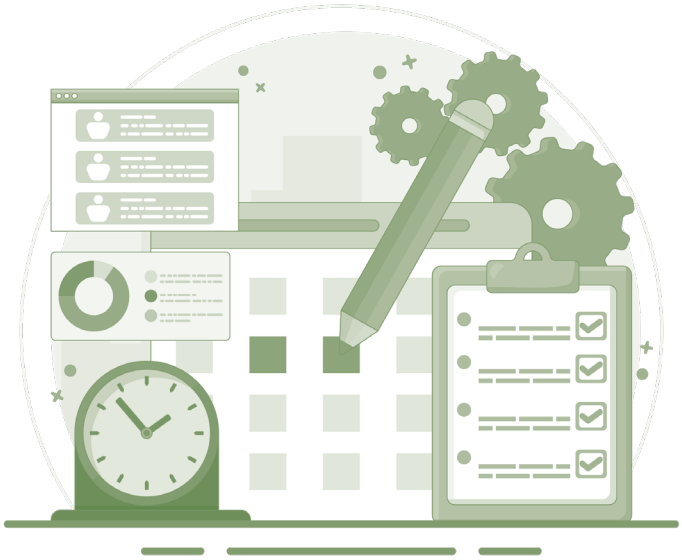
What does **STATISTICAL BIAS** mean within the context of screening tools?



What is it?

When evaluating the quality of any screening tool, it is important to determine whether or not the assessment is biased against different groups of students. This helps to ensure that students do not receive higher or lower screening scores for reasons other than the primary skill or trait that is being tested. In other words, we want the screener to give us an accurate assessment of risk for all students.

Example

Consider a vocabulary assessment that asks you to define the word 'sphygmomanometer' (the technical word for the instrument used to measure your blood pressure). Although you understand what a sphygmomanometer is and what it is used for, you may not have had the exposure to advanced medical training that would make you aware of the more technical term. If this item was included on a medical licensing exam, it would be completely appropriate, but if it is included in an assessment designed to measure general language skills of adults, one might argue this item is biased towards those with formal medical training.

How do I know if a screening tool is biased?

To understand bias, screening test developers may conduct an analysis that examines the degree to which a screening tool is or is not biased against subgroups (e.g., race/ethnicity, gender, socioeconomic status, students with disabilities, English learners). In general, comparisons of group means are not sufficient for demonstrating bias or the lack thereof because the properties of the items may be conflated with the properties of the students taking the assessment. For example, some items may be more difficult for students who have not been exposed to background knowledge in a certain area. Instead, more sophisticated statistical investigations that examine both properties of items and students at the same time are better suited to provide rigorous examinations of bias.

A joint set of standards set forth by the American Educational Research Association, American Psychological Association, and the National Council on Measurement in Education states that, "Fairness is a fundamental validity issue and requires attention throughout all stages of test development and use."

How does this apply to the NCII's tools charts?

The National Center on Intensive Intervention's (NCII's) tools charts provide information on whether or not vendors have conducted an analysis of bias for their tool. A bias analysis is an analysis that examines the degree to which a tool is or is not biased against subgroups (e.g., race/ethnicity, gender, socioeconomic status, students with disabilities, English language learners). The information on the tools chart does not provide a judgement of whether or not a tool is biased. On the tools chart, in the Bias Analysis column, if you click on the word 'Provided' or 'Not Provided' you can find more information on bias analysis information provided.

Where do I go from here?

For more information about statistical bias in screening measures, visit the NCII's academic and behavior screening charts. NCII publishes these charts to assist educators and families in becoming informed consumers who can select screening that best meet their needs.

For more information on literacy screening processes, see resources from the National Center on Improving Literacy https://improvingliteracy.org/.

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