IN THE UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF FLORIDA
TAMPA DIVISION

UNITED STATES OF AMERICA

V. **Case No. 8:14-Cr-379-T-36TGW**

JESUS HERNANDEO ANGULO MOSQUERA

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DECLARATION OF POLYGRAPH EXPERT

DR. DAVID C. RASKIN

I, David C. Raskin, Ph.D., state and declare as follows:

1. I received my Ph.D. degree in psychology from the University of California, Los Angeles in 1963. I specialized in experimental psychology, human psychophysiology, quantitative methods, and statistical analysis. I have served on the faculties of UCLA, Michigan State University, the University of British Columbia, and the University of Utah, where I presently hold the rank of Professor Emeritus of Psychology. For 51 years, I have conducted and published scientific research in human psychophysiology. For 44 years, I have conducted laboratory and field research on polygraph techniques for the detection of deception, taught university and applied courses about polygraph techniques, trained government and law enforcement polygraph examiners, and published extensively on polygraph techniques. I have served as an expert witness in approximately 250 criminal and civil cases in federal and state courts in the United States, Canada, and Sweden. My Curriculum Vitae accurately provides a list of my education, training, publications, presentations, employment history, and appearances as an expert witness. I have been informed by Counsel that my Curriculum Vitae has already been provided to the Court.

2. I conduct polygraph examinations and provide professional consultations and evaluations of polygraph examinations all over the United States. I was trained and certified in field polygraph testing techniques at the Backster School of Lie Detection in New York City in 1973. The

Backster School of Lie Detection is an American Polygraph Association accredited institution for the training of polygraph examiners.

3. I have provided instruction, workshops, and consultations for the United States Government, including the Department of Defense National Center for Credibility Assessment, Secret Service, Federal Bureau of Investigation, Drug Enforcement Administration, Customs and Border Protection, Department of Energy, Central Intelligence Agency, Department of Homeland Security, Department of State, Department of Justice, Department of the Treasury, Bureau of Alcohol, Tobacco, Firearms, and Explosives, Air Force, Army Intelligence, and Federal Reserve System. I have also provided testimony and consultations to the US Senate Committees on Watergate, Judiciary, Armed Services, and Labor and Human Resources. I have also provided expert testimony, consultations, and training to foreign governments and courts, including Canada, China, Colombia, Indonesia, Israel, Korea, Mexico, Norway, and Sweden. I have also performed expert evaluations and training for state and local law enforcement agencies all over the United States and Canada.

VALIDITY OF POLYGRAPH TESTS

4. Polygraph tests have gained general acceptance in the scientific fields of psychology and psychophysiology and in the areas of those disciplines devoted to credibility assessment. Psychophysiological credibility assessment, commonly known as polygraph testing, has long passed the experimental stage.

5. In practice, virtually all polygraph instruments used for psychophysiological credibility assessment record measures from at least three physiological systems that are controlled by the autonomic nervous system. Recordings are usually made of palmar sweating (commonly known as the galvanic skin response or the electrodermal response), relative blood pressure (obtained from an inflated cuff on the upper arm), and respiration (obtained from volumetric sensors placed around the chest and/or abdomen). Many field polygraph instruments also make measurements of peripheral vasomotor activity and monitor the subject's movements.

6. The basis of polygraphy or psychophysiological credibility assessment is a scientific theory that can be and has been tested with the methods of science. Any conscious effort at deception by a rational individual causes involuntary and uncontrollable physiological responses through the autonomic nervous system that may include measurable reactions in blood pressure, peripheral pulse-amplitude, breathing and electrodermal response.

7. **Comparison Question Tests**. The most commonly used techniques for the psychophysiological detection of deception are comparison question tests (CQT). The theory of these comparison question tests is as follows: The CQT assesses a person's credibility by looking for a differential reaction between two types of questions. The first type of question is known as a relevant question. Relevant questions are direct accusatory questions that address the issue under investigation (e.g., Did you shoot John Doe?). The second type of questions, comparison questions, are ambiguous questions to which the examiner usually elicits a "No" answer (e.g., Before 2010, did you ever do anything that was dishonest, illegal or immoral?). Another version of the CQT directs the subject to answer comparison questions with a lie (e.g., In your entire life, did you ever tell even one lie?).

8. The rationale of the comparison question test predicts that guilty subjects will produce larger physiological responses to the relevant questions to which they know they are deceptive, than to the relatively unimportant comparison questions. Innocent subjects are expected to produce larger physiological responses to the comparison questions, to which they are assumed to be either deceptive or uncertain of the veracity of their answer, than to the truthfully answered relevant questions.

9. The CQT technique is based on sound underlying scientific theories and has been tested by the scientific method. As the documents cited in this declaration demonstrate, the basic scientific theory of the psychophysiological detection of deception and the various techniques used for the detection of deception have been subjected to numerous scientific tests during the past 30 years. The results of those scientific tests have been published in high quality peer-reviewed scientific journals.

10. The CQT technique was used in the polygraph test administered to Jesus Hernando Angulo-Mosquera on November 6, 2014 by retired FBI Special Agent James Orr. I have been informed by Counsel that his report of the polygraph examination dated November 6, 2014 has already been provided to the Court.

11. **There are known error rates.** There have been numerous studies published in peer-reviewed scientific journals that test the theory of the psychophysiological detection of deception and provide estimates of the error rates for comparison question tests. Science has approached the problem of assessing the accuracy of comparison question tests in two venues: (1) laboratory studies, and (2) field studies.

a. **Laboratory Research:** Laboratory research is a traditionally attractive alternative because the scientist can control the environment. Moreover, with regard to credibility assessment studies, the scientist can know with certainty who is telling the truth and who is lying by randomly assigning subjects to conditions. Laboratory research on credibility assessment typically includes "deceivers" who have committed a mock crime (e.g., "steal" money or a valuable object from an office) and are instructed to deny the "theft" during a subsequent polygraph test.

i. There are advantages and disadvantages of laboratory research. From a scientific viewpoint, random assignment to conditions is highly desirable because it controls for the influence of extraneous variables that might confound the results of the experiment.[1] Laboratory research on credibility assessment has been criticized as lacking in realism. However, the level of realism in properly designed and conducted laboratory studies does not limit the ability of scientists to apply the laboratory results to real-world settings.[2]

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[1] *See* the extensive discussion of the advantages of random assignment to conditions in T. D. Cook & D. T. Campbell, QUASI-EXPERIMENTATION: DESIGN AND ANALYSIS ISSUES FOR FIELD SETTINGS (1979).

[2] *Id. Also see*, Craig A. Anderson, James J. Lindsay, & Brad J. Bushman, Research in the psychological laboratory: Truth or triviality? 8 CURRENT DIRECTIONS IN PSYCHOLOGICAL SCIENCE 3 (1999). Anderson et al., conclude the following: Correspondence between lab- and field-based effect sizes of conceptually similar independent and dependent variables was considerable. In brief, the psychological laboratory has generally produced truths, rather than trivialities.

ii. Some scientists who conduct research on psychophysiological credibility assessment have attempted to overcome the limitations of the laboratory approach by making the laboratory simulations as realistic as possible.[3] A recent survey of the relevant scientific community indicated that the majority of scientists believe that laboratory studies are a useful tool for policy makers to assess the validity of comparison questions tests.[4]

b. **Field Studies:** The alternative approach in studying psychophysiological credibility assessment is the field study. In this approach, polygraph tests conducted in actual cases are examined. Although field studies are subject to various methodological problems,[5] the chief problem in detection of deception field studies is unambiguously determining ground truth. A method that is independent of the polygraph test outcome is needed to determine who in fact is telling the truth and who in fact is lying. Although a number of approaches have been taken, it is generally agreed that confessions are the best available criterion for ground truth in these studies.[6] Scientists

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[3] *See* John C. Kircher, Steven W. Horowitz & David C. Raskin, Meta-analysis of mock crime studies of the control question polygraph technique 12 LAW AND HUMAN BEHAVIOR 79 (1988). Three factors have been identified as contributing to the realism of laboratory research on the CQT: (1) Use of realistic subject populations. College student subjects have been associated with low accuracy rates, while more representative subject samples from prison populations and the community have been associated with higher accuracy rates; (2) Use of representative field examiners, techniques, and scoring methods. Those laboratory studies that have used field polygraph examiners, and field techniques for administering and scoring the examinations have produced higher accuracy rates; and (3) The use of incentives associated with the outcome of the examinations. Studies with explicit motivations associated with the outcome of the test have produced higher accuracy rates.

