

# **Predictive Index® Research Programs**

PI Worldwide 

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## **Predictive Index® Research Programs**

Since the company's founding in 1955, PI Worldwide has committed substantial financial and personnel resources to ensuring that the PI maintains the highest possible degree of scientific rigor. It has always been our belief that in order to provide our clients with a program of superior quality and practical utility, we need to continually evaluate the measurement properties of PI to ensure that it demonstrates appropriate reliability and validity, and remains free of bias. The results of this research clearly indicate that PI is both a valid and legally defensible tool that is appropriate for inclusion in any selection system.

Please note that all research studies on the PI conducted by PI Worldwide are in compliance with the U.S. Federal Regulations of the Equal Employment Opportunity Commission's (EEOC) Guidelines For The Development and Use of Personnel Selection Procedures. These guidelines are designed to provide a framework for determining the proper use of tests and other selection procedures, as well as preventing discriminatory employment practices. Research on the PI is also done in accordance with professional standards established by the American Psychological Association (APA) and the Society of Industrial and Organizational Psychology (SIOP).

*At present, PI Worldwide supports psychometric research in the following areas:*

### **1. Test-Retest Reliability:**

Reliability 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 the same person responds to it a number of 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. A report by Dr. J. Christopher Perry and Dr. Philip W. Lavori describes the excellent test-retest reliability of the PI, especially with the Self factors (natural behavior) as would be expected.

### **2. Internal-Consistency Reliability:**

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 concept (Dominance), then the words that are counted and scored on that concept should be related. In this case, one would ask, are the 17 words on the PI that measure the Self A factor statistically related? Likewise, are the 20 words on the PI that measure the Self B factor statistically related, and so on for all PI factors.

There are two general ways to compute internal consistency reliability, and the PI has impressively demonstrated this reliability using both methods. Split-half reliability was computed in the Perry and Lavori study referenced earlier, and Cronbach's alpha was computed in a study called "A Normative Reliability Investigation of the Predictive Index Organization Survey Checklist". With both of these analyses, the Predictive Index has successfully demonstrated internal consistency reliability.

### **3. Construct 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 validity of a measure can be assessed in a number of ways. 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

study called "The Construct Validity of Predictive Index and 16PF". Both of these studies compared the PI with Cattell's 16PF (The 16PF is a well-respected and well-researched personality assessment). 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 variables. A pattern should emerge that meets the following expectations: Factors that are defined in a similar way by both the PI and the 16PF should prove to be very mathematically related (e.g., PI's extroversion factor and the 16PF extroversion factor), and factors that are defined in a dissimilar way on both 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 of these studies, the PI very successfully demonstrated construct validity: the relationships you would intuitively expect should be related were mathematically related, and the relationships you would intuitively not expect should be related were mathematically unrelated.

#### **4. Criterion-Related Validity:**

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 if so, they show the nature of these relationships. The PI has been investigated in over 400 criterion-related validity studies since 1972, (16 of these studies were conducted in 2003 alone) for a variety of jobs and in a variety of industries, and has been shown to be job-related in all of these studies. This body of evidence overwhelmingly supports the fact that the PI is indeed related to job behaviors. Please note that criterion-related validity studies are conducted for PI clients free of charge.

#### **5. Protection from Adverse Impact and PI:**

We have performed research to determine whether the Predictive Index discriminates against protected classes. In a report written by Dr. Wolman of Harvard University, 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. His analyses showed that neither sex nor race affected PI scores.

In a 1998 study by Dr. Wendi Everton, the PI was analyzed to determine whether the PI produces adverse impact based on age. The study showed that for all PI factors, people over age 40 (the protected class) had PI patterns that were no different than people under age 40. The Predictive Index does not create an adverse impact on these protected classes. The relationship between age and PI scores was re-examined in a 2004 report by Dr. Todd Harris. Once again, it was found that the PI produced no bias against the protected class of people over the age of 40.

#### **6. Cross-Cultural Research on the PI:**

The PI truly is an international tool, as evidenced by our clients around the globe, as well as the PI's availability in over 60 languages. We continue to take steps to insure the PI's validity in non-U.S. markets. For example, in 2003 we conducted criterion-related validity studies involving employees from Canada, India, U.K., Spain, Portugal, Germany and the Netherlands. The results of these international job validity efforts demonstrate the same strong quantitative connections between the PI and job performance that our U.S.-based studies have shown. Recent studies have also documented the PI's internal consistency reliability, freedom from bias, and construct validity in non-U.S. markets.

**In summary, research has demonstrated that the PI is reliable, valid, work-related, and free of bias. As has been the case since the inception of commercial use of the Predictive Index in 1955, the staff of PI Worldwide will continue to study and analyze the psychometric properties of the PI, as well as the consequences of its use in the real-world settings of our clients.**