



- **The Research studies discussed in this slide show come from Academia.**
- **Complaints from Academia suggest that the USG refuses to identify their CM research. They argue that everything should be out in the open.**
 - **The fact that the anti-polygraph sites take what the academics claim work in the way of CM and publicize it, is of no concern to Academia.**
 - **This is not a complaint against Academics. Their research is important and appreciated.**
 - **However, we in the USG have a very different mission – protecting National Security**

The Polygraph and Lie Detection (2003)

- **Basic science and polygraph research give reason for concern that polygraph test accuracy may be degraded by CM, particularly when used by major security threats who have a strong incentive and sufficient resources to use them effectively. If these measures are effective, they could seriously undermine any value of polygraph security screening (Page 216)**

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- **National Academy of Science 2003 report – study funded by DOE**
- **Based on existing CM research – provided the following comments:**
 - **All physiological indicators measured by the polygraph can be altered by conscious efforts through cognitive or physical means raising concern**
 - **Empirical research indicates CM may be learnable**
 - **Research does not clarify whether users of CM can be detected in contexts in which systematic efforts are made to detect or deter them.**
 - **Available evidence does not allow us to determine whether innocent examinees can increase chances of achieving non-deceptive outcomes by using CM**

- **Suggest future research on CM be conducted**

Comment about Research

- **Mock crimes do not reach the level of jeopardy involved in actual criminal activity**
- **Human Use committee mandates that NCCA cannot introduce jeopardy into projects**
- **Human Use rules followed by most Universities are not as stringent**
- **Research in detection of deception still valuable for a number of reasons**

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- **BELOW COVER THE 4TH BULLET**
- **Kircher, Raskin, Honts, & Horowitz, 1988, 1994;**
 - **Difference is the level of response not the quality of response.**
- **Anderson, Lindsay, & Bushman 1999**
 - **Correspondence between lab & field-based effect sizes of conceptually similar independent & dependent variables was considerable.**
 - **In brief, the psychological laboratory has generally produced truths, rather than trivialities' (P.3).**
 - **While the question generalizeability still requires attention, we support the notion that data derived from well-conducted laboratory studies provide useful information for the study of PDD in the real world**

CM Research Examples of Research

1. Honts, Hodes, & Raskin, 1985; Honts, Raskin, & Kircher, 1987
2. Honts, 1987; Honts & Amato, 2002
3. Gudjonsson, 1988
4. Elaad & Ben-Shakhar, 1991
5. Honts & Perry, 1992
6. Honts, Raskin, & Kircher, 1994
7. Honts, Devitt, Winbush, & Kircher, 1996; Cail-Sirota & Lieberman, 1995
8. Honts & Amato, 2002
9. Elaad & Ben-Shakhar, 2009

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1. **Highly motivated using physical or mental CM can beat examiners**
2. **Drugs not an effective CM if the drug influences entire neuro-physiological sys**
3. **No evidence that hypnosis is effective as a CM** (Gudjonsson, G.H. (1988) *How to defeat the polygraph test*. In A. Gale (Ed) *Polygraph Test: Lies, Truth & Science*, London: Sage, pp. 126-136)
4. **Continuous mental dissociation will decrease CIT detection efficiency**
5. **Alcohol is not effective as a CM**
6. **Tongue bite & Toe press are effective CM; Mental CM (counting backwards by 7s) is an effective CM; Spontaneous CM are not effective; CM question on a test is not effective. Suggest that CM activity may be one reason for high rate of false-negative errors in some national security studies**
7. **Toe press & counting backwards by 7s effective CM for CIT**
8. **Spontaneous CM ineffective**
9. **Toe press & mental CM can generate high false negatives in CIT**

Honts, Hodes & Raskin 1985

- Experiment 1 – CQT format – 4 Groups
 - 1 Group – Tongue Bite – No training
 - 1 Group – Toe Press – No training
 - 1 Group guilty + 1 Group innocent
- Experiment 2 – CQT format – 3 Groups
 - 1 Group – Tongue Bite & Toe Press – Trained
 - 1 Group – Guilty
 - 1 Group – Innocent

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- Experiment 1
 - Allowed to read extensively on the CQT technique
 - 1st group – programmed guilty + tongue bite (pain CM) wherever they thought they should
 - 2nd group programmed guilty + toe press (muscle contraction CM) wherever they thought they should
 - A 3rd group programmed innocent
 - A 4th group programmed guilty – no CM
 - No significant effect for CM found
- Experiment 2
 - Allowed to read extensively on the CQT + trained where/when to perform CM
 - Same CM as above
 - 47% false negative outcomes – no false negatives in the control group
 - Concluded CM training in lab setting can defeat polygraph
- **Key Point: CM training can identify patterns produced by these CM**
- Effects of Physical CM on the PDD, Journal of Applied Psychology, 70(1), pp. 177-187

Honts, Raskin, Kircher, Hodes 1988

- Experiment – CQT – Spontaneous CM
 - Offered a cash reward for truthful outcomes
 - 60% of guilty self-reported using CM
- Most frequent spontaneous CMs
 - Controlled breathing and mental relaxation
- Study concluded that spontaneous CM were not effective in defeating CQT.
- Experienced examiners unable to detect spontaneous CM

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- All of the early pioneers in polygraph identified slow breathing (6 to 8 breaths a minute) as a “deceptive” examinee attempting to defeat the test.
- One of the major problems in polygraph today is giving “breathing instructions” or stating, “I want you to breath normally”. **These instructions often lead to controlled breathing.**
- The mental relaxation consisted of people going to their happy place. Relaxing on the beach, playing with their dog, etc.
- Honts; Raskin; Kircher; Hodes 1988, *Effects of Spontaneous CM on the PDD*, Journal of Police Science and Administration

Honts, Raskin, Kircher 1994

- 20 innocent – 100 guilty – 80 trained in CM
 - Physical CM (Toe Press or Biting the tongue)
 - Mental CM (Counting backwards by 7)
 - CQT
- Mental and Physical CM equally effective
 - Both CMs defeated the CQT 50% of the time
 - CM difficult to detect on instrument or visually
- Strongest response usually seen in the CV channel

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- Two issues of importance here:

- The authors advised that both the physical and mental CM were difficult to detect either visually or via instrument recorded physiology.

- 2nd – the strongest responses usually seen in the CV channel

- So, what's are the two important issues?

- Issue 1 – This project was 17 years ago – we know that both mental and physical CM create patterns of physiological behavior that can be identified

- Issue 2 – The authors pointed out that the strongest response often revealed itself in the CV channel. Consider as to whether the responses were too strong and whether a pattern developed at every comparison question

- *Mental & physical CM reduce the accuracy of polygraph tests, Journal of Applied Psychology, 79(2), pp. 252-259.*

[**Elaad & Ben-Shakhar, 2009**]

- Countering CM in the CIT using Covert Respiration Measures
- CIT vulnerable to toe pressing and mental CM
- Interesting Tidbit:
- **Toe pressing activates muscles which results in an enlarged line lengths for the selected foils**

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- What does the interesting tidbit mean?
- **Physical CM appear to cause the RLL to enhance (larger). Knowing this may help to correctly identify guilty participants.**
- **UNCLASSIFIED** – For this class this means that when we see patterns developing at IRQ or CQ and these patterns are in the PN channels – consider the line length.
 - **We looked at a previous study suggesting both mental and physical CM created enhanced CV channel recordings. (Now we also have enhanced PN channel recordings)**
- *Countering Countermeasures in the Concealed Information Test Using Covert Respiration Measures, Appl Psychophysiol Biofeedback (2009) 34: 197-208.*
- Published online: 19 June 2009 @ Springer Science+Business Media, LLC 2009