[4] Charles R. Honts, Steven Thurber, Dario Cvencek & Wendy Alloway. General acceptance of the polygraph by the scientific community: Two surveys of professional attitudes. Paper presented at the American Psychology-Law Society biennial meeting, Austin, Texas (2002) [hereinafter, The Honts Survey.]

[5] *Supra* Note 1 (Cook & Campbell).

[6] The problems associated with field research in this area are discussed in detail by David C. Raskin, Polygraph Techniques for the Detection of Deception; and in David C. Raskin (Ed.) PSYCHOLOGICAL METHODS IN CRIMINAL INVESTIGATION AND EVIDENCE, 276 (1989) at 264.

who conduct field research generally agree that useful field studies of psychophysiological credibility assessment tests should have all of the following characteristics:[7]

i. Subjects should be sampled from the actual population of subjects in which the researcher is interested. In order to make inferences about tests conducted on criminal suspects, criminal suspects should be the subjects.

ii. Subjects should be obtained by random sampling. Cases must be included without reference to either the accuracy of the original outcome or the quality of the physiological recordings.

iii. The resulting physiological data must be evaluated by persons trained and experienced in the field scoring techniques about which inferential statements are to be made. Independent evaluations by persons who have access to only the physiological data are useful for evaluating the information content of those data. However, the decisions rendered by the original examiners probably provide a better estimate of the accuracy of polygraph techniques that are employed in the field.

iv. The credibility of each subject must be determined by information that is independent of the specific test. Confessions substantiated by physical evidence are presently the best available criterion.

12. A Committee of Concerned Social Scientists filed a *Brief for Amicus Curiae* with the Supreme Court of the United States in the case of *United States v. Scheffer*.[8] They estimated the error rate for polygraph tests by examining high quality laboratory and field studies. They found eight high quality laboratory studies of the CQT. Table 1 below describes the results of these studies

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[7] *See* the reviews by: Charles R. Honts, David C. Raskin & John C. Kircher, The Scientific Status of Research on Polygraph Techniques: The Case For Polygraph Tests, in MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY: Volume 2, D. L. Faigman, D. Kaye, M. J. Saks & J. Sanders (Eds. 2002), and more recently, Charles R. Honts, The Psychophysiological Detection Of Deception, in DETECTION OF DECEPTION IN FORENSIC CONTEXTS, Pär Anders Granhag and Leif Strömwall (Eds. 2004).

[8] Brief of the Committee of Concerned Social Scientists as Amicus Curiae in Support of the Respondent in *United States v. Scheffer*, 44 M.J. 4442 (1996) [hereinafter Committee].

along with two studies overlooked by the Committee and a new study.[9] These high quality laboratory studies indicate that the **CQT very accurately discriminates between truth tellers and deceivers**. Overall, the CQT correctly classified approximately 91 percent[10] of the subjects and produced approximately equal numbers of false positive and false negative errors.

Table 1. The Results of High Quality Laboratory Studies of the Comparison Question Test

	Guilty (%)				Innocent (%)			
Study	n	Correct	Wrong	Inc	n	Correct	Wrong	Inc
Driscoll et al. (1987)[b]	20	90	0	10	20	90	0	10
Ginton et al. (1984)	2	100	0	0	13	85	15	0
Honts, et al. (1994)[a]	20	70	20	10	20	75	10	15
Honts, et al. (2003)[b]	24	92	0	8	24	92	8	0
Horowitz, et al. (1994)[c]	15	53	20	27	15	80	13	7
Kircher & Raskin (1988)	50	88	6	6	50	86	6	8
Patrick & Iacono (1989)	24	92	8	0	24	64	36	0
Podlesny & Raskin (1978)	20	70	15	15	20	90	5	5
Podlesny & Truslow (1993)	72	69	13	18	24	75	4	21
Raskin & Hare (1978)	24	88	0	12	24	88	8	4
Rovner et al. (1979)[a]	24	88	0	12	24	88	8	4
Means	**26.8**	**82**	**7**	**11**	**23.5**	**83**	**10**	**7**
Percent Decisions		**91**	**9**			**89**	**11**	

[9] Lawrence N. Driscoll, et al., The Validity of the Positive Control Physiological Detection of Deception Technique, 15 J. POLICE SCI. ADMIN. 46 (1987); Avital Ginton et al., A Method for Evaluating the Use of the Polygraph in a Real-Live Situations, 67 J. APPLIED PSYCHOL. 131 (1982); Charles R. Honts, et al., Effects Of Outside Issues On The Control Question Test, manuscript in press, J. GEN. PSYCH, (2003); Charles R. Honts et al., Mental and Physical Countermeasures Reduce the Accuracy of Polygraph Tests, 79 J. APPLIED PSYCHOL. 252 (1994); Horowitz et al., The Role of Comparison Questions in Physiological Detection of Deception, manuscript in press with Psychophysiology (1996); John C. Kircher & David C. Raskin, Human Versus Computerized Evaluations of Polygraph Data in a Laboratory Setting, 73 J. APPLIED PSYCHOL. 291 (1988). Christopher J. Patrick, and William G. Iacono, Psychopathy, Threat, and Polygraph Test Accuracy, 74 J. APPL. PSYC. 347 (1989); John A. Podlesny & David C. Raskin, Effectiveness of Techniques and Physiological Measures in the Detection of Deception, 15 PSYCHOPHYSIOLOGY 344 (1978); John A. Podlesny & Connie M. Truslow, Validity of an Expanded-Issue (Modified General Question) Polygraph Technique in a Simulated distributed-Crime-Roles Context, 78 J. APPLIED PSYCHOL. 788 (1993); David C. Raskin & Robert D. Hare, Psychopathy and Detection of Deception in a Prison Population, 15 PSYCHOPHYSIOLOGY 126 (1978); Louis I. Rovner, The accuracy of physiological detection of deception for subjects with prior knowledge, 15 POLYGRAPH 1 (1986).

[10] The results excluded inconclusive outcomes as they are not decisions.

13. The Committee of Concerned Social Scientists[11] also examined the available field studies of the CQT. They identified four field studies[12] that meet the criteria for meaningful field studies of psychophysiological credibility assessment tests. The results of the independent evaluations for these studies are illustrated in Table 2. Independent evaluations of the field studies produced results quite similar to the results of the high quality laboratory studies with an average accuracy of CQT decisions of 90.5 percent.[13] However, in the field studies nearly all of the errors were false positive errors. False positive errors mistakenly conclude that a truthful person was deceptive, as opposed to false negative errors that mistakenly indicate that a deceptive person was truthful.[14]

14. A recent field study by Ginton[15] (2012) employed a novel approach that eliminated the need for external verification, i.e., confession or other evidence. He obtained 64 paired polygraph

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11 *Supra* note 8 (Committee).

12 Charles R. Honts, Criterion development and validity of the control question test in field application, THE JOURNAL OF GENERAL PSYCHOLOGY 509, 123 (1996).; Charles R. Honts & David C. Raskin, A Field Study of the Directed Lie Control Question, 16 J. POLICE SCI. ADMIN. 56 (1988); Christopher J. Patrick & William G. Iacono, Validity of the Control Question Polygraph Test: The Problem of Sampling Bias 76 J. APPLIED PSYCHOL. 229 (1991); David C. Raskin et al., A STUDY OF THE VALIDITY OF POLYGRAPH EXAMINATIONS IN CRIMINAL INVESTIGATIONS, Final Report to the National Institute of Justice, Grant Number 85-IJ-CX-0400, Department of Psychology, Salt Lake City University of Utah (1988).

13 The results excluded inconclusive outcomes that are not decisions.

14 See the discussion in Raskin et al., *supra* Note 7 and in Honts, *supra* Note 12, concerning the performance of original examiners in these studies. They note that the original examiners in the Patrick and Iacono study perform at a much higher level than the independent evaluators. This finding was not representative of the other three field studies. The original examiners in the Patrick and Iacono study, *supra* Note 12, correctly classified 100% of the guilty and 90% of the innocent subjects. This performance is quite similar to the original examiners in the Honts (1996) field study, *supra* Note 12, who were from the same law enforcement agency. Raskin et al., *supra* Note 7, and Honts, *supra* Note 12, have argued that the independent evaluator data from the Patrick and Iacono study should be viewed as an anomaly. If the Patrick and Iacono data are excluded, the field estimate of the accuracy of CQT decisions is 95.5%, Raskin et al., *supra* Note 7.

15 Avital Ginton, A non-standard method for estimating accuracy of lie detection techniques demonstrated on a self-validating set of field polygraph examinations, PSYCHOLOGY, CRIME & LAW, DOI:10.1080/1068316X.2012.656118 (2012).

tests from the files of the Israel Police in which opposing evidence was provided by the two examinees. Based on algebraic calculations, Ginton found that the accuracy of CQT decisions was 94% on guilty suspects and 84% correct on innocent suspects. These results reinforce the findings of 90% overall accuracy of the field studies cited above. Significantly, Ginton's paradigm overcomes the objection that the false negative rate is underestimated and the confession criterion is not independent of the polygraph test result.

