

Polygraph

VOLUME 28

1999

NUMBER 4

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Published Quarterly

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P.O. Box 8037, Chattanooga, Tennessee 37414-0037

Exclusive or Nonexclusive Comparison Questions: A Comparative Field Study

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Abstract

The relative effectiveness of exclusive (time-bar, or Backster) and nonexclusive (no time-bar, or Reid) probable lie comparison questions (CQ) was assessed by comparing the physiological responses elicited using one or the other type CQ in 230 (60% truthful and 40% deceptive) verified Zone Comparison Test (ZCT) field examinations. Exclusive comparison questions were used in 87 (37.8 %) examinations and nonexclusive comparison questions were used in the remaining 143 (62.2 %). Each examination used two relevant questions and analysis of the field numerical scores showed that overall examinations using nonexclusive comparison questions had significantly larger mean numerical scores (question one, $M = 2.99$; question two, $M = 2.87$) compared to examinations using exclusive comparison questions (question one, $M = 2.14$; question two, $M = 2.26$). Further analysis showed similar results after computing the mean numerical scores for truthful (NDI) and deceptive (DI) subject status. Examinations using nonexclusive comparison questions had scores significantly more in the correct direction than those produced by exclusive comparison questions. These findings are consistent with those reported in some earlier laboratory studies examining the same issue. Together, these results present a strong argument favoring the use of nonexclusive comparison questions, as opposed to exclusive comparison questions, for conducting specific issue PDD field examinations.

Keywords: Exclusive comparison questions, field study, nonexclusive comparison questions, validity.

In the field, polygraph examinations are often administered to determine whether a person is truthful or deceptive regarding a specific issue. Polygraph examiners most frequently use the comparison question (CQ) polygraph technique for this purpose (Horvath, 1991; Honts, 1986; Raskin, 1982; Reid & Inbau, 1977).

In a CQ examination there are basically three types of questions asked. Relevant questions are those that deal with the specific issue of the examination. For example, in an embezzlement one might ask, "Did you steal the missing bank deposit?" Irrelevant questions are designed to be non-emotion provoking and are "used as buffers

and to establish norms" (Horvath, 1988, p. 198), for example, "Did you ever go to school?" Finally, comparison questions lack the specificity of relevant questions and relate instead to the motivation believed to underlie the offense under investigation. Probable-lie comparison questions are constructed so that an examinee is led to respond with an answer of "no" when the question is asked and, in so doing, lie or at least doubt the veracity of his or her answer (Horvath, 1991). For instance, in an examination for an embezzlement, comparison questions may focus on stealing, cheating or dishonest behavior. For example, "Before the age of 18 did you ever steal anything?" or, "Do you now remember ever cheating someone who trusted you?"

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We are grateful for the editorial assistance of Associate Editor John Palmatier, Ph.D.

The premise on which comparison and relevant questions are based is an assumption that subjects will fear that which holds the greatest immediate threat to their well being. For a person who has committed a crime, the most immediate threat should attach to answers given in reply to relevant questions. Therefore, a truthful person should experience less concern when answering relevant questions honestly, but concurrently experience more concern for the accuracy of an answer given when asked the more general comparison questions (Horvath, 1991; Palmatier, 1991).

John Reid was the first to develop and use comparison questions in "a completely revised polygraph technique," (Reid & Inbau, 1977, p. 3) the comparison question (CQ) test. The comparison questions introduced by Reid were nonexclusive in nature and encompassed the longest period possible, including the period during which the crime under investigation was committed. For example, a nonexclusive comparison question asked in an examination for a theft could be "Have you ever stolen anything?"

Backster (1969) concluded that nonexclusive comparison questions could easily be misinterpreted as relevant questions by deceptive subjects. Consequently, these questions may elicit equal or greater responses when compared to relevant questions. Accordingly, the number of deceptive subjects called truthful (false negative errors) would be unacceptably large. To correct this perceived problem Backster modified the format of Reid's nonexclusive comparison question by adding a time-bar, a period which purposely excludes the offense at examination. For example, a 22-year-old taking an exam about a recent theft might be asked: "Before your 20th birthday, did you ever steal anything?" These questions are called exclusive comparison questions.

Many field examiners favoring the use of nonexclusive comparison questions argue that exclusive comparison questions cannot arouse the same level of concern within an examinee as can nonexclusive comparison questions. These examiners reason that exclusive comparison questions will, by

limiting the scope of time considered by an examinee, logically lower the amount of concern for them. These advocates feel that any decrease in concern experienced by persons answering these comparison questions would reduce their responses to them. This would be especially true for the innocent because of the inherently strong concern for any relevant question. Consequently, the use of exclusive comparison questions for testing should result in a larger number of innocent people being called deceptive, or false positive errors. This possibility is one that those generally opposed to the comparison question polygraph technique, for instance Lykken (1981, 1998) and Ben-Shakhar and Furedy (1990), often voice in their writings.

Podlesny and Raskin (1978) were the first researchers to test the relative effectiveness of using exclusive and nonexclusive comparison questions in a laboratory study. Overall, these researchers found that exclusive comparison questions were more effective than nonexclusive comparison questions. However, these findings were later challenged by a study conducted by Horvath (1991) who concluded that nonexclusive comparison questions were superior, as they were no more apt than exclusive comparison questions to result in false negative errors, produced a much lower rate of false positive errors, and that "guilty persons tested with nonexclusive control (comparison) questions produced significantly greater numerical scores than those tested with exclusive control questions" (Horvath, 1991) (parenthetical note added).

Matte (1997), an advocate favoring the use of exclusive comparison questions, recently wrote that he believed Horvath's (1991) findings were arguable, and not easily generalized to a more diverse population because the subjects tested were similar in age. Further, Matte (1997) argued that Horvath used an MGQT polygraph question format rather than a ZCT polygraph question format. It appears that Matte (1997) would like others to believe that because nonexclusive comparison questions are generally used in an MGQT format, while exclusive comparison questions are generally used in a ZCT format, the findings would have

been significantly different if Horvath (1991) had used the latter rather than the former question format. Matte (1997) wrote that "... had Horvath also tested the exclusive and nonexclusive control questions using the Exclusive control question format of two relevant questions compared against two controls or an equal number of each, he would have found a significant number of false negatives and that the nonexclusive control questions would have been too powerful for the two neighboring relevant questions" (p. 291).

However, it appears that Matte (1997) failed to adequately review the research literature addressing this issue before writing his text. In 1991 Palmatier reported his research findings after replicating Horvath's (1991) study. The difference between the two studies however, was that Palmatier (1991) also tested the relative effectiveness of exclusive and nonexclusive comparison questions in both MGQT and ZCT polygraph question formats. The results of this study (Palmatier, 1991) found that the MGQT and ZCT polygraph question formats were statistically the same whether exclusive or nonexclusive comparison questions were used. These results remained consistent even after dropping the two extra relevant questions used in an MGQT format, and scoring done using an equal number of relevant questions (three questions in each exam). The results also showed that exclusive and nonexclusive comparison questions produced a statistically equal rate of false negative errors (7% and 8% respectively). Some other important differences noted by Palmatier (1991) (p. 83) were in the rate of false positive errors (exclusive = 22%; nonexclusive = 7%), the rate of inconclusive decisions (exclusive = 26%; nonexclusive = 8%), and overall accuracy (exclusive = 45%; nonexclusive = 77%). These findings also remained consistent again after dropping the two extra relevant questions and comparing an equal number of relevant and comparison questions as suggested by Matte (1997).

To date, it is significant to note that the studies testing the relative effectiveness of exclusive and nonexclusive comparison questions have done so in a laboratory setting.

Although the results presented in these studies (e.g. Horvath, 1991; Palmatier, 1991) are suggestive, the relative effectiveness of exclusive and nonexclusive comparison questions in a field setting has never been tested. The present study was conducted to address this issue, that is, to test the relative effectiveness of these two types of comparison questions in a real world setting.

Method

A total of 230 real life verified (135 by confession, 95 by court decision) polygraph examination records for tests administered during the period 1995 to 1998 were drawn from the files of a commercial polygraph laboratory. The examinations included 138 (60%) truthful subjects and 92 (40%) deceptive subjects; 105 (45.7%) examinations were specific issue elimination tests and the other 125 (54.3%) were specific issue non-elimination tests.

All 230 examinations were conducted using a variation of the Backster ZCT polygraph test that is widely used by Israeli law enforcement agencies. The question sequence used was:

- Question 1 – Irrelevant Question
- Question 2 – Irrelevant Question
- Question 3 – Sacrifice Relevant Question (Do you intend to lie to me during this test?)
- Question 4 – Comparison Question #1 (Exclusive or Nonexclusive)
- Question 5 – Relevant Question #1 (Did you ...?)
- Question 6 – Comparison Question #2 (Exclusive or Nonexclusive)
- Question 7 – Relevant Question #2 (Did you ... last week?)
- Question 8 – Comparison Question #3 (Exclusive or Nonexclusive)

Using this variation of the ZCT polygraph procedure, 87 (37.8%) examinations employed exclusive (time-bar/Backster) comparison questions and the

remaining 143 (62.2%) used nonexclusive (Reid) comparison questions.

Subjects

The 230 case files included 84% ($n = 194$) male and 16% ($n = 36$) female examinees. The 230 subjects had a mean age of 40.11 years and a mean level of education of 11.5 years. The subjects represented a diverse cultural background; 53% ($n = 122$) were born in Israel, 21% ($n = 47$) