	1.3	2.5	1.5	1.1
10	2.0	1.2	3.1	.6	1.8	3.1	2.0	1.7
11	2.8	1.7	4.1	1.0	2.5	4.2	2.7	2.4
12	3.6	2.5	5.3	1.3	3.2	6.0	3.6	3.1
13	4.7	3.2	6.7	2.3	4.1	7.5	4.8	4.0
14	6.0	4.3	8.6	3.5	5.3	8.9	6.1	4.9
15	7.6	5.4	10.6	4.3	6.7	10.7	7.7	6.1
16	9.4	6.9	12.8	5.7	8.3	13.3	9.7	7.5
17	11.5	8.6	15.3	7.5	10.1	16.6	11.7	9.4
18	13.8	10.5	18.3	9.2	12.2	19.8	14.1	11.6
19	16.4	12.8	21.8	12.2	14.6	22.3	16.8	14.2
20	19.1	15.3	25.1	15.1	17.1	25.0	19.7	16.7
21	22.5	18.3	28.8	18.2	19.9	29.3	23.0	19.6
22	26.1	21.7	33.7	22.1	23.3	33.8	26.8	23.0
23	30.1	25.6	37.0	27.1	27.5	37.0	31.1	26.8
24	34.3	29.8	41.3	30.6	32.0	41.5	35.6	31.0
25	38.9	34.4	46.2	35.7	36.4	46.9	40.2	36.0
26	43.8	39.5	51.1	41.5	41.5	51.5	45.0	41.9
27	49.0	44.8	56.7	46.9	46.8	56.5	50.6	46.5
28	54.6	50.6	61.8	52.5	52.3	63.2	56.2	52.5
29	60.2	56.5	67.1	58.3	58.0	67.4	61.7	58.5
30	66.1	62.7	72.8	64.9	64.1	72.7	67.6	64.2
31	72.1	69.4	77.8	72.6	70.4	78.1	73.5	70.6
32	78.1	76.0	83.0	78.9	77.1	82.0	79.6	77.0
33	84.1	82.5	88.0	86.1	83.3	87.6	85.3	83.5
34	89.3	87.8	92.5	91.2	88.6	91.9	90.3	88.4
35	94.2	93.4	96.0	95.7	93.6	96.2	94.7	93.8
36	97.8	97.5	98.6	98.9	97.5	98.4	98.0	97.5
37	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Ambition</i>								
Score N =	Total 21,606	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 19,806	40+ 3,470
0								
1	.0	.0			.0		.0	
2	.0	.0			.0		.0	
3	.1	.1	.1		.1	.1	.1	.0
4	.2	.1	.2		.2	.2	.2	.1
5	.3	.2	.5		.3	.4	.3	.2
6	.5	.3	.7	.1	.5	.9	.5	.4
7	.7	.5	1.0	.1	.7	1.1	.7	.6
8	1.1	.8	1.5	.4	1.0	1.6	1.0	1.0
9	1.5	1.1	2.2	.4	1.5	2.5	1.5	1.4
10	2.0	1.5	3.0	.4	2.0	3.5	1.9	1.9
11	2.8	2.1	4.3	.8	2.9	4.5	2.8	2.7
12	3.7	2.7	5.6	1.3	3.8	5.3	3.6	3.6
13	5.1	3.7	7.7	2.0	5.2	7.2	5.0	5.3
14	6.4	4.8	9.4	2.8	6.5	8.7	6.3	6.7
15	7.9	5.8	11.8	4.2	7.9	10.2	7.8	8.0
16	10.1	7.6	14.9	6.7	10.1	12.9	10.0	10.7
17	12.7	9.8	18.5	8.4	12.8	15.6	12.7	13.3
18	15.6	12.4	22.7	11.1	16.1	19.7	16.0	16.2
19	19.3	16.0	27.0	14.5	19.9	24.4	20.0	19.9
20	23.6	20.1	32.4	17.9	24.6	28.7	24.5	24.2
21	28.2	24.4	37.7	22.7	28.7	35.0	29.2	28.7
22	33.2	29.5	43.2	28.2	33.7	41.5	34.4	34.2
23	39.7	35.9	50.0	34.6	39.9	49.6	41.1	40.4
24	46.8	43.4	57.5	43.7	47.1	57.6	48.6	47.8
25	54.7	51.5	65.2	54.1	55.0	64.1	56.8	55.3
26	63.6	61.4	72.3	65.4	63.4	71.9	65.5	64.7
27	74.2	72.5	81.8	77.2	74.1	80.2	76.3	74.2
28	86.7	85.7	91.6	90.0	86.4	89.9	88.3	86.8
29	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Sociability</i>								
Score N =	Total 21,588	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 1,632
0	.2	.1	.3	.1	.3	.3	.2	.4
1	.5	.4	1.0	.5	.7	.4	.4	1.1
2	1.3	1.0	2.2	1.4	1.7	1.1	1.1	2.4
3	2.3	1.9	3.8	2.8	2.9	1.6	1.9	4.3
4	4.1	3.6	6.3	3.9	5.2	3.5	3.5	7.4
5	6.8	6.3	9.3	7.0	8.2	6.4	6.0	11.6
6	10.1	9.5	13.3	12.4	11.6	8.9	9.2	16.4
7	14.0	13.3	18.1	17.9	15.7	12.2	13.0	22.0
8	18.6	17.8	23.3	24.1	20.3	16.4	17.4	27.9
9	24.6	23.8	29.9	31.9	26.2	22.1	23.4	35.2
10	31.0	30.1	36.7	40.8	32.2	28.6	29.7	42.2
11	37.6	37.0	43.3	48.7	38.6	34.7	36.2	49.8
12	44.4	44.2	50.1	56.5	45.5	42.1	43.3	56.9
13	51.5	51.3	57.2	65.1	52.1	49.3	50.4	63.9
14	58.9	59.0	64.2	72.7	59.4	56.9	58.2	70.3
15	66.1	66.1	71.4	79.2	66.5	64.5	65.4	76.6
16	72.5	72.7	77.0	84.2	72.6	71.3	71.8	81.5
17	78.8	79.2	82.8	87.8	79.2	78.6	78.5	86.9
18	84.5	85.0	87.3	92.3	84.7	83.8	84.3	90.5
19	89.1	89.5	90.8	95.1	89.1	88.5	88.9	93.6
20	93.2	93.4	94.1	97.4	92.8	93.1	92.8	96.3
21	96.3	96.3	97.1	98.9	96.0	96.6	96.1	98.1
22	98.4	98.5	98.6	99.6	98.4	98.5	98.4	99.4
23	99.6	99.5	99.7	99.9	99.5	99.7	99.5	99.9
24	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Likeability</i>								
Score N =	Total 21,588	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 1,630
0								
1	.0	.0			.0		.0	
2	.0	.0			.0		.0	
3	.0	.0	.0	.1	.0		.0	.0
4	.1	.1	.0		.1		.0	.1
5	.1	.1			.1	.1	.1	.1
6	.1	.1	.1	.2	.1		.1	.1
7	.2	.2	.1		.2		.2	.3
8	.3	.4	.2	.2	.4		.3	.5
9	.6	.7	.4	.4	.7	.2	.6	.7
10	.9	1.0	.7	.7	1.1	.3	.9	1.2
11	1.5	1.7	1.2	1.1	1.7	1.3	1.6	1.7
12	2.4	2.6	1.9	1.4	2.5	2.1	2.4	2.7
13	3.4	3.7	2.9	1.9	3.6	3.7	3.5	3.8
14	5.0	5.3	4.2	2.8	5.0	5.9	5.3	5.1
15	7.4	7.7	6.3	5.6	7.1	9.4	7.7	7.2
16	11.0	11.4	9.1	9.5	10.0	14.0	11.2	10.6
17	16.4	17.0	14.0	15.1	14.9	20.3	16.8	16.0
18	25.5	26.1	22.9	25.8	23.3	28.3	25.5	25.4
19	39.3	40.6	35.3	42.1	36.5	45.3	39.5	39.8
20	60.0	61.8	54.6	65.1	57.2	64.8	60.1	60.6
21	83.4	85.3	79.5	87.7	81.7	85.8	83.8	83.7
22	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Prudence</i>								
Score N =	Total 21,594	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 1,629
0								
1								
2	.0	.0			.0		.0	
3	.0	.0			.0		.0	
4	.1	.1			.1	.1	.0	.0
5	.2	.3	.0	.1	.1	.2	.1	.1
6	.3	.7	.1	.1	.2	.4	.3	.1
7	.6	.7	.2		.6	.8	.6	.2
8	1.1	1.1	.3	.2	1.0	1.4	1.0	.5
9	1.7	1.8	.7	.4	1.6	2.8	1.8	.7
10	2.7	2.9	1.3	.9	2.5	4.6	3.0	1.0
11	4.3	4.4	2.5	1.6	4.0	7.0	4.8	1.7
12	6.3	6.4	4.2	2.8	5.9	9.6	6.9	2.8
13	8.8	8.8	6.1	4.5	8.2	13.7	9.8	4.1
14	12.0	12.1	8.5	6.5	11.3	17.9	13.2	6.5
15	16.3	16.4	12.5	9.6	15.3	23.2	17.7	9.5
16	21.2	21.3	16.7	13.2	19.9	29.2	22.6	14.0
17	27.2	27.2	22.6	18.4	25.8	35.4	28.8	19.0
18	34.3	33.9	29.8	25.4	32.4	42.7	35.9	25.1
19	41.9	41.3	37.7	31.3	39.8	50.2	43.7	32.6
20	50.0	49.0	46.6	40.5	47.5	56.9	51.5	41.0
21	58.3	57.1	55.6	49.2	55.9	63.7	59.6	49.9
22	67.0	66.0	64.5	58.9	64.7	71.0	67.8	59.9
23	74.6	73.4	73.0	67.4	72.7	77.6	75.3	68.7
24	81.8	81.1	80.4	75.5	80.3	84.4	82.0	78.1
25	87.6	86.8	86.9	82.3	86.5	88.8	87.4	85.2
26	92.3	91.5	92.1	89.3	91.5	92.3	92.2	90.6
27	95.6	95.0	95.8	94.0	95.1	95.4	95.4	95.0
28	97.9	97.6	98.1	96.6	97.7	97.5	97.8	97.7
29	99.2	99.1	99.4	99.0	99.2	98.9	99.2	99.1
30	99.8	99.7	99.9	99.7	99.8	99.9	99.8	99.9
31	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Intellectance</i>								
Score N =	Total 21,596	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 3,470
0	.0	.0	.1		.1		.0	.1
1	.2	.1	.5	.2	.3	.2	.2	.3
2	.6	.4	1.1	.5	.7	.4	.5	1.0
3	1.2	.9	2.5	1.4	1.5	.9	1.0	2.4
4	1.8	1.3	3.3	1.9	2.2	1.7	1.5	3.6
5	3.3	2.5	6.1	4.1	4.0	3.9	2.9	6.2
6	5.3	4.0	9.4	6.8	6.0	5.5	4.8	8.8
7	8.2	6.3	14.1	10.5	9.0	7.8	7.6	13.1
8	11.8	9.3	20.2	16.0	12.9	11.1	11.3	18.1
9	16.5	13.4	26.6	21.8	17.5	15.5	15.6	24.2
10	21.6	18.2	33.2	28.7	22.7	19.7	20.5	30.9
11	27.4	23.8	40.3	36.2	28.4	25.3	26.3	37.9
12	31.7	27.6	44.7	40.8	32.8	28.8	30.2	43.1
13	38.6	34.5	51.9	49.1	39.4	35.4	37.1	50.4
14	46.3	42.3	59.7	57.4	46.9	43.2	44.8	58.7
15	54.0	50.3	67.2	65.1	54.3	50.5	52.5	66.8
16	61.5	58.2	73.6	73.2	61.5	58.0	60.1	73.5
17	69.1	65.9	79.8	79.2	68.7	65.6	67.6	79.5
18	76.1	73.7	84.7	84.8	75.5	72.6	74.8	85.1
19	82.6	80.6	89.4	89.3	82.1	79.7	81.5	89.9
20	88.0	86.5	93.3	92.9	87.4	86.0	86.9	93.8
21	91.4	90.4	94.8	94.9	91.3	89.9	90.6	95.9
22	95.2	94.7	96.9	97.7	95.2	95.1	94.8	98.0
23	97.7	97.3	98.7	98.9	97.7	97.1	97.5	99.0
24	99.3	99.1	99.7	99.6	99.4	98.8	99.3	99.7
25	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>School Success</i>								
Score N =	Total 21,605	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 3,470
0	.4	.5	.3	.1	.5	.6	.4	.6
1	1.7	1.8	1.2	.7	1.8	2.2	1.5	2.1
2	4.0	4.4	2.9	2.1	4.5	5.5	3.7	5.2
3	7.5	8.2	5.9	5.5	8.2	9.3	7.2	9.3
4	12.6	13.5	10.5	11.0	13.3	15.7	12.2	15.2
5	18.9	20.1	15.6	16.9	19.7	22.6	18.3	21.9
6	26.9	28.1	23.6	25.3	27.9	33.0	26.6	30.2
7	35.9	37.2	32.6	33.9	37.1	42.0	35.8	39.4
8	46.2	47.4	42.7	44.8	47.1	51.0	46.0	49.3
9	57.5	58.8	53.7	57.6	57.8	63.5	57.5	59.6
10	68.7	70.1	65.2	69.1	69.3	71.8	69.0	70.7
11	79.2	80.2	77.0	79.6	79.9	80.9	79.5	81.0
12	87.7	88.8	85.4	88.8	88.2	88.9	87.9	89.5
13	94.8	95.3	93.7	95.2	94.9	95.9	94.7	95.9
14	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Service Orientation</i>								
Score N =	Total 21,608	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,036	White 9,345	Other 1,406	<40 10,806	40+ 3,470
0	.0	.0			.0		.0	
1	.0	.0			.0			.1
2	.2	.2	.1		.3	.2	.2	.3
3	.7	.7	.5	.2	.8	.8	.6	.9
4	1.9	1.9	1.5	.8	1.9	1.6	1.7	2.2
5	4.1	4.0	4.0	1.3	4.3	4.0	4.0	4.3
6	7.7	7.3	8.2	2.9	7.7	7.8	7.6	8.0
7	13.3	12.2	13.6	5.7	13.1	13.0	13.3	13.1
8	21.1	20.3	21.3	10.1	20.7	21.2	20.9	20.6
9	31.4	30.4	31.5	17.7	30.9	30.5	31.0	30.7
10	43.9	43.0	43.6	29.0	43.3	43.9	43.4	43.3
11	59.8	59.1	59.3	46.8	59.4	59.5	59.0	60.6
12	76.9	76.3	76.2	66.5	76.4	77.2	76.0	76.8
13	92.1	91.9	91.5	88.4	92.0	91.9	91.8	92.4
14	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Stress Tolerance</i>								
Score N =	Total 21,609	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 3,470
1	.0		.0		.0		.0	
2	.1	.0	.1		.0	.1	.1	.0
3	.1	.1	.2		.1	.2	.1	.1
4	.3	.1	.5	.2	.2	.5	.3	.3
5	.5	.3	1.0	.2	.5	.9	.5	.5
6	.9	.6	1.5	.5	.8	1.4	.8	.9
7	1.5	1.0	2.1	.7	1.3	2.1	1.4	1.3
8	2.3	1.5	3.3	1.2	2.0	3.6	2.1	2.0
9	3.4	2.3	4.8	2.0	2.9	5.0	3.4	2.7
10	4.7	3.3	6.6	2.9	4.2	7.9	4.8	3.9
11	6.4	4.6	8.7	4.3	5.6	10.5	6.5	5.4
12	8.5	6.2	11.3	6.5	7.4	13.9	8.7	7.2
13	11.1	8.1	15.7	9.0	9.8	17.6	11.4	10.0
14	14.5	10.9	20.1	12.5	12.8	20.6	14.9	12.9
15	18.6	14.5	24.9	16.2	16.5	25.8	19.2	16.4
16	23.2	18.7	30.8	21.2	21.1	30.4	23.9	21.7
17	29.0	24.3	37.5	28.6	26.7	37.1	30.0	27.3
18	35.5	30.9	44.2	37.4	33.0	44.7	37.2	33.0
19	43.3	39.1	52.4	46.6	40.8	52.6	45.3	41.3
20	51.7	47.7	60.2	55.4	49.5	60.5	54.0	49.2
21	61.3	57.6	69.2	64.6	59.5	69.8	63.5	59.1
22	71.5	68.4	78.5	75.6	70.0	78.2	73.5	69.4
23	82.0	79.5	87.4	86.0	80.9	86.7	83.6	80.4
24	92.5	91.3	95.2	95.6	92.0	94.8	93.5	91.6
25	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Reliability</i>								
Score N =	Total 21,606	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 3,470
0	.0	.0			.0	.1	.0	
1	.2	.2	.0	.1	.2	.2	.2	.0
2	.5	.5	.1	.2	.5	.7	.6	.1
3	1.2	1.2	.6	.3	1.1	2.0	1.3	.5
4	2.3	2.3	1.4	.8	2.3	3.2	2.5	1.3
5	4.3	4.1	2.9	2.0	4.1	5.7	4.6	2.7
6	7.0	6.7	5.3	3.5	6.5	10.0	7.5	4.2
7	10.6	10.1	8.8	6.4	9.9	14.5	11.4	7.5
8	15.6	14.8	13.6	10.2	14.7	21.9	16.9	11.0
9	21.9	20.7	20.3	14.8	20.6	28.6	23.2	15.8
10	29.6	27.8	29.3	21.9	28.0	37.0	30.9	23.2
11	38.8	37.1	38.4	30.4	36.7	46.9	40.0	31.6
12	48.7	46.6	48.5	39.4	46.4	56.2	49.6	41.8
13	59.4	57.2	59.6	51.1	57.0	65.8	60.0	53.7
14	70.5	69.0	70.3	64.8	68.5	74.7	71.1	66.0
15	81.5	80.3	81.7	77.6	80.1	83.8	81.5	79.6
16	91.1	90.2	91.7	88.5	90.5	91.9	91.1	90.4
17	97.2	96.8	97.8	96.0	96.9	98.0	97.3	96.8
18	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Clerical Potential</i>								
Score N =	Total 21,610	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 3,470
0								
1								
2								
3								
4	.0	.0			.0			
5	.0		.0		.0	.1	.0	
6	.1	.1	.0		.1	.1	.1	
7	.2	.1	.2		.2	.2	.2	.1
8	.5	.4	.5	.1	.5	.7	.5	.3
9	1.0	.9	1.1	.5	1.1	1.7	1.0	1.1
10	1.9	1.6	2.2	.8	2.0	3.2	1.9	2.1
11	3.3	2.5	4.1	1.4	3.3	5.8	3.2	3.7
12	5.5	4.4	6.7	3.3	5.6	8.5	5.5	5.7
13	8.7	7.3	10.3	5.8	8.7	12.6	8.5	9.1
14	12.9	11.1	15.8	9.8	12.9	18.1	12.9	13.5
15	18.4	16.0	22.6	15.3	17.8	26.7	18.7	18.8
16	25.7	23.0	31.4	23.7	24.9	35.2	26.3	26.0
17	34.5	31.4	41.6	33.8	33.3	45.4	35.8	34.0
18	44.3	41.3	52.2	44.3	43.2	55.7	46.0	43.4
19	55.2	51.9	63.1	56.4	53.6	66.6	56.7	54.7
20	66.1	63.6	72.6	71.0	64.6	76.4	68.0	65.1
21	76.9	75.1	81.6	80.9	76.0	84.4	78.6	75.9
22	86.4	85.2	89.5	90.2	85.4	92.1	87.9	84.7
23	94.6	94.1	95.6	97.2	93.7	97.7	95.2	94.0
24	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<i>Sales Potential</i>								
Score N =	Total 21,590	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 3,470
0								
1								
2								
3	.0	.0			.0			.0
4								
5	.0					.1	.0	
6	.0		.0		.0			.1
7								
8	.0	.0			.0		.0	
9								
10	.0	.0			.1	.1	.0	.1
11	.0	.1						
12	.1	.1	.1		.1		.1	.2
13	.1	.1	.2		.2		.1	.3
14	.2	.1	.4		.3		.2	.4
15	.3	.2	.5		.5		.2	.5
16	.4	.3	.7		.6	.3	.3	.8
17	.5	.4	.9	.1	.8		.4	1.1
18	.7	.5	1.2	.1	1.0	.4	.5	1.4
19	.9	.6	1.6	.2	1.2	.6	.7	1.8
20	1.1	.8	2.1	.4	1.5	.9	.9	2.3
21	1.5	1.1	2.7		1.9	1.3	1.2	2.9
22	1.8	1.3	3.2	.7	2.3	1.6	1.5	3.3
23	2.2	1.7	4.0	1.1	2.8	2.2	1.9	4.0
24	2.8	2.1	4.9	1.4	3.3	2.9	2.4	4.8
25	3.5	2.8	5.9	2.1	4.2	3.3	3.1	5.9
26	4.5	3.6	7.4	3.4	5.2	4.3	4.0	7.6
27	5.6	4.7	8.8	4.5	6.6	5.4	5.0	9.6
28	6.8	5.8	10.5	6.2	8.0	6.3	6.1	11.9
29	8.2	7.1	12.5	8.2	9.5	7.6	7.4	14.1
30	10.0	8.7	15.0	10.1	11.4	9.8	9.1	17.1
31	11.9	10.5	17.5	12.5	13.3	11.6	10.7	20.0
32	14.0	12.5	20.0	15.4	15.3	13.7	12.7	22.9
33	16.3	14.5	23.2	18.8	17.6	15.7	14.7	26.5
34	18.9	17.0	26.3	21.8	20.2	18.6	17.3	29.6
35	21.7	19.8	29.3	25.4	22.9	20.9	20.0	33.3
36	24.8	23.0	32.9	30.4	25.9	23.7	23.2	37.1
37	28.3	26.4	36.9	35.5	29.2	27.6	26.6	41.1
38	31.9	30.1	41.0	40.2	32.8	30.6	30.1	45.5
39	35.7	33.6	45.3	45.4	36.6	34.5	34.0	49.5

<i>Sales Potential (cont.)</i>								
Score N =	Total 21,590	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 3,470
40	39.6	37.7	49.3	49.9	40.4	37.9	38.1	52.8
41	43.4	41.4	53.2	54.6	43.9	41.7	41.9	56.5
42	47.5	45.7	57.2	59.8	47.7	45.9	45.9	60.9
43	51.7	50.0	61.2	64.1	52.1	50.3	50.4	64.9
44	55.9	54.4	65.3	69.6	56.0	54.7	54.6	69.1
45	60.1	58.5	69.4	73.4	59.9	58.9	58.9	72.5
46	64.1	62.6	72.8	77.5	63.9	62.9	62.8	76.4
47	68.3	67.1	76.3	81.3	67.9	67.8	67.0	80.5
48	72.3	71.3	79.5	84.7	71.7	71.7	71.1	83.3
49	76.0	75.1	82.7	87.3	75.6	74.9	74.8	86.6
50	79.6	78.8	85.6	90.2	79.3	78.7	78.5	89.4
51	82.9	82.1	88.2	92.3	82.5	81.9	81.9	91.4
52	85.9	85.4	90.6	94.0	85.5	85.3	85.0	93.6
53	88.7	88.1	92.6	95.0	88.2	88.1	87.7	95.0
54	91.2	90.7	94.3	96.8	90.7	90.2	90.5	96.2
55	93.3	93.0	95.6	97.8	92.9	92.5	92.8	97.5
56	95.1	94.8	96.7	98.5	94.7	94.8	94.6	98.3
57	96.6	96.3	97.8	98.9	96.4	96.5	96.2	99.0
58	97.8	97.5	98.7	99.6	97.5	97.7	97.5	99.4
59	98.7	98.5	99.3	99.8	98.5	98.9	98.6	99.8
60	99.3	99.1	99.7	99.9	99.1	99.4	99.2	99.9
61	99.7	99.5	99.9	100.0	99.6	99.6	99.6	100.0
62	99.9	99.8	100.0		99.9	99.9	99.8	
63	100.0	99.9	100.0		100.0		99.9	
64	100.0	100.0			100.0	100.0	100.0	
65	100.0				100.0		100.0	

<i>Managerial Potential</i>								
Score N =	Total 21,610	Sex		Race			Age	
		Male 11,490	Female 5,469	Black 1,667	White 9,345	Other 1,406	<40 10,806	40+ 3,470
0								
1								
2								
3								
4	.0							
5								
6	.0	.0			.0			
7	.0	.0	.0		.0	.1	.0	
8	.1	.0	.1		.1		.0	.0
9	.1	.1	.1		.1	.1	.1	
10	.1	.1	.1		.1	.3	.1	
11	.2	.2	.1		.2	.4	.2	
12	.3	.3	.3	.1	.4	.6	.4	.2
13	.5	.4	.5		.5	1.4	.6	.3
14	.7	.6	.6	.1	.8	1.6	.7	.7
15	.9	.8	.9	.3	1.0	2.0	1.0	.8
16	1.4	1.1	1.4	.5	1.4	2.6	1.4	1.1
17	1.8	1.5	1.7	1.1	1.8	3.2	1.8	1.7
18	2.4	2.0	2.4	1.4	2.4	3.8	2.3	2.4
19	3.0	2.5	3.1	2.0	3.0	4.8	3.0	2.8
20	4.1	3.4	4.4	2.5	4.1	6.2	4.0	3.9
21	5.6	4.6	6.1	3.4	5.7	8.4	5.5	5.6
22	7.3	6.1	8.1	4.9	7.4	10.5	7.3	7.1
23	9.4	8.1	10.6	6.5	9.5	13.1	9.5	9.3
24	11.9	10.6	13.3	9.0	11.8	16.4	12.1	12.0
25	15.1	13.5	17.4	12.4	14.9	20.7	15.3	15.4
26	19.1	17.2	22.0	15.7	18.8	25.9	19.4	19.3
27	23.5	21.4	26.9	20.2	23.1	31.5	24.0	23.5
28	29.3	27.2	33.1	27.0	28.8	38.5	30.0	29.6
29	35.6	33.7	39.7	33.6	35.2	45.6	36.5	36.2
30	42.8	40.9	47.8	40.9	42.7	52.8	44.0	43.9
31	51.2	49.6	56.0	50.4	51.3	61.8	52.6	52.9
32	60.2	58.6	65.0	60.6	59.6	70.1	61.2	61.9
33	69.5	67.9	74.3	70.8	69.0	77.7	70.6	71.1
34	79.1	77.8	82.7	80.9	78.6	85.1	79.8	80.7
35	88.6	88.1	90.4	89.3	88.6	91.9	89.1	89.9
36	96.0	95.7	96.7	96.0	96.0	97.5	96.2	96.5
37	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0



The Hogan Personality Inventory

Interpretive Report

John Doe

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Introduction

The Hogan Personality Inventory (HPI) is designed to assess personal qualities that promote success in work, in relationships, in education and training, and in life. This report may reveal areas of unexpected strength; conversely, the report may reveal some interpersonal tendencies that can cause problems. In either case, the information will be a useful foundation for personal and professional development.

Because different occupations require different personal characteristics, the HPI can also be used to aid decisions about personnel selection, job change, and career planning. The primary scales of the inventory are:

Adjustment	High scorers tend to be calm, self-confident, and steady under pressure. Low scorers tend to be tense, moody, and they may not handle pressure well.
Ambition	High scorers tend to be energetic, competitive, and eager to advance themselves. Low scorers tend to be quiet, unassertive, and less interested in advancement.
Sociability	High scorers tend to be outgoing, impulsive, and colorful, and they dislike working by themselves. Low scorers tend to be reserved and quiet; they do not call attention to themselves, and they do not mind working alone.
Likeability	High scorers tend to be friendly, warm, and sociable. Low scorers tend to be independent, frank, and direct.
Prudence	High scorers tend to be organized, dependable, and thorough; they follow rules well and are easy to supervise. Low scorers tend to be impulsive and flexible; they tend to resist rules and close supervision; however, they may be creative and spontaneous.
Intellectance	High scorers tend to be imaginative, inventive, and quick-witted; they may be easily bored and may not pay attention to details. Low scorers tend to be practical and down to earth; they are willing to tolerate boring tasks.
School Success	High scorers tend to enjoy education and to perform well in training. Low scorers are less interested in formal learning and tend not to perform well in school or training environments.

Validity of these results

This Test is Valid and Interpretable.

Personality Interpretation

The following report describes Mr./Ms. Doe's scores on the HPI. To interpret these results, first note the percentile score for each scale and then read the description of that scale. Next, on the lower half of the page, examine the subscale (i.e. HIC) scores. These will indicate the areas of particular strength and/or weakness that contribute to the larger personality scale. Each subscale is defined and a sample item is given to aid your interpretation. The graph on the right of each subscale shows the total number of items on each subscale as well as the total number endorsed.

Occupational Interpretation

In addition to the report on the main personality scales, reports on one or more occupational scales may also be provided in this report. The HPI occupational scales concern attitudes and characteristics that have broad, general importance for job performance. These scales are based on the personality dimensions presented previously. They were developed by comparing persons with high and low standing on the occupational dimension under consideration using the HPI. Qualities that distinguished high rated people from low rated people formed the scales. The following are the main occupational scales:

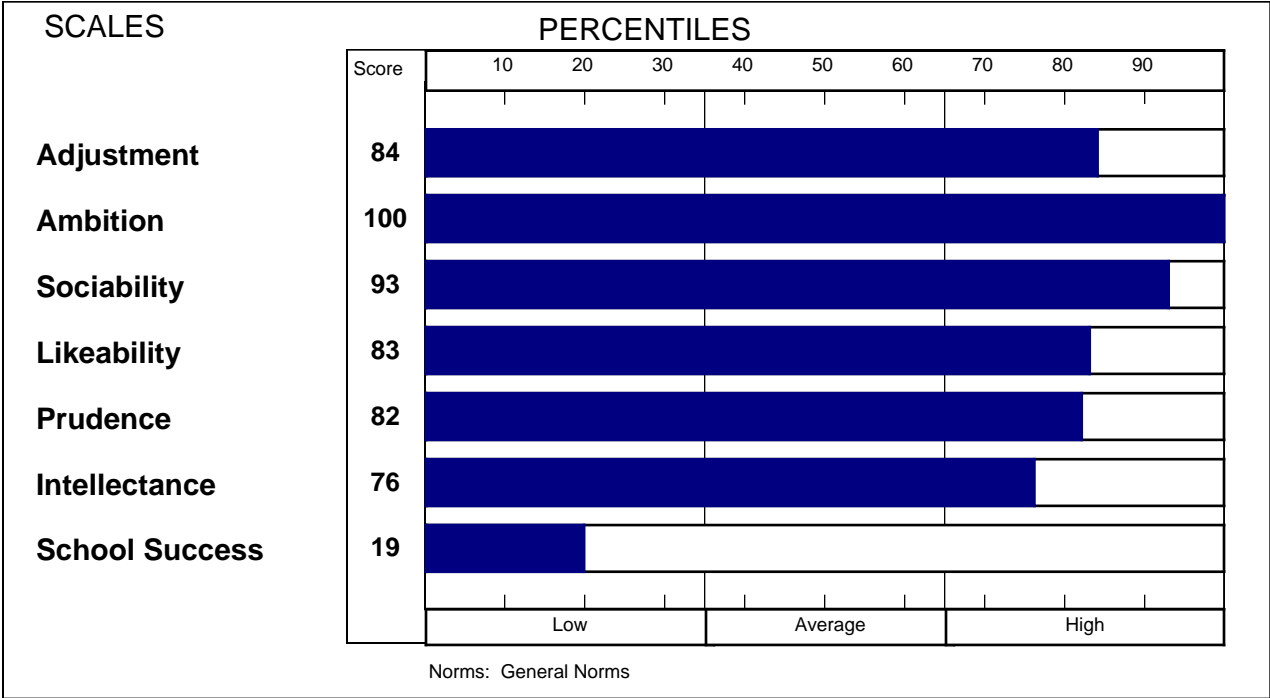
Service Orientation	Concerns being attentive and helpful.
Stress Tolerance	Reflects the ability to deal with pressure and adversity.
Reliability	Measures willingness to comply with rules and procedures.
Clerical Potential	Concerns the ability to perform well in clerical work.
Sales Potential	Assesses traits associated with successful sales performance
Managerial Potential	Reflects talent for leadership and persuasion.

The report may also provide scores on one or more special occupational scales. These are scales which have been found to have relevance to job performance within a particular organization.

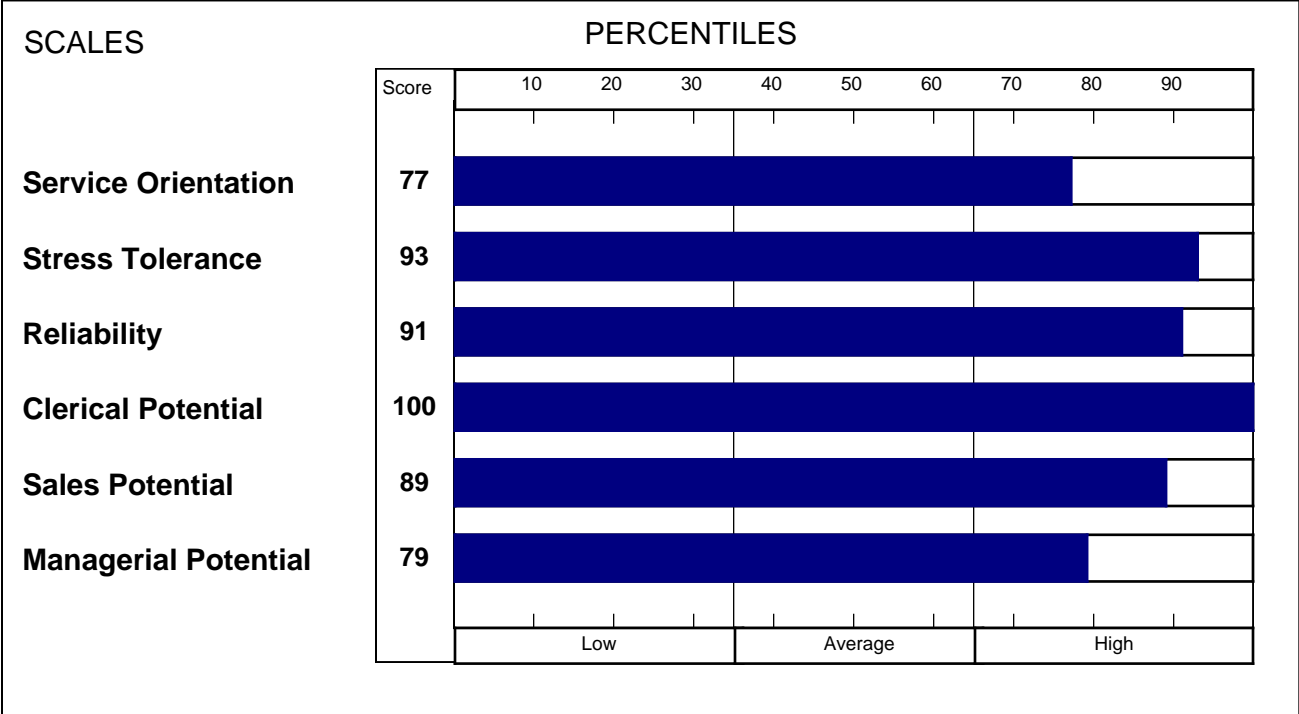
The graphs on the following page provide an overall view of Mr./Ms. Doe's scores on each scale. Scores shown are in percentiles. The percentile scores indicate the percentage of people from a comparison group who tend to score at or below Mr./Ms. Doe's obtained score.

The Hogan Personality Inventory Primary Scales

This Test is Valid and Interpretable.



Occupational Scales



Adjustment




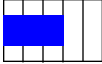


Scale Description

The Adjustment scale reflects the degree to which a person is steady in the face of pressure, or conversely, sensitive and self-critical. Persons with high scores rarely take things personally and generally handle stress well. Persons with low scores tend to be self-critical and to blame themselves when things go wrong.

Score = 84th percentile

Mr./Ms. Doe's score on the Adjustment scale indicates that he/she is quite calm, self-accepting, and confident. He/She is tolerant, easy-going, happy, and rarely introspective. He/She should be free from self-doubt and unnecessary worry, a fine colleague and coworker, and a person who handles stress very well.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Empathy <i>Absence of irritability</i>	I am rarely irritated by faults in others.	 5 out of 5
Not Anxious <i>Absence of anxiety</i>	I am seldom tense or anxious.	 4 out of 4
No Guilt <i>Absence of regret</i>	I rarely feel guilty about some of the things I have done.	 5 out of 6
Calmness <i>Lack of emotionality</i>	I keep calm in a crisis.	 4 out of 4
Even Tempered <i>Not moody or irritable</i>	I rarely lose my temper.	 3 out of 5
No Somatic Complaint <i>Lack of health concerns</i>	I almost always feel good.	 5 out of 5
Trusting <i>Not paranoid or suspicious</i>	People really care about one another.	 3 out of 3
Good Attachment <i>Good relations with one's parents</i>	No matter what happened I felt my parents loved me.	 4 out of 5

Ambition

Scale Description

The Ambition scale evaluates the degree to which a person seems leaderlike, seeks status, and values achievement. Persons with high scores are competitive, upwardly mobile, and concerned with success. Persons with low scores are cautious, and have modest career aspirations. Ambition is important for work in sales, supervision, and management; it is less important for hourly workers.

Score = 100th percentile

Mr./Ms. Doe's score on the Ambition scale is above average suggesting that he/she is energetic and has high standards for accomplishment. Such persons are likely to be competitive and self-assured, and to seek leadership roles. Although he/she values achievement, his/her success will be moderated by his/her social skills, as indicated by the Sociability and Likeability scales which are reported next.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Competitive <i>Being competitive, ambitious and persistent</i>	I am an ambitious person.	 5 out of 5
Self-Confident <i>Confidence in oneself</i>	I am a very self-confident person.	 3 out of 3
No Depression <i>Feelings of contentment</i>	I am a happy person.	 6 out of 6
Leadership <i>Capacity for leadership</i>	In a group I like to take charge of things.	 6 out of 6
Identity <i>Satisfaction with one's life tasks</i>	I know what I want to be.	 3 out of 3
No Social Anxiety <i>Social self-confidence</i>	I don't mind talking in front of a group of people.	 6 out of 6

Sociability

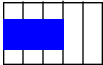




Scale Description

The Sociability scale assesses the degree to which a person needs and/or enjoys social interaction. Persons with high scores are extroverted and talkative; they may also be exhibitionistic and they create a strong social impression. Persons with low scores are more quiet and reserved; they tend to take a low social profile. Sociability is important for jobs where one must meet with clients, and is especially important for sales and promotional work. Sociability is less important in jobs where there is little contact with the public.

Score = 93rd percentile

Mr./Ms. Doe received a moderately high score for Sociability. Persons scoring in this range are talkative, gregarious, and they seek social attention; they prefer not to work alone.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Likes Parties <i>Enjoys parties</i>	I would go to a party every night if I could.	 3 out of 5
Likes Crowds <i>Finds large crowds exciting</i>	Being part of a large crowd is exciting.	 4 out of 4
Experience Seeking <i>Preference for variety and challenge</i>	I like a lot of variety in my life.	 6 out of 6
Exhibitionistic <i>Exhibitionistic tendencies</i>	I like to be the center of attention.	 4 out of 5
Entertaining <i>Being witty and entertaining</i>	I am often the life of the party.	 3 out of 4

Likeability

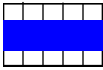


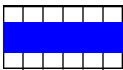

Scale Description

The Likeability scale reflects social sensitivity, tact, and perceptiveness. Persons with high scores tend to be warm, friendly, and considerate; persons with low scores are often unconcerned with how they are regarded by others. Likeability is important for sales and management, or jobs where one must meet the public. Likeability is less important in jobs where there is little contact with clients and coworkers.

Score = 83rd percentile

Mr./Ms. Doe's score on the Likeability scale suggests that he/she is thoughtful, warm, and considerate; such persons arouse liking and trust in others. He/She has good social skills and should work very well with other people in many capacities.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Easy to Live With <i>Tolerant and easy-going nature</i>	I work well with other people.	 5 out of 5
Sensitive <i>Tends to be kind and considerate</i>	I always try to see the other person's point of view.	 3 out of 4
Caring <i>Interpersonal sensitivity</i>	I am sensitive to other people's moods.	 4 out of 4
Likes People <i>Enjoys social interaction</i>	I enjoy just being with other people.	 6 out of 6
No Hostility <i>Lack of hostility</i>	I never hold grudges very long.	 3 out of 3

Prudence

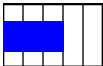

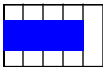


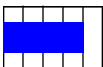
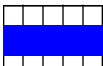
Scale Description

The Prudence scale concerns self control and conscientiousness. Persons with high scores tend to be orderly and dependable, but they may also be conservative and over controlled. Persons with low scores tend to be impulsive and unpredictable, but they may be flexible and innovative.

Score = 82nd percentile

Mr./Ms. Doe's score on the Prudence scale suggests that he/she is reliable, conscientious, and hard working. He/She may also tend to be serious, conforming, reserved, and resistant to change. He/She will respond very well to supervision and he/she is well suited for work that requires close concentration, self-control, and attention to detail.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Moralistic <i>Adhering strictly to conventional values</i>	I always practice what I preach.	 3 out of 5
Mastery <i>Being hard-working</i>	I strive for perfection in everything I do.	 4 out of 4
Virtuous <i>Being perfectionistic</i>	I do my job as well as I possibly can.	 4 out of 5
Not Autonomous <i>Concern about others' opinions of oneself</i>	Other people's opinions of me are important.	 1 out of 3
Not Spontaneous <i>Preference for predictability</i>	I always know what I will do tomorrow.	 3 out of 4
Impulse Control <i>Lack of impulsivity</i>	I rarely do things on impulse.	 4 out of 5
Avoids Trouble <i>Professed probity</i>	When I was in school I rarely gave the teachers any trouble.	 5 out of 5

Intellectance

Scale Description

The Intellectance scale reflects the degree to which a person seems creative, adventurous, and analytical. Persons scoring high on Intellectance tend to be original, imaginative, and to have many interests and hobbies. Persons scoring low on Intellectance tend to be practical, cautious, and uninterested in speculative questions. Intellectance is important in jobs where people need to be curious, analytical, questioning, and critical; it is less important in repetitious jobs that require attention to detail.

Score = 76th percentile

Mr./Ms. Doe's score on the Intellectance scale is above average, suggesting that he/she is alert and imaginative. He/She has a wide range of interests, is possibly creative, and enjoys theoretical and artistic activities.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Science Ability <i>Interest in science</i>	I am interested in science.	 4 out of 5
Curiosity <i>Curiosity about the world</i>	I have taken things apart just to see how they work.	 3 out of 3
Thrill Seeking <i>Enjoyment of adventure and excitement</i>	I would like to be a race-car driver.	 2 out of 5
Intellectual Games <i>Enjoys intellectual games</i>	I enjoy solving riddles.	 2 out of 3
Generates Ideas <i>Ideational fluency</i>	I am a quick-witted person.	 4 out of 5
Culture <i>Interest in culture</i>	I like classical music.	 3 out of 4

School Success





Scale Description

The School Success scale reflects the degree to which a person enjoys academic activities and values education as an end in itself. Persons with high scores on this scale tend to be good students and high academic achievers. Persons with low scores regard education as a means to an end and not as something that is intrinsically important.

Score = 19th percentile

Mr./Ms. Doe's score on the School Success scale suggests that he/she is not particularly interested in education and has somewhat less than the average amount of academic motivation. He/She should think carefully before embarking on any expensive educational undertakings.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Education <i>Being a good student</i>	As a child, school was easy for me.	 0 out of 3
Math Ability <i>Being good with numbers</i>	I can multiply large numbers quickly.	 2 out of 3
Good Memory <i>Having a good memory</i>	I have a large vocabulary.	 3 out of 4
Reading <i>Enjoys reading</i>	I would rather read than watch TV.	 0 out of 4

Service Orientation

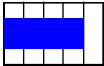
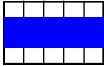

Scale Description

The Service Orientation scale identifies people who are courteous and helpful when dealing with customers and associates.

Score = 77th percentile

Mr./Ms. Doe's score suggests that he/she is strongly service oriented. He/She appears to be courteous, attentive, friendly, and easy-going.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Virtuous <i>Being perfectionistic</i>	I do my job as well as I possibly can.	 4 out of 5
Empathy <i>Absence of irritability</i>	I am rarely irritated by faults in others.	 5 out of 5
Sensitive <i>Tends to be kind and considerate</i>	I always try to see the other person's point of view.	 3 out of 4

Stress Tolerance


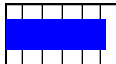
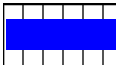


Scale Description

The Stress Tolerance scale identifies people who handle pressure well and are not tense or anxious.

Score = 93rd percentile

Mr./Ms. Doe's score suggests that he/she is resilient. He/She should be pleasant, poised, confident, and healthy.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Not Anxious <i>Absence of anxiety</i>	I am seldom tense or anxious.	 4 out of 4
No Guilt <i>Absence of regret</i>	I rarely feel guilty about some of the things I have done.	 5 out of 6
No Depression <i>Feelings of contentment</i>	I am a happy person.	 6 out of 6
No Somatic Complaint <i>Lack of health concerns</i>	I almost always feel good.	 5 out of 5
Calmness <i>Lack of emotionality</i>	I keep calm in a crisis.	 4 out of 4

Reliability

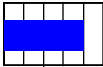
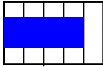
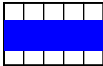

Scale Description

The Reliability scale concerns willingness to follow organizational rules and be a good organizational citizen.

Score = 91st percentile

Mr./Ms. Doe's score suggests that he/she is quite reliable, conscientious, careful, and easy to supervise.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Good Attachment <i>Good relations with one's parents</i>	No matter what happened I felt my parents loved me.	 4 out of 5
Impulse Control <i>Lack of impulsivity</i>	I rarely do things on impulse.	 4 out of 5
Avoids Trouble <i>Professed probity</i>	When I was in school I rarely gave the teachers any trouble.	 5 out of 5
No Hostility <i>Lack of hostility</i>	I never hold grudges very long.	 3 out of 3

Clerical Potential


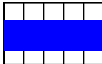
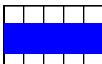
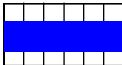

Scale Description

The Clerical Potential scale identifies people who are likely to make responsible, hard working employees.

Score = 100th percentile

Mr./Ms. Doe received a high score on the measure of Clerical Potential. Persons with scores in this range tend to be competent, stable, steady, and able to listen well.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Not Anxious <i>Absence of anxiety</i>	I am seldom tense or anxious.	 4 out of 4
No Somatic Complaint <i>Lack of health concerns</i>	I almost always feel good.	 5 out of 5
Avoids Trouble <i>Professed probity</i>	When I was in school I rarely gave the teachers any trouble.	 5 out of 5
Leadership <i>Capacity for leadership</i>	In a group I like to take charge of things.	 6 out of 6
Caring <i>Interpersonal sensitivity</i>	I am sensitive to other people's moods.	 4 out of 4

Sales Potential

Scale Description

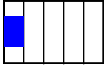
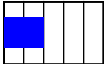
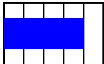


The Sales Potential scale identifies people who are self-assured, flexible, ambitious, outgoing, and self-motivated.

Score = 89th percentile

Mr./Ms. Doe's score on the Sales Potential scale is in the high range. Persons with scores in this range tend to be sociable, friendly, and like challenges, which leads to success in sales work.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Self-Confident <i>Confidence in oneself</i>	I am a very self-confident person.	 3 out of 3
No Social Anxiety <i>Social self-confidence</i>	I don't mind talking in front of a group of people.	 6 out of 6
Likes Parties <i>Enjoys parties</i>	I would go to a party every night if I could.	 3 out of 5
Likes Crowds <i>Finds large crowds exciting</i>	Being part of a large crowd is exciting.	 4 out of 4
Experience Seeking <i>Preference for variety and challenge</i>	I like a lot of variety in my life.	 6 out of 6
Exhibitionistic <i>Exhibitionistic tendencies</i>	I like to be the center of attention.	 4 out of 5
Entertaining <i>Being witty and entertaining</i>	I am often the life of the party.	 3 out of 4
Easy To Live With <i>Tolerant and easy-going nature</i>	I work well with other people.	 5 out of 5
Likes People <i>Enjoys social interaction</i>	I enjoy just being with other people.	 6 out of 6

Impulsivity	<i>Acting on impulse</i>	I frequently do things on impulse.		1 out of 5
Thrill Seeking	<i>Enjoyment of adventure and excitement</i>	I would like to be a race-car driver.		2 out of 5
Generates Ideas	<i>Ideational fluency</i>	I am a quick-witted person.		4 out of 5
Self Focus	<i>Being introspective</i>	I often try to understand myself.		3 out of 4
No Impression Management	<i>Lack of concern about social feedback</i>	I never wonder what people are thinking about me.		3 out of 4

Managerial Potential


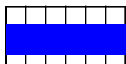
Scale Description

The Managerial Potential scale identifies people who can direct others in a pleasant and effective fashion.

Score = 79th percentile

Mr./Ms. Doe's score on the Managerial Potential scale is in the high range. Such persons tend to be well-informed, hard working, and enthusiastic, and to do well in management positions.

Sub-Scale Interpretation

HIC Name : <i>Definition</i>	Sample item	Score: Raw and Maximum
Education <i>Being a good student</i>	As a child, school was easy for me.	 3 out of 3
No Depression <i>Feelings of contentment</i>	I am a happy person.	 6 out of 6
No Somatic Complaint <i>Lack of health concerns</i>	I almost always feel good.	 5 out of 5
Identity <i>Satisfaction with one's life tasks</i>	I know what I want to be.	 3 out of 3
Mastery <i>Being hard-working</i>	I strive for perfection in everything I do.	 4 out of 4
Avoids Trouble <i>Professed probity</i>	When I was in school I rarely gave the teachers any trouble.	 5 out of 5
Leadership <i>Capacity for leadership</i>	In a group I like to take charge of things.	 6 out of 6
Competitive <i>Being competitive, ambitious and persistent</i>	I am an ambitious person.	 5 out of 5