15. The high quality field studies indicate high accuracy for the CQT on the basis of the data represented in Table 2, which were derived from independent evaluations of the physiological data. This is a desirable practice from a scientific viewpoint, because it eliminates possible contamination (e.g. knowledge of the case facts and the overt behaviors of the subject during the examination) that might be included in the decisions of the original examiners. However, independent evaluators rarely offer testimony in legal proceedings. Typically, the original examiner provides the testimony. Thus, accuracy rates based on the decisions of independent evaluators may not be the figure of merit for legal proceedings. The Committee of Concerned Social Scientists summarized the data from the original examiners in the studies reported in Table 2 and two additional studies that are favored by critics of the CQT.[16]

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[16] Those two studies are, Benjamin Kleinmuntz & Julian J. Szucko, A field study of the fallibility of polygraphic lie detection, 308 NATURE 449 (1984); Frank Horvath, The effects of selected variables on interpretation of polygraph records 62 JOURNAL OF APPLIED PSYCHOLOGY 127 (1977). Neither of these studies meets the generally accepted requirements for useful field studies. Nevertheless, they are cited by critics of the CQT as evidence that the CQT is not accurate. The study reported by Benjamin Kleinmuntz and Julian J. Szucko, A field study of the fallibility of polygraphic lie detection, 308 NATURE 449 (1984) fails to meet the criteria for a useful field study because: The subjects were employees who were forced to take tests as part of their employment, not criminal suspects. The case selection method was not specified. Students at a polygraph school that does not teach blind chart evaluation evaluated the data. Moreover, those students were given only one-ninth of the usual amount of data collected in a polygraph examination and were forced to use a rating scale with which they were not familiar. The study reported by Frank Horvath, The effects of selected variables on interpretation of polygraph records, 62 JOURNAL OF APPLIED PSYCHOLOGY 127 (1977), also fails to meet the criteria for a useful study because: About half of the innocent subjects were victims of violent crime, not suspects. Virtually all of the false positive errors in that study were with innocent victims, not innocent suspects. In addition, the persons doing the blind evaluations were all trained at a polygraph school that does not teach blind chart evaluation. Finally, cases were not selected at random. Some cases were excluded from the study because of the nature of the charts. An interesting fact that critics almost never mention is that the decisions by the original examiners in

[Footnote continued on next page]

Table 2. Accuracy of Independent Evaluations in High Quality Field Studies of the Comparison Question Test

		Guilty (%)				Innocent (%)		
Study	n	Correct	Wrong	Inc	n	Correct	Wrong	Inc
Honts (1996)[a]	7	100	0	0	6	83	0	17
Honts & Raskin (1988)[b]	12	92	0	8	13	62	15	23
Patrick & Iacono (1991)[c]	52	92	2	6	37	30	24	46
Raskin et al. (1989)[d]	37	73	0	27	26	61	8	31
Means	**108**	**89**	**1**	**10**	**82**	**59**	**12**	**29**
Percent Decisions		**98**	**2**			**83**	**17**	

[a]Sub-group of subjects confirmed by confession and evidence.
[b]Decision based only on comparisons to traditional comparison questions.
[c]Results from the mean blind rescoring of the cases "verified with maximum certainty" (p.235)
[d]These results are from an independent evaluation of the "pure verification" cases.

16. The data for the original examiners presented in Table 3 clearly indicate that the original examiners were even more accurate than the independent evaluators.

Table 3. Percent Correct Decisions by Original Examiners in Field Cases

Study	**Innocent**	**Guilty**
Horvath (1977)	100	100
Honts and Raskin (1988)	100	92
Kleinmuntz and Szucko (1984)	100	100
Raskin, Kircher, Honts, & Horowitz (1988)[a]	96	95
Patrick and Iacono (1991)	90	100
Honts (1996)[b]	100	94
Means	**98**	**97**

[a]Cases where all questions were confirmed.
[b]Includes all cases with some confirmation.

[Footnote continued from previous page]

the Horvath Study were 100% correct. *See also* the discussion in David C. Raskin, Methodological Issues in estimating polygraph accuracy in field applications, 19 CANADIAN JOURNAL OF BEHAVIORAL SCIENCE 389 (1987).

17. The scientific data concerning the validity (the accuracy and error rate) of the polygraph can be summarized as follows: **High quality scientific research from the laboratory and the field converge on the conclusion that a properly conducted CQT is a highly accurate discriminator of truth tellers and deceivers. The research results indicate an accuracy estimate that exceeds 90 percent.** Moreover, original examiners, who are most likely to offer testimony, produce even higher estimates of accuracy than independent evaluators. There may be a tendency for the CQT to produce more false positive than false negative errors, but this trend in the current literature is not particularly strong.[17] Moreover, no tendency toward false positive errors is seen in the decisions of the original examiners.

18. The scientific validity of a properly administered polygraph examination in a real life case compares favorably with such other forms of scientific evidence, such as X-ray films, electrocardiograms, fiber analysis, ballistics comparison tests, blood analysis. Furthermore, polygraph evidence is far more reliable than other forms of expert testimony, such as psychiatric and psychological opinions of sanity, diminished capacity, dangerousness, and many of the posttraumatic stress/recovered memory syndromes.[18]

ISSUES REGARDING THE VALIDITY OF POLYGRAPH TESTS

19. There are several concerns that are commonly raised about factors that might increase the error rate associated with polygraph tests.

a. **Countermeasures:** A Countermeasure is anything that a subject might do to attempt to distort or defeat a polygraph test.[19] Detailed reviews of the scientific literature on

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[17] This is especially true if the outlying data produced by the Patrick and Iacono study, *supra* Note 12, are discounted.

[18] *See* the discussion in, Charles R. Honts & Mary V. Perry, Polygraph Admissibility: Changes and Challenges, 16 L. & HUM. BEHAV. 357 (1992), and Charles R. Honts & Bruce D, Quick, The polygraph in 1995: Progress in science and law, NORTH DAKOTA LAW REVIEW 71 (1995).

[19] Charles Honts & Susan Amato (2002). Countermeasures, in Murray Kleiner (Ed.), HANDBOOK OF POLYGRAPH TESTING. London: Academic (251-64) (2002).

countermeasures are available in a number of sources.[20] These reviews of the scientific literature on countermeasures have concluded the following:

i. There is no credible scientific evidence that drugs or other countermeasures designed to affect the general state of the subject are effective against the CQT.[21] Although some laboratory studies have indicated that training in specific point countermeasures designed to increase responding to comparison questions may produce a substantial number of false negative outcomes when used against both the comparison question and the concealed knowledge tests,[22] it is important to note that competent training in these countermeasures is critical to their effectiveness. Subjects who are given only information[23] or who spontaneously attempt countermeasures[24] are unable to achieve the desired effects, and the required training is difficult to obtain.[25] Honts and Perry noted that there are no easy answers to the problem of subjects trained to employ countermeasures, it

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20 *e.g.*, Charles R. Honts & Mary V. Perry, Polygraph Admissibility: Changes and Challenges, 16 L. & HUM. BEHAV. 357, 373 (1992) ; Charles R. Honts, Interpreting research on polygraph countermeasures. 15 J. Police Science and Administration 204 (1987); Charles R. Honts, et al., Mental and Physical Countermeasures Reduce the Accuracy of Polygraph Tests. 79 JOURNAL OF APPLIED PSYCHOLOGY 252 (1994), Raskin et al., *supra* Note 7.

21 *Id*., Honts (1987); *id*., Raskin et al.

22 See e.g., Charles R. Honts, David C. Raskin, & John C. Kircher, Mental and Physical Countermeasures Reduce the Accuracy of Polygraph Tests. 79 JOURNAL OF APPLIED PSYCHOLOGY 252 (1994).

23 Rovner (1986), *supra* note 9; Wendy Alloway & Charles R. Honts, An Information Countermeasure has no Effect on the Validity of the Test for Espionage and Sabotage (TES). Paper presented at the annual meeting of the Rocky Mountain Psychological Association, Park City, Utah (2002, April).

