Resource Associates, Inc.

PERSONAL STYLE INVENTORY

A Personality Assessment System
for the Work Place

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Table of Contents

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A Work-Based Personality Measurement System

In recent years, measurement of work-related personality characteristics has become an increasingly important function of human resources and other organization units tasked with the responsibility for employee selection. The domain of personnel assessment has expanded from an emphasis on job-related knowledge, skill, and abilities (KSA's) to include KSAO's where "O" refers to other personal characteristics, especially personality traits. It is now recognized by researchers and practitioners alike that personality plays a key role in job performance.

Resource Associates' Personal Style Inventory (PSI) is a normal personality inventory that differs from many of the widely used personality instruments—such as the 16 PF, NEO, or Myers-Briggs Type Indicator—in that most of the items were contextualized to work settings. This approach is consistent with research that demonstrates the work-related validity of personality measures can be increased by framing items in terms of work (Schmit, Ryan, Stierwalt, & Powell, 1995). In our continuing effort to maximize the validity of our PSI measures for different clients, we have sometimes written sets of items specific to a single job.

Although the PSI measures many different work-related facets of personality, it also assesses what are termed the "Big Five" personality traits. The Big Five reflects a paradigm shift in the field of psychology, especially personality and individual differences, contending that there is a core set of five broad personality traits that infuse all areas of behavior, including work behavior (DeRaad, 2000; John, Angleitner, & Ostendorf, 1988; McCrae & Costa, 1987; Wiggins & Trapnell, 1997). The Big Five personality traits—Neuroticism, Extraversion, Agreeableness, Openness, and Conscientiousness—have been extensively studied and are supported by an extensive body of empirical research. For example, three meta-analyses (Barrick & Mount, 1991; Salgado, 1997; Tett, Jackson, & Rothstein, 1991) have found that Conscientiousness is a near-universal predictor of job performance, regardless of type of job or industry.

Recent developments in the areas of personality, individual differences, and personnel psychology (e.g., Lounsbury, Sundstrom, Gibson, & Loveland, 2003; Paunonen & Ashton, 2001 Paunonen, Rothstein, & Jackson, 1999; and Schneider, Hough, & Dunnette, 1996) indicate that, in addition to the Big Five, other personality traits which denote more narrow domains of behavior, can add to the predictability of job performance above and beyond what can be accounted for by the Big Five. In our own work on developing validated pre-employment assessment batteries, we have also found that narrow personality traits not only can add to the predictability of job performance beyond the Big Five, but for many jobs and performance criteria, narrow traits are better predictors than the Big Five. A number of our measures are designed specifically for certain types of occupation (e.g., sales management) and achieve higher levels of validity than the Big Five traits. In addition to the Big Five, we measure over 50 personality traits with our PSI, which are described in more detail below.

Our Approach to Developing Personality Measures

Our approach to personality measures is informed by working closely with HR professionals, job incumbents and supervisors, direct on-site observation, and personality-oriented job analysis, as well as by the latest advances in the field of applied psychology. After identifying the appropriate content for a personality measure, each PSI scale is constructed to represent homogenous items that sample diverse situations and expressions of behavior within the content domain (Nunnally & Bernstein, 1994) of interest. These efforts help ensure the reliability and validity of our measures. After our measures have been used to select employees for jobs, they typically undergo continuous improvement resulting from changing demands of clients and new validation studies.

Personality versus Ability

Unlike measures of cognitive aptitude and ability, which tend to assess maximal performance, personality measures tend to assess typical performance. Personality measures often add incremental validity above and beyond cognitive measures in the prediction of job performance. Additionally, unlike almost all measures of cognitive aptitude, personality measures tend to minimize adverse impact on EEOC-protected groups. Finally, personality measures can be used for a variety of purposes beyond making employment decisions. By way of example, personality scores can be used to help a manager train and coach employees as well as provide important information to the candidate to use for career-planning and professional development.

Advantages of Using Personality Measures

Personality assessment is a valuable addition to a test battery that focuses on cognitive abilities or technical skills for new hires. Personality tests measure different aspects of future job performance – so using mental ability tests and personality assessments can significantly increase the predictive power of an assessment battery. As but one example, think of a very smart but sloppy or unstable worker who can perform well on those aspects of job performance predicted by cognitive aptitude tests, but not other important areas of performance such as quality, timeliness, and efficiency of work. Unlike measures of cognitive aptitude and ability, which tend to assess maximal performance, personality measures tend to assess typical performance – they can tell you how a person is likely to behave most of the time. Also, personality measures are not timed and do not require an administrator or other mechanism to monitor time limits. Moreover, personality measures tend to have minimal, if any, adverse impact, which is almost universally found for all mental ability tests. There are typically no significant differences between different racial/ethnic groups on personality measures, nor between different age groups, or between males and females (with the exception of males having slightly higher scores on Tough-Mindedness).

Distinctive Features of the
RA Personal Style Inventory

The special features of our PSI which we have found enhance its appeal to companies wanting to measure personality characteristics for pre-employment or promotion testing are as follows:

1. Unlike many normal personality measurement devices, most of the PSI items are written from the <u>perspective of work</u>. This increases the job-relatedness of our measures and helps increase user acceptance.

2. The <u>scales are modular</u> and can be combined as needed. Based on the client's preferences, and on the results of job analysis and/or validation studies, companies can choose to use only some of the scales. The whole inventory need not be used, which can save valuable test administration time.

3. Each item has a <u>full 5-point response scale</u> which gives the applicant more response choice freedom for expressing "in-between" responses.

4. A personality-based <u>job analysis form</u> is included in the package to help assess the importance of each trait for a particular job or company.

5. We can provide <u>extensive "feedback reports"</u> that can be given out to explain a person's results on each dimension in a proactive, informative way.

6. Many of our items are designed to <u>control for social desirability and "faking</u>."

    For example, here is an item we have used in the past to measure orderliness.

I like to keep my work neat and well-organized.	☐ ☐ ☐ ☐ ☐ 1 2 3 4 5	I like to keep my work neat and organized, but not if it means getting behind schedule.

7. Given that many of the consultants on staff at Resource Associates are proficient in test development, we can <u>design new scales</u> to measure personality traits specifically for your company.

Wide Applicability for Business and Industry

In addition to pre-employment selection, there are other valuable uses of personality measure. Listed below are some of the applications of the Resource Associates PSI:

- Recruitment, including training recruiters in personality appraisal.
- Individual counseling and employee assistance interventions
- Training needs assessment
- Professional development
- Placement into different jobs and career paths
- Career planning
- Improving work group and team functioning
- Promotion testing
- Conflict resolution
- Succession planning
- Pre-retirement planning
- Personal feedback and development
- Partnerships and mergers

Technical Foundation

General working adult norms based on over 1,200,000 job applicants and incumbents from a wide range of positions and type of organizations are available for our personality measures. We can also develop norms specific to a particular job, company, recruitment area, and demographic variables.

All of the reliability and validity indices which have calculated for our measures are too numerous to list here. Instead, representative selected reliability and validity information is presented below. Overall, our measures have been found to be related to and predict a variety of indicators of job performance for many different occupations in many different organizational settings.

Description of Available PSI Dimensions

The measures presented below represent personality traits—relatively enduring characteristics of individuals across situations and over time. Some of these are more long-term (e.g., Extraversion) and less likely to change, whereas others (e.g., Career-Decidedness, Customer Service Orientation) may be more sensitive to immediate circumstances.

For a particular client need, only a subset of these dimensions would be used in an inventory with candidates.

For a given job or occupational group, the important dimensions are selected (usually by job analysis, expert judgment, or results of validation study), then compiled into an inventory to assess candidates for that job.

Big Five Traits

Agreeableness—Disposition to be pleasant, amiable, equable, and cooperative; inclined to work harmoniously with others; will avoid disagreements, arguments, conflict in interactions with other people.

Conscientiousness—Being reliable, dependable, trustworthy, and rule-following; strives to honor commitments and do what one says one will do in a manner others can count on. In addition to this measure of Conscientiousness, we have two other related forms of Conscientiousness; one that includes orderliness, rule-following behavior, and preference for structure; while one other measure of Conscientiousness does not include orderliness and the other does not include rule-following behavior.

Emotional Stability/Resilience—This trait is the inverse of what others term Neuroticism; it reflects overall level of adjustment, resilience, and emotional stability; indicative of ability to function effectively under conditions or job pressure and stress.

Extraversion—Tendency to be sociable, outgoing, expressive, talkative, gregarious, warmhearted, congenial, and affiliative; attentive to and energized by other people and social/interpersonal cues in the workplace.

Openness—Prone to seek out and engage in new: Ideas, procedures, techniques, and experiences; inclined toward organization, innovation, acquiring new KSA's on the job, continuing education, professional development, travel, cross-cultural activities, and temporary duty assignments.

Other Personality Traits & Attitudes

Achievement Orientation—Motivated to achieve and excel in an area of performance; disposition to pursue challenging (but obtainable) goals, receive clear performance feedback, and measure one's self in terms of accomplishments and realizations (typically relative to other people). Individuals who score high on achievement motivation are not satisfied until they have realized significant achievements in their area of endeavor and have a history of accomplishments over time.

Accountability—Taking personal responsibility for work performed, decisions, and general job conduct, especially when problems arise or negative outcomes emerge.

Adaptability—Being adaptable, flexible, and able to improvise and adjust work-style to different conditions and situations.

Assertiveness—Refers to a person's inclination to seize the initiative, take charge of situations, speak up in meetings, bring influence to bear on other people, voice ideas and opinions that may not be well-received by others, defend one's actions and beliefs when challenged, and confront problems directly.

Attitudes toward Children—Pertains to people who work with children in their jobs; they enjoy being around children, want to have a positive influence on children's lives, and have a high tolerance for typical child behavior.

Autonomy—Need for independence and autonomy at work, including not having a boss.

Avoidance of Violence— Propensity to be overtly aggressive and inflict harm on another person or damage to property and possessions; tendency to explode when provoked; views violence as a reasonable form of problem-solving or appropriate response to perceived threats and challenges.

Career-Decidedness—Having a clear sense of career direction and knowing what kind of occupational field or type of job one wants to work in.

Company Loyalty—This scale measures the degree to which people hold positive attitudes about their company and the management versus having a negative predisposition, being suspicious, taking steps to undermine public image of the company.

Competitiveness—Consistently engaging in competition with and trying to outperform business peers and rivals for work-related purposes; concerned with "keeping score" and doing better than peers, especially in contests and competitions.

Cross-Cultural Sensitivity—Tolerance for cultural diversity; willingness to work with people with widely different backgrounds.

Customer Engagement—-Making prompt, positive initial contact with customers; smiling a lot, talking first, making eye contact, using upbeat voice tone, always saying something cheerful; projecting a positive body language, having a dynamic presence, and generally energizing the customer on first meeting.

Customer Relationship Building—Striving to build a personalized relationship with customers, including knowing their names (and making sure they know your name), learning about their preferences, asking questions and finding something they have in common with customers. Encouraging customers to come back again when they leave, and remembering them when they return.

Customer Service Orientation—Striving to provide responsive, personalized, quality service to (internal and external) customers; putting the customer first; and trying to make the customer satisfied, even if it means going above and beyond the normal job description or policy.

Detail-Mindedness—Enjoys working on tasks that require attention to detail; takes pride in taking the extra time to get details correct.

Drug Use—This scale measures positive attitudes about use of illegal drugs, propensity to spend time with people who use drugs themselves, and belief that illegal drug use is not harmful.

Empathy—Sensitivity and responsiveness to the emotions of other people; sympathetically tuning in to the motives, needs, and psychological states of the people one works with.

Faking Good—Tendency to present oneself in a favorable light and to try to make a good impression on others, even if such impression is not realistic or warranted by the facts; putting on a good front; and avoiding the disclosure of negative information about oneself or one's work record.

Goal-Setting—Regularly setting and attaining clear, measurable business goals and objectives; managing one's work activities by goal-setting principles.

Health-Mindedness— Concern about being healthy and engaging in behaviors to maintain health.

Image Management—Derived from "Self-Monitoring" construct; reflects a person's disposition to monitor, observe, regulate, and enhance self-presentation to create a favorable impression on other people.

Integrity—Behaving in ways on the job which reflect prosocial values: Honesty, personal integrity, and adherence for societal norms for "good" conduct. They are less likely to engage in antisocial and delinquent acts on the job or to tolerate it in others (e.g., theft, pilferage, allowing illegal sales of restricted products, sabotage, embezzlement, larceny, misrepresentation, cheating, falsification of information, etc.)

Integrity re: Company Policies—Consistent with Conscientiousness.
Integrity re: Internal Theft—Beliefs that taking company property (cash, equipment, materials) or time is acceptable.
Integrity Re: External Theft—Beliefs that engaging in theft in the community is acceptable.

Locus of Control— General belief that work success stems from personal initiative and effort, not luck or fate.

Nurturance—Persistent desire to help others and attend to their needs; inclination to help, assist, succor, attend to the need of, and provide care for others; typically in child care, nurses, human service occupations.

Optimism—Having an optimistic, hopeful disposition concerning prospects, plans, people, and the future, even in the face of difficulty and adversity; tendency to minimize problems and persist in the face of setbacks.

