

Countermeasures in 2009

What We Know and What We Don't Know

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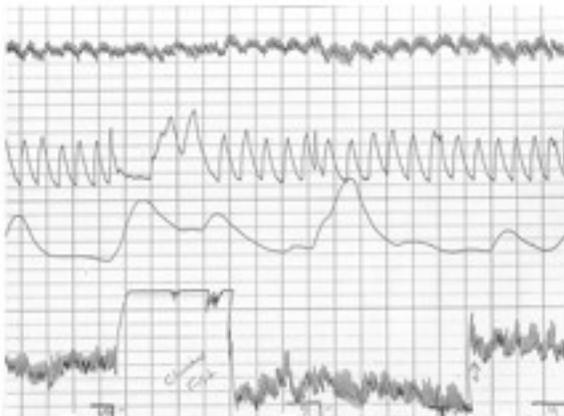
If someone tries to beat the test, the charts will look funny and you will know it.

Cleve Backster circa 1976

This was the complete and total extent of countermeasure training at the Backster School of Lie Detection in 1976.

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WE HAVE ALL SEEN CHARTS LIKE THIS:



The subject of this field test was confronted with his countermeasure use and confessed. The stolen property was recovered!

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POLYGRAPH COUNTERMEASURES

Definition: Anything that a polygraph subject does in an effort to defeat, or distort the result of, a polygraph examination.

- General State Countermeasures
- Specific Point Countermeasures
- Information
- Spontaneous Countermeasures

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POLYGRAPH

What must a countermeasure do to beat:

A CQT: The countermeasure must reverse the differential reactivity between relevant and control questions so that the control questions now evoke stronger physiological responses than do the relevant questions to which the subject is attempting deception.

A CIT: The countermeasure must alter the subject's physiological responding so that the Keys consistently produce smaller physiological response than at least one of the Foils.

For both tests, the countermeasure must be applied in a way that is not detectable by the examiner, either through an observation of the subject or the physiological data.

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GENERAL STATE COUNTERMEASURES

The General State Countermeasures (GSC) include anything that a subject might do to affect him- or herself throughout the entire test.

They include:

Drugs

Fatigue

Anti-perspirant applied to the fingers

None of the GSCs are likely to be effective against the CQT, although they might be effective against the CKT.

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DRUGS

Although one poorly designed study found a CM effect for meprobamate on the CKT, other research has shown the the following as ineffective against the CKT:

Diazepam

Meprobamate

Ritalin

Propranolol

Alcohol

Drug CM studies with the CQT show no effects for:

Meprobamate

Propranolol

Alcohol

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SPECIFIC POINT COUNTERMEASURES

The Specific Point Countermeasures (SPC) attempt to alter a polygraph test outcome by changing a subjects physiological reactivity at specific places in the test.

In the first edition of *A Tremor in the Blood*, Lykken claimed that people could easily beat a CQT by biting their tongues or pressing their toes against the floor during the comparison questions. Lykken claimed to have demonstrated this in some classified research for the U. S. Air Force.

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PHYSICAL SP COUNTERMEASURES

In the early 1980s Honts and his associates began a series of laboratory studies examining the validity of Lykken's claims about the effectiveness of physical countermeasures.

These studies all used the laboratory paradigm developed by Raskin and his students at the University of Utah during the 1970s.

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PDD Research

Research on PDD has been conducted in both Laboratory and Field Settings.

Laboratory Research is valuable because it allows for precise control of experimental variables. It is also possible to study some questions in the laboratory that may be difficult or impossible to study in the field.

Field Research is important because it allows for research under real world conditions. Unfortunately, it is almost impossible to conduct countermeasure research in field settings.

