



c a v e o n TM

Test Security

Caveon Webinar Series

“Don’t Shoot the Messenger!”

**Score Invalidations as a Test Fraud
Deterrent**

September 14, 2011

Don't Shoot the Messenger

- Dennis Maynes, M.S.
 - Chief Scientist
 - Caveon Test Security
- Mark G. Christensen, Ph.D.
 - Assistant Executive Vice President and Director of Testing
 - National Board of Chiropractic Examiners
- Aimée Hobby Rhodes, JD
 - Director, Examination Security
 - CFA Institute
- Doris Lavoie, B.Sc, MSW, CAE
 - Executive Director
 - National Dental Hygiene Certification Board

Agenda

- Introduction of Presenters
- Topic: Using Score Invalidation as a Security Tool
 - Nature of Evidence
 - Communications with Test Takers
 - Putting a Process in Place
 - Working through Legal Requirements
- Discussion of Effectiveness

Circumstantial Evidence

- Evidence in which an *inference* is required to connect it to a conclusion of fact.
- More than one explanation is possible.
 - Alternative explanations are known as “disconfirming evidence”
- Corroborating evidence may support one inference over others.

Testing Examiner's Role

- Ensure the test administration is fair and proper
- Certify that the test administration was fair and valid
- Evidence that prevents certification of fair and valid testing may result in the testing examiner declaring the scores to be invalid
- Decision depends upon fairness and validity, not whether an individual cheated

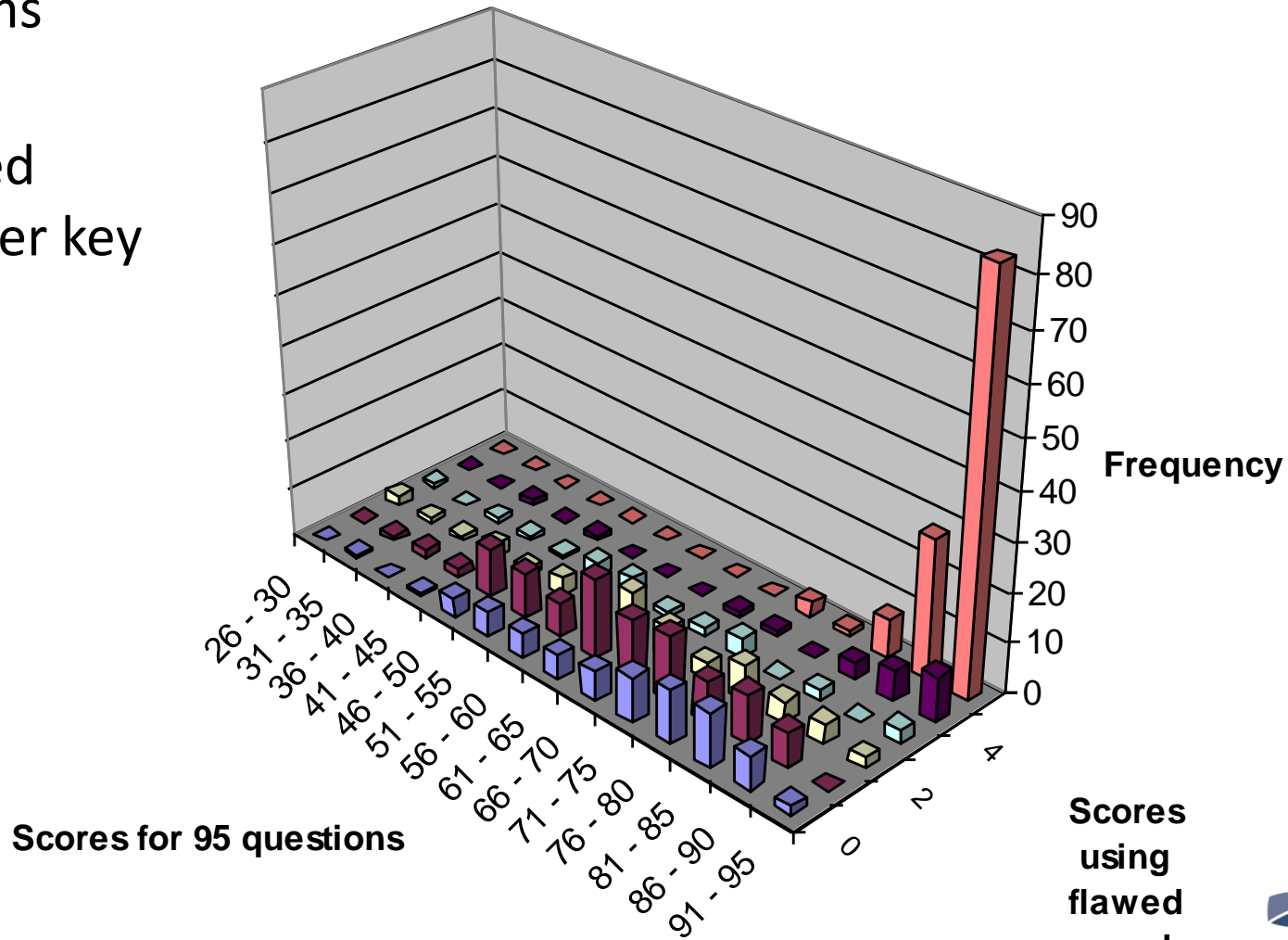
Statistical Evidence of Indeterminate Scores

