What do "reliability" and "validity" mean, and is the Predictive Index reliable and valid?

These words have very specific and specialized meanings in psychometrics, the branch of psychology that deals with testing and assessment. In plain English, "reliability" and "validity" are two approaches to judging the usefulness of a psychological measure like the PI. They can be defined in this way:

Reliability: This refers to the consistency or stability of a measure. If the concept being measured is assumed to be consistent, such as a personality trait, then the measure should yield similar results if the same person responds to it a number of times. If the concept being measured is assumed to be inconsistent, such as mood, then the measure should yield dissimilar results if a person completes it several times.

One way to estimate reliability is by computing the measure's "test-retest reliability". This is accomplished by giving the same people the same measure at two different times and statistically comparing the two scores. An independent study by Dr. J. Christopher Perry and Dr. Philip W. Lavori describes the excellent test-retest reliability of the PI, especially of the Self factors, as would be expected since these measure natural behaviors.

A second way to estimate reliability is by computing the measure's "internal consistency reliability".This is accomplished by determining whether items that measure the same concept are statistically related. If, for example, the Self A factor represents one construct, then the words that are counted and scored on that factor concept should be related. For example, one would ask, are the 17 words on the PI that measure the Self A factor statistically related to each other?

There are two general ways to compute internal consistency reliability, and the PI has impressively demonstrated such reliability using both methods. Split-half reliability was investigated in the Perry and Lavori study mentioned above, and Cronbach's alpha was investigated in a study by Dr. Richard Wolman and James Pratt ("A Normative Reliability Investigation of the Predictive Index Organization Survey Checklist"). Both studies demonstrated that the Predictive Index possesses strong internal consistency reliability.

Validity: While reliability refers to the consistency of a measure, validity refers to the accuracy of a measure. A measure is valid if it actually measures what it purports to measure. The Predictive Index clearly does.

Construct validity is demonstrated when a measure is statistically compared with another measure of similar and/or different concepts. To be successful, the comparison measure must have been soundly constructed and be generally accepted. Such research has been successfully performed twice, in the Perry and Lavori study and in a more recent 1996 study by Wolman and Pratt ("The Construct Validity of Predictive Index and 16PF"). Both studies compared the PI to Cattell's 16PF (a well-respected and well-researched tool, though not developed for use in business).

A construct validity study involves looking at patterns of correlations. Correlations are mathematical measures that can identify the presence and strength of the relationship between two things. A pattern should emerge that meets the following expectations: For what is referred to as "convergent validity, "factors that are defined in a similar way by both the PI and the 16PF should prove to be significantly statistically related (e.g., PI's extroversion factor and the 16PF extroversion factor), and for "divergent validity," factors that are defined in a dissimilar way on the PI and the 16PF should prove to be mathematically unrelated (e.g., PI's extroversion factor and the 16PF emotional stability factor). In both studies, the PI very successfully demonstrated construct validity: the factors we assume measure similar constructs were mathematically related, and those we assume measure different constructs were not related.

Criterion-related validity is demonstrated when a measure is statistically compared with behaviors it claims to predict. We say that the PI is related to, and can predict, behaviors in the workplace. Criterion-related validity studies objectively show whether these relationships exist, and when they do, the nature of these relationships. Since 1972 the PI has been investigated in over 300 criterion-related validity studies, for a variety of jobs in a variety of industries. The PI has consistently been shown to be job-related. This body of evidence overwhelmingly demonstrates that the PI is related to job behaviors.

If you have additional questions about validity, please contact your PI Consultant.

What does the PI measure?

There are four primary and two resultant factors that make up the Predictive Index. The four primary factors are called Factor A, Factor B, Factor C, and Factor D; the resultant factors are referred to as Factor M and Factor E. Each describes basic drives and motivations that all humans have, and each is represented by a continuum of scores.

Factor A (Dominance) measures the drive to exert one's influence over people and events. Factor B(Extroversion) measures the drive for social interaction with other people. Factor C (Patience) measures the intensity of a person's pace. Factor D (Formality) measures the drive to conform to formal rules and structure. Factor M is a measure of a person's stamina. Factor E measures the extent to which the individual is either subjective or objective in his or her judgements and decision-making.

These factors are then investigated within the context of three elements: the Self, the Self-Concept, and the Synthesis. The Self is a measure of an individual's basic pattern of drives and behavior — a measure of those drives that are most motivating and those behaviors that are most natural for that individual. The Self-Concept measures the environmental expectations or demands that a person feels, which may or may not fit with his or her natural tendencies. The Synthesis, a mathematical combination of the Self and Self-Concept scores, is designed to measure how that person is actually behaving in the current environment.

Does the PI measure cognitive ability?

The PI is a behavioral assessment tool that does not measure cognitive ability. Although cognitive ability is an important aspect of the individual to consider for many jobs, it is inappropriate to use cognitive ability as a blanket selection tool for all jobs. For this reason, the publishers of the Predictive Index have opted to maintain the Predictive Index as a tool that can be safely and appropriately used universally.

What is the reading level of the PI? What if someone cannot read at that level?

The Predictive Index has an eighth-grade reading level. The reading level of an individual taking the Pi should affect the PI in only one way (the M Factor), and in a way expected and predicted by the theory behind the PI. The Predictive Index checklist may be understood as a symbolic environment composed of 172 varied, symbolic stimuli, responses to which provide information about behavior and motivation in the real environment. If someone selects fewer words from the checklist, either due to not knowing what some words mean or thinking that those words do not describe him or her or what is expected of him or her, the person is simply reacting to the PI environment as he or she would react in the actual workplace environment. Furthermore, it is important to remember that the PI measures natural drives and behaviors – not education level, not intelligence, and not socio-economic status (see relevant FAQ answers).

What support is available to validate the PI's relationship to performance for specific jobs?

For any and all of our clients, Praendex Inc., the publisher of the Predictive Index, will perform criterion-related validity studies free of charge. There is no limit to the number of studies that can be performed, though it is important that there must be a sufficient number of employees currently performing the job, and adequate measures of their job performance. These studies are performed by Todd Harris, Ph.D., the Director of Research of Praendex, who is happy to answer any questions about conducting these studies – though your PI Consultant is the first person with whom you should speak about validity studies.

What about the EEOC guidelines on the use of select ion procedures – is the PI safe?

The United States government's Equal Employment Opportunity Commission (EEOC) has published and vigorously upheld "Uniform Guidelines for Employee Selection Procedures." These guidelines, which all U.S. businesses are required to meet, address the conduct of criterion-related validity studies. They were designed to protect individuals from "protected classes" from discriminatory employment decisions based on arbitrary methods. Because of these guidelines, many U.S. employers are understandably wary of products that can help them make employment decisions, such as the PI. Our nearly three thousand clients, however, are comforted by these facts: (1) as demonstrated by our criterion-related validity studies, the PI's results are not arbitrary; (2) in over 40 years, use of the PI has never been successfully challenged in court; (3) at any time, as part of the service contract, a client can commission us to perform, free of charge, a criterion-related validity study that uses their own employees and performance measures.

What support will you offer if we face litigation attacking our use of PI and its validity?

In response to challenges attacking the validity or reliability of Predictive Index, Praendex Incorporated will provide copies of its research reports on the validity and reliability of PI, and, if necessary, will provide access

to its research staff to answer any questions or challenges.

What protection does the PI have on the issue of adverse impact?
We have performed research to determine whether the Predictive Index discriminates against protected classes. In a study conducted by Harvard psychologist Dr. Wolman, the PI was analyzed to determine whether men and women tended to score differently on the PI, and whether African-Americans, Hispanics, and Caucasians tended to score differently on the PI. The analyses showed that neither sex nor race affected PI scores. In a more recent study by Dr. Wendi Everton, the PI was analyzed to determine whether the PI produces adverse impact based on age. This study showed that for all PI factors, people over 40 (the protected class) had PI patterns that were no different than people young er than 40. In short, the Predictive Index does not have an adverse impact on these protected classes.

Is the PI a valid tool for management selection decisions and/or the development of managers?
The use of the PI with managers and executives has been a focus of both formal and informal study over many years. In terms of formal research, the studies mentioned above that investigated the PI's general reliability and validity contained individuals from all levels within organizations, including manager s. Furthermore, our library of research now includes 43 criterion-related validity studies for a variety of managerial positions, including sales managers, supermarket store managers, and restaurant managers. These studies unequivocally show that the PI is related to the performance of managers at all levels of organizations. An example of our informal research is a comparison of the PI profiles of a sample of top executives in the early 1970's and another sample gathered in 1999. Analyses showed that both groups exhibited the PI profile we would predict for top executives.