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A LABORATORY STUDY



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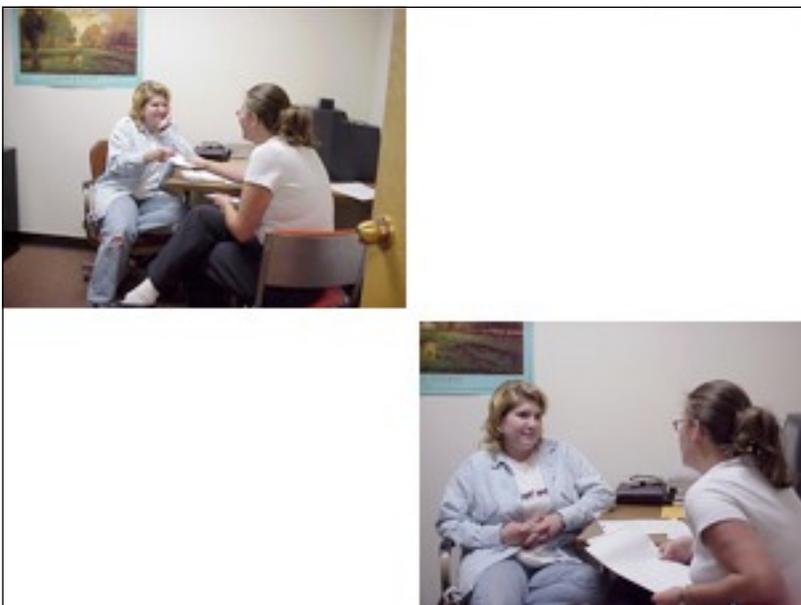
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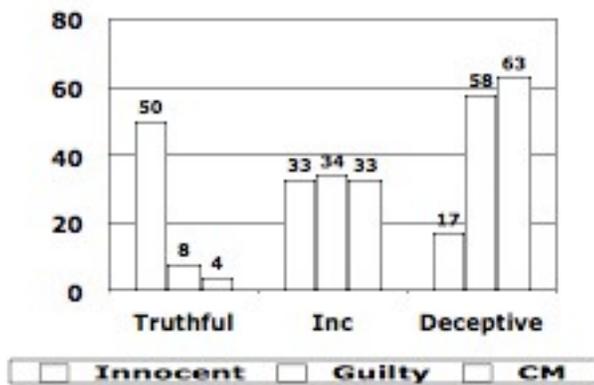
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The Honts et al., Studies

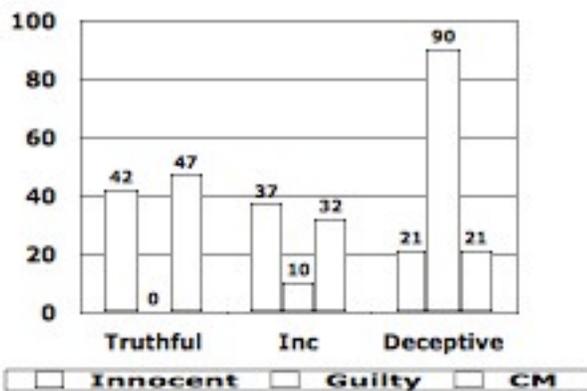
Honts et al., (1985a) examined biting the tongue or pressing the toes during the comparison questions.



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The Honts et al., Studies

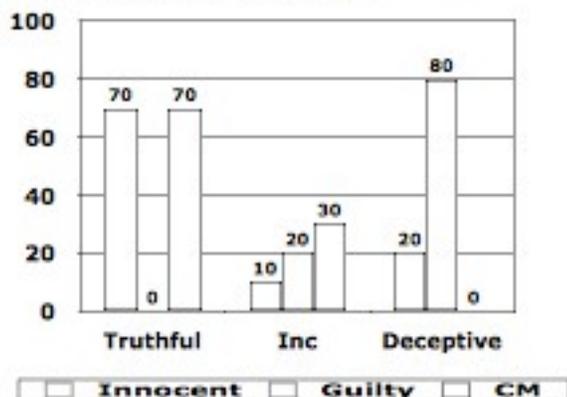
Honts et al., (1985b) examined biting the tongue and pressing the toes during the comparison questions.