Orderliness—Tends to be well-organized in completing tasks and prompt with turning in paperwork. More likely to create systems so that tools and materials are kept in an orderly, neat manner.

Organizational Citizenship—Propensity to volunteer for activities, projects, and programs that are above and beyond job duties; engaging in altruistic behavior that benefits the company as a whole or other employees.

Persistence—Disposition to keep working on projects until completed, and persevere despite setbacks and obstacles.

Potential for Long Tenure—Inclined to remain in one company and move up in an organization rather than advance by changing employers; disposition to weather stress, problems, and obstacles rather than quit and seek employment elsewhere.

Self-Directed Learning—Inclination to learn new materials and find answers to questions on one's own rather than in response to company initiative or request by one's manager; taking personal responsibility for one's continued education, training, work-related learning, and professional development; showing active concern for and engaging in activities to continuously improve one's knowledge, skills, and abilities.

Self-Promotion—Promoting one's self and product or service to other people for business-related purposes.

Sense of Identity—Knowing one's self and where one is headed in life, having a core set of beliefs and values that guide decisions and actions, and having a sense of purpose.

Social Networking—Expanding one's business contacts, networks, and alliances by personal relationships with other individuals and groups.

Teamwork—This trait is an adaptation of Agreeableness, reflecting a propensity for working as part of a team; inclined to be cooperative and participative in group projects; values team cohesion and solidarity.

Tolerance for Financial Insecurity—Willingness to forego a regular paycheck and experience irregularity in income.

Tolerance for Mundane Work—Ability to handle and enjoy repetitive tasks with minimal mental challenge.

Tough / Tender-Mindedness—Appraising information and making work decisions based on logic, facts, and data rather than feelings, values and sentiments. Those scoring in the tough-minded direction tend to be analytical, realistic, objective, and unsentimental when making judgments and drawing conclusions about what needs to be done. Those scoring more in the tender-minded direction tend to be sensitive, considerate, empathetic, and willing to use personal feelings and values as decision-criteria. Similar to Myers-Briggs Thinker-Feeler preference.

Visionary vs. Operational style**—**Refers to whether a person is inclined toward more of a global, intuitive, big-picture, visionary thinking style or more of a concrete, practical, hands-on, detail-oriented thinking style. Visionary dimension is similar to Myers-Briggs Intuitive vs. Sensing preference.

Work Drive—Disposition to work hard and for long hours, investment of one's time and energy into job and career, and being motivated to extend oneself, if necessary, to finish projects, meet deadlines, attain quotas, and achieve job success.

Sales-Related Measures

Competitiveness—Refers to a sales person being competitive and striving to outperform other sales representatives. Motivated by sales feedback, comparisons, and contests.

Customer Engagement—Reaching out to and connecting with customers in a positive manner that makes them feel welcome and stimulates their interests in products and services.

Extrinsic Motivation—Refers to a sales candidate being motivated by money, wealth, prestige, and luxurious lifestyle.

Image Management (Sales)—Disposition to monitor, observe, regulate, and control self–presentation and image one projects in sales and selling-related activities; includes being tactful, discreet, poised, circumspect, and shrewd.

Relationship Sales—Developing and cultivating a personalized relationship with customers to influence sales outcomes.

Retail Execution—Managing all aspects of retail sales operations to ensure standardization of procedures and services so that customer can potentially have a consistent experience in-store or in facility regardless of time of day or year in which employees are working; streamlining procedures and product configuration so that the consumer can efficiently navigate through facility and minimize time spent completing transactions.

Sales Assertiveness—Forceful; willing to initiate conversations with new people to push their agenda, voice an opinion, or make suggestions. More likely to "bump up" a sale or engage in "suggestive selling."

Sales Boldness—Refers to a person having supreme levels of boldness, confidence, and chutzpah in sales situations. People scoring high on this scale are colorful, charismatic, interesting, and memorable.

Sales Confidence—Refers to confidence about being successful in sales activities. Feels he/she knows how to generate sales prospects, do sales, and achieve positive sales outcomes in one's work.

Sales Savvy—General knowledge and savvy about selling, including ways to prospect, make persuasive presentations to customers, closing, and general selling tactics and strategies.

Managerial-Related Measures

Dominance / Assertive Leadership—Inclination to strive for and feel comfortable in a dominant leadership role in groups and organizational settings; dominant individuals are comfortable using power and will readily exert their authority over subordinates; they like to be in charge of the work goals and activities of other people.

Willingness to Give Honest Feedback—Providing honest, accurate, valid, and timely performance feedback to subordinates based on observed behavior without downplaying or omitting negative information.

Human Relations Style (for managers)—A basic dimension of leadership and management; equivalent to "Consideration" in the Ohio State Leadership studies. Refers to a leader's concern for the morale and well-being of his/her subordinates and consideration of their needs and concerns; includes showing an active interest in the feelings and attitude of subordinates, and treating them with empathy, respect, and compassion.

Task Structure—Another basic dimension of leadership and management; equivalent to "Initiating Structure" in the Ohio State Leadership studies. Refers to an individual's orientation toward clarifying duties, tasks, and expectations; directing, planning, goal-setting, scheduling, monitoring, reviewing, and organizing the work environment and activities of subordinates to accomplish organizational goals.

Visionary vs. Operational Leadership—Refers to a leadership style which emphasizes creating an organizational vision and mission, developing corporate strategy, identifying long-term goals, and planning for future contingencies versus a leadership style which focuses on day-to-day operations and accomplishments, short-term goals, current problems and implementation of plans.

Cognitive Aptitude

Because many of our clients want a measure of cognitive aptitude in their pre-employment assessment battery, we have also developed a measure of cognitive aptitude. The following aptitudes are measured as an untimed supplementary section to the personal style scales:

Numerical Reasoning Aptitude—Being able to logically analyze numerical information, reason with numbers, and make inferences about quantitative relationships. High scorers are more likely to be effective in doing calculations quickly, making sense of profit and loss statements, and doing quick mental estimates of quantitative figures.

Verbal Reasoning Aptitude—Ability to comprehend English vocabulary, reason with verbally-based information, and draw conclusions based on complex verbal stimuli.

Abstract Reasoning Aptitude—Ability to make sense of different information, to reason abstractly so as to determine patterns and relationships among symbolic stimuli. When making complex decisions, high scorers are more likely to be able to lay out available options and then make wise choices in an efficient manner.

Overall Cognitive Aptitude—This scale is a linear composite of the above aptitudes (numerical, verbal, and abstract reasoning). It assesses a person's overall cognitive aptitude, or general mental ability. The higher the overall cognitive aptitude, the greater the likelihood of the individual performing at a high level in the job, particularly when it comes to flexible general problem solving, learning new procedures, and using high-level analytical skills; keeping track of multiple sets of information, reasoning through complex problems, and handling a heavy information processing load. As would be expected and as described in more detail later in this manual, our measure of overall cognitive aptitude is fairly highly related to measures of general intelligence ($r = .75$), and ACT scores ($r = .53$).

Reliability of the RA Personal Style Inventory

Reliability refers to the repeatability and consistency of measurement. For example, if a measure is reliable, it should produce a similar result for people who take a measure on two (or more) occasions. Also, all of the items in a scale that is reliable should be related to each other and measure the same thing. Synonyms for reliability are repeatability, reproducibility, precision, dependability, fidelity, accuracy, and generalizability.

Resource Associates ensures that all measures are reliable before they are used. We typically assess reliability as the internal consistency reliability coefficient (Cronbach's *alpha*) for our scales. For our main measures, reliability coefficients are based on samples ranging from 1,000 to over 400,000 job applicants and incumbents. To simplify, we present below the median reliability coefficient for most frequently used measures over a wide range of jobs and business sectors.

Table 1: Reliability Coefficients for the RA PSI Measures

Scale	Number of Items	Median Coefficient Alpha
Achievement Orientation	11	.80
Adaptability	11	.76
Agreeableness	9	.77
Alcohol Use	13	.82
Assertiveness	10	.82
Attitudes Toward Children	12	.81
Avoidance of Violence	12	.83
Career-Decidedness	5	.93
Company Loyalty	15	.85
Competitiveness	10	.81
Conscientiousness	10	.84
Customer Service Orientation	12	.77
Detail-Mindedness	8	.82
Drug Use Potential	16	.82
Emotional Stability/Resilience	9	.86
Empathy / Interpersonal Sensitivity	12	.85
Extroversion	8	.83
Faking Good	10	.81
Health-Mindedness	7	.61
Impression Management	11	.76
Integrity	13	.75
Integrity re: Company Policy	10	.74
Integrity re: Internal Theft	12	.74
Integrity re: External Theft	10	.77
Initiative (Work Drive for hourly jobs)	13	.81
Locus of Control	8	.79
Intrinsic / Extrinsic Motivation	10	.87
Nurturance	12	.72
Openness	11	.80
Optimism	7	.85
Orderliness	9	.81
Potential for Long Tenure[2]	11	.81
Retail Execution	11	.89
Risky Behavior Orientation	13	.79
Safety-Mindedness	4	.79
Self-Directed Learning	7	.85
Teamwork Orientation	6	.84
Tolerance for Mundane Work	9	.91
Tough / Tender-Mindedness[2]	12	.78
Work Drive[1]	9	.81
MANAGERIAL MEASURES		
Dominance / Assertive Leadership	9	.84
Managerial Task Structuring	10	.82
Human Relations Style	10	.81
Honest Feedback	9	.94
Visionary vs. Operational Style	8	.78
SALES MEASURES		
Selling Enthusiasm / Confidence	9	.75
Sales Savvy	10	.62

Table 1 Reliability Coefficients for the RA PSI Measures (cont.)

Scale	Number of Items	Median Coefficient Alpha
Image Management	11	.79
Extrinsic Motivation	6	.80
Retail Execution	11	.81
Sales Boldness	8	.81
COGNITIVE ABILITY		
Numerical Reasoning Aptitude	14	.77
Verbal Reasoning Aptitude	16	.75
Abstract Reasoning Aptitude	14	.80
Overall Cognitive Aptitude	44	.84

Validity of the RA Personal Style Inventory Dimensions

Validity is demonstrated by a correspondence between scores on a measure and logically related outcomes, criteria, and other measures. In the context of work, we are most often concerned of the validity of a measure with respect to an important criterion of job behavior, such as performance. We have documented a variety of validity evidence for our measures, including criterion-related, predictive, concurrent, and known-groups validity as well as incremental; and construct validity. A definition of validity terms is provided in Appendix I.

Licensed Industrial Psychologists on staff at Resource Associates do the basic research to develop solid, reliable, valid tests. In this section, we present data that shows conclusively that Resource Associates' Personal Style Inventory is an extremely valuable hiring tool for many types of businesses.

- Accounting / Finance workers
- Administrative Assistants
- Advertising Associates
- Appliance Service Specialists
- Agricultural Extension Agents
- Assemblers
- Bank Tellers / Loan Officers
- Baristas
- CAD Designers
- Camp Counselors
- Call Center Customer Service / Sales
- Collections Agents
- Clerical staff (including secretaries, cashiers, clerks, and administrative support staff)
- Consultants
- Customer Account Managers
- Customer Service Representatives
- Dispatchers
- Engineers and Engineering Technicians
- Executives
- Facilities Maintenance
- Financial Service Representatives
- Health Care Support Staff
- Health Care Direct Care Staff
- Human Resource Professionals
- Information Technology Professionals
- Installers
- Inventory Control Specialists
- Light Rail Repairers
- Linemen

- Loan Officers
- Managers – various types
- Mechanics (sewing, maintenance, and general mechanical workers)
- Machinists
- Marketing Managers
- Payroll Managers / Associates
- Parts Builders
- Pipefitters
- Pharmaceutical Sales Representatives
- Project Managers
- Production Control Specialists
- Production Workers
- Programmers
- Quality Assurance Specialists
- Receptionists
- Restaurant Managers / Asst. Managers
- Sales Representatives (field and internal)
- Setup Technicians
- Shipping Clerks
- Store Managers / Asst. Managers
- Substation Technicians and Operators
- Supervisors / Group Leaders / Team Leaders
- Teachers (High School)
- Telemarketers
- Tellers
- Tool & Die Makers
- Utility Workers
- Warehouse / Inventory Control / Stock Clerks

Resource Associates has conducted dozens of validation studies on the scales and measures in the Personal Style Inventory. Most of these are criterion-related concurrent validation studies with performance ratings serving as the criteria, though we have also conducted predictive validation studies using turnover and absenteeism as criteria and we have employed "known groups" validation to differentiate high performers from average and poor performers.

The main PSI scales have been validated in a wide range of settings against many different criteria. In the following sections we present for some of the validity results from our most recent validation studies.

Achievement Striving: People scoring high on this dimension are determined to reach their goals. They set goals, put forth a great deal of effort, and are constantly looking at how much they have achieved in life.

Validity coefficients are often represented by correlations between a predictor (test) and a criterion (e.g., supervisor rating).

Typically validity coefficients range between .15 and .40.

Stronger (more desirable) correlations are higher and closer to 1.0.

Validity Coefficients for Achievement Striving

GPA	Dean's List	Winning Awards
.31**	.31**	.29**

Adaptability: This dimension was validated with small business owners and entrepreneurs with one summary criterion: Satisfaction with Work. The validity coefficient was .23**.

Agreeableness: People scoring high on this dimension are more amiable, agreeable, cooperative, collegial, helpful, and tolerant of other people. This scale is often significantly related to performance ratings of teamwork, relations with co-workers, relations with supervisors, safety, and overall job performance.

Validity Coefficients for Agreeableness

Productivity	Teamwork	Relations with Coworkers	Relationships with Supervisors	Overall Performance
.21**	.30**	.22**	.20*	.19*

The validity coefficients for Agreeableness in relation to overall job performance for five different jobs are presented in Table 10 on page 30.

Alcohol Use: This dimension refers to positive attitudes about drinking and admission that drinking is associated with various problems at home, at work, with friends, driving.

Validity Coefficients for Alcohol Use

Problem Solving	Safety on Job	At-Fault Auto Accidents	Drinking-Related Citations	Workman Comp Claims
-.11**	-.12*	.149**	.135*	.109*

Assertiveness: This dimension refers to a person's asserting themselves and being forceful. One can think of this dimension as social dominance. People high on assertiveness can take charge of situations and impose their will on others. They will not back down from tough situations or difficult people and will speak their mind on matters of importance to them. Assertiveness is also an important component of sales activities.

Validity Coefficients for Assertiveness / Winning Over Others

Sales Contests in Banks	Collections Rate	Elected Leadership Positions
.23**	.18*	.26**

Avoidance of Violence: This dimension measures attitudes toward use of violent behavior to solve problems and displaying intense emotions. Two validation studies are now in process, however, the incidence of violence on the job is so rare that these are long term studies. For the time being, subject matter experts in the law enforcement field have judged the items to be content valid, and subject matter experts have had input on how norms were established for scoring.

Company Loyalty: This scale measures the degree to which people hold positive attitudes about their company and the management versus having a negative predisposition, being suspicious, taking steps to undermine public image of the company. In a study of 300 laborers, this variable was positively related to every one of the supervisor ratings, so it suggests that people who feel good about their employer probably try harder to do their jobs well and get along with co-workers and managers than people who are suspicious of or antagonistic toward their employer. Company Loyalty is a very strong indicator of how well supervisors feel about an employee on many different dimensions.

Typical Validity Coefficients for Company Loyalty

Relationships with Managers	Positive Attitudes on the Job	Disciplinary Actions	Overall Performance
.35**	.35*	-.26**	.39**

Competitiveness: People who score high on this scale want to be seen as better performers than other people. In a study of over 300 field sales representatives with a large pharmaceutical company, competitiveness was correlated .26** with sales volume and .32** with overall job performance.

Typical Validity Coefficients for Competitiveness

Sales Volume	Overall Performance
.26**	.33**

Conscientiousness: Generally, this dimension is our most valid personality predictor, which is understandable given the importance to companies of employees being reliable, trustworthy, rule-following, and predictable in their work behavior. We typically find conscientiousness to be significantly related to performance rating dimensions for productivity, quality, dependability, attendance, safety, and overall job performance. For example, in three recent concurrent validation studies with average sample size of n = 165 general production worker incumbents, and three studies with workers in summer camps, collections, and banking positions, we obtained the following median validity coefficients for the PSI Conscientiousness scale.

Typical Validity Coefficients for Conscientiousness

Productivity	Quality	Dependability	Overall Performance
.26**	.19*	.32**	.28**

Cross-Cultural Sensitivity: People scoring high on this scale are tolerant of cultural diversity and they express a willingness to work with people of different characteristics and backgrounds than themselves. We have not had the opportunity to validate this scale, but Subject Matter Experts in the human resources profession have judged the items in the scale to be content valid and the norms to be reasonable.

Customer Service Orientation / Customer Responsiveness: This is a factor which is relevant for jobs where the employee has frequent contact with and provides direct service to customers, including some selling. Where we have had the opportunity to evaluate this dimension with human service workers, banking representatives, and retail workers, correlations have been significant with rated performance in such areas as providing courteous service to customers, handling complaints in a tactful manner, company commitment, customer retention, and selling. Following are typical validities for Customer Service Orientation in samples of banks, credit unions, and retail settings.

Validity Coefficients for Customer Responsiveness

Overall Performance	Relationships With Supervisors	Relationships with Co-workers	Relationships With Customers
.34**	.19*	.24**	.25*

Detail-Mindedness: This dimension has been studied with people doing accounting work and records management in office settings.

Validity Coefficients for Detail-Mindedness

Overall Performance	Job Satisfaction	Accuracy
.27**	.28*	.30**

Drug Use Potential: This scale measures positive attitudes about use of illegal drugs, propensity to spend time with people who use drugs themselves, and belief that illegal drug use is not harmful. In research with 300 laborers, this variable was negatively related to 9 of the 12 supervisor ratings, suggesting that people who have more favorable attitudes toward drug use (and should, therefore, be more inclined to use illegal drugs) are seen as worse employees in both their task behavior and people relations.

Validity Coefficients for Drug Use Potential

Integrity	Safety-Mindedness	Relationships w/ Mgrs	Driving Citations	At-Fault Auto Accidents
-.175**	.206**	.148**	.175**	.189**

Empathy / Interpersonal Sensitivity: This dimension has been included in a number of studies with health care workers, social service agency personnel, and customer service employees. It measures a workers' ability to understand the emotional issues that are relevant to the other person.

Validity Coefficients for Empathy / Interpersonal Sensitivity

Overall Performance	Relationships With Supervisors	Relationships with Co-workers	Relationships With Customers
.30**	.19*	.29**	.35*

Emotional Stability / Stress Resistance: People scoring high on this scale are more even-tempered, stable, controlled, and resilient. On a daily basis at work, you may find that these people do not get upset easily and can take job strain and pressure in stride. The flip side of what is termed "Neuroticism" in terms of the Big Five personality systems, emotional stability is often implicated in the job analyses we conduct and found to be a significant correlate of job performance, especially in organizations which have stressful work conditions and place significant strain on individual workers (which is becoming the norm in many fast-paced organizations which emphasize, for example, just-in-time production, ISO 9000, continuous improvement, and customer-first orientation). Meta-analytic research has repeatedly shown that Emotional Stability is one of the best predictors of job performance, accidents, and turnover, as well as career, job, and life satisfaction. Some of the dimensions which we typically find emotional stability to be significantly related to are provided below (using the same validation samples as listed above).

Validity Coefficients for Stress Resistance / Emotional Stability

Productivity	Quality	Ability to Work Under Pressure	Attendance	Turnover Potential	Overall Job Performance
.22**	.18*	.30**	.28**	.38**	.24*

Extraversion: People scoring high on this scale tend to be socially alert and involved with what is going on with the people they work with. Extroverted people are more likely to speak up, voice their opinions, get involved with problem solving discussions, and build relationships with various people throughout the company as well as vendors and customers. People scoring high on this scale tend to be sociable, outgoing, warm-hearted, socially alert, and involved with what is going on with the people they work with. Extroverted people are more likely to speak up, voice their opinions, get involved with problem solving discussions, and affiliate with coworkers. Although this construct has been very well-received in projects where we provide individual assessment results for personal feedback, career planning, and team development, we have not usually found it to be a valid predictor of job performance. This may reflect the fact that for most jobs the behavioral attributes of Extraversion are not very job-relevant or it may be that most jobs provide enough latitude for individuals to express as much Extraversion (or

introversion) as they wish while working such that it is not systematically related to job performance. Another interpretation is that most companies are moving toward highly interdependent team-based work cultures. Given that they have a long way to go before eliminating the traditional culture where each worker is responsible only for himself, the validation studies may not have had sufficient opportunity to test the relationship between Extraversion and productivity. The few exceptions we have found involve customer service jobs where the incumbent deals with customers exclusively by telephone. Here, introversion is modestly and significantly correlated *(r =*.19, *p*<.05) with overall job performance. Also, in jobs which demand a fairly high level of interpersonal skills and extensive interaction with others, such as bank teller, bank customer loan representative, camp counselor, and teachers, Extraversion is often a good predictor. Shown below are some typical validities.

Validity Coefficients for Extraversion

Being Sensitive and Receptive	Openness to New Learning	Being Good Role Model	Overall Job Performance
.18*	.23*	.24**	.20*

In customer service jobs where the incumbent deals with customers exclusively by telephone, introversion is modestly and significantly correlated *(r =*.19, *p*<.05) with overall job performance.

Faking Good: We seldom find this scale to be directly related to job performance, though it has emerged as a modest *(r =* .17 to r=.19, p<.05) significant positive predictor of relations with coworkers and supervisors as well as overall job performance in U.S.-based Japanese companies. We interpret elevated scores on the faking good scale to indicate the need for further reference-checking and/or target subsequent interviewing in an effort to determine whether the candidate has misrepresented the facts about himself or his work record during the application process.

Health-Mindedness: This dimension evaluates the degree to which people are concerned about being healthy and whether they engage in behaviors to maintain their health. In a study of laborers in physically demanding jobs, Health-Mindedness was correlated .180* with supervisor ratings of Work Ethic.

Impression Management: This dimension has been studied with samples of managers. Where the organizational climate calls for great sensitivity and political awareness (e.g., sales / senior managers), the correlation is about .20**. In other organizations where management wants direct and honest feedback from lower level employees, the correlation for those jobs tends to be reversed -.22**.

Integrity: The items in this scale are geared around questions of integrity (e.g., whether they might do something that is wrong but which is often condoned in the general population) and questions concerning their beliefs about normative behavior (e.g., whether they believe that everybody steals occasionally) and fears about punishment for wrongdoing. In studies with a manufacturing worker population, the scale did not quite reach significance. With a sample of bank employees, this scale produced the following significant validity coefficients:

Validity Coefficients for Integrity for Banking Employees

Job Skills	Quality	Teamwork	Ability to Function Under Stress	Personal Reliability	Overall Job Performance
.21**	.22**	.16**	.17*	.27**	.18*

We have also developed a broad-based measure of anti-social behavior on the job, called "Unethical Behavior" that incorporates typical integrity items, plus anti-social items and narcissistic items adapted from MCMI-III. An analysis of 532 store managers, 42% with high scores on the pathology scale had either been terminated for theft, sexual harassment, gross dereliction of duty, etc. vs. only 14% with low scores. Figure 1 below depicts scores on our "unethical behavior" scale for convicted felons compared to customer service employees who function in a job with strong concern for ethics and integrity.

Figure 1
Scores on "Unethical Behavior" Scale for Convicted Felons and Customer Service Employees

	<1.4	1.4 <1.6	1.6 <1.8	1.8 < 2	2.0 <2.2	2.2 <2.4	2.4 <2.6	2.6 <2.8	2.8 <3.0	3.0 <3.2	3.2 <3.4	3.4 <3.6	3.6 <3.8	3.8 <4.0	4.0 <4.2	4.2 <4.4	4.4 <4.6	4.6 <4.8

(Bar chart with vertical axis labeled 1 through 10)
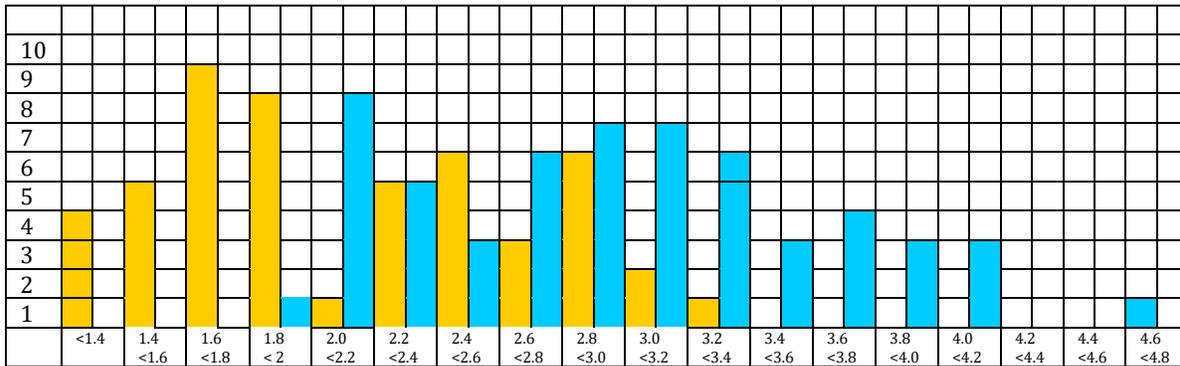
* On the Unethical scale, low scores are good, while high scores are indicative of potential for theft and embezzlement.
* <u>Blue</u> bars are scores for convicted felons in a pre-release program on the Unethical scale.
* <u>Yellow</u> bars are scores on the Unethical scale for employees scores who work in a Customer Service role with highly confidential information.

Integrity re: Company Policies: This dimension is very similar to Conscientiousness and contains the same mix of items.

Integrity re: Internal Theft: This dimension is judged to be content valid by Subject Matter Experts in human resources and security professions. We have done benchmarking studies with security guards to establish scoring norms. Criterion-related validation studies are ongoing. For the time being, scoring norms are fairly loose which means that if someone scores Below Average or Low, these are really extremely negative indicators.

Integrity re: External Theft: This dimension is judged to be content valid by Subject Matter Experts in the human resources and security professions. We have done benchmarking studies with security guards to establish scoring norms. Criterion-related validation studies are ongoing. For the time being, scoring norms are fairly loose which means that if someone scores Below Average or Low, these are really extremely negative indicators.

Initiative / Work Drive for hourly jobs: This dimension is designed to measure work ethic for people in hourly jobs; desire to stay busy and be productive, willingness to do whatever needs to be done.

Validity Coefficients for Initiative / Work Drive

Work Ethic	Quality of Work	Prob. Solving Efforts	Safety Mindedness	Teamwork	Overall Performance
.41**	.32**	.36**	.39**	.38**	.37**

Intrinsic / Extrinsic Motivation: This is a double-sided dimension. People scoring on the Intrinsic side of the scale are best described as those who don't put much thought into income and benefits issues in their daily worklife; they are motivated by meaningful tasks, a sense of purpose, and gratification in the accomplishments in their job. People scoring on the Extrinsic side of the scale are more motivated by opportunity to make a large income and to see their earnings increase in direct relation to the outcomes of their efforts on the job.

Managerial Style- Initiating Structure: Drawing on the Ohio State Leadership studies, this factor is based on the leadership dimension of Task Structuring. It has been found to be significantly related to managerial and supervisory performance in a variety of settings. Performance indicators include turnover and rated performance in such areas as productivity, organization, timeliness, work group performance, and overall job performance with validities in the .24 to .36 range.

Managerial Style- Human Relations/Consideration: This factor also draws on the Ohio State Leadership studies and refers to a manger showing consideration for and being responsive to the feelings, concerns, and emotional states of subordinates. In some companies, the importance of human relations is downplayed. In others, where positive management-worker relations are valued and where the company actively works to maintain a healthy organizational climate, this factor has been related to a manager being perceived as sensitive, caring, and empathetic (r = .23). In a recent validation study of 155 retail managers, this dimension was the single highest predictor of overall job performance (r =.35).

Nurturance: This dimension has been included in a number of studies with health care workers, social service agency personnel, and customer service employees. It measures a person's desire to be of benefit to someone else.

Validity Coefficients for Nurturance

Overall Performance	Teamwork	Relationships with Co-workers	Relationships With Customers/Patients
.30**	.24**	.20**	.32*

Openness To New Experience: People scoring high on this scale tend to be more comfortable with organization change and to be more interested in job rotation, relocation, continuing education, professional development, and company-sponsored job training programs. In addition, they tend to be inquisitive and curious about their environment, so innovation and new learning come more easily for them. We have found this dimension to be particularly valid in innovative and change-oriented organizations which emphasize extensive employee learning and development. It has distinguished people who are promoted from production jobs into team leader and supervisor positions in such organizations. The Openness scale is typically correlated with performance rating dimensions dealing with new learning, receptiveness to training, technical development, adaptability to change, and overall job performance. Here are the median validity coefficients for the PSI Openness scale from three recent concurrent validation studies.

Validity Coefficients for Openness

New Learning	Overall Job Performance
.26**	.18*

Optimism / Enthusiasm: This scale measures optimistic attitudes so people scoring high are judged to be more cheerful, upbeat, optimistic, hopeful about the future, and demonstrate a more "can-do" attitude about problems and obstacles. People scoring low are judged to be more cautious, careful, concerned that things can go wrong, and less likely to persevere in face of difficulties. This dimension is correlated r=.35 with overall job performance for credit and collections agents, r=.29** with production workers, r=.32 with psychiatric counselors, r=.25** with managers. The follow correlations demonstrate the relationship between the Optimism scale and various scales on the PAI for Law Enforcement.

PAI Job Problems	PAI Integrity Problems	PAI Anger Problems	PAI Alcohol Problems	PAI Drug Problems	PAI Substance Problems
-.40**	-.16	-.34**	-.24*	-.26*	-.33**

Orderliness: People scoring high on this scale keep their office area neat and tidy, their schedules well managed. It has been studied primarily with people who work in retail establishments. This dimension is also typically highly correlated with Conscientiousness.

Validity Coefficients for Orderliness

Overall Job Performance
.26*

Sales Scales: In preliminary research on our six sales-related scales (Selling Confidence, Sales Savvy, Image Management, Sales Boldness, Competitiveness, Extrinsic Motivation) based on a sample of 300 pharmaceutical sales representatives, all six factors were found to be significantly related to overall sales performance with individual validities in the r = .25 range and a multiple correlation of r =.32, which

increased to .41 when these four measures were combined with Work Drive and Customer Service Orientation.

Self-Directed Learning: In studies of grade school students, the correlations for the 6th, 7th, 9th, 10th, and 12th grades were r = .33, .39, .26, .26, and .37, respectively, and for the college sample, the correlations for Freshmen (for which the cumulative GPA was based on only one semester's worth of grades), Sophomore, and Juniors were r = .20, .28, .42, respectively (all p < .01).

Teamwork: People scoring high on this dimension are more amiable, agreeable, cooperative, collegial, helpful, and tolerant of other people. Plus, they indicate a willingness or preference for working interdependently with co-workers. This scale is often significantly related to performance ratings of teamwork, relations with co-workers, relations with supervisors, safety, and overall job performance. Here are the median validity coefficients for the PSI Teamwork scale from recent concurrent validation studies.

Validity Coefficients for Teamwork

Productivity	Teamwork	Relations with Coworkers	Relationships with Supervisors	Overall Performance
.21**	.30**	.22**	.20*	.19*

Tenure Potential: This scale assesses a person's attitudes about job hopping vs. staying in the job for the foreseeable future as well as preference for advancement within a single organization versus advancement by movement to new employers. It also taps potential turnover intention as a function of stressful and frustrating conditions, events and situations. In a sample of collections agents working on commission, the following validities were achieved. We present other information on this dimension and Turnover in a later section of this report.

Validity Coefficients for Potential for Long Tenure

Openness to New Learning	Quality	Productivity	Relationships with Co-Workers	Relationships With Supv.	Overall Job Performance
.18*	.29**	.29**	.21*	.24**	.34**

Tolerance for Mundane Work: This scale evaluates the degree to which people prefer a job where the tasks are fairly simple, repetitive, and mindless. We have studied this dimension primarily with a retail company where many of the tasks involve routine chores like cleaning the toilet, emptying trashcans, etc.

Validity Coefficient for Tolerance for Mundane Work

Overall Performance
.42*

Visionary vs. Operational Leadership Style: In studies of managers and executives going through outplacement, the Visionary vs. Operational leadership style dimension was able to distinguish between senior level and mid-level managers r=.28**.

Work Drive: Employees scoring more highly on this scale are more likely to be tolerant of long work hours, frequent overtime, and a demanding, rigorous schedule. This dimension is often our single best personality predictor of job performance in companies, especially those which require overtime, irregular work hours, or coming into work on the weekends as well as requirements that employees extend themselves in other ways to meet the demands of their job or employer. While we have found it to be significantly related to every job performance dimension in some studies, most typically we find work drive to be a significant predictor of productivity, attendance, safety, and overall job performance. In nearly every validation study where we have used this dimension as a predictor, it was one of the strongest measures. No matter whether we are validating a test for nurses, camp counselors, production workers, or computer programmers, the Work Drive dimension is usually the best single predictor of supervisor ratings of job performance, including such diverse jobs as restaurant manager, production technician, nurses, credit and collections agent, camp counselor, and ag extension agent.

Typical Validity Coefficients for Work Drive

Productivity	Attendance	Safety	Ability to Function Under Stress	*Kaizen*[a] Activity	Overall Job Performance
.35**	.31*	.25**	.23	.23**	.33**

[a]In U.S.-based Japanese companies

Table 2:
Bivariate Correlations of Overall Job Performance with Cognitive Aptitude, Big Five Personality Traits, and Work Drive by Validation Sample

	Agricultural Extension Agents	Tire Mfg	Automotive Mfg	Banking	Collections
Cognitive Aptitude	NA	.23	.33	.24	.28
Agreeableness	.26	-.07	.15	.42	-.12
Conscientiousness	.19	.17	.19	.30	.13
Emotional Stability	.14*	.23*	.19*	.48**	.09
Extraversion	.25**	-.07	.08	.36**	-.13
Openness	.25**	.08	.06	NA	NA
Work Drive	.28**	.30**	.46**	.49**	.24*
Sample Size	238	105	188	154	105

* $p<.05$ ** $p<.01$

Cognitive Aptitude: Our measure of overall cognitive aptitude has been consistently related to job performance depending on the facet of job performance being validated—typically the aptitude items cover verbal reasoning, numerical reasoning, and abstract reasoning. Consistent with 85 years of personnel psychology research findings (Schmidt & Hunter, 1998), our individual and overall measures of overall cognitive aptitude have been found in every validation study which we have conducted to be significantly related to job performance. Given these results, it is clear that smarter employees are more productive and are judged to be more desirable employees by both supervisors and co-workers alike. Employees with higher cognitive aptitude scores tend to be more productive and are rated by supervisors as more capable and competent. The more complex the job demands, the more basic mental aptitude plays a part in successful job performance. Nevertheless, it is still a very effective predictor for most entry-level jobs. Aptitude has also predicted employee turnover and absenteeism. In research on the construct validity of the **untimed** aptitude items used with a Personal Style Inventory, we found them to be highly correlated $(r =.75**)$ with the full scale Otis Lennon Intelligence Test. Using these measures of aptitude means that you can obtain a very good indicator of your candidate's potential within a very short period of time and with little effort on the part of the test administrator. Following are median validity coefficients based on a large number of studies across different industries.

Validity Coefficients for Overall Cognitive Aptitude

Learning Potential	Reasoning Ability	Quality	Openness to New Learning	Relationships With Supv.	Relationships With Co-Wkrs	Overall Job Perf.
.35**	.34**	.31**	.35**	.28**	.26**	.35**

Potential for Long Tenure: This scale measures attitudes about job hopping vs. staying in the job for the foreseeable future. It also taps potential job change subsequent to disappointments and annoyances in the job. In a sample of collections agents working on commission, the following validities were achieved.

Validity Coefficients for Potential for Long Tenure

Openness to New Learning	Quality	Productivity	Relationships with Co-Workers	Relationships With Supv.	Overall Job Performance	Tenure
.18*	.29**	.29**	.21*	.24**	.34**	.38**

In studies we have conducted with managerial staff, turnover for those tested was less than half of those who had not been tested (15% compared to 38%). In that group, we also looked at involuntary turnover related to serious infractions of the rules; among the tested group: 4% compared to the non-tested group: 8%. The tenure scale was correlated .52** with actual turnover.

In another study, scores on Potential for Turnover were clearly related to job changes—among those who scored in the top one-third, turnover was less than half that of people who scored in the bottom one-third. The following two graphs are more evidence that the Turnover Potential score predicts actual turnover.

Table 3: Turnover Statistics

Turnover Predictor	Percent Turnover in the Group
Lower 1/3 scores	63%
Middle 1/3 third scores	48%
Upper 1/3 scores	29%

Scores on the Tenure Potential Scale	People Who Left The Company	People Who Are Still Employed
Lowest 1/3	48%	8%
Middle 1/3	45%	37%
Top 1/3	7%	55%

Scores on the Tenure Potential Scale	Length of Time People Stayed With The Company		
	Shorter Tenure	Longer Tenure	Still Employed
Lowest 1/3	53%	42%	8%
Middle 1/3	39%	54%	37%
Top 1/3	8%	4%	55%

Turnover Predictor	Stayers	Leavers
Lowest third	73%	27%
Middle third	45%	55%
Highest third	42%	58%

In another study of 268 manufacturing workers, the "Turnover Group" included all employees who had left the organization in their first year of employment, and a matched sample "Control Group" represented by randomly selected current employees who were hired within the same time period as people in the Turnover group. While cognitive aptitude and several demographic measures had no apparent relationship with the criterion measures, several personality measures were negatively related to turnover (Agreeableness, Conscientiousness, Extraversion, Flexibility, Long Tenure Potential, Optimism / Enthusiasm, Initiative, and Work Drive). Stated differently, these same variables are positively related to being a longer tenured employee.

In this same study, frequencies were run to determine cut points to divide the distribution into thirds on a Turnover Predictor. The following expectancy table resulted. So, using a composite "Turnover" score, people who score in the lowest third are more than 2.5 times more likely to be successfully employed and stay with the company over a long time period.

Table 4:
Relationship of Personality Variables and Turnover

Personality Predictors	Turnover 1=Stay 2=Leave	Length of Tenure	N
Agreeableness	$r = -.108^*$, $p = .052$	$r = -.130^*$, $p = .026$	223
Conscientiousness	$r = -.118^*$, $p = .040$	$r = -.109^*$, $p = .053$	223
Detail-Mindedness	$r = -.138$, $p = .190$	$r = -.242$, $p = .061$	43
Cross-Cultural Sensitivity	$r = -.122$, $p = .152$	$r = -.163$, $p = .085$	73
Emotional Stability	$r = -.086$, $p = .100$	$r = -.100$, $p = .069$	223
Extraversion	$r = -.213^*$, $p = .021$	$r = -.199^*$, $p = .028$	93
Flexibility	$r = -.291^*$, $p = .029$	$r = -.307^*$, $p = .023$	43
Follows Procedures	$r = -.179$, $p = .126$	$r = -.173$, $p = .134$	43
Openness to Change	$r = -.101$, $p = .067$	$r = -.105$, $p = .059$	212
Long Tenure Potential	$r = -.223^{**}$, $p = .006$	$r = -.221^{**}$, $p = .007$	122
Needs To Work	$r = -.122$, $p = .218$	$r = -.070$, $p = .328$	43
Optimism / Enthusiasm	$r = -.173^*$, $p = .027$	$r = -.175^*$, $p = .026$	125
Sense of Ownership of Job	$r = -.112$, $p = .237$	$r = -.107$, $p = .246$	43
Initiative	$r = -.338^{**}$, $p = .013$	$r = -.352^{**}$, $p = .010$	43
Teamwork Orientation	$r = -.092$, $p = .154$	$r = -.093$, $p = .152$	123
Avoidance of Violence	$r = .236$, $p = .105$	$r = .252$, $p = .090$	30
Work Drive	$r = -.170^{**}$, $p = .006$	$r = -.173^{**}$, $. p = .005$	223

Incremental Validity of PSI Measures

We have conducted several analyses of our personality measures to assess their ability to contribute unique, additional variance to the prediction of job performance above and beyond other measures (i.e., demonstrating incremental validity), such as the ability of narrow personality traits to show incremental validity beyond the Big Five and cognitive ability measures. In Table 5 below are some examples of such analyses showing the incremental validity of Work Drive in relation to the Big Five as well as Cognitive Aptitude and the Big Five personality traits.

Table 5:
Results of Hierarchical Multiple Regression Cognitive Aptitude, Personality, and Work Drive Measures on Overall Job Performance by Validation Sample

Step / Variables Entered	Production Technicians (*n*=105)	Tire Production Workers (*n*=105)	Tellers, Financial Service, & Loan Officers (*n*=154)	Portfolio Managers (*n*=154)	Ag Extension Workers (n=238)
1 Big Five Measures[1]	R=.319** $R^2\Delta$=.102**	R=.378** $R^2\Delta$=.143**	R=.494** $R^2\Delta$=.241**	R=.303** $R^2\Delta$=.092**	R=.327** $R^2\Delta$=.107**
2 Work Drive	R=.503** $R^2\Delta$=.151**	R=.454* $R^2\Delta$=.063**	R=.532** $R^2\Delta$=.042**	R=.398** $R^2\Delta$=.067**	R=.352** $R^2\Delta$=.017**
1 All 16 PF Measures	R=.289** $R^2\Delta$=.083**				
2 Work Drive	R=.502** $R^2\Delta$=.252**				
1 Cognitive Aptitude Measures	R=.332** $R^2\Delta$=.110**	R=.228** $R^2\Delta$=.052**	R=.240** $R^2\Delta$=.058**	R=.282** $R^2\Delta$=.080**	
2 Big Five Measures [1]	R=.428** $R^2\Delta$=.073**	R=.418** $R^2\Delta$=.123**	R=.517** $R^2\Delta$=.267**	R=.359** $R^2\Delta$=.050*	
3 Work Drive	R=.591** $R^2\Delta$=.166**	R=.497** $R^2\Delta$=.072**	R=.551** $R^2\Delta$=.037**	R=.421** $R^2\Delta$=.048**	

Note—For the Bank (Tellers, Financial Service, and Loan Officers) and Credit and Collection (Portfolio Managers) samples Openness was not included in the Big Five Measures.
* *p*<.05   ** *p*<.01

Adverse Impact

It is widely accepted in the literature on personality that there is no systematic adverse impact across EEOC protected groups. While we occasionally find significant mean differences between groups in local (one company) analyses, the direction of the difference is not consistent across studies, i.e., sometimes the difference favors the majority group, and sometimes it favors the minority group.

We have performed analyses of mean scores of PSI measures to see if there are differences between separate racial/ethnic, sex, and age (over 40) subgroups as defined by Title VII-protected groups (as defined by the Uniform Guidelines on Employee Selection Procedures, 1978). For example, mean Work Drive scores were computed for each subgroup, then independent samples *t* tests were used to compare males and females, blacks and whites, and those under 40 versus 40 and over in the various samples. A one-way analysis of variance was used to compare the mean scores for whites, blacks, and Hispanics in the one sample where there were enough cases in each group to permit such an analysis.

Table 6:
Results of Tests for Mean Difference on Work Drive for Sex, Age, and Racial/Ethnic

	Males Mean / SD	Females Mean / SD	t-test for gender	Under 40 Mean / SD	40+ yrs Mean / SD	t-test for age
Automotive	3.86/.53	3.78/.54	$t(621)=1.65$	3.88/.54	3.74/.51	$t(620)=2.76**$
Telecommunications	3.83/.64	3.84/.62	$t(844)=.06$	3.84/.62	3.81/.64	$t(842)=.54$
Steel	3.90/.54	3.84/.64	$t(840)=.81$	3.90/.55	3.83/.55	$t(840)=1.57$
Convenience Stores	4.00/.56	4.01/.57	$t(2498)=.11$	NA	NA	NA
Career Transition	3.09/.78	3.10/.79	$t(2725)=.31$	3.09/.80	3.10/.77	$t(2725)=.18$
Fuel Distribution	3.77/.50	3.82/.56	$t(241)=.63$	NA	NA	NA
Career Planning	3.27/.51	3.18/.59	$t(454)=1.65$	3.28/.51	3.16/.56	$t(475)=2.49*$
Hourly Production	3.76/.55	3.74/.54	$t(1196)=.53$	3.82/.54	3.80/.52	$t(479)=.57$

	White Mean / SD	Af. Amer Mean / SD	t-test	White Mean / SD	Black Mean / SD	Hispanic Mean / SD	F - test
Automotive	3.78/.53	3.84/.53	$t(620)=1.01$	NA	NA	NA	NA
Telecommunications	NA	NA	NA	3.81/.65	3.71/.61	3.89/.63	$F(2,811)=5.09**$
Steel	3.89/.55	3.87/.60	$t(827)=.27$	NA	NA	NA	NA
Career Planning	3.26/.52	3.28/.52	$t(827)=.27$	NA	NA	NA	NA
Hourly Production	3.77/.73	3.83/.53	$t(425)=.50$	NA	NA	NA	NA

Note: * *p<.05*, ** *p<.01*
Mean scores with a common subscript do not differ significantly from each other at the *p<.01* level.
Some sample sizes in a row differ because of missing demographic information.

As can be seen in Table 6, there were no significant differences in mean Work Drive scores between males and females for any of the eight samples. Also, there were no significant differences in mean Work Drive scores for whites versus blacks in five samples. In the telecommunications sample, Hispanics were found to have a significantly higher mean Work Drive score than blacks and whites, which did not differ from each other. Only two significant differences in mean Work Drive scores between individuals under 40 and 40 and over: For both the automotive and career planning samples, those under 40 had significantly higher Work Drive scores than individual 40 and over in age (*t* (620)=2.76, *p<.01* and *t* (475)=2.49, *p<.05*, respectively). In sum, taking these results as a whole, there appears to be no potential adverse impact of Work Drives on females, blacks, or Hispanics, with mixed evidence for adverse impact on individuals 40 years and older.

Table 7:
Personality Score Comparisons Between Younger vs. Older Employees

	Less than 40 Average (SD)	Older Average (SD)	*t* value	P value[1]
Conscientiousness	3.53 (.498)	3.64 (.593)	-.86	.392
Emotional Stability	3.52 (.621)	3.51 (.566)	.17	.864
Teamwork	18.4 (2.81)	18.44 (2.77)	-.07	.947
Openness	3.47 (.525)	3.41 (.495)	.53	.599
Extroversion	3.53 (.582)	3.48 (.586)	.39	.698
Fake Good	2.50 (.553)	2.60 (.585)	-.81	.420
Work Drive	3.35 (.698)	3.31 (.507)	.30	.762
Customer Service	3.90 (.429)	3.81 (.417)	1.03	.306
Tough-Mindedness	3.12 (.658)	3.17 (.726)	-.31	.755

[1] The significance level is given in the form of P=XXX. It refers to the probability that the validity coefficient could have occurred by chance alone.

* t-values referenced by a single asterisk indicate the significance level met the p≤.05 standard.

** t-values referenced by a double asterisk indicate the significance level met the p≤.01 standard.

Table 8:
Differences in Males vs. Females on Personality Composite Predictor of Turnover

TOTAL SAMPLE		
Turnover Predictor	STAYERS	LEAVERS
Lowest third(n=39)	73%	27%
Middle third(n=44)	45%	55%
Highest third(n=42)	42%	58%
Total N=125	(n=66 or 53%)	(n=59 or 47%)

MALES (as part of the total sample shown above)		
Turnover Predictor	STAYERS	LEAVERS
Lowest third (n=27)	71%	29%
Middle third (n=26)	39%	61%
Highest third (n=21)	33%	67%
Total N=74	(n=36 or 49%)	(n=38 or 51%)

FEMALES (as part of the total sample shown above)		
Turnover Predictor	STAYERS	LEAVERS
Lowest third (n=12)	83%	17%
Middle third (n=18)	55%	45%
Highest third (n=21)	48%	52%
Total N=51	(n=30 or 59%)	(n=21 or 41%)

AFRICAN AMERICAN (as part of the total sample shown above)		
Turnover Predictor	STAYERS	LEAVERS
Lowest third (n=5)	60%	40%
Middle third (n=3)	33%	67%
Highest third (n=4)	--	100%
Total N=12	(n=4 or 33%)	(n=8 or 66%)

CAUCASIAN (as part of the total sample shown above)		
Turnover Predictor	STAYERS	LEAVERS
Lowest third (n=32)	75%	25%
Middle third (n=38)	45%	55%
Highest third (n=35)	51%	49%
Total N=105	(n=59 or 56%)	(n=46 or 44%)

In Table 8,
- Females are more likely to stay on the job than men, but higher scores on the Turnover Predictor yields roughly the same results for males vs. females. If people who scored in the top 1/3 on the Turnover Predictor were eliminated from the applicant pool, then 59% of women would be hired compared to 72% of men. Using the 80% rule, there is no evidence of adverse impact because 59/72=82 which is more than the 80 cutoff for adverse impact.
- In analyzing African Americans vs. Caucasians, the sample size is very small which limits the rigor of any statistical test that might evaluate Adverse Impact. The fact that there were less than 10% Blacks in the total sample is representative of the actual community from which the group was drawn. Other ethnic groups were not included because there were so few (3 Asians and 2 "others"). If employees who scored in the top 1/3 on the Turnover Predictor were eliminated, then the pass rate for African Americans would be 66% and for Caucasians would be 66% as well, so there is no evidence of Adverse Impact.

Construct Validity

In an effort to explore the construct validity of the PSI scales, we administered them in conjunction with three well-known and widely used measures of normal personality—the 16 PF (Fifth Edition) the NEO-PIR, and the Myers Briggs Type Indicator (MBTI). We also intercorrelated our aptitude measures with a variety of well-known cognate measures of intelligence, cognitive ability, and specific aptitude. The tables below present the resulting correlations. In general, the correlations of common constructs, such as the Extraversion scale from the RA PSI and the 16 PF, NEO-PIR and MBTI, are generally positive and fairly substantial, especially the common constructs correlated between the RA PSI and the NEO-PIR "Big Five" scales, which is evidence of a convergent validity of indicators. There is also substantial evidence of discriminant validity of indicators, as evidenced, for example, by the low intercorrelations between the RA PSI scales and a number of the 16 PF scales (e.g., Reasoning and Liveliness) and the MBTI scales (e.g., Judging/Perceiving and Thinking/Feeling. As can be seen in Tables 5-9, there is substantial convergence of our aptitude measures with other well-established, logically-related measures of intelligence and aptitude.

Table 9:
Correlations Between Sales on the RA PSI and the 16 PF (Fifth Edition)
(sample=6700 applicants for industrial jobs)

16 PF Scales	RA-PSI Conscienti-ousness	RA-PSI Openness	RA-PSI Emotional Stability	RA-PSI Agreeable-ness	RA-PSI Extraversion	RA-PSI Work Drive	RA-PSI Customer Service Orientation	RA-PSI Assertiveness	RA-PSI Faking Good
A Warmth	.08*	-.02	.09*	.36**	.42**	-.05	.22**	.12**	.04
B Reasoning	-.06	.09*	-.04	.00	-.10**	-.03	.11*	.04	.00
C Emotional Stability	.25**	.19**	.58**	-.30	.33**	.13**	.19**	.20**	.35**
E Dominance	.11**	.15**	.11**	-.08	.31**	.26**	.13**	.78**	.03
F Liveliness	-.12**	.06	-.02	.05	.37**	.03	.07	.30**	-.11**
G Rule Consciousness	.49**	-.04	.11**	.24**	-.04	.18**	.11*	.26**	.08*
H Social Boldness	.19**	.23**	.37**	.24**	.65**	.16**	.15**	.33**	.33**
I Sensitivity	-.23**	.02	-.16**	-.05	-.02	-.10*	.02	-.01	-.13**
L Vigilance	.03	-.10*	-.03	-.14**	-.17**	-.01	-.19**	.03	-.14**
M Abstractness	-.34**	.10*	-.09*	.02	-.07	.03	-.10**	.01	-.04
N Privateness	-.06	-.20**	-.08*	-.28**	-.54**	.05	-.17**	-.18**	-.19
O Apprehension	-.21**	-.23**	.49**	-.18**	-.21**	-.08*	-.08*	-.35**	-.29**
Q1 Openness	-.06	.53**	.08	.02	.16**	.10	.14**	.03	-.01
Q2 Self-Reliance	-.09**	-.02	-.15**	.38*	-.36**	-.12**	-.19**	-.19**	-.20**
Q3 Perfectionism	.53**	.01	.06	.06	.04	.24**	.15**	.12**	.31**
Q4 Tension	.22**	-.19**	-.29**	-.25**	-.14**	-.17**	-.19**	-.21**	-.29**
IM Impression Management	.14**	-.13**	.36**	.18**	.18**	.03	.11**	.11**	.46**

*p<.05 **p<.01   Note: Correlations of equivalent constructs are presented in the yellow shaded cells.
NOTE: Construct Validity coefficients are correlations between a scale on one test (the Resource Associates' Personal Style Inventory) and a comparable scale on another test (usually a known test that has been used for some time and is widely known).

Table 10:
Correlations between scales on the RA PSI and the NEO-PIR Main Scales
(sample=149 incumbents in various jobs)

NEO-PIR Scales	Conscientiousness	Open-ness	Emotional Stability	Agreeableness / Teamwork	Extro-version	Work Drive	Faking Good
Neuroticism	-.16	-.22**	-.73**	-.33**	-.18*	-.02	-.35**
Extraversion	-.01	.17	.26**	.35**	.80**	.19*	.03
Openness	-.29**	.39**	-.16	.08	.20*	.07	-.19*
Agreeableness	.16	-.14	.27**	.70**	.02	-.02	.28**
Conscientiousness	.50**	.16	.20*	.18*	.18*	.44**	.24**

*p<.05 **p<.01
Note: Correlations of equivalent constructs are presented in the yellow-shaded cells.

Table 11:
Correlations between scales on the RA PSI and the Myers Briggs Type Indicator (MBTI) Continuous Scales (sample=155 incumbents in various jobs)

MBTI Scales	Conscientiousness	Openness	Emotional Stability	Agreeableness / Teamwork	Extro-version	Work Drive	Faking Good
Extraversion (Introversion)	-.09	.07	.21**	.16	.36**	-.05	.04
Intuitive (Sensing)	-.19*	.20*	.01	-.04	-.07	-.05	-.10
Feeling (Thinking)	-.14	.05	.02	.21**	.02	-.11	-.02
Perceiving (Judging)	-.18*	.10	.15	.12	.08	-.02	-.03

*p<.05 **p<.01   Note: Correlation of equivalent constructs is presented in the yellow shaded cell.
NOTE: Construct Validity coefficients are correlations between a scale on one test (the Resource Associates' Personal Style Inventory) and a comparable scale on another test (usually a known test that has been used for some time and is widely known).

Table 12:
Correlations between RA PSI Cognitive Aptitude Scales and Selected Intelligence and Aptitude Measures (sample=770 applicants for industrial jobs and college students)

Intelligence/Aptitude Scale	RA-PSI Verbal Reasoning	RA-PSI Numerical Reasoning	RA-PSI Abstract Reasoning	RA-PSI Overall Cognitive Aptitude
Otis Lennon Group Intelligence Test	.74**	.62**	.64**	.80**
DAT Abstract Reasoning Test	.32**	.42**	.84**	.61**
EAS Numerical Computation Test	.19**	.59**	.21**	.44**
PTI Numerical Test	.18**	.40**.	.32**	.41**
EAS Space Visualization Test	.25**	.41**	.54**	.55**
Minnesota Clerical *Speed & Accuracy Test	.26**	.28**	.22**	.27**
Minnesota Paper Form Board	.10*	.04	.17**	.19**
Bennett Mechanical Comprehension Test	.26**	.36**	.50**	.54**
16 PF B scale (reasoning)	.46**	.61**	.57**	.72**
ACT (American College Testing Program)	.51**	.46**	.33**	.54**

*p <.05   **p <.01

Table 13:
Correlations between dimensions on the RA PSI for Managers and the 16 PF (5th Edition) (sample=6477 applicants for Executive, Managerial, Supervisory, and Team Leader Jobs)

16 PF Scales	RA-PSI Dominance / Assertive Leadership	RA-PSI Managerial Initiating Structure	RA-PSI Managerial Human Relations
A Warmth	.25**	.15**	.25**
B Reasoning	.07**	-.24**	.07**
C Emotional Stability	.31**	.14**	.11**
E Dominance	.39**	.27**	.14**
F Liveliness	-.13**	-.02	.06**
G Rule Consciousness	.22**	.38**	.11**
H Social Boldness	-.55**	.24**	.18**
I Sensitivity	-.08**	-.02	-.01
L Vigilance	-.13**	.13**	-.17**
M Abstractness	-.17**	-.19**	-.06**
N Privateness	-.18**	.03	-.20**
O Apprehension	-.34**	-.16**	-.08**
Q1 Openness	.16**	-.14**	.15**
Q2 Self-Reliance	-.26**	-.19**	-.15**
Q3 Perfectionism	.30**	.47**	.13**
Q4 Tension	-.26**	-.29**	-.15**
IM Impression Management	.30**	.26**	.32**

*p<.05 **p<.01*
NOTE: Construct Validity coefficients are correlations between a scale on one test (the Resource Associates' Personal Style Inventory) and a comparable scale on another test (usually a known test that has been used for some time and is widely known).

Table 14:
Correlations between Work Drive and other Personality, Satisfaction, and Aptitude Measures

Work ethic[1]	.48**	**16 PF 5th ed. Scales[2]:**	
Protestant Work Ethic[1]	.26**	A--Social Warmth	-.09
Central Life Interest-Work[1]	.27**	B—Reasoning	-.12
Job Involvement[1]	.45**	C—Emotional Resilience	.20**
Type A Personality[1]	.33**	E—Dominance	.26**
Workaholism[1]	.55**	F—Liveliness	-.05
Survey of Work Values[1]:		G--Rule-Consciousness	.12
Intrinsic	.23**	H--Social Boldness	.31**
Organization man ethic	.23**	I-Sensitivity	-.26**
Upward striving	.01	L—Vigilance	.02
Social status of job	.30**	M--Imaginative	-.13*
Conventional ethic	.35**	O—Self-Confidence	.11
Attitudes toward earnings	.16	Q1--Openness to Change	.06
NEO-PIR Scales[2]:		Q2--Self-reliance	-.13*
Neuroticism	.09	Q3—Perfectionism	.31**
Extraversion	.24**	Q4—Tension	-.20*
Openness	.01	Impression Management	.10
Agreeableness	-.07	Fake Good[4]	-.35**
Conscientiousness	.40**	NEO-PIR Scales[2]:	
Achievement-Striving	.47**	Neuroticism	.09
Myers-Briggs Temperament Inventory[3]:		Extraversion	.24**
Extraversion (Introversion)	.36**	Openness	.01
Intuitive (Sensing)	.09	Agreeableness	-.07
Feeling (Thinking)	-.20**	Conscientiousness	.40**
Perceiving (Judging)	.06	Achievement-Striving	.47**
Satisfaction Scales[4]:		Myers-Briggs Temperament Inventory[3]:	
Job Satisfaction	.24**	Extraversion (Introversion)	.36**
Career Satisfaction	.35**	Intuitive (Sensing)	.09
Life Satisfaction	.12**	Feeling (Thinking)	-.20**
Cognitive Tests[5]:		Perceiving (Judging)	.06
DAT Abstract Reasoning[5]	.08	Satisfaction Scales[4]:	
EAS Numerical Reasoning[5]	-.04	Job Satisfaction	.24**
EAS Numerical Computation[5]	-.04	Career Satisfaction	.35**
EAS Space Visualization[5]	.19	Life Satisfaction	.12**
Bennett Mechanical Comprehension Test[5]	.01		
Otis Lennon Test of Mental Maturity[1]	.02		

Note:

[1] n= 146 to 157 undergraduates enrolled in psychology courses.
[2] n= 244 candidates for managerial positions in a Fuel Distribution Company.
[3] n= 216 utility employees participating in a career development program.
[4] n= 481 employees from various companies participating in a career planning program.
[5] n=93 to 108 candidates for various jobs in different companies as part of a pre-employment testing program administered by a personnel testing firm.
[6] From the 16 PF Form A (Institute for Personality and Ability Testing, 1978).

Correlations Between Predictors on the PSI versus the PAI

PSI Scales	PAI Job Problems	PAI Integrity Problems	PAI Anger Problems	PAI Alcohol Problems	PAI Drug Problems	PAI Substance Problems
Avoidance of Violence	-.41**	-.32**	-.55**	-.39**	-.38**	-.46**
Drug Use Potential	.63**	.46**	.64**	.45**	.55**	.58**
Integrity-Company Policies	-.52**	-.31**	-.49**	-.30**	-.34**	-.44**
Integrity-Internal Theft	-.42**	-.32**	-.41**	-.33**	-.40**	-.44**
Integrity-External Theft	-.44**	-.29**	-.45**	-.39**	-.44**	-.50**
Agreeableness	-.49**	-.26*	-.49**	-.40**	-.41**	-.48**
Assertiveness	-.33**	-.17	-.31**	-.30**	-.31**	-.38**
Customer Service	-.44**	-.20*	-.47**	-.35**	-.39**	-.43**
Emotional Stability	-.43**	-.18*	-.53**	-.31**	-.40**	-.46**
Extroversion	-.30**	-.14	-.34**	-.29*	-.28*	-.37**
Intrinsic Motivation	-.16	-.16	-.17	-.17	-.11	-.20
Nurturance	-.33**	-.08	-.28*	-.16	-.19*	-.27*
Openness	-.35**	-.18*	-.35**	-.22*	-.31**	-.35**
Optimism / Enthusiasm	-.40**	-.16	-.34**	-.26*	-.26*	-.33**
Teamwork	-.17	-.04	-.24*	-.00	-.09	-.10
Work Drive	-.40**	-.10	-.27*	-.13	-.21*	-.30**
Cognitive Aptitude	.00	.12	-.02	-.07	-.13	.02

These are one-tailed correlation coefficients.

Two stars reflect a significance of < .001; one star reflects a significance of <.01 and no star indicates that the relationship is not significant.

Differences between Occupations on PSI Measures

As noted by Osipow (1971) and Crites (1969), one important characteristic of a personality construct for it to be useful in such fields as career development, occupational planning, vocational guidance, employment counseling, and job placement, is that it should function as an individual differences variable which, when aggregated, can differentiate occupations. Accordingly, we have examined whether there are differences in the PSI personality measures among various occupations. For example, we compared mean differences in Work Drive scores for occupational groups where there were at least one hundred individuals in an occupational grouping. A one-way analysis of variance was used to compare the mean scores: F (13, 4856)=16.75, $p<.01$), between occupations which indicated that there were significant differences in mean Work Drive score between the 14 occupations. *Tukey b* post hoc tests were used to identify homogenous subgroups, with results displayed below in Table 11.

There were six homogenous groups of occupations identified by the *Tukey b* test, with some overlap between adjacent groups. The lowest scoring group on the Work Drive measure is composed of Clerical and Engineering while the highest scoring group is composed of Marketing, Management, and Executive occupations. It is interesting to note that the relative ordering of occupations by Work Drive score is similar to an ordering that would be obtained if one used typical hours worked per week for each occupation. For example, Top Level Executives typically work 60 hours/week or more and many individuals working in Marketing work 50 hours /week or more, while Clerical staff and Engineers typically work about 40 hours/week (U. S. Department of Labor, 2003). Using data on typical hours worked per week for the different occupations (ibid), we correlated average Work Drive score with estimated hours worked per week and found a .70 correlation. This estimate should be interpreted with caution as it based on only 14 cases, limited sample sizes within occupations, and approximate indices of hours worked; however, it does suggest that there is some degree of correspondence between aggregated Work Drive scores for an occupation and the typical hours worked/week by members of that occupation.

Table 15:
Occupations Grouped into Homogenous Subsets on Mean Work Drive Score

Occupation	Mean Work Drive Score
Clerical	2.94
Engineering & Science	3.12
Customer Service	3.27
Business—General	3.31
Manufacturing	3.31
Financial Services	3.32
Information Technology	3.32
Consulting	3.33
Human Resources	3.36
Accounting	3.40
Sales	3.45
Marketing	3.53
Management	3.60
Executive	3.70

Note: These groupings are based on the results of *Tukey b* post hoc tests performed at the .05 probability level. Occupations with a common subscript do not differ significantly from each other on mean Work Drive scores at the *p<*.05 level.

Relationship between PSI Personality Measures and Job, Career, and Life Satisfaction

We have investigated the relationship between our personality measures and job, career, and life satisfaction. In Tables 12 and 13 we summarize these correlations for 14 different occupational groups. The pattern of significant correlations varies by occupation, with two traits emerging as being significantly related to both job and career satisfaction for all 14 occupations—emotional resilience and optimism—and one being significantly related to job satisfaction for 10 occupations and to career satisfaction for 11 occupations—work drive.

Table 16:
Correlations between Job Satisfaction and Personality Traits by Occupational Group

Trait	Full Sample (n=5932)	Accountant (n=110)	Business -General (n=117)	Clerical (n=140)	Consultant (n=542)	Customer Service (n=168)	Engineering /Science (n=232)	Executive (n=242)
Assertiveness	.12**	-.01	-.01	.04	.15**	.19*.	.13*	.22**
Conscientiousness	.12**	.12	.12	.20*	.04	.19*	.26**	.23**
Customer Service	.15**	.04	.06	.02	.16**	.25**	.10	.11
Emotional Resilience	.27**	.19**	.23*	.19*	.28**	.39**	.27**	.29**
Extraversion	.13*	.06	.02	.05	.19**	.17*	.08	.12
Image Management	.06**	-.09	-.03	.16	.09*	-.24**	-.02	-.03
Intrinsic Motivation	.05**	.07	-.11	.01	.06	.08	.11	.01
Managerial Human Relations	.12**	NA	NA	NA	NA	NA	NA	NA
Manager Participative	.04*	NA	NA	NA	NA	NA	NA	NA
Openness	.04*	-.04	-.01	-.06	.11*	.05	.00	.04
Optimism	.23**	.14*	.15*	.20*	.32**	.31**	.19**	.13*
Teamwork	.08**	.01	.10	.10	.02	.14	.19**	.02
Tough-Mindedness	.05**	.14*	.22*	.20*	-.06	.12	.22**	.05
Visionary Leadership	-.05**	NA	NA	NA	NA	NA	NA	-.03
Work Drive	.15**	.15*	.15**	.14	.09*	.23**	.23**	.14*

Table 16 (Continued)

Trait	Financial Services (n=266)	Human Resources (n=377)	Information Technology (n=762)	Management (n=887)	Manufacturing (n=190)	Marketing (n=321)	Sales (n=413)
Assertiveness	.06	.19**	.06	.17**	.01	.05	.06
Conscientiousness	.24**	.04	.12**	.12**	.08	.04	.12*
Customer Service	.19**	.09	.18**	.17**	.04	.12*	.14**
Emotional Resilience	.27**	.26**	.24**	.31**	.18*	.19**	.21**
Extraversion	.12	.21**	.13**	.16**	.08	.08	.12*
Image Management	-.09	-.12*	-.04	-.12**	-.02	-.10	-.01
Intrinsic Motivation	.03	.05	.03	.06	.01	.06	-.02
Managerial Human Relations	NA	NA	NA	.19**	NA	NA	NA
Manager Participative	NA	NA	NA	.11**	NA	NA	NA
Openness	-.07	.04	.07	.05	-.14	.05	.05
Optimism	.16*	.24**	.19**	.24**	.16*	.17**	.21**
Teamwork	.01	.07	.13**	.14**	-.08	.13*	.02
Tough-Mindedness	-.09	.09	.14**	-.01	.21**	.09	-.01
Visionary Leadership	NA	NA	NA	-.07	NA	NA	NA
Work Drive	.11	.11*	.17**	.19**	-.06	.16**	.09

 * p<.05   ** p<.01

Table 17:
Correlations Between Career Satisfaction and Personality Traits by Occupational Group

Trait	Full Sample (n=5932)	Accountant (n=110)	Business -General (n=117)	Clerical (n=140)	Consultant (n=542)	Customer Service (n=168)	Engineering /Science (n=232)	Executive (n=242)
Assertiveness	.25**	.27**	.14	.14	.19**	.27**	.24**	.17**
Conscientiousness	.11**	.05	.15	.22**	.14**	.20**	.25**	.23**
Customer Service	.21**	.16	.04	.12	.20**	.37**	.16*	.19**
Emotional Resilience	.37**	.47**	.22*	.35**	.45**	.46**	.32**	.28**
Extraversion	.22*	.24*	.13	.03	.24**	.34**	.14*	.13*
Image Management	-.04**	-.01	.07	-.15*	-.02	-.27**	.08	-.04
Intrinsic Motivation	.07**	.01	.08	.12	.15**	.21**	.12	.09
Managerial Human Relations	.14**	NA	NA	NA	NA	NA	NA	.19**
Manager Participative	-.04*	NA	NA	NA	NA	NA	NA	-.06
Openness	.15**	.11	.13	.03	.13*	.09	.15*	.06
Optimism	.37**	.28**	.15	.31**	.48**	.43**	.33**	.29**
Teamwork	.03*	.22*	.16	.16	.10*	.24**	.20**	.12
Tough-Mindedness	.04	.14	.18	.09	-.13*`	-.03	.13**	.03
Visionary Leadership	.04	NA	NA	NA	NA	NA	-.03	.02
Work Drive	.21**	.36**	.22*	.08	.15**	.23**	.23**	.15*

Table 17 (Continued)

Trait	Financial Services (n=266)	Human Resources (n=377)	Information Technology (n=762)	Management (n=887)	Manufacturing (n=190)	Marketing (n=321)	Sales (n=413)
Assertiveness	.18*	.29**	.24**	.26**	.19**	.20**	.18**
Conscientiousness	.15*	.14**	.07*	.12*	.13	.01	.05
Customer Service	.19**	.17**	.21**	.22*-*	.19**	.10	.14**
Emotional Resilience	.41**	.36**	.36**	.40**	.28**	.26**	.28**
Extraversion	.18**	.27**	.24**	-.10	.15*	.20**	.21**
Image Management	-.06	-.08	-.03	-.10**	-.09	.01	-.04
Intrinsic Motivation	.07	.16*	.09	.13*	.03	.07	.03
Managerial Human Relations	NA	NA	NA	.19**	NA	NA	NA
Manager Participative	NA	NA	NA	-.01	NA	NA	NA
Openness	.04	.09	.16**	.15**	.11	.12*	.13**
Optimism	.34**	.32**	.37**	.39**	.23**	.28**	.30**
Teamwork	.17**	.12*	.19**	.19**	.08	.24**	.12*
Tough-Mindedness	-.12	.03	.11*	-.01	.10	-.15*	-.02
Visionary Leadership	NA	NA	NA	.02	-.03	NA	NA
Work Drive	.23**	.24**	.19**	.21**	.09	.46**	.18**

* p<.05   ** p<.01

Relationship between PSI Personality Measures and Job and Career for Two Sample Occupations

We have also conducted separate analyses of the relationship between our personality and managerial traits and job and career satisfaction for numerous job categories. Below are examples of such analyses and the implications drawn for two occupational groups—Human Resources (HR) managers and Information Technology (IT) workers.

Personality Predictors for Human Resource Managers

Many of the personality traits that the present study identified as significant predictors of career satisfaction have a link to core competencies identified in the HR literature. The current findings identified assertiveness, customer service orientation, emotional resilience, extraversion, managerial human relations, openness, and optimism as an important components of an HR manager's makeup. On the other hand, a slightly different set of predictors emerged for HR Specialists: here conscientiousness is important as is an open, frank style, and a focus on day-to-ay operational issues as opposed to long range, strategic issues.

Expectations to the contrary notwithstanding, correlations between personality factors and the career satisfactions HR managers and non-managerial HR specialists were more similar than different. However, there were absolute differences between the two groups. HR managers generally scored significantly higher on the personality dimensions than did non-managers. One possible interpretation of this finding is that selection or promotion into the HR managerial jobs is based on personality traits, but the importance of these traits for career satisfaction may be similar for HR managers and non-managers.

Comparison of the U.S. and U.K. results has some bearing on the ongoing debate over convergent / universalistic HR approaches versus divergent/contextualist HR approaches (Morgan, Kristensen & Whitley, 2001; Pot & Paauwe, 2004). The present findings are most consistent with the convergence position, given the similarities between sets of U.K. and U.S. correlations and on all mean scores of personality and managerial measures. On balance, however, it should be noted that there were significant differences between these two groups on the measures of Managerial Human Relations and Task Structuring. U.S. HR manager correlations were higher for both of these variables. The latter result can be interpreted as supporting Strauss' (2001) contention that there is more emphasis in British than American HR management on employee involvement.

The results of the multiple regression analyses indicate that between 17% (U.K. sample) and 26.5% of the variance in career satisfaction of HR managers could be accounted for between two and four personality dimensions.

Table 18:
Results of Stepwise Multiple Regression Analyses for Predicting Career Satisfaction for HR Managers

U.S. HR Managers (Sample 2) (*n* = 210)

Step	Variable	Multiple R	R²	R²Change
1	Optimism	.461**	.213**	.213**
2	Emotional Resilience	.480**	.231**	.018*

Non-Managerial HR Specialists (*n* = 116)

Step	Variable	Multiple R	R²	R² Change
1	Optimism	.489**	.239**	.239**
2	Extraversion	.515**	.265**	.026*

Table 18 (Continued)

U.S. HR Managers (Sample 1) (*n* = 2237)

Step	Variable	Multiple R	R²	R²Change
1	Emotional Resilience	.372**	.138**	
2	Work Drive	.405**	.164**	.026**
3	Optimism	.424**	.179**	.016**
4	Assertiveness	.430**	.186**	.006**

U.K. HR Managers (*n* = 146)

Step	Variable	Multiple R	R²	R²Change
1	Optimism	.307**	.094**	
2	Openness	.371**	.138**	.044**
3	Assertiveness	.415**	.172**	.034**

n = 146
p < .05   **p* <.01

Table 19:
Correlations Between Personality Traits and Career Satisfaction
for U. S. and U. K. Samples of HR Managers

Traits	HR Mgrs	HR Specialists	HR Mgrs U.S.	HR Mgrs U.K.
Assertiveness	.23**	.25**	.28**	.29**
Conscientiousness	.07	.19*	.07**	-.01
Customer Service Orientation	.30**	.36**	.27**	.17*
Emotional Resilience	.39**	.37**	.37**	.21**
Extraversion	.25**	.39 **a	.26**	.14*b
Image Management	-.12	-.24** a	-.04 b	-.04
Intrinsic Motivation	.11	.18	.10**	.11
Managerial Human Relations	.22**	NA	.22**	.05
Openness	.19**	-.07	.14 **	-.06
Optimism	.46**	.49**	.37**	.31**
Task Structuring	.06	NA	.19 **a	-.02 b
Teamwork	.06	.09	.16**	.22**
Visionary	.09 B	-.20 *A	.08 **B	.11B
Work Drive	.14	.15	.11**	.13
Sample Size	210	116	2237	146

p < .05; **p* < .01
Note: Correlations with different superscripts are significantly different from each other at the *p* < .05 level (lower case letters) or *p* < .01 level (capital letters).

Personality Predictors for Information Technology Workers

The table below indicates that there is a similar relational pattern between predictors of job satisfaction and career satisfaction, however, the correlations are significantly higher between personality dimensions and career satisfaction than for job satisfaction. The strongest predictors are emotional resilience and optimism, suggesting that being able to weather stress and demonstrate a positive outlook on life helps IT Workers be satisfied in a job or career. The multiple regression analysis shows that the Emotional Resilience is a strong predictor of both job and career satisfaction even when other variables are entered simultaneously into the equation.

IT work is widely regarded as being populated mainly by introverts, (e.g., Myers & McCaulley, 1985). In one study of IT professionals (including individual workers and managers) using the Myers-Briggs Type Indicator, the Institute for Management Excellence (2006) concluded that they "tend to be much more introverted than extroverted...", finding that whereas only 25% of the general population was introverted, 67% of computer professionals are introverted. Their study contends that IT work favors introversion because of the long hours spent working alone. However, these may be somewhat dissatisfying hours, as the results of the present study clearly point toward more extroverted IT workers being more satisfied with their jobs and careers. The present finding is interesting because it goes against expectation—i.e., that more introverted individuals would be happier than more extraverted individuals working in IT jobs—and leads to a conundrum for career planning, vocational mapping, occupational counseling, and other activities that help individuals choose an occupation and/or make a decision about taking a job in IT based on their personality scores: Should more extraverted individuals be discouraged from pursuing an IT job or career? And, similarly, should more introverted individuals be cautioned about choosing a job or career in IT? On the other hand, the current findings align well with recommendations that interpersonal skills and communication should receive further emphasis in IT professional training, education (including curricular design), and development (e.g., Lee, Trauth, & Farwell,1995).

Table 20:
Correlations between Personality Traits and Job and Career Satisfaction (IT Workers)

Big Five-Related Traits	Job Satisfaction	Career Satisfaction	t
Conscientiousness	.11**	.12**	.39
Emotional Resilience	.39**	.48**	4.03**
Extraversion	.24**	.28**	1.63
Openness	.14**	.27**	5.29**
Teamwork	.22**	.22**	0.0
Narrow Traits			
Assertiveness	.16**	.33**	7.07**
Customer Service Orientation	.21**	.27**	2.44*
Image Management	-.10**	.06	6.39**
Intrinsic Motivation	.16**	.01	-6.00**
Optimism	.35**	.39**	1.71
Work Drive	.20**	.29**	3.68**
Visionary	-.01	.04	1.95

Note: *t* represents test for difference between two dependent correlations (Cohen & Cohen, 1989, pp. 67-57).
n = 1059,   *$p < .05$; **$p < .01$

Table 21:
Results of Stepwise Multiple Regression Analysis for Job and Career Satisfaction

Dependent Variable: Job Satisfaction (IT Workers)

Step	Variable	Multiple R	R^2	R^2 Change
1	Emotional Resilience	.388**	.151**	.151**
2	Teamwork	.411**	.169**	.018**
3	Intrinsic Motivation	.431**	.186**	.017**
4	Work Drive	.450**	.202**	.016**

Dependent Variable: Career Satisfaction (IT Workers)

Step	Variable	Multiple R	R^2	R^2 Change
1	Emotional Resilience	.478**	.229**	.173**
2	Assertiveness	.525**	.275**	.046**
3	Optimism	.537**	.285**	.010**
4	Teamwork	.539**	.290**	.005**

n = 1059,   *p <.05   **p <.01

There are several organizational implications of the present findings concerning Extraversion. First, all other factors being relatively equal, companies may want to recruit and hire individuals with higher levels of Extraversion. Second, those parties involved in career planning and development should recognize that Extraversion is positively related to job and career satisfaction and, at the very least, inform individuals seeking vocational guidance about this relationship and not necessarily dissuade extraverts from choosing IT for their vocations because of their higher scores on Extraversion. Third, since another way to interpret the present results is that more social interaction is related to higher levels of job and career satisfaction, employers may want to offer IT employees more opportunities to talk, fraternize, and personally interact with each other (and other employees), through company-sponsored social events, recreational groups, outings, luncheons, discussion groups, and other activities that facilitate social interaction and extraversion-related behaviors.

Regarding the question of working independently versus interdependently, the traditional view has been that IT employees must be able to work independently (cf. U. S. Dept. of Labor, 1991). More recently, however, there has been increasing emphasis on the need for IT workers to work collaboratively and in support of each other. As summarized by ITTraining (2006),

> "Training for IT professionals is not just about teaching staff how to work with the latest hardware and software. Other skills like communication and teamwork are becoming increasingly important as IT departments work across the business rolling out technology-based projects." (p. 42).

In many companies, the work of individual IT employees is performed in concert with other IT employees and with employees from other departments as part of a project where the outcomes affect all participants. Schneider (2002) summarizes research involving nearly 900 senior IT professionals with a focus on factors contributing to the success of IT projects. He concluded that "...teamwork and motivation are more important than technical competence or formal training." Given such examples of the importance of teamwork, it is not surprising that Teamwork in our study was positively related to job and career satisfaction. As in the case of Extraversion and career counseling, the present findings present a dilemma for whether to recommend IT occupations to individuals who prefer to work as part of a team or independently. If one considers the present results and recent analyses of IT skills for project work, teamwork would be recommended, but if one turns to most sources of vocational and occupational planning information, independence is the more important trait for IT work. For example, the Occupational Information Network (O*NET), which has replaced the Dictionary of Occupational Titles as the nation's primary source of occupational information, lists Independence as a key Work Style and Work Value for IT occupations (O*NET, 2006). We believe that there is no simple answer to the question of whether teamwork or independence are more important personal attributes of IT employers and that future recommendations will need to be more nuanced and will require clarification of the different conditions under which each trait is more important.

The six higher magnitude correlations between personality traits and career satisfaction than job satisfaction are consistent with the conceptual distinction between job satisfaction as a construct pertaining to a shorter time period than career satisfaction. In the course of a career, as opposed to a job, there is more opportunity for a trait to manifest itself and lead to positive consequences, for example, higher levels of Assertiveness may be associated with more instances of the individual assuming leadership roles, speaking out on issues of concern, standing up for one's self, and exerting influence on coworkers.

Validity of Customer Service / Telesales Test

In a study by Dr. Warren Bobrow using Resource Associates personality and aptitude predictors, the results were as follows:

- New hires perform substantially better than incumbents, so your initial investment in testing pays off in terms of greater productivity and value to the company.
- <u>Even after training is given to BOTH groups, the performance differences remain,</u> providing clear evidence that people who come into your company with the right mix of talent and personality for the job will always perform better than those who are short on optimal fit.

Performance of New Hires
Aug 2002 Through July 2003
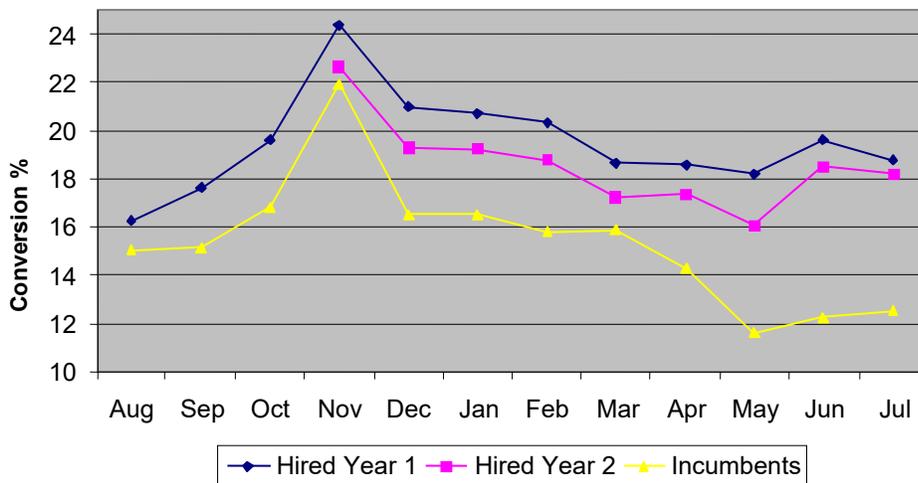
October 2001 through September 2003
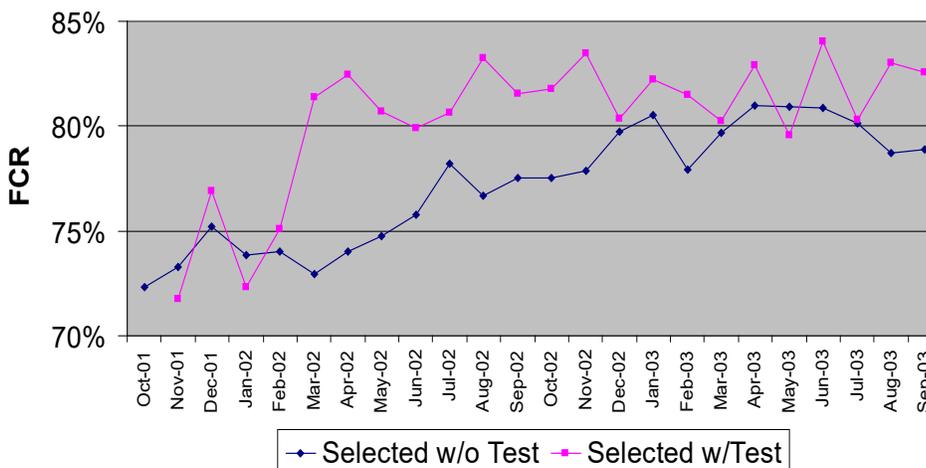
Validity of a Selection Testing for Manufacturing / Maintenance Workers

After bankruptcy, a manufacturing plant reopened under new management, and one new feature of the hiring process was Resource Associates' aptitude and personality testing for **Entry-Level Workers**. Previous employees were encouraged to apply as were other people in the community, but now candidates had to pass the battery of tests. Although the cutoff was set at a moderate level, the hiring screen produced a much more capable workforce. After 9 months, the Operations Manager reported that the plant was 22% more productive than before — and he attributed it to the workforce they had created by using aptitude (basic math and reading) and personality testing as part of the hiring process.

In another study where we validated a selection test for a CAD Operator position:
- Start-up training time reduced 2/3s
- Processing speed improved 12%
- Performance indicators improved 4%
- Resulted in a $2 million Return on Investment (ROI) the first year for a workgroup of 30 people.

Another study where we validated a selection test for Maintenance Workers:
- Minimum estimated savings of $150,000 in the first year (in one department) in terms of faster repair of equipment and quicker return to full production
- 90% reduction in emergencies
- 100% reduction in government fines from improved equipment function
- 30% increase in productivity.

Validity of Resource Associates Store Manager Selection Test
- Achieved a 66% reduction in voluntary and involuntary turnover during initial orientation and training which contributed to a 3100% Return on Investment (ROI) in the first year .
- 42% of those scoring low on Integrity were terminated or left the company within three years vs. 14% of those who scored high.
- Using our measure of Integrity as a predictor for store managers and restaurant managers, 42% of low scorers were terminated within 3 years (many for theft, embezzlement, misuse of company property, insubordination, etc.) while only 12% of high scorers had left the company in the same time period.

Validity of Resource Associates Restaurant Manager Selection Test

		Percent of Restaurant Mgrs Who Were Rated Outstanding on Job Performance
APTITUDE Score	Bottom 1/3	3%
	Middle 1/3	10%
	Top 1/3	29%
PERSONALITY Score	Bottom 1/3	5%
	Middle 1/3	15%
	Top 1/3	25%

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Appendix I
Glossary of Validity Terms

- **Content validity** is evaluated by showing how well the content of a test samples the class of situations or subject matter about which conclusions are to be drawn, or how representative the test sample is to the universe of generalization for which it is intended. Example of content validity: A measure of Extraversion should reflect different aspects of behavior related to this construct, including talking, joining groups, smiling, projecting warmth, social leadership, willingness to meet with other people and engage in discussions, preferring face-to-face interactions versus written or Email communications, etc. Example of lack of content validity: In a training program, the instructor teacher gives an exam over material not covered in the course or program. Unlike most of the other forms of validity, content validity cannot be measured by a statistic, it is usually assessed in terms of expert opinion.

- **Criterion-related validity** is evaluated by comparing the test scores with one or more external variables (called criteria) considered to provide a direct measure of the characteristic or behavior in question. Example: Conscientiousness correlating with job attendance.

- **Predictive validity** indicates the extent to which an individual's future level on a criterion is predicted from prior test performance. Or, the extent to which future levels on a construct are predicted from present construct scores. Example: Using a pre-employment test at time hiring decisions are made to predict job performance ratings one year later.

- **Concurrent validity** indicates the extent to which the test scores estimate an individual's present standing on the criterion. Or, the extent to which a construct is related to another construct or criterion when both are measured at the present time. Example: Scores on Customer Service Orientation correlate with ratings by customers of a service worker's performance.

- **Construct validity** is evaluated by investigating what qualities a test measures, that is, by determining the degree to which certain explanatory concepts or constructs account for performance on the test. This is the " big cheese" of validity and can be seen as incorporating all other forms of validity evidence. In principle, there is a complete theory surrounding a construct, every link of which is empirically verified in construct validation. Construct validation requires the integration of many studies.

- **Convergent validity** is evaluated by the degree to which different (hopefully independent) methods of measuring a construct are related and produce similar results. A good metaphor here is a legal trial where the different forms of evidence (e.g., eyewitness testimony, blood samples, fingerprints, fibers converge on the same result and lead to a common conclusion) Example: Self-reported Extraversion is related to Extraversion as reported by coworkers or boss.

- **Discriminant validity** is evaluated by the degree to which a construct is discriminable (e.g, uncorrelated) from and non-redundant with other related constructs. Example: A new measure of Emotional Resilience can be differentiated statistically from other established measures of Emotional Stability (for example, showing moderate to low correlations with related constructs, showing different validity patterns and incremental validity).

- **Incremental validity** refers to the degree to which a measure significantly adds unique variance to the prediction of a criterion variable. Example: In a hierarchical regression analysis, a measure of Work Drive adds unique variance to the prediction of supervisor rating of job performance after Cognitive Ability already been entered into the equation.

- **Known-group validation** refers to predicting and verifying differences on a construct as function of group membership where there is a high degree of *a priori* consensus about between-group differences on a measure. For example, we would expect to find differences on our measure of Conscientiousness between employees who win an award for perfect attendance or good citizenship versus employees who were fired for violating company rules construct. Or, we would expect to find higher levels of Openness for individuals who had volunteered for overseas assignment.

- **Nomothetic span** refers to the network of relationships of the test (or construct) to measures of other constructs and criterion behaviors. Similar to "bandwidth" in the bandwidth-fidelity dilemma. A construct with a wide nomothetic span would show empirically verified

relationships with a lot of other constructs and criteria. For example, Conscientiousness has a fairly wide nomothetic span and is related to a number of other measures and variables (such as job performance, absences, tardiness, accidents, attendance, and quality of work whereas Career-Decidedness has a more narrow nomothetic span and is related to staying in an occupational field and not engaging in exploring other types of jobs.

- **Convergence of indicators** refers to the extent to which measures of a common construct are related and display similar patterns of relationships. For example, the NEO, 16 PF, Jackson PRF, and Myers-Briggs measures of Extraversion would all be highly intercorrelated.
- **Nomological network** is the representation of the constructs (and variables) which are linked to the construct of interest. Usually, this takes the form of boxes and arrows or boxes and lines. For example, we might have a simple 3-variable nomological network for job turnover:
- (Job Dissatisfaction) → (Psychological Withdrawal from the job) → Job Turnover

Appendix II
Reliability and Validity Principles

- If measures are not reliable, they will not be valid.
- Reliability is a minimum, but not a sufficient, criterion for validity.
- To be valid, a measure must be reliable.
- As the reliability of a measure decreases, validity tends to decrease.
- Validity is a matter of degree, not all or none. Validation is never finished, because there are so many perspectives on validity and because there are so many different and changing contexts which alter the meaning and interpretation of validity.
- The major concern of validity is not to explain or predict a single isolated event, behavior, or item response, because these almost certainly reflect multiple determinants; rather, the intent is to account for or predict consistency in behaviors across situations and over time.