No Lie!
Caveats and Cautions in the use of Polygraphy

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Roadmap

- The Polygraph Test does not detect lies
- The Polygraph Test is especially likely to falsely incriminate the innocent
- Why polygraphers over-estimate the accuracy of the test
- No credible scientific exists to support using the Polygraph Test
- Implications for assessing allegations of sexual misconduct

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The Polygraph Test

Fundamental assumption:

Physiological responding differs when one is truthful versus being deceptive
EXHIBIT "B"
A CLASSIC "LYING" REACTION

THE POINT AT WHICH THE SUBJECT ANSWERED A RELEVANT QUESTION.
Office of Technology Assessment 1983 report:
"There is no known physiological response that is unique to deception."
Thus...

Anyone who claims to measure lying ... 
... is lying!
### Approaches to Detecting Deception

<table>
<thead>
<tr>
<th>Emotion/Arousal</th>
<th>Memory/Recogntion</th>
<th>Other Cognitive Correlates</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The” Polygraph</td>
<td>Guilty Knowledge Test (Concealed Information Test)</td>
<td>Response Conflict</td>
</tr>
<tr>
<td>Facial Expression</td>
<td>Autonomic (SCR)</td>
<td>Attention and Memory Load</td>
</tr>
<tr>
<td>Voice Stress</td>
<td>Central (ERP, fMRI?)</td>
<td>Both ERP and fMRI</td>
</tr>
<tr>
<td>Facial Blood Flow</td>
<td></td>
<td>Linguistic Analysis</td>
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<td>Thermography</td>
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<td></td>
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<tr>
<td>Demeanor</td>
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</table>

*Note that none detect lying *per se*
What is the Polygraph Test?
Control Question Test (CQT; John Reid, 1947)
(for Specific Incidents Investigations)

- Approximately 10 questions

- Relevant Questions
  - address the subject matter under investigation

- Control Questions
  - questions developed by the examiner after a pretest interview with the subject
  - address generally questionable behavior

- The pretest interview stresses 2 ways to fail test, and that test is infallible
CQT “Theory” (Raskin, 1982)

- Innocent subjects should react with stronger emotion to the Control questions since their content are of greater direct concern.
- Guilty subjects should respond with stronger emotion to the Relevant questions.
- Comparing the magnitude of the responses (usually skin-resistance) to the control and relevant questions yield a verdict of Guilty, Innocent, or Indeterminate.
“CONTROL” TEST QUESTIONS

- Did you touch Susie between her legs?
- Have you found teen girls attractive?
- Have you been naked in sight of Susie?
- Have you lied to try to stay out of trouble?
- Have you viewed pornography?
- Have you fantasized sexually about Susie?
Validity and Ethical Concerns: Examine the Assumptions

Assumptions that must be met in order for the CQT to produce valid results:

- Examiner formulates relevant questions that guilty subjects will answer deceptively (*reasonable*)
- Examiner constructs control questions that subjects will answer untruthfully or with some doubt as to their veracity (*plausible, but difficult*)
- An innocent person will be more disturbed by the control questions than by the relevant questions (*implausible*)
- A guilty person must be more disturbed more by the relevant questions (*reasonable*)
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The CQT Box Score

<table>
<thead>
<tr>
<th></th>
<th>% Correctly Classified</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Guilty</td>
</tr>
<tr>
<td>Social Scientist's Research</td>
<td></td>
</tr>
<tr>
<td>Weighted Total</td>
<td>88%</td>
</tr>
<tr>
<td>Professional Polygrapher’s Research</td>
<td></td>
</tr>
<tr>
<td>Weighted Total</td>
<td>91%</td>
</tr>
</tbody>
</table>

after Iacono & Patrick, 1997
Assessing deception: Polygraph techniques.
In R. Rogers, Ed., Clinical Assessment of Malingering and Deception
New York: Guilford.
Why the Difference?
Types of Validity Studies

**Laboratory:** Mock Crime

**Field:** Real Life Cases
Problems with Field Studies

- How is ground truth established?
  - Judicial verdicts inadequate
  - plea bargains and false convictions
  - evidence not beyond a reasonable doubt
  - judicial verdict may be influenced by outcome of polygraph!

- Therefore confessions are used to identify the culpable and to clear the innocent.

- Confessions gathered only after the subject has failed the test, which leads to an unfortunate selection bias
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Why Using Confessions Overestimates Accuracy

In Fact Guilty

Passed Polygraph

No Confession

Not Selected (False Negative) 0%

In Fact Innocent

Failed Polygraph

No Confession

Not Selected (Unverified True Positive) 0%

Confession

Selected (True Positive) 100%

Confession of another accused

Selected (True Negative) 100%

No Confession

Not Selected (False Positive) 0%
Feedback Polygraphers Receive

100% of those who confess failed the polygraph!

100% of those who are exonerrated by another person’s confession passed the polygraph!
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“What is remarkable, given the large body of relevant research, is that claims about the accuracy of the polygraph made today parallel those made throughout the history of the polygraph: practitioners have always claimed extremely high levels of accuracy, and these claims have rarely been reflected in empirical research.”

“Almost a century of research in scientific psychology and physiology provides little basis for the expectation that a polygraph test could have extremely high accuracy.”
“Meta-Analytic Survey” by APA

Ad-hoc Committee (Mike Gougler, Raymond Nelson, Mark Handler, Donald Krapohl, Pam Shaw, Leonard Bierman)

Scope:
- 45 samples (majority in Polygraph, 49% by Raymond Nelson)
- 295 scorers
- 11,737 examinations

Omnibus accuracy 86.9% (23.5% inconclusive)

No break-down of false-positive & false-negative

Critical admission:

“Real world confirmation data are selective ... and confirmed cases more often may have correct PDD results than do unconfirmed cases. As a result, field studies may overestimate PDD decision accuracy to some degree.”
“To strategically plan for and ensure our survival in the years ahead, the APA has been implementing initiatives…”

“We are at a great time in polygraph history and we can be proud of the steps we are taking to move our profession forward”

“… specific-incident polygraph tests can discriminate lying from truth telling at rates well above chance, though well below perfection. … polygraph accuracy for screening purposes is almost certainly lower than what can be achieved by specific-incident polygraph tests in the field.”
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Implications

- If most accused folks are not culpable, a very large number of False-Positives will result.

- Impact of False-Positives on the accused and the family.

- Cumulative risk of False-Positives with Maintenance Polygraph Tests is substantial (and no evidence to suggest that maintenance polygraphs are effective, Meijer et al. 2008, Int J Law Psych).

- Countermeasures can reduce True Positive rate.
Synopsis

- There is no unequivocal lie response
- **Polygraphy:**
  - assesses emotional reactions
  - has an unacceptably high false-positive rate
  - Is vulnerable to countermeasures that can reduce true-positive rate
- Polygraphers overestimate accuracy due to how cases are selected for inclusion in studies
- Polygraphs are useful for eliciting admissions and confessions; i.e. “scare the hell out of people”

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