GUIDE: Test validity rests in the evidence, Part 1 and Part 2

Topic Purpose:
Diagnostic accuracy is the ability of a test to correctly identify (or rule out) a diagnosis. The purpose of this topic is to provide an overview of diagnostic accuracy research.

Video and Slides:
This topic is a two-video set. The first video provides a foundational introduction. The second video explores the topic more in depth.

Video 1
Length of video: 34 minutes

Content:

- Beginning to 19:30: Introduces the diagnostic system: The diagnostic test, the target disorder, and a comparison gold-standard reference test. This segment of the video steps mostly outside of the field of communication disorders (some reference to audiology) to use historical references and the example of radar detection to illustrate the concepts of the index test (the test of interest) and the gold-reference test, and how comparison of the results of these two leads to true and false positive, as well as true and false negative determinations.

- 19:30 – 26:51: This section provides an overview of the concepts of sensitivity and specificity using a speech recognition in noise test.

- 26:51 - 31:44: This section discusses the 'gold' or reference standard test in diagnostic accuracy research with a reminder that reference tests must be based on data from sufficiently representative samples including under-represented groups.

- 31:44: Summary of video 1.

Video 2
Length of video: 39 minutes

Content:

- Beginning to 3:15: How to determine if a research study represents a diagnostic accuracy study and to identify the elements of a study that related to diagnostic accuracy

- 3: 15 – 5:15: How to determine diagnostic accuracy of a test

- 5:15 - 10:55: Examples of diagnostic accuracy studies focusing on central auditory lesions, including pointing out some weaknesses in these examples.

- 10:55 - end: Common problems found in diagnostic accuracy studies with examples such as from speech recognition in noise tests and other studies relevant to communication disorders disciplines

Activities:

This activity asks the student to select two different diagnostic accuracy tests of their choice and then walks the student through a process for a detailed analysis of the elements of those studies to evaluate the quality of the studies. A table and a step-by-step guide are available to lead students through this analysis. This is a more detailed activity that might work well particularly in a research methods course or an assessment course where students have the time, structure, and support to engage in a more detailed project. An answer key is provided for select references that the author of this topic includes in the topic, but this exercise could easily go beyond these references to use other studies.

Resource:

The resource is a reference list for this topic divided into topic areas.