Introduction to Psychometrics

Psychometrics

Psychometrics is the science of examining the qualities of assessments used to measure various skills and abilities. This brief provides an overview of reliability, validity, and the importance of both. Additionally, the brief will cover sensitivity to change and normed tests.

Why are Psychometrics Important?

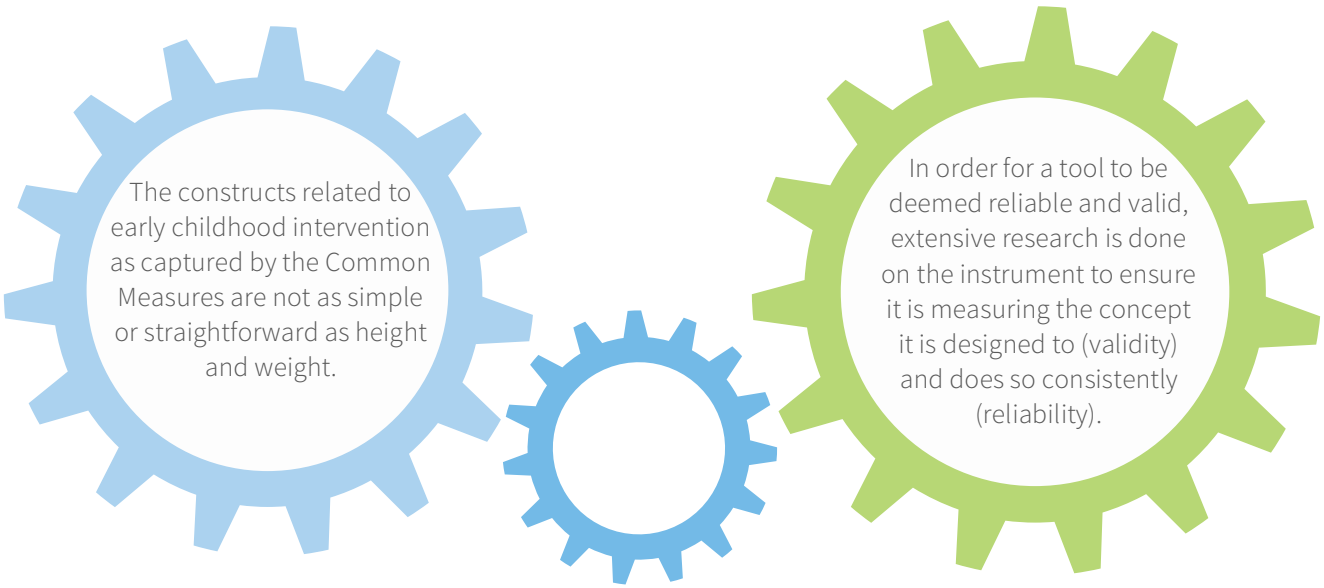
Reliability, validity, sensitivity, and norms are critical in assessment. If a tool does not produce reliable and valid results, then the information provided cannot be fully trusted. An assessment should be normed and sensitive to change in order to determine whether children are meeting their developmental norms and how they progress or change over time.

Reliability

Reliability determines how effectively a tool yields consistent information across various circumstances. An assessment is reliable when data is unchanging regardless of who administers the assessment and when and where it is completed. If a tape measure is used to record a child's height in inches at three different times in one day by three different people in three different locations, it is expected the results will be similar. In the example, the tape measure is a reliable tool which produces consistent data across different situations.

Validity

Validity determines whether a tool corresponds with what it is supposed to measure. For example, a tape measure would not be a valid way to assess a person's weight while a scale would.



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Sensitivity

A measure that is sensitive to change has the ability to reflect a child's growth and development over time. Some instruments can be valid and reliable, but are not able to capture change across time. For example, a measure needs to be able to capture current skills as well as reflect improvement or emergent skills.

Developmental Norms and Benchmarks

Developmental norms are used to determine a child's progress compared to a group of children who are representative of the population, aka the "normed" group. For example, the average age at which a child walks, talks, and develops certain motor skills would be the norm. This would be the standard against which a given child's performance would be measured. Instruments that are not normed cannot accurately determine whether a child is on track developmentally.

Benchmarks provide the criteria to determine if a child is meeting standards in a particular focus area. Growth can be compared to benchmarks. They also allow interventions to be calibrated to meet the child's need.

Resource

Halle, T., Zaslow, M., Wessel, J., Moodie, S., and Darling-Churchill, K. (2011). Understanding and Choosing Assessments and Developmental Screeners for Young Children: Profiles of Selected Measures. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.