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The Honts et al., Studies

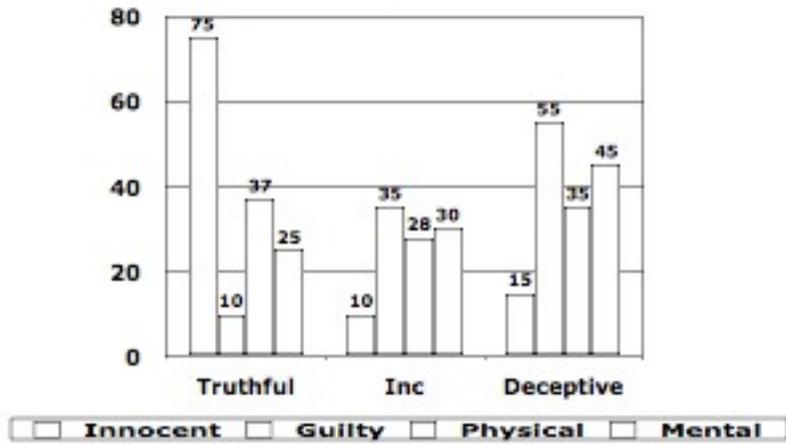
Honts et al., (1987) examined biting the tongue and pressing the toes during the comparison questions under higher motivation.



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The Honts et al., Studies

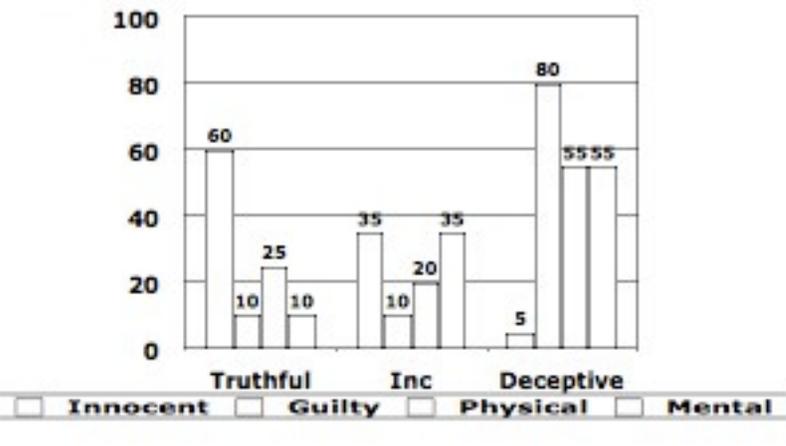
Honts et al., (1994) examined both physical and mental countermeasures.



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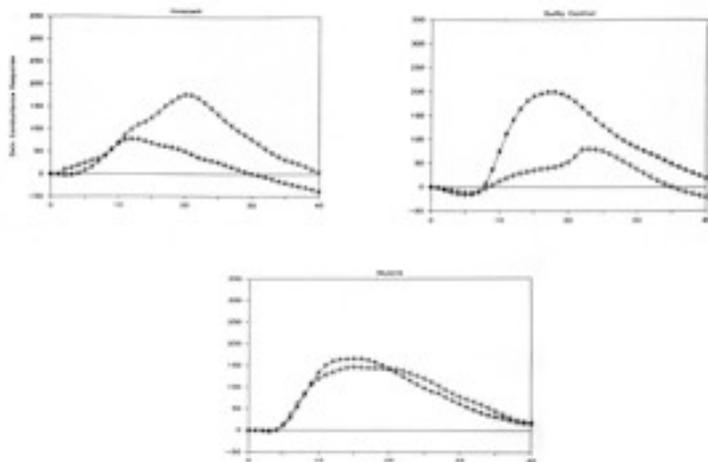
The Honts et al., Studies

Honts et al., (1994) also used Computer Assisted Polygraph algorithms to score the data.



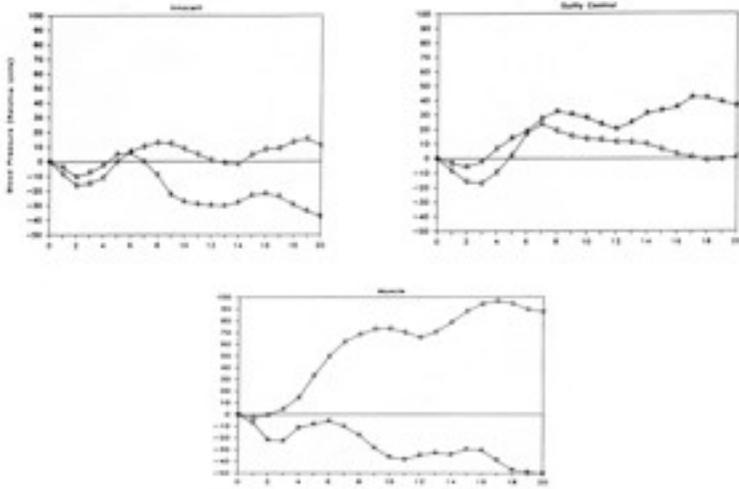
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EFFECTS OF CMS ON PHYSIOLOGY:



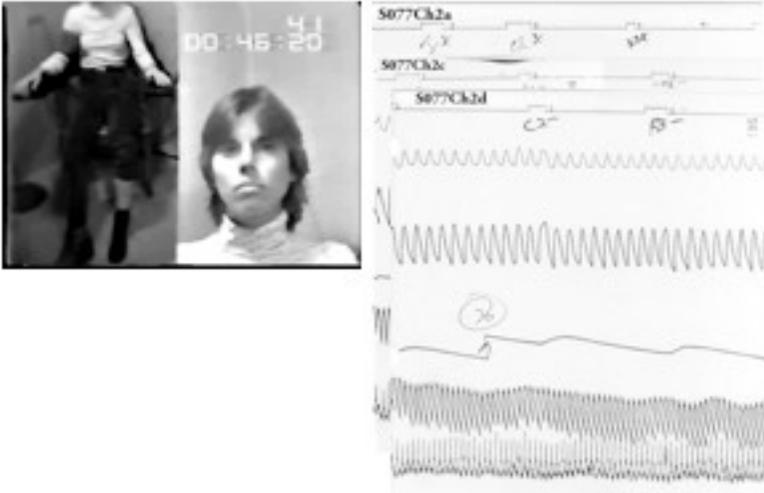
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EFFECTS OF CMS ON PHYSIOLOGY: RBP



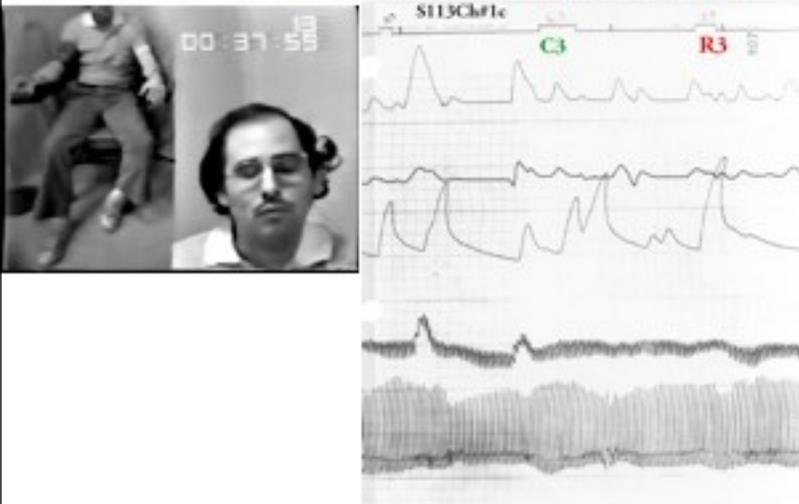
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IS THIS SUBJECT USING COUNTERMEASURES?