24 Charles R. Honts, David C. Raskin, John C. Kircher & Robert L. Hodes, Effects of Spontaneous Countermeasures on the Physiological Detection of Deception, 16 JOURNAL OF POLICE SCIENCE AND ADMINISTRATION 91 (1988); Charles R. Honts, Susan Amato & Anne K. Gordon, Effects of Spontaneous Countermeasures Used Against the Comparison Question Test 30 POLYGRAPH 1 (2001); Kimberly Otter-Henderson, Charles R. Honts, & Susan Amato, Spontaneous Countermeasures During Polygraph Examinations: An apparent exercise in futility, 31 POLYGRAPH, 9 (2002). These three studies produce very similar results that can be summarized as follows: spontaneous countermeasure attempts were common, even among innocent subjects. However, spontaneous countermeasures had no effects on the test outcomes of guilty subjects, but lowered (shifted the average score in the deceptive direction) the scores of innocent subjects.

25 Honts and Perry, *supra* note 17 at 376.

appears that computerized analysis of the physiological records substantially reduces the false negative rate attributable to countermeasure use.[26] Users of polygraph information should weigh the usefulness of the polygraph outcome against the probability that the subject received expert training in the use of countermeasures and practiced it successfully. In this regard, the polygraph test is not different from any psychological test where the scoring key could be discovered and unethically revealed to the person being tested.

ii. The popular notion that a "pathological," "psychopathic," "sociopathic" or "criminally hardened" liar cannot be tested successfully with the polygraph has no basis in scientific fact. "Psychopathic" or "criminally hardened" liars, including those clinically diagnosed with Antisocial Personality Disorder, respond quite satisfactorily when attempting deception and are as easily detected in their deception as normal individuals.[27]

iii. Psychotic persons may not be suitable subjects for polygraph testing, especially when they experience psychotic episodes, delusions, or hallucinations during the examination. These subjects might sincerely believe such delusions to be fact. Persons psychotic to this degree would be recognized as such by any experienced examiner.

iv. There are no known traits of personality or personality disorders that would allow or predispose a deceptive person to pass a properly conducted polygraph examination.[28]

COMPARISON QUESTION TEST (CQT)

20. **The CQT polygraph technique described above is generally accepted in the relevant scientific community.** This acceptance is demonstrated by a number of sources of evidence, including professional community surveys, the existence of peer-reviewed publications, the

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26 *Id*. at 374; also see Honts et al., (1994) *supra* note 19.

27 Numerous studies have addressed the question of whether psychopaths can beat the polygraph, e.g. Raskin and Hare, *supra* note 9; *see also* the analysis and review by Charles R. Honts, David C. Raskin, & John C. Kircher, 19, Effects of Socialization on the Physiological Detection of Deception. JOURNAL OF RESEARCH IN PERSONALITY, 373 (1985).

28 *Id*., Honts et al.; *see also* Charles R. Honts, David C. Raskin, & John C. Kircher (1986, October). Individual differences and the Physiological Detection of Deception. Paper presented at the annual meeting of the Society for Psychophysiological Research, Montreal, Canada.

proliferation of peer-reviewed scientific publications and journals, and a recent report by the National Research Council of the National Academy of Sciences.

21. **Surveys.** There are at least four surveys that directly address the general acceptance of the CQT.[29] All of these surveys have included members of the Society for Psychophysiological Research (SPR). The SPR is a professional society of scientists (Ph.D. and M.D.) who study how the mind and body interact. Thus, the SPR is an appropriate scientific community for assessing general acceptance.

a. **Gallup Survey**: In 1982, The Gallup Organization undertook the initial survey, which was later replicated and extended by Susan Amato's Master's Thesis at the University of North Dakota in 1994. The results of these surveys are consistent and lead to the conclusion that there is a great deal of acceptance of polygraphs in the relevant scientific community.

i. Approximately two thirds of the Ph.D. and M.D. members of the SPR who were surveyed stated either that polygraph tests are a valuable diagnostic tool when considered with other available information or that polygraph tests are sufficiently reliable to be the sole determinant.[30]

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[29] The Gallup Organization, Survey of the Members of the Society for Psychophysiological Research Concerning their Opinions of Polygraph Test Interpretations, 13 POLYGRAPH 153 (1984)[hereinafter, The Gallup Survey]; Susan L. Amato, A SURVEY OF THE MEMBERS OF THE SOCIETY FOR PSYCHOPHYSIOLOGICAL RESEARCH REGARDING THE POLYGRAPH: OPINIONS AND IMPLICATIONS. Unpublished Master's Thesis, the University of North Dakota, Grand Forks (1993) [hereinafter, The Amato Survey]; William Iacono and David Lykken partially presented in The Scientific Status of Research on Polygraph Techniques: The Case For Polygraph Tests, in MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY, D. L. Faigman, D. Kaye, M. J. Saks, & J. Sanders (eds. 1997); also partially available at The Validity of the Lie Detector: Two Surveys of Scientific Opinion, 87 J. APPLIED PSYCH. 426 (1997) [hereinafter, The Iacono & Lykken Survey]; The Honts Survey, *supra* note 4.

[30] Respondents in both surveys gave responses to the following question: Which one of these four statements best describes your own opinion of polygraph test interpretations by those who have received systematic training in the technique, when they are called upon to interpret whether a subject is or is not telling the truth? A) It is a sufficiently reliable method to be the sole determinant, B) It is a useful diagnostic tool when considered with other available information, C) It is questionable usefulness, entitled to little weight against other available information, or D) It is of no usefulness.

ii. In the Amato Survey, when only those respondents who reported that they were highly informed about the polygraph literature were included, the percentage that opined that polygraph tests are a useful diagnostic tool increased to 83%. Of those individuals who rated themselves as highly informed, fewer than 10% reported being involved in conducting polygraph examinations professionally. Therefore, these results were not skewed by the financial self-interest of the respondents.

b. **Iacono and Lykken Survey**: The Iacono and Lykken Survey also addressed the members of the SPR. Although the Iacono and Lykken survey produced more negative views of the polygraph than the Gallup and Amato surveys, the Iacono and Lykken survey is seriously flawed and is so surrounded by controversy and uncertainty that the results are not useful for any scientific or probative purpose.[31]

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[31] Drs. Iacono and Lykken are two of the most outspoken critics of polygraph testing. However, the Iacono and Lykken Survey is so flawed and at this time so controversial, that it cannot be used for any substantive purpose. Problems with the Iacono and Lykken study include: (1) The cover letter for the Iacono and Lykken Survey sets the survey in the context of the legal admissibility of the polygraph in court, rather than about the scientific validity of the technique. In effect this is asking the respondents to make a political and legal judgment rather than a scientific one. This is in clear contrast to the Amato Survey that was set in the context of whether or not the SPR should have a formal scientific policy regarding the validity of polygraph testing. The context of the Iacono and Lykken Survey is clearly inappropriate since few, if any, of the members of the SPR have the legal background to make an admissibility assessment. (2) Through discovery and cross examination in the cases of *The State of Washington v. Daniel Galleqos*, 95-1-02749-7 (1996) and *Steve Griffith v. Muscle Improvement, Inc.*, Superior Court of California, sworn deposition 21 April 1998, it was revealed that the sample of respondents to the Iacono and Lykken survey described themselves as very uninformed about the topic of polygraph examinations. Iacono and Lykken's respondents were asked "About how many empirical studies, literature reviews, commentaries, or presentations at scientific meetings dealing with the validity of the CQT have you read or attended?" Unfortunately, subjects were asked to respond on a bizarre non-linear scale. Conversion of the scale units to item exposure rates reveals that the average respondent replied that she or he had been exposed to 3 items on the validity of the polygraph. Since the responses on this non-linear scale must have a strong positive skew, this means that many more than 50% of the subjects must have responded that they had been exposed to fewer than 3 items. Given the large number of scientific articles and presentations on this topic, the data provide a strong indication that the Iacono and Lykken sample was, as a whole, highly uninformed about the polygraph, and thus has little to offer in terms of an informed opinion about its scientific validity. Unfortunately, Iacono and Lykken did not include any of this information in either of their publications and those results would remain unknown were it not for the discovery and cross-examination processes. (3) There is one known anomaly in the Iacono and Lykken data analysis that makes it impossible to compare some of their results to the other surveys in any meaningful way. In determining their highly informed group, Iacono and Lykken cut the distribution at 4 and above on their 7-point scale. In forming their highly informed group, Amato and Honts cut the distribution at 5 and above. This difference in cutting scores makes it

[Footnote continued on next page]

c. **Honts Survey**: Honts and his colleagues reported the most recent survey of scientific opinion regarding the validity of polygraph testing.[32] The Honts Survey also addressed members of the SPR and also assessed the opinions of the members of the American Psychology-Law Society (APLS). The APLS is an organization of scientists and lawyers who study the interaction of scientific psychology and the law. The members of the APLS are familiar with the methodology of applied research for use in legal settings and with legal requirements for the admissibility of scientific evidence. In recent years an increasing amount of research on polygraph testing has been presented at the APLS meetings and in Psychology and Law journals, allowing the members of the APLS to be familiar with much of the current scientific literature on polygraph testing. The Honts Survey found favorable attitudes toward the polygraph from the members of both the SPR and the APLS. Among the items surveyed, The Honts Survey addressed the following major questions:

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impossible to compare these results across the two surveys. Iacono and Lykken's choice of a cutting point almost certainly reduced the confidence estimate by their highly informed subjects. (4) In their chapter in the Faigman et al. book, id., Iacono and Lykken describe their survey as a random survey. However, in the Journal of Applied Psychology version of their survey Iacono and Lykken reveal that their sampling was not random. Drs. Raskin, Honts, and Kircher were deliberately left out of the sampling frame and thus did not have an opportunity to review, respond, or be represented in the survey. (5) Because of the serious anomaly in the data analysis and the self-admitted misrepresentation of the survey in a publication intended for the legal profession, Dr. Amato and Dr. Honts became very concerned that there might be other undisclosed problems with the Iacono and Lykken survey. Under the ethical standards of the American Psychological Association, scientists are required to make their data available for reanalysis by qualified scientists. On March 10, 1997, and now on many subsequent occasions Dr. Amato and Dr. Honts wrote first to Dr. Iacono and then to Dr. Lykken requesting the data from their survey for the purpose of reanalysis. To this date, they have refused to provide free access to their data. On 28 April 1998, Dr. Iacono requested copies of the data from the Amato and Honts survey. Those data were provided to Iacono within two weeks of the receipt of their request. Efforts to obtain the Iacono and Lykken data for reanalysis continue. Until those data are made freely available and a reanalysis can be performed, it is my opinion that the Iacono and Lykken survey data cannot be relied upon for any substantive purpose. A critique of the Iacono and Lykken survey has been published, see David C. Raskin, Charles R. Honts, Susan Amato, & John C. Kircher, *The case for the admissibility of the results of polygraph examinations: 1998 update*. Supplemental pocket part to: D. L. Faigman, D. Kaye, M. J. Saks, & J. Sanders (Eds.) MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY.

[32] The Honts Survey, Supra Note 4.

- "How much weight should policy makers give the results of laboratory studies of the polygraph?" Figure 1 illustrates the complete results of this question.
    - Of the APLS respondents, 81.2% endorsed giving laboratory studies some weight or stronger, and 49.1% endorsed giving moderate or considerable weight.
    - Of the SPR respondents, 76.3% endorsed giving some weight or stronger, and 63.2% endorsed giving moderate or considerable weight.

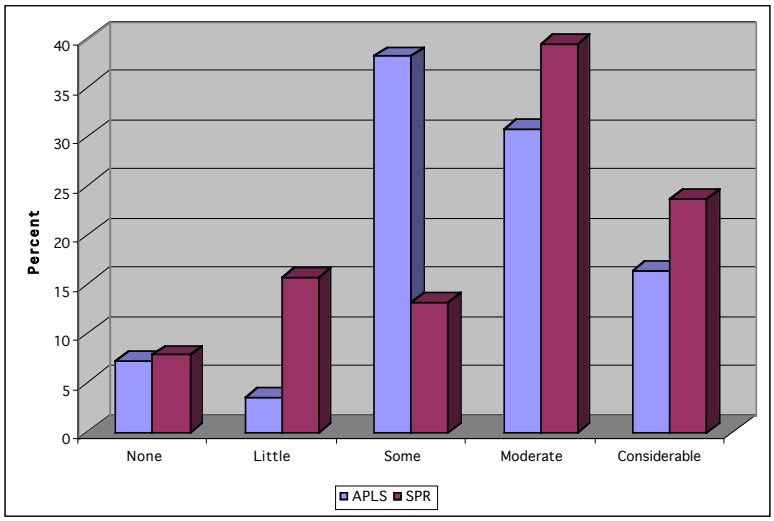

Figure 1. Weight to be given to laboratory polygraph studies.

- "Are polygraph studies published in scientific peer-reviewed journals based on generally accepted scientific methodology?" The percentages "Yes" responses was 95.7% for APLS and 91.4% for SPR.
- Scientists were asked to compare the forensic usefulness of the polygraph in comparison to other commonly offered types of evidence. Respondents from both organizations produced the same pattern of response. The results of this question are shown in Table 4.

Table 4. Usefulness of the Polygraph Compared to Other Forensic Sciences.

Subjects were asked to compare the usefulness (less useful than, about the same as, or more than) of a properly conducted polygraph to other commonly admitted evidence. Percentages shown are those who said that polygraph is as useful or more useful than the evidence with which it was compared.

Evidence	**APLS**	**SPR**
Psychologist's opinion of parental fitness	59.3%	55.6%
Psychologist's opinion regarding malingering	62.3%	55.6%
Eyewitness ID of robbery suspect	74.1%	73.0%
Psych assessment of dangerousness	71.7%	69.4%
Psych assessment of temporary insanity	74.5%	74.3%
Fingerprints	9.3%	16.7%
DNA	1.8%	5.6%

- Respondents were asked: "Would the accuracy of judicial verdicts be increased or decreased if experts could present polygraph test results in courts of law?" The percentage of respondents who opined that verdicts would either be unaffected or would show increased accuracy was 72% for the APLS and 61% for the SPR. Figure 2 illustrates the complete results for this question.

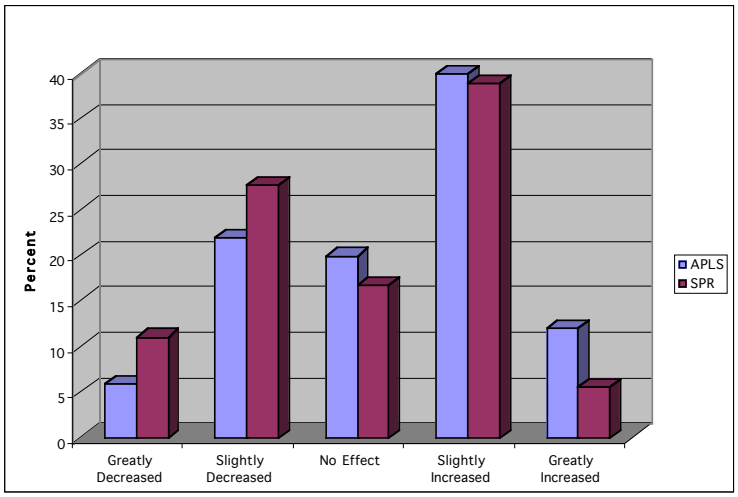

Figure 2. Predicted impact of the admission of polygraph on verdict accuracy.

c. **Peer Review:** The CQT technique has also been widely subjected to publication and peer review. An important indicator of the acceptance of the psychophysiological detection of deception by the scientific community is the large number of original scientific studies published in peer-reviewed scientific journals. Studies that reported positive results for the validity of the

polygraph have appeared in such professional journals as: *The Journal of Applied Psychology*, *The Journal of General Psychology*, *Psychophysiology*, *The Journal of Police Science and Administration*, *Current Directions in Psychological Science*, *Psychological Bulletin*, *The Journal of Research in Personality*, and *Law and Human Behavior*.

i. To be published in any of these journals, the editor first sends an article out for review by two or three independent scientists who are very familiar with the research area but are not personally involved with the article under consideration. These peer-reviewers comment on the quality of the literature review, the research design, the statistical analyses, the reasonableness of the conclusions drawn, and the appropriateness of the article for the respective journal.

ii. The editor of the journal also reviews the article and, based on the editor's evaluation and the comments and recommendations of the reviewers, makes a decision about publication. Revisions are frequently required before an article is accepted for publication, if it is accepted.

iii. Articles with unacceptable scientific methods, statistics, or unsupportable conclusions are not published. Articles that are not acceptable within the scientific discipline covered by the journal are not usually published. For example, the *Journal of Applied Psychology* rejects 85% of the manuscripts submitted for publication.

iv. Articles that report matters that are not acceptable psychological science seldom make it through the peer review process and typically are not published in the *Journal of Applied Psychology* and other high quality scientific journals. The *Journal of Applied Psychology* has published numerous articles on the psychophysiological detection of deception.[33] The

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[33] Some of the articles on the polygraph published in the Journal of Applied Psychology are as follows: P. J. Bersh, A Validation Study of Polygraph Examiner Judgments, Journal of Applied Psychology, 399, 53 (1969); P.O. Davidson, Validity of the Guilty Knowledge Technique: The effects of motivation. Journal of Applied Psychology, 52, 62-65 (1968); E. Elaad, Detection of Guilty Knowledge in Real-Life Criminal Investigations. Journal of Applied Psychology, 75, 521-529 (1990); E. Elaad, A. Ginton & N. Jungman, Detection Measures in Real-Life Criminal Guilty Knowledge Tests. Journal of Applied Psychology, 77, 757-767 (1992); A. Ginton, D. Netzer, E. Elaad & G. Ben-Shakhar, A Method for Evaluating the use of the polygraph in a real-life situation. Journal of Applied Psychology, 67, 131-137 (1982); C. R. Honts, R. L. Hodes, & D. C. Raskin, Effects of Physical Countermeasures on the Physiological Detection of Deception.