- Extreme Similarity – Non-independent test taking
 - Answer copying
 - Exam coaching
- Passing with Extreme Speed – Answer Key disclosure
 - Employment of proxy test takers
- Unusual gains – Disclosure of exam items
 - Purchase of exam content
- Affinity to “flawed answer keys” – Disclosure of exam content
 - TH Items
 - Rogue Review Courses

Illustration of Disclosed Content

100 items

5 with a
flawed
answer key



Scores
using
flawed
answer key



caveon™
Test Security

Putting a Process in Place

- Mark G. Christensen, Ph.D.
 - Assistant Executive Vice President and Director of Testing
 - National Board of Chiropractic Examiners

NATIONAL BOARD OF CHIROPRACTIC EXAMINERS (NBCE)

- International testing agency for the chiropractic profession since 1963
- Develops, administers, scores, and reports scores to licensure authorities in the U.S., Canada, England, France, Australia, and South Korea
- Tests several thousand licensure candidates on an annual basis

NBCE EXAMINATIONS

EXAM	DESCRIPTION
Part I	Six basic science areas
Part II	Six clinical science areas
Part III	Nine clinical competency areas
Part IV	Three major areas: Diagnostic imaging, chiropractic technique, and case management. Offered in an objective structured clinical exam (OSCE) format.

- NBCE began data forensics studies in 2010 with 2 administrations of the Parts I, II, and III examinations

PREPARE TO TAKE ACTION

STUDY CAVEON REPORT

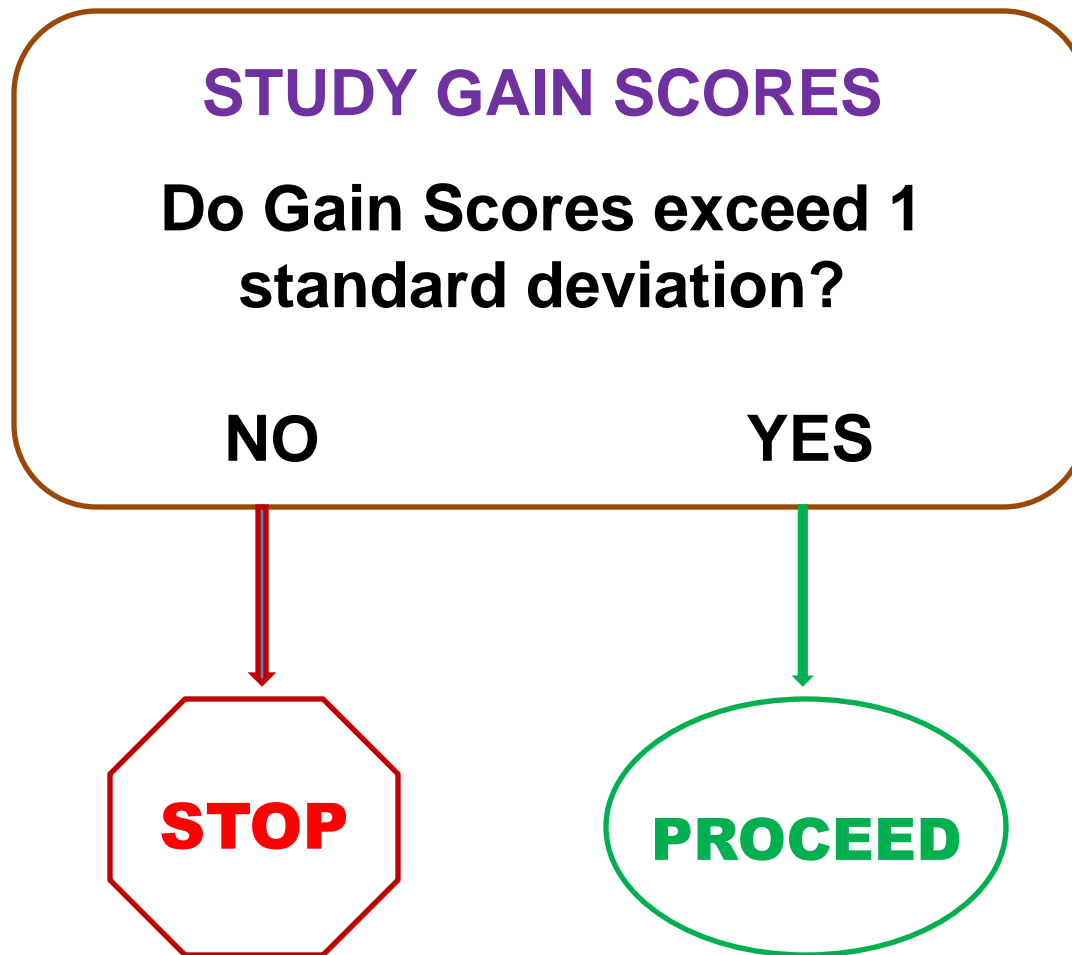
**Does Caveon Index exceed 7.5
or 1 chance in 30 million that
the similarity in responding
occurred by chance?**

NO

YES



PREPARE TO TAKE ACTION



PREPARE TO TAKE ACTION

**STUDY SEATING CHARTS &
EXAM BOOKLETS**

**Do Seating Charts & Exam
Booklets indicate the possibility
of copying?**

NO

YES

STOP

PROCEED

PREPARE TO TAKE ACTION

STUDY PROCTOR REPORTS

Do Proctor Reports imply the possibility of non-independent test taking behavior?

NO

YES

PROCEED

PROCEED

PREPARE TO TAKE ACTION

STUDY SYNOPSIS OF ALL EVIDENCE

Do 1 or more pieces of evidence allow the strong possibility of non-independent test taking?

NO

YES



PREPARE TO TAKE ACTION

**PROVIDE DATA &
RECOMMENDATION TO LEGAL
COUNSEL**

**Does legal counsel support
invalidating specific test
scores?**

NO

YES

STOP

PROCEED

PREPARE TO TAKE ACTION

PROVIDE DATA TO EXECUTIVE VICE PRESIDENT

Does Executive Vice President support invalidating specific test scores?

NO

YES



PREPARE TO TAKE ACTION

**SEND LETTER OF SCORE
NULLIFICATION ALLOWING 10
DAYS FOR A RESPONSE**

**Does examinee reply with
evidence to explain the aberrant
exam performance?**

NO

YES

**INVALIDATE
TEST SCORE &
NOTIFY BOARD**

PROCEED

TAKE ACTION

REVIEW RESPONSE AND MAKE FINAL DECISION

Does the examinee's evidence change the decision to invalidate the test score?

NO

YES

**INVALIDATE
TEST SCORE &
NOTIFY BOARD**

**RELEASE
TEST SCORE**



Candidate Communications

- Aimée Hobby Rhodes, JD
 - Director, Examination Security
 - CFA Institute

CFA Program Overview

- CFA Institute administers the CFA[®] Program and awards the CFA designation
- We administer the CFA Exam (Levels I, II and III) each June and Level I again in December.
- Our exam is administered in 89 countries to 194,000+ candidates each year.
- All exams are paper and pencil.
 - Level I is multiple choice
 - Level II item set
 - Level III is ½ item set and ½ essay.

Candidate Communications

Please provide the Professional Conduct Program with any response or explanation for the unusual similarities in exam responses, as well as any additional information you would like the PCP to consider in reviewing this matter. The CFA Institute Rules of Procedure require that you provide your response in writing within thirty (30) days of the date of this letter. You may submit your written response by facsimile (434.951.5450), e-mail (pcprogram@cfainstitute.org), or by mail to the address identified below.

- Send candidate a Notice of Inquiry
 - Explanation of the problem
 - Explanation that disciplinary action may be taken
 - Notice that candidate score is on hold
 - Provides copy of our Rules of Procedure
 - Gives them an opportunity to respond

Candidate Communications

- We **DO NOT** take telephone calls. All communication must be submitted in writing. E-mail encouraged, although some come via fax or snail mail.
- Statement of Charges and Cover Letter
 - Cover Letter summarizes findings of the Designated Officer and recommended sanction
 - Statement of Charges presents all evidence that supports to charge

Statement of Charges outlines all evidence in the case against the candidate to include:

Similarity Analysis

- Expected Agreement
- Actual Agreement
- Similarity Statistic
- Explanation of Analysis

Suspected Cheating Report

Seating Chart/Floor Plan

Candidate Connections

Sequence of Identical Responses

Erasure Analysis

- Number of Erasures
- Number of Incorrect Matches to other Candidate

Candidates Score History

Signs of Active Test Taking

Computational Analysis

Hard Copies of All Documents Referenced



Candidate Communications

Candidates respond in writing. They can choose to:

- Accept recommended sanction
- Submit the case to a hearing panel
 - Paper review
 - Five member panel
 - Decision communicated to candidate in writing

All sanctions, but for private censures, are posted on CFA Institute web-site.

Handling Legal Requirements

- Doris Lavoie, B.Sc, MSW, CAE
 - Executive Director
 - National Dental Hygiene Certification Board

The NDHCB

- Who We Are & What We Do
- Exam Security Tools
- Prevention vs Postvention
- Role of Legal Counsel

*Doris Lavoie, CAE
NDHCB Executive Director*

Who we are & What we do

- The National Dental Hygiene Certification Board exists so that Canadian Regulators have reliable and valid testing mechanisms for assessing current dental hygiene competencies.
- We administer about 2,000 exams per year, three times/year - January, May and September;
- 100% CBT (computer-based testing), since Jan 2011;
- We're a small organization but we contract out many technical functions including Item Writing, Exam development, Exam publishing/distribution, IT, etc.



Tools to ensure optimal exam security

- Comprehensive exam security policy that covers the following (as a minimum):
 - Copyright issues;
 - Definition of key terms (e.g. “irregular behaviour”, “under review”, etc.);
 - Steps of the exam results review process;
 - Communication issues (who – when);
 - Appeal Process;
 - Clear statement about where the organization stands on exam security issues.



Tools (continued)

- Statement of Understanding (user agreement) to be signed by the candidate before the exam that clearly spells our exam security policy and the possible consequences for those who don't abide by the rules.
- Security clause within the contract with your exam development & publishing service providers to ensure cooperation/accountability if a security incident occurs.
- Signed agreement/contract with exam proctors and exam centre administrators (whether they are hired by your organization or through your exam publisher/distributor).



Prevention vs Postvention

- You can have the best policies, proctors and processes in place; some individuals will still find ways around them.
- Over the past 2.5 years we have found that “postvention” through a systematic data forensics analysis of our exam results has uncovered, on many occasions, some irregular scores that led us to take action.
- Firm action on our part has proven to be a good deterrent for future candidates who might think they could get away with it.



Consultation with Legal Counsel

- Include your legal counsel throughout the process (policy wording, statement of understanding, decision making rationale following evidence of irregularities, answering appeals, etc.)
- For the wording of a policy, statement of understanding or letter to a candidate, our legal counsel has always been to keep it clear and concise and avoid superfluous explanations that can lead to unwanted debate away from the real issues.



Links of interest

- NDHCB Exam Security Policy:
ndhcb.ca/en/exam_security.php
- Candidate Statement of Understanding:
ndhcb.ca/files/CandidateStatementofUnderstanding.pdf

Discussion of Effectiveness

- National Board of Chiropractic Examiners
- CFA Institute
- National Dental Hygienist Certification Board

Q&A

Presenter websites and resources:

- www.cfainstitute.org
- www.nbce.org
- www.ndhcb.ca
- www.caveon.com
- NDHCB Exam Security Policy:
ndhcb.ca/en/exam_security.php
- Candidate Statement of Understanding:
ndhcb.ca/files/CandidateStatementofUnderstanding.pdf