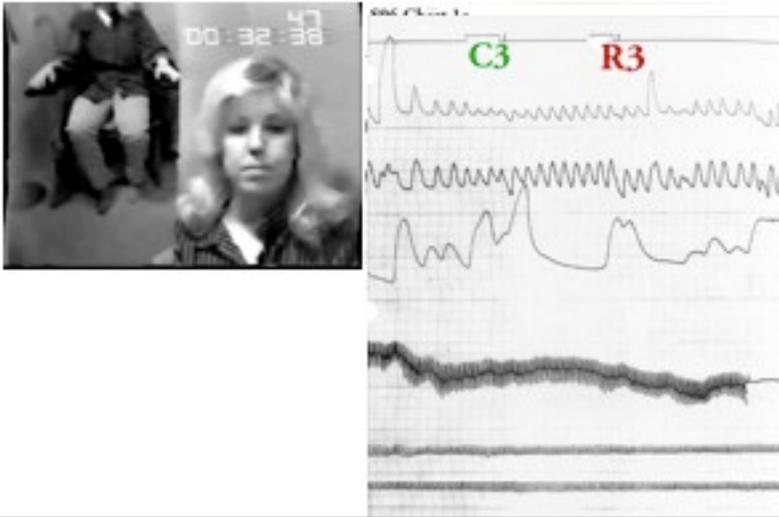
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IS THIS SUBJECT USING COUNTERMEASURES?



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IS THIS SUBJECT USING COUNTERMEASURES?



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DETECTING COUNTERMEASURES

The data from Honts et al., (1985) were subjected to several analyses.

At the end of each examination the examiner made a forced choice decision about countermeasures based on observing the subject and on the quality of the charts.

Decisions were independently made based on the charts alone

Cleve Backster made countermeasures decisions based on the charts.

None of the evaluations produced better than chance results.

There was a bias toward false positive errors.

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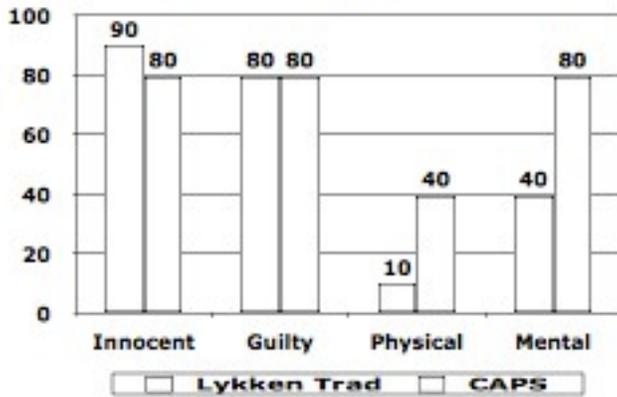
COUNTERMEASURES AND THE CKT

Lykken, Ben-Shakkhar and Furedy argue for the superiority of the CKT and have even suggested that the CKT is immune from countermeasures.

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RESULTS OF HONTS ET AL., 1996



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COUNTERMEASURE INFORMATION

A great deal of information available to interested subjects.

Maschke, G. W., & Scalabrini, G. J. (2000). The lie behind the lie detector. Available free online at AntiPolygraph.org to everyone.

Lots of other material is around, much of it of poor quality.

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However, sources like the Maschke & Scalabrini's book do contain accurate information about how polygraph tests work and about possible countermeasures.

The critical question is:

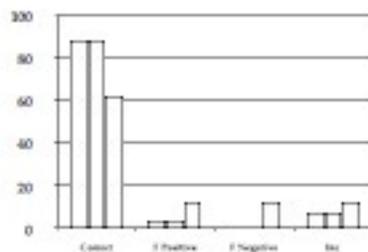
Does polygraph information matter?

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STUDIES ON POLYGRAPH INFORMATION

Rovner et al., 1979 examined the effects of Information and Practice on the CQT.

- No effects for information
- Weak, but confounded effect for Practice



□ Standard □ Information
□ Info & Prac

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HONTS & ALLOWAY (2007)

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SPONTANEOUS COUNTERMEASURES

Honts, Raskin, Kircher & Hodes, 1988 examined the debriefings of subjects from three laboratory studies of the CQT.

They found:

60% of the guilty subjects attempted one or more countermeasures

None of their innocent subjects reported countermeasures

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SPONTANEOUS COUNTERMEASURES

Honts, Raskin, Kircher & Hodes, 1988 reported the following spontaneous countermeasures:

Mental Countermeasures

- Relaxation
- Disassociation
- Self-deception
- Imagery
- Rationalization

Physical Countermeasures

- Attempts to Control Breathing
- Biting Tongue
- Attempts to Control Heart Rate
- Attempts to Control Physiology
- Pressing the Toes to the Floor

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Despite the fact that the majority of the guilty subjects in the Honts et al., studies attempted to beat the test:

None of them were successful in producing a false negative outcome.

Nor were they able to alter the rate of inconclusive outcomes.

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SPONTANEOUS COUNTERMEASURES

Otter-Henderson, Honts, & Amato, (2002), *Polygraph*, 31, 9-14. Examined the occurrence of spontaneous counter-measures against the RI in an employment screening study. They reported the following:

77.5% of the Guilty subjects attempted one or more countermeasures

30% of the Innocent subjects attempted one or more countermeasures

In order of frequency (most to least) the following counter-measures were reported:

Altered Breathing

Mental countermeasures

Physical countermeasures

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SPONTANEOUS COUNTERMEASURES

Otter-Henderson, Honts, & Amato, (2002) reported no effects of spontaneous countermeasure use on the physiological data collected in their study.

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SPONTANEOUS COUNTERMEASURES

Honts, C. R., Amato, S. & Gordon, A. K. (2001), *Polygraph*, 30, 1-9, looked for the effects of spontaneous countermeasure by subjects in a large laboratory study of the CQT. They reported:

89.6% of the guilty subjects reported the use of one or more countermeasures

45.8% of the innocent subjects reported the use of one or more countermeasures.

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HONTS, ET AL., REPORTED THE FOLLOWING COUNTERMEASURE FREQUENCY TABLE:

TYPE OF DM	FREQUENCY OF SPONTANEOUS COUNTERMEASURE ATTEMPTS		
	FREQUENCY		
	INNOCENT	GUILTY	ALL S
NONE	44	10	54
ALTERED BREATHING	24	37	61
MENTAL	49	97	146
PHYSICAL	10	10	20

NOTE: OF THOSE REPORTING COUNTERMEASURE USE, 52.2% (72 OF 138) REPORTED USING MULTIPLE COUNTERMEASURES

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HONTS, ET AL., ALSO ASKED IF EXPERIENCED EXAMINER COULD DETECT COUNTERMEASURE USE.

Three DoDPI instructors evaluated the charts from the Honts et al., (2002) study and rated them on a 7-point scale for the likelihood that a subject had attempted a countermeasure.

Inter-rater reliability was very poor, $r = 0.27$.

None of the instructors was able to predict countermeasure use at above chance levels.

If the ratings were turned into decisions, then almost half (47.5%) of the countermeasure "detections" were with innocent subjects.

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The Honts et al., (2001) results suggest that if examiners believe they can detect counter-measures, and if they interpret countermeasures as indicative of deception to the issues of the examination, then a large number of false positive errors is likely to result.

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HONTS, ET AL., ALSO EXAMINED THE IMPACT OF CM USE ON THE VALIDITY OF THE CQT

For guilty subjects there was no effect of the spontaneous use of countermeasures on their numerical scores.

However, for innocent subjects there was a significant and **NEGATIVE** relationship between use of countermeasures and their numerical scores
 $r = -.43$

That is, Innocent subjects who used countermeasures produced more negative scores ($M = -3.91$) than did Innocent subjects who did not attempt countermeasures ($M = 4.55$).

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HONTS, ET AL., ALSO REPORTED

No relationship between countermeasure use and:

Age

Sex

And number of years of education

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Honts, Raskin, & Kircher (1992) examined the frequency of YES answered controls in 290 laboratory subjects. They report:

YES answers were common, 23% of the subjects gave at least one YES answer to a comparison question.

YES answers were most often given by Innocent subjects, 67% of the YES answers were given by Innocent subjects

There were no reliable differences in the numerical scores resulting from comparison to YES versus NO answered comparison questions

Conclusions

The research shows that YES answers to controls are a common behavior by Innocent subjects taking CQTs.

YES answered controls should be used in scoring.

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HONTS ET AL (2009)

In a study using both probable-lie and directed-lie examinations Honts et al (2009) debriefed participants about their spontaneous use of countermeasures.

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HONTS ET AL (2009)

Overall 48% reported attempting a countermeasure.

Probable-lie 50% attempted

Directed-lie 46% attempted

Of the Guilty 78% attempted

Probable-lie 83% attempted

Directed-lie 72% attempted ($p = .095$)

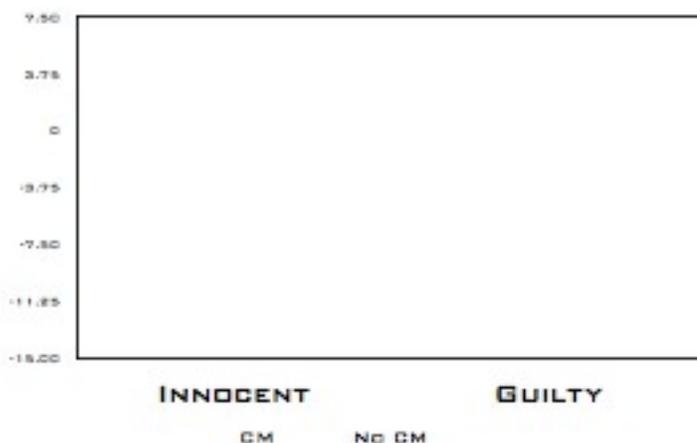
Of the Innocent 18% attempted ($p > .001$)

Probable-lie 15% attempted

Directed-lie 20% attempted

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HONTS ET AL (2009) SCORES



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CURRENT TRENDS

- * There currently are countermeasure classes being offered to polygraph examiners that claim to provide ways for examiners to detect countermeasures.
- * Some of the material in these classes is based on case studies of individuals who have attempted countermeasures, failed and then confessed to countermeasure use.
- * In science this is known as a case study approach.
- * In science, case studies are never used to define causal relationships.
- * In science, case studies are used to stimulate hypotheses that can then be used to define causal relationships.

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CURRENT TRENDS CTD.

- * One polygraph expert has used these case study data to analyze current field cases and then to offer testimony in courts of law:
 - * That based on his study of these field cases he can determine when subjects are attempting countermeasures.
 - * That if a subject is attempting countermeasures the test should be considered unreliable and not admitted as evidence. This expert makes these decisions with high certainty.
- * Neither of these conclusions is supportable as science.

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WHY THOSE CLAIMS ARE NOT SCIENCE

- * Scientific studies show that innocent individuals now frequently engage in countermeasures. Although doing so produces negative effects for them in terms of their total score. Nevertheless most are classified correctly.
 - * Should they be denied the benefit of a polygraph they passed?
- * No published scientific study shows that any person is better than chance at detecting countermeasures, either from watching the subject or from analyzing the charts.
 - * Extraordinary claims of ability, require extraordinary evidence of performance.

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WHY THOSE CLAIMS ARE NOT SCIENCE

- * The case study approach used here has one fatal flaw.
 - * There is no comparison group.
 - * The unanswered, and ultimately critical question is:

How often do non-countermeasure users show the same patterns that are being used to allegedly detect countermeasures?

- * If such patterns and markers are displayed by subjects who are not using countermeasure, then they are useless as countermeasure detectors as they are as likely to implicate a non-user as a user.
- * In scientific terms, the case studies being used, do not test for specificity.

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NEW RESEARCH HONTS & CRAWFORD (2009)

- * Upon learning about this expert's methods and claimed abilities, my laboratory decided to look at some non-countermeasure charts and see if the patterns and markers were present.
 - * We sampled 92 cases from the recent validity study by Honts et al., (2009).
 - * Since the expert claimed to be able to detect countermeasures by recognizing respiration patterns trained by Doug Williams we chose to look for those patterns of response in our subjects, NONE OF WHOM had been exposed to the Doug Williams materials.

