A Crash Course in Cheating on Tests

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Cheating 101

- Cheating defined

- Deterring cheating

- Detecting cheating

- Deciding how to handle cheating

Cheating Defined

An action taken by an individual to intentionally bias assessment results.

Cheating Defined

- Anyone

- with knowledge of or access to

- testing materials or the testing process

Examinees   **test staff**   **Test Prep**

Employees of test publishers

Test developers   Vendors

Parents

Why do we care?

- Fundamental fairness for examinees

- Public health, safety and well-being

Cheating in Context

Impact of cheating

- Measurement

- Societal

- Financial

Cheating across the testing lifecycle

- Deter
- Detect
- Decide

Preventing / Deterring / Stopping Cheating: **Test Design**

- Single-form, linear test

- CAT

- Event based v. Windows based testing

Preventing / Deterring / Stopping Cheating: **Limiting Access**

- Limiting paper during item development
- Restricting access to secure materials
- Secure, tamper-proof shipping

Preventing / Deterring / Stopping Cheating: **Communication and Contracting**

- Appropriate and prohibited behavior

- Permitted materials

- Copyrights

- Confidentiality

- Consequences

- Contract

- Messaging

"I wouldn't—there's an awful lot of scary-sounding legalese."

Preventing / Deterring / Stopping Cheating: Check-in

- Prohibited items

- Government-issued identification

- Biometrics
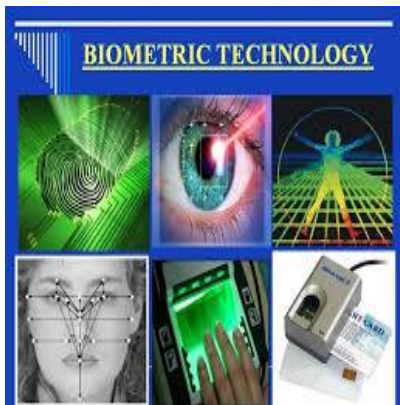
Preventing / Deterring / Stopping Cheating: **Test Administration and Proctoring**
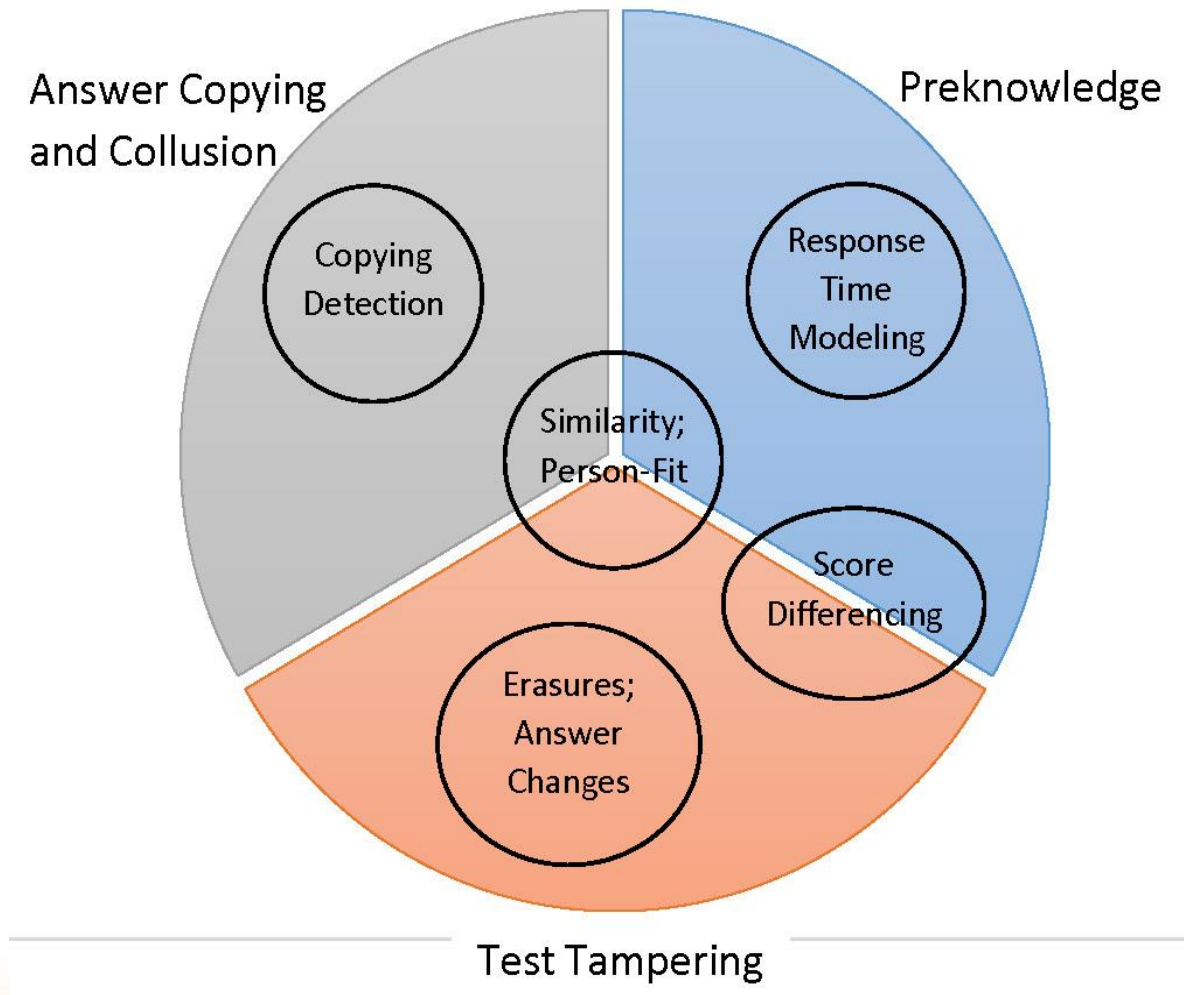
- Random seating

- Spacing

- Breaks

Preventing / Deterring / Stopping Cheating: **Test Administration and Proctoring**

- Active monitoring

- Conflicts of Interest

- Training

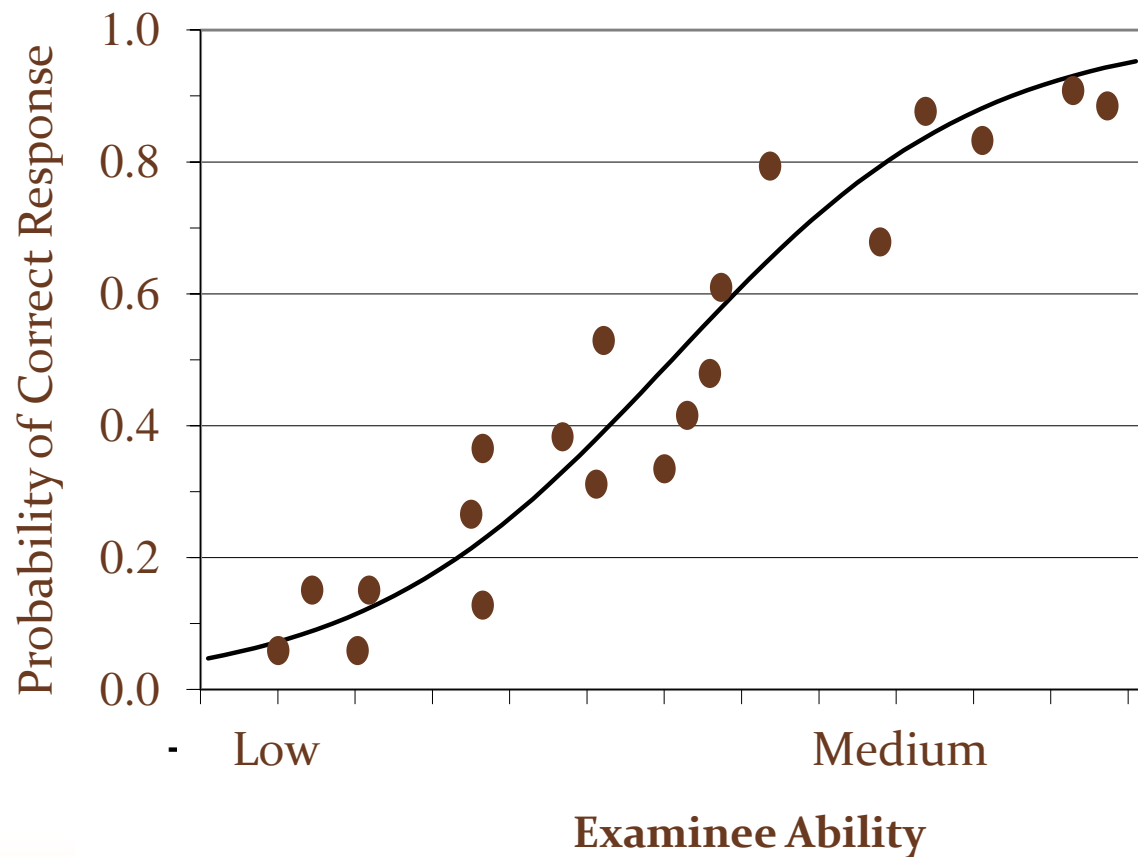# Detecting and Investigating Cheating

Statistical Methodologies

Detecting and Investigating Cheating: Statistical Detection

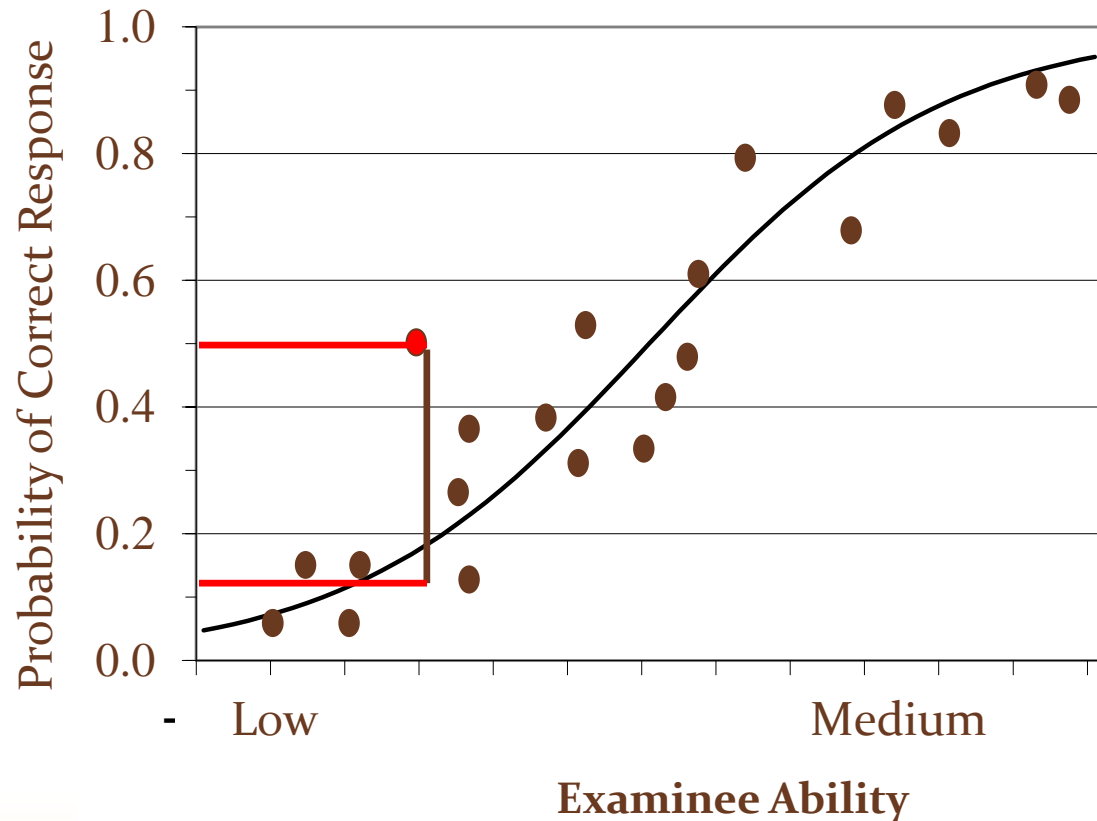# Detecting and Investigating Cheating: Statistical Detection

- Person fit

Detecting and Investigating Cheating: Statistical Detection

- Person fit

Observed: 0.50
Expected: 0.16

Detecting and Investigating Cheating: Statistical Detection

- Copying detection and similarity
  - Comparison of the number of answer matches relative to the expected number of matches.
  - Answer copying is directional—How often do we expect for this suspected copier, given his overall performance, to pick the same answers as the alleged source?
  - Answer similarity is symmetric–a pair of examinees provides only one index value
    - Copying, collusion, preknowledge, test tampering

Detecting and Investigating Cheating: Statistical Detection

- Score Differencing
  - Identifies candidates whose performance varies significantly across two different sets of items: one believed to be largely secure and one which is possibly compromised.
    - Works best when compromise status is known
  - Gain scores for repeat candidates are a special case of score differencing

Detecting and Investigating Cheating: Statistical Detection

- Erasures and Answer Changes
  - Answer changes are uncommon events
  - About half the answer changes should be Wrong to Right (WTR)
    - Other half are Right to Wrong and Wrong to Wrong
    - Large numbers of WTR changes are suspicious
  - Methods
    - Compare average number of WTR changes per student
    - Score differencing: compare performance across items with changes and those without changes
    - Because benign erasures are so uncommon, one doesn't need to tamper very much with data before it is detectable.

Detecting and Investigating Cheating: Statistical Detection

- Response Time (RT) Methods
  - RT varies a lot across items as a function of reading load, cognitive load, computational load, and natural between-person differences
    - Variability in baseline RT patterns poses a serious detection problem
  - Item response models for RT
    - Can detect by finding irregular RT patterns, especially across sets of items believed to be compromised or secure
    - RT data paired with response accuracy data appears to be a promising area for detection of preknowledge

Detecting and Investigating Cheating: **Other Methods**

- Proctor Irregularity Reports

- Hotlines

- Webcrawls

- Data analysis

- Logging and monitoring systems

Deciding How to Address Cheating: **Investigating**

Statistics

Deciding How to Address Cheating: **Investigating**

- Data, Document, and Digital forensics

- Access Logging and Monitoring Reports

Deciding How to Address Cheating: **Investigating**

Irregularity reports

Deciding How to Address Cheating: **Investigating**

Interviews

Deciding How to Address Cheating: **Investigating**

Mystery shopping / audits

Deciding How to Address Cheating: **Investigating**

Webcrawls / Social Media

Deciding How to Address Cheating: **Resolving**

Evaluating the evidence

Who?

What?

Deciding How to Address Cheating: **Resolving**

Determining consequences

Thank you!

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