

11—Human Behavior and Safety

dimension is increased, the other dimension also increases. Because the number deals with the magnitude of relationship, a reliability of -60 is greater in magnitude than a coefficient of $+45$, although the variables are inversely related in the former.

Although it is theoretically possible to have a reliability coefficient as low as -1.00 , in practice the value rarely goes below $+20$. How high can a coefficient be? This is difficult to answer, since the answer depends upon the use of the testing instrument, the nature and manner in which reliability was obtained, and other factors.

Validity refers to the test's or instrument's power or ability to measure what it is intended to measure—the degree of correlation the instrument has with the external criterion it is supposed to measure. Once again validity is expressed as a correlation coefficient. A negative sign, however, is as useful as a positive coefficient. A negative validity indicates that those possessing more of the measured trait are less desirable. An illustration might be testing for a job that requires very little mental ability—it may be negatively correlated with an IQ test so that the desirable workers for the job are those with the lower test scores.

A measurement may be reliable without being valid, but a valid measurement must also be reliable. Because reliability is self-correlation and validity is a correlation with some external criteria, a test cannot be correlated with something else and not correlate with itself. To illustrate that a reliable measure may not also be valid, consider a yardstick. A yardstick is very reliable—it gives a consistent measurement every time it is used. It is also valid for measuring the length of a table. But if a yardstick is used for weighing the table, it is no longer valid for measuring.

In addition to reliability and validity, a measuring technique must be practical. A technique may possess high validity but be so cumbersome and intricate that it can only be used in special situations, and then only by highly skilled technicians. In spite of its statistical value, such a technique is almost worthless.

Two sampling techniques used for eval-

uating potential accident-producing behavior are (a) the critical incident technique, described in Chapter 4, and (b) behavior sampling.

The behavior sampling or activity sampling technique involves the observation of worker behaviors at random intervals and the instantaneous classification of these behaviors according to whether they are safe or unsafe. Calculations are then made to determine either (a) the percent of time the workers are involved in unsafe acts or (b) the percent of workers involved in unsafe acts during the observation period. Various components of a safety program (i.e., safety lectures, posters, 5-minute safety talks, safety inspections, motion picture films, supervisory training) can be applied and an immediate indication of their influence on unsafe behavior can be obtained.

It is important that the safety professional approach any psychological evaluation with caution. Texts and references in industrial, social, and personnel psychology will provide guidelines for the development and use of test batteries for measuring individual differences. These tests or evaluative instruments are best developed and administered by competent professionals who specialize in this work.

With respect to the problem of screening employees or potential employees in regard to their accident potential, caution must be exercised. To date, no systematic screening procedures have been developed which meet both reliability and validity criteria and which are adequate for use in all industries or even in a specific industry. While in theory such a screening procedure is possible, the state of scientific knowledge in occupational safety research is too limited to support the development of such screening measures.

Motivation

Through the interaction of hereditary and environmental factors, each worker is an individual personality. The safety professional must be continually aware of individualities when dealing with human beings.

There are instruments by which various aspects of human behavior can be evaluated, many of which are already in use in industry.