

On Some Applications of Signal Detection Theory in Psychology and Education

Lawrence T. DeCarlo
Measurement, Evaluation, & Statistics
Teachers College, Columbia University

Signal detection theory (SDT), originally applied in psychophysics, has general applications in psychology and education. Examples of three different extensions of the traditional signal detection model are presented. A mixture extension of SDT allows for mixing over trials and has been applied in memory research in psychology. Another extension allows for item effects and has been applied to studies where radiology trainees attempt to detect fractures in ankle X-rays. Finally, a latent class extension of SDT has been applied in educational and medical research, such as essay grading in large scale tests. The extensions are theoretically motivated and lead to some interesting statistical models.