CM Research What is effective

- **Honts, Raskin, & Kircher, 1994**
 - **Suggested Tongue bite effective CM**
 - **Suggested Toe press effective CM**
 - **Suggested mental CM (counting backwards by 7s) effective CM**
- **Not surprising that all anti-polygraph sites suggest using these CM**
 - **Do above CM leave a pattern?**

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- **All of the listed CM leave an identifiable pattern that can be observed**
- **Those patterns are currently classified until we feel secure that highly motivated people cannot eliminate the patterns while performing CM**
- **Are some examiners getting beat? If so, why?**
 - **Some examiners have a truth bias – and have convinced themselves that the people they are testing are not spies.**
 - **Some examiners are afraid to be confrontational or do not know how to approach examinees who are performing CM.**
 - **Some examiners are arrogant and think they are smarter than those who conduct research into these behaviors.**
 - **Some examiners are just plain lazy and want to push NSR calls.**

CM Research Spontaneous CM

1. Honts, Raskin, Kircher, Hodes, 1988
2. Otter-Henderson, Honts, Amato, 2002
3. Honts, Amato, & Gordon, 2001
4. Honts & Amato, 2002
5. Honts & Alloway, 2007

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1. Spontaneous CM did not change results of test for those programmed innocent
 - a) 77% of guilty used CM
 - b) 30% of innocent used CM
 - c) Altered breathing; mental dissociation; tongue bite; pressure to foot
 - d) This study used R/I format
2. Spontaneous CM did cause a significant number of innocent to show deception
 - a) 47.7% of innocent used CM
 - i. 24 altered breathing
 - ii. 49 mental dissociation
 - iii. 10 physical (biting tongue, flexing muscles)
 - b) 55.4% of guilty used CM
 - i. 37 altered breathing
 - ii. 97 mental dissociation
 - iii. 10 physical (biting tongue, flexing muscles)
3. 2001 – not very good at identifying CM
 - a) 141 CM attempts
 - b) 44 caught by examiners
 - c) Suggested examiners do a poor job detecting CM
4. 2002 – Honts & Amato
 - a) Proportion of examinees who attempt CM could be substantial
 - b) Innocent examinees who read LBLD & performed CM often appeared deceptive

Otter-Henderson, Honts, & Amato 2002

- **53.8% (43 of 80) guilty performed spontaneous CM**
- **30.0% (12 of 40) innocent performed spontaneous CM**
- **Altered breathing, mental CM, biting tongue**
- **Results: Spontaneous CM by deceptive participants does not effect polygraph outcomes**

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CM Research Spontaneous CM

- Honts & Alloway, 2007
- Participants give *The Lie Behind The Lie Detector*
 - Those programmed innocent and those programmed guilty
 - Participants spent on average 1 hour reading
- Those that spontaneously performed CM, both innocent & guilty more likely to fail the exam

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- Those that are trained in CM still successful at producing a false-negative result consistent with Honts & Amato, 2002.

CM Research Summarizing the Research

- **Both guilty and innocent perform CM**
 - **Probably more innocent attempting CM**
 - **One study reveals innocent performing CM may appear guilty**
- **Tongue bite, toe presses and mental arithmetic are the CM of choice**
- **Multiple CM used by examinees**

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- **Both guilty and innocent perform CM**
 - **In most research projects (not dealing with CM) the use of spontaneous CM can be as high as 40%**
 - **Internet most likely exacerbated this problem**
 - **Only one study suggests that innocent examinees performing CM will appear guilty** (This study all innocent & guilty allowed to read TLBTLD)
- **Most of the research has narrowed down tongue bite, toe presses, and mental arithmetic as CM that will result in a false negative**
- **Antipolygraph.org (Maschke's) site pushes these CM plus mirroring the DoDPI TDA breathing criteria.**
- **Multiple CM used by examinees**
 - **Spontaneous CM usually more than one type**
 - **Even in research where asked to do one type often attempt more than one**
- **Suggests if you catch/tell to stop CM they often go to another CM**