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publication of numerous articles in mainstream journals of scientific psychology demonstrates that the community of scientific psychologists generally accepts the methods of the psychophysiological detection of deception.

d. **Publications:** The increasing number of scientific publications on the psychophysiological detection of deception and the involvement of an increasing number of psychological laboratories also evidence the mainstream acceptance of the. Moreover, the journal *Polygraph* is now abstracted and indexed in the Criminal Justice Abstracts, reflecting its acceptance as an authoritative source of scientific information.

e. The National Research Council of the National Academy of Science recently reviewed the scientific research concerning the validity of the polygraph.[34] Although they were critical of the use of non-specific issue polygraphs as a national security screening tool, they reached the following conclusions about specific issue polygraphs used in criminal cases:

> The available evidence indicates that in the context of specific-incident investigations and with inexperienced examinees untrained in countermeasures, polygraph tests as currently used have value in distinguishing truthful from deceptive individuals.
>
> No alternative techniques are available that perform better, . . .

(p. 178)

[Footnote continued from previous page]

Journal of Applied Psychology 70, 177-187 (1985); C. R. Honts, D. C. Raskin, & J. C. Kircher, Mental and Physical Countermeasures Reduce the Accuracy of Polygraph Tests, Journal of Applied Psychology 79, 252-259 (1994); F. S. Horvath, The effect of selected variables on interpretation of polygraph records. Journal of Applied Psychology, 62, 127-136 (1977); J. C. Kircher & D. C. Raskin, Human versus computerized evaluations of polygraph data in a laboratory setting. Journal of Applied Psychology, 73, 291-302 (1988); C. J. Patrick & W. G. Iacono, Validity of the control question polygraph test: The problem of sampling bias. Journal of Applied Psychology, 76, 229-238 (1991); J. A. Podlesny & C. Truslow, Validity of an expanded-issue (Modified General Question) polygraph technique in a simulated distributed-crimes-roles context. Journal of Applied Psychology, 5 (1993).

[34] National Research Council, THE POLYGRAPH AND LIE DETECTION (2003).

POLYGRAPHS AND JURIES

22. The science of Psychology and the Law has addressed the impact of testimony concerning the outcome of polygraph examinations on juries.

23. I am familiar with the scientific literature concerning the impact of polygraph testimony on juries. My former doctoral student Dr. Charles Honts has published a scholarly peer-reviewed work[35] that includes a review of this literature, and he has conducted original scientific research on the topic. The results of his research have been published in a peer-reviewed journal, subjected to the peer review process described above, and have been accepted for presentation at scientific meetings.

a. A number of studies have been conducted on the topic of the impact of polygraph testimony on juries.[36] This research consists of experimental work with mock juries and post-trial interviews with jury members who had been presented with polygraph testimony.

i. This literature consistently shows that juries are not inclined to give undue weight to polygraph evidence. It provides strong evidence that juries are capable of weighing and evaluating all evidence and that they are capable of rendering verdicts that may be inconsistent with polygraph results. In no case did research suggest that polygraph testimony inappropriately affected the jury decision-making process.

ii. The study by Cavoukian and Heslegrave.[37] Is typical of this research. They reported two experiments where cases were presented to mock juries either with or without

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35 C. R. Honts, & M. V. Perry, Polygraph Admissibility: Changes and Challenges, 16 L. & HUMAN BEHAV. 357 (1992).

36 N. J. Brekke, P. J. Enko, G. Clavet, & E. Seelau, The Impact of Nonadversarial Versus Adversarial Expert Testimony, 15 L. & Hum. Behav. 451 (1991). S. C. Carlson, M. S. Passano & J. A. Jannunzzo, The Effect of Lie Detector Evidence on Jury Deliberations: An Empirical Study. 5 J. Police Sci. & Admin. 148 (1977). A. Cavoukian & R. J. Heslegrave, The admissibility of polygraph evidence in court: Some Empirical Findings. 4 L. & Hum. Behav. 117 (1979). A. Markwart & B. E. Lynch, The Effect of Polygraph Evidence on Mock Jury Decision-Making, 7 J. Police Sci. & Admin. 324 (1979); Bryan Meyers & Jack Arbuthnot, Polygraph Testimony and Juror Judgments: A Comparison of the Gulty Knowledge Test and the Control Question Test, 27 J. APPLIED SOCIAL PSYCH. 1421 (1997).

polygraph evidence. The mock jurors were asked to give ratings of their perceptions of the likelihood of the defendant's guilt, and they were asked to render verdicts. In both experiments, in the absence of polygraph evidence, subjects tended to rate the defendant near the middle (uncertain) portion of the guilt scale. This indicates that the evidence was relatively equivocal, the very type of case where polygraph evidence is likely to be offered. The addition of evidence that the defendant had passed a polygraph test shifted subjects' ratings toward not guilty, but the effect was relatively small, shifting the mean rating from approximately 3 to 4 on a 7-point scale in one experiment and from a mean rating of 5 to 6 on a 9-point scale in the other experiment. Polygraph evidence had a significant effect on verdicts in one experiment, but did not have a significant effect on verdicts in a second study. All effects of polygraph testimony were eliminated by the introduction of testimony by an opposing witness who testified that polygraph tests were only 80% accurate and that the results of polygraph tests should be viewed with skepticism. Cavoukian and Heslegrave concluded that concerns about blind acceptance and overwhelming impact of polygraph tests are unjustified.

b. Research conducted at the University of North Dakota by Dr. Honts and his graduate students[38] replicated the findings of the research described in ¶¶ 22.a.i and 22a.ii, *supra*. In the context of a mock trial, they contrasted polygraph testimony with testimony concerning identification based on a blood test. They consistently found that jurors were more skeptical of polygraph testimony than they were of blood test testimony, even when the experts reported them to

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37 A. Cavoukian & R. J. Heslegrave, The admissibility of polygraph evidence in court: Some Empirical Findings. 4 L. & Hum. Behav. 117 (1979).

38 L. Vondergeest, C. R. Honts, & M. K. Devitt, Effects of Juror and Expert Witness Gender on Jurors' Perceptions of An Expert Witness. MODERN PSYCHOLOGICAL STUDIES, 1 (1993). M. K. Devitt, C. R. Honts, & B. Gillund. Stealing Thunder does not Ameliorate the Effects of the Hired Gun Cross-Examination Tactic. Paper presented at the annual meeting of the American Association for Applied and Preventive Psychology, Chicago (1993). C. R. Honts, M. K. Devitt, & S. Amato, Explanatory Style Predicts Perceptions of Expert Witness Believability. Paper presented at the annual meeting of the American Association of Applied and Preventive Psychology, Chicago (1993). C. R. Honts & M. K. Devitt, The Hired Gun Cross Examination Tactic Reduced Mock Jurors' Perception of Expert Witness' Credibility. Paper presented at the biennial meeting of the American Psychology-Law Society/Division 41 San Diego, CA (1992).

be of the same level of accuracy. There were no indications in any of the studies that polygraph evidence overwhelmed jurors or that they were unable to use and value evidence that was contrary to the polygraph outcome.

24. My personal experience presenting testimony before juries has also indicated that juries are able to discount polygraph evidence in favor of other evidence and render verdicts contrary to the polygraph results.

25. I know of no data, published or unpublished, that support the notion that juries give undue weight to polygraph evidence or that they are unable to evaluate and appropriately weigh polygraph evidence in the context of other evidence introduced at trial.

POLYGRAPHS ARE USED BY THE GOVERNMENT

26. The United States Government is the most frequent user of polygraph tests.[39] Numerous federal agencies use the polygraph to investigate criminal acts and vet employees. Some Federal agencies that use the polygraph include: The Federal Bureau of Investigation, the Secret Service, The Drug Enforcement Agency, all of the Armed Services, the Department of Energy, the Central Intelligence Agency, the National Security Agency, the Defense Intelligence Agency, and the National Reconnaissance Office.

27. Federal uses of the polygraph include criminal investigation, counterintelligence, foreign intelligence, national security screening, and exculpation.

a. The U.S. Department of Defense maintains a training unit, the National Center for Credibility Assessment (NCCA), which conducts and funds a substantial amount of scientific research on the polygraph and sets standards and trains all federal polygraph examiners.

28. In Fiscal Year 2011, the Department of Defense ran 43,434 polygraph examinations (this does not include certain classified programs or the NSA whose polygraph activities are classified). Of these examinations, 41,057 were conducted as a condition of access to highly sensitive positions requiring classification clearance, 1,537 were for criminal investigation, and 840

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39 *Supra* note 33, National Research Council.

were counterintelligence tests. Thus, the Department of Defense places heavy reliance on the ability of the polygraph to detect hostiles who attempt to penetrate our national security system. The NCCA official position is that polygraphs are 90% accurate when properly administered by a competent examiner. The NCCA also teaches a course on how to present polygraph results at trial. In 1997 it was estimated that the Federal government employed approximately 500 polygraph examiners and spent approximately 25 million dollars per year on examiner salaries alone.[40] These numbers have increased dramatically since the establishment of the U.S. Department of Homeland Security.

THE FRIENDLY POLYGRAPH EXAMINER

29. Honts,[41] and Raskin and his colleagues[42] studied the claim that polygraph examinations conducted in confidence for the defense are less valid than non-confidential tests (the "Friendly Polygraph Hypothesis"). The Friendly Polygraph Hypothesis is as follows:

a. The Friendly Polygrapher Hypothesis was developed by Orne,[43] who speculated that a guilty suspect who takes a non-law enforcement polygraph examination on a confidential basis can beat the test because of a lack of fear that an adverse result will be disclosed to the authorities. This speculation was based solely on the results of an unrealistic laboratory study in which college students were given simple card tests, not the standard comparison question test that is typically used in criminal investigation.[44] Orne argued that if the suspect expects only favorable results to be

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40 Gordon H. Barland, Ph.D, Chief, Special Projects, Department of Defense Polygraph Institute, Letter to Public Defender, Neni Odiaga, June 13, 1997.

41 Charles R. Honts, IS IT TIME TO REJECT THE FRIENDLY POLYGRAPH EXAMINER HYPOTHESIS?, paper presented at the annual meeting of the American Psychological Society, Washington, D.C. (May, 1997). Available at: http://truth.idbsu.edu/polygraph/fpeh.html.

42 David C. Raskin, Charles R. Honts, Susan Amato & John C. Kircher, The Case for The Admissibility of The Results of Polygraph Examinations: 1999 Pocket Part to Vol. 1. Of D. L. Faigman, D. Kaye, M. J. Saks, & J. Sanders (eds.) MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY 160 (1999).

43 Martin Orne, *Implications of Laboratory Research for the Detection of Deception*, in LEGAL ADMISSIBILITY OF THE POLYGRAPH 94 (N. Ansley ed. 1975).

44 For a complete description and analysis, *see* David C. Raskin, *The Polygraph in 1986: Scientific, Professional and Legal Issues Surrounding Application and Acceptance of Polygraph Evidence*, 1986 UTAH L. REV. 60 (1986).

reported, the suspect will be more confident, the examiner more supportive, the suspect will have little at stake, and the lack of fear of failure and disclosure will enable a guilty person to pass the test. However, I have shown that the scientific literature provides no support for the friendly examiner hypothesis and generally contradicts it.[45]

b. Laboratory studies where there is little at stake routinely produce detection rates of approximately 90%, ¶¶ 13 *supra*, and laboratory studies using placebos and other procedures designed to make guilty subjects believe they can pass the polygraph test show no reduction in detection rates even for the guilty knowledge test, which is easier to beat.[46]

i. If Orne's hypothesis were correct, one would expect laboratory studies of the CQT to produce relatively more false negative than false positive errors. This is clearly not supported by the data. Honts reviewed 20 laboratory studies of the CQT with a total of 567 guilty subjects and 490 innocent subjects.[47] The false negative rate was 12% and the false positive rate was 16%. This outcome is opposite to the prediction generated by the Friendly Polygraph Hypothesis. Notably, 6 of the 20 laboratory studies reported no errors with guilty subjects, despite a lack of fear of any negative sanctions associated with failing the test.

c. Criminal suspects have no assurance that adverse results will remain confidential since most examiners advise them of their rights and obtain a written waiver prior to the test.[48] The suspects have a great deal at stake because a favorable test may help to obtain a dismissal or acquittal on the charges, and an unfavorable outcome may result in increased legal costs, personal stress, and disruption of their relationship with their defense counsel. These are far greater motivations than the

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45 Id.

46 Howard Timm, *Effect of Altered Outcome Expectancies Stemming from Placebo and Feedback Treatments on the Validity of the Guilty Knowledge Technique*, 67 J. OF APPLIED PSYCHOLOGY 391 (1982).

47 *Supra* note 41.

48 David C. Raskin, *Polygraph Techniques for the Detection of Deception*, in PSYCHOLOGICAL METHODS IN CRIMINAL INVESTIGATION AND EVIDENCE 255 (D. Raskin ed. 1989).

small amount of money guilty subjects have at stake when they routinely fail laboratory polygraph tests.

d. In order to pass a CQT, the guilty suspect must produce stronger physiological reactions to comparison (control) questions than to the relevant questions about the allegations. There is no psychological mechanism or logical argument that explains how a low level of fear or concern about the test outcome can selectively reduce the reactions to the relevant questions and simultaneously enhance the physiological responses to comparison questions to produce a pattern that appears to indicate truthfulness. In fact, fear is not a necessary part of any modern scientific polygraph theory of the comparison question tests.[49] The laboratory data and logical analysis strongly contradict the Friendly Polygraph Hypothesis.

e. There are two published sets of data from tests of criminal suspects that also contradict the Friendly Polygraph Hypothesis.[50]

i. I published a complete data from 12 years of my confidential CQT examinations for defense attorneys and non-confidential tests for law enforcement, courts, and stipulated situations.[51] The results indicated that 58% of suspects who were informed that the results would be provided to the prosecution passed their tests, but only 34% of those who took confidential defense tests passed. In addition, the numerical scores were significantly more negative (in the deceptive direction) for confidential tests compared to more positive scores (in the truthful direction) for non-confidential tests.

ii. Honts recently presented a similar, complete set of data from 14 years of confidential and non-confidential examinations. He reported that 44% of the confidential tests were

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49 *See* discussions in, John A. Podlesny & David C. Raskin, *Physiological Measures and the Detection of Deception*, 84 PSYCHOLOGICAL BULLETIN 783 (1977) and J. Peter Rosenfeld, *Alternative Views of Bashore and Rapp's (1993) Alternatives to Traditional Polygraphy: A Critique*, 117 PSYCHOL. BULLETIN 159 (1995).

50 *Supra* note 41.

51 *Supra* note 44.

passed but 70% of the non-confidential tests were passed. These data are also opposite to the effects predicted by the Friendly Polygraph Hypothesis.

30. The foregoing analysis and these data clearly demonstrate that the Friendly Polygraph Hypothesis fails on all counts. It is illogical, unsupported by laboratory studies, and is contradicted by data from actual field cases.

31. **Without assistance, average people perform poorly in detecting deception**. Although the role of credibility assessment has traditionally been left to juries, scientific research shows that the average person is not effective in detecting deception. A number of reviews converge on the conclusion that without an intimate knowledge of the individual, or instrumental assistance, the average adult, including lawyers, judges, police officers, intelligence officers, and psychologists perform only slightly better than chance at detecting the deception of adults or children.[52]

32. Given the validity data for the polygraph described above, a properly conducted polygraph test may offer valid and helpful information to the trier of fact in the task of assessing credibility in context of a criminal or civil trial.

STANDARDS FOR ADMINISTRATION OF POLYGRAPHS

33. There are standards for the administration of psychophysiological detection of deception tests. New Mexico Rule of Evidence 11-707[53] provides clear standards for tests to be offered as evidence in New Mexico courts of law and has served as a superior model for national standards. National polygraph organizations and polygraph boards in other states have adopted

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52 *See* reviews by: Aldert Vrij, DETECTING LIES AND DECEIT: THE PSYCHOLOGY OF LYING AND IMPLICATIONS FOR PROFESSIONAL PRACTICE (2000); Paul Ekman TELLING LIES (1986); Paul Ekman & Maureen O'Sullivan 46, Who can catch a liar? 913 AMERICAN PSYCHOLOGIST (1991); Bella M. DePaulo, 3 Spotting lies: Can humans learn to do better? 83 (1994); and the recent empirical reports by: Marcus Choi Tye, Susan L. Amato, Charles R. Honts, Mary K. Devitt, & Douglas P. Peters, The Willingness of Children to Lie and the Assessment of Credibility in an Ecologically Relevant Laboratory Setting, 3 APPLIED DEVELOPMENTAL SCIENCE 92 (1999); Paul Ekman, Maureen O'Sullivan & Mark G. Frank, A Few Can Catch a Liar, 10 PSYCHOLOGICAL SCIENCE 263 (1999). Also see the more recent work: Pär Anders Granhag and Leif Strömwall (Eds.) DETECTION OF DECEPTION IN FORENSIC CONTEXTS (2004).

53 New Mexico Rule of Evidence 11-707 (2012).

similar standards. Various agencies of the government, including the FBI and the Department of Defense Polygraph Institute, among many others, maintain and enforce standards based on the same underlying scientific principles and procedures. The American Society of Testing and Materials (ASTM) International promulgates, sets, and maintains a similar international standard for administering psychophysiological detection of deception tests that are used in the context of criminal investigations.[54]

34. **The Polygraph in Comparison to Other Diagnostic Techniques**. Crewson[55] reported a meta-analysis that compared the polygraph with standard diagnostic tests commonly used in Medicine and Psychology. The analysis compares the accuracy of the polygraph with commonly applied and familiar techniques in Psychology and Medicine. One purpose of his study was to review the scientific literature concerning the accuracy and reliability of diagnostic tests in polygraph, medicine, and psychology. Following a computer-based search, 1,158 articles and abstracts were reviewed, 145 were found to be useful, resulting in data on 198 studies. Agreement between evaluators was evaluated with the kappa statistic. Among evaluators in polygraph, medicine, and psychology the obtained kappa coefficient was .77, .56, and .79, respectively. That finding is illustrated below in Figure 3 from the Crewson Executive Summary [CES, p. 26.]. For field diagnostic assessments, the sensitivity of polygraph, medical, and psychological tools was .92, .83, and .72.

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54 American Society of Testing and Materials, Standard Guide for PDD Examination Standards of Practice, ANNUAL BOOK OF STANDARDS, Vol. 14.02 (2000).

55 Philip E. Crewson, A COMPARATIVE ANALYSIS OF POLYGRAPH WITH OTHER SCREENING AND DIAGNOSTIC TOOLS (DoDPI01-R-0003). Department of Defense Polygraph Institute, Fort Jackson, SC 29207-5000. DTIC No. ADA403870.

Averaging a standard measure of agreement across the reviewed literature suggests polygraph and psychology studies report similar levels of agreement. A kappa value of 1.0 represents 100% agreement beyond what would be expected by chance.

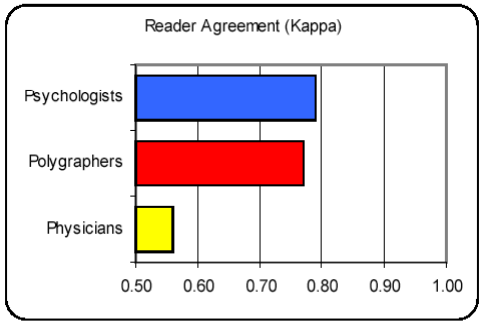

Figure 3. The reliability of polygraph examiners compared to psychologists and physicians. From Crewson (2001).

Specificity of polygraph, medical, and psychological diagnostic testing was .83, .88, and .67, respectively. The overall accuracy of the polygraph in relation to specific diagnoses made by Physicians and Psychologists is illustrated below in Figure 4.

Accuracy by Target Condition

The average diagnostic accuracy for detecting deception with polygraph was similar to diagnosing breast cancer with MRI or ultrasound (US).

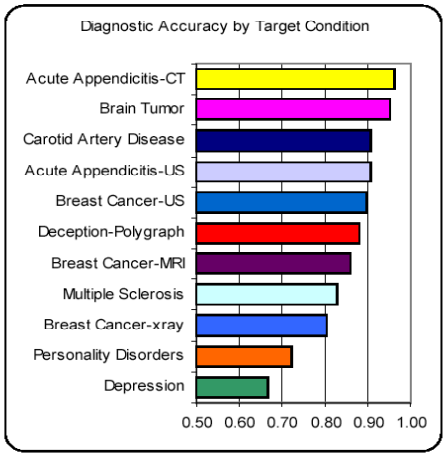

Figure 4. The accuracy of the polygraph in comparison to specific diagnoses made by Physicians and Psychologists. From Crewson

Overall accuracy of the polygraph in relation to the other diagnostic tools is illustrated in Figure 5. Crewson concluded that, "Reports in the literature of polygraph's accuracy and reliability (agreement) on specific issues appear to be consistent with published studies on medical and psychological assessment tools." (p. 2)

Accuracy of Various Diagnostic Tools

The average accuracy reported for 37 diagnostic polygraph studies (specific issue) was similar to MRI (17 studies), CT (19 studies), and ultrasound (38 studies). MMPI had the lowest reported accuracy (17 studies).

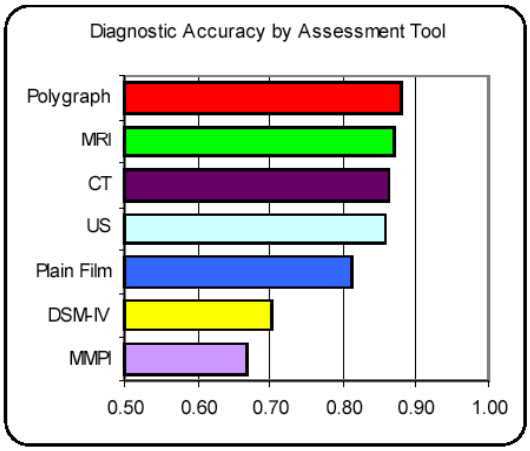

Figure 5. The overall accuracy of the polygraph in relation to commonly used diagnostic tests in Medicine and Psychology. From Crewson (2001).

35. It is my opinion that the above statements represent the current state of the science on polygraph testing.

36. I have reviewed the report and materials from the polygraph examination administered to Jesus Hernando Angulo-Mosquera on November 6, 2014 by retired FBI Special Agent James Orr.

37. In accord with my standard practice in reviewing examinations conducted by other examiners, I evaluated the physiological data before reviewing any of the other materials. My initial examination of the physiological recordings revealed that they were high quality. The standard physiological measures had been taken. Amplitudes of the various recordings were acceptable and clearly within the standards of the profession. The test was a Utah Probable Lie Comparison Question Test with three relevant questions and three comparison questions. The questions were repeated three times. In sum, the physiological recordings were consistent with professional standards and were of sufficient quality to permit a numerical scoring analysis.

38. The following relevant questions were asked, each of which was answered "No":

R1. Did you know the drugs were on that ship before the Coast Guard boarded the ship?

R2. Did you know the drugs were on the Hope II before the Coast Guard boarded the ship?

R3. Did you know the drugs were on that ship before the Coast Guard found them in August?

39. I evaluated the physiological recordings using the scoring system developed and scientifically validated at the University of Utah.[56] The Utah scoring system has consistently been shown to be one of the most accurate of the scorings systems currently available. For the entire set of relevant questions, a combined total numerical score of -6 or lower is indicative of deception, a total numerical score of +6 or greater is indicative of truthfulness, and total numerical scores between -6 and +6 are considered inconclusive.

40. My analysis of the 2014 polygraph examination of Jesus Hernando Angulo-Mosquera produced a total numerical score of +16. This is a definite result that indicates he answered truthfully to the relevant questions listed above.

41. After completing my analysis of the physiological data, I evaluated the November 6, 2014 polygraph materials and report by retired FBI Special Agent James Orr polygraph. As a result of that evaluation, I reached the following conclusions:

a. The critical questions of the examination (the relevant and comparison questions) were proper in structure, content, and form,

b. The questions conform to current standards of practice within the polygraph profession.

c. The questions are representative of the questions used in the polygraph techniques that were the focus of the research described above.

42. In summary, my evaluation of the November 6, 2014 polygraph examination of Jesus Hernando Angulo-Mosquera revealed that the polygraph examination was a Utah Probable Lie Comparison Question Test conducted to the current standards of the polygraph profession. The examination produced physiological data that are consistent with a conclusion that Jesus Hernando Angulo-Mosquera was truthful when he answered the relevant questions listed above.

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[56] Brian G. Bell, David C. Raskin, Charles R. Honts, & John C. Kircher, The Utah Numerical Scoring System, 28 Polygraph 1 (1999).

43. The opinions stated in this Declaration are held to a reasonable degree of scientific certainty.

I declare under the penalty of perjury under the laws of the United States and the State of Arizona that the foregoing is true and correct.

Executed this 16th day of December, 2014 at Green Valley, Arizona.

David C. Raskin, Ph.D.