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DOUG WILLIAMS' EXAMPLE RESPIRATION PATTERNS

EXHIBIT E

PHLEMO REACTIONS

FIGURE NO. 1



FIGURE NO. 2

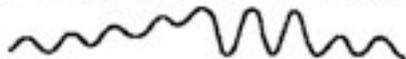


FIGURE NO. 3



FIGURE NO. 4

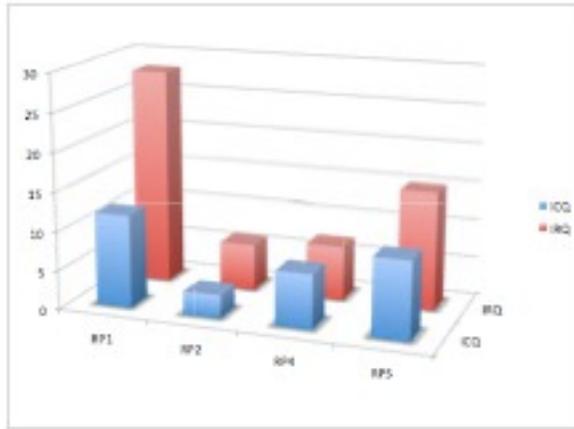


FIGURE NO. 5



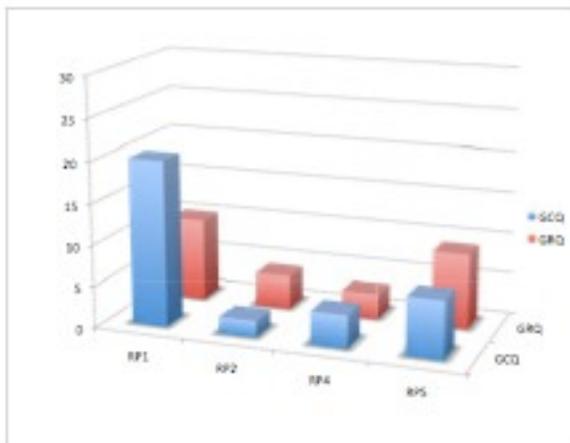
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DOUG WILLIAMS' RESPIRATION PATTERNS IN INNOCENT SUBJECTS



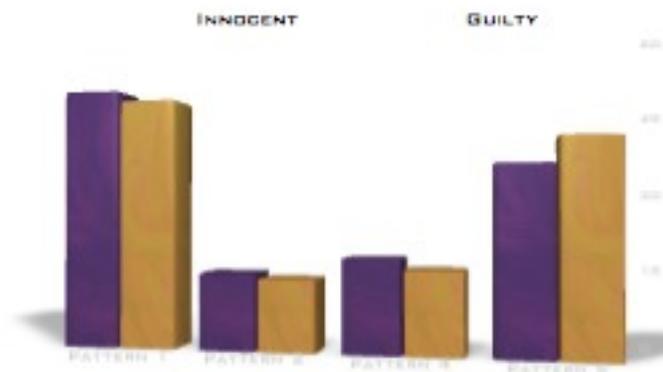
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DOUG WILLIAMS' RESPIRATION PATTERNS IN GUILTY SUBJECTS



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PERCENTAGE OF INDIVIDUALS SHOWING THE DW RESPIRATION PATTERNS



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THE FUTURE OF POLYGRAPH COUNTERMEASURE RESEARCH

In the late 1980s a decision was made by the U. S. Government that all internal polygraph countermeasure research would be classified.

Moreover, it was decided that the U. S. Government would not provide funds for any private-sector polygraph countermeasure research, unless it too was classified.

Polygraph research, if done properly, is expensive.

Until Government policy changes, or researchers in other countries take the initiative, it is unlikely that there will be much progress in the area of polygraph countermeasures research.

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FIGHTING BACK

- Counter-Countermeasures
 - Likely to become an endless game.
- Countermeasure Detectors
 - Movement Detectors
 - EMG
 - Statistical
 - CPS already outperforms humans with CM subjects
 - Honts dissertation suggests that more can be done, if the research is forthcoming.
- Advice?
 - Video
 - Use the best instrumentation you can obtain
 - Use the CPS algorithm as a check.

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