

Thorndike (1918) argued

*Whatever exists at all exists in some amount. To know it thoroughly involves knowing its quantity as well as its quality (p. 16).*

Crocker & Algina (1986) presented the following background regarding test theory:

1. No single approach to the measurement of any construct is universally accepted.
2. Psychological measurements are usually based on limited samples of behavior.
3. The measurement obtained is always subject to error.
4. The lack of well-defined units on the measurement scales poses still another problem.
5. Psychological constructs cannot be defined only in terms of operational definitions but must also have demonstrated relationships to other constructs or observable phenomena.

The study of the logic underlying test construction and test use. Awareness of this logic and the models used to operationalize test construction and interpretation, including their assumptions and limitations, lead to improved practice in test construction and intelligent use of test information for decision making.

Crocker & Algina also offered six roles of Test Theory in research and evaluation:

1. formulating a research question or hypothesis
2. *specifying operational definitions for each variable in the hypothesis*
3. *developing/selecting the instruments and procedures needed to obtain and quantify observations on each variable*
4. *testing the accuracy and sensitivity of the instruments and procedures to be used*
5. collecting the experimental data within the framework of the study design
6. summarizing the data and, when appropriate, conducting statistical tests to determine the likelihood that observed results were due to chance

Classical test theory provides a framework for us to understand, interpret, and use the results of measurements. It is technically not a theory, but a frame of reference based on the idea that observations, made through any process, are not absolute or perfect. There is error to varying degrees in our observations or measurements. Classical test theory gives us a way to understand the role of error, its sources, and ways to estimate its impact on our measurements and our interpretations. In class, I will make the argument that error is not an inherent component of test scores or observations – that we introduce error through test score interpretations and uses.

Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. New York, NY: CBS College Publishing.

Thorndike, E.L. (1918). The nature, purposes, and general methods of measurement of educational products. *The seventeenth yearbook of the National Society for the Study of Education*. Bloomington IL: Public School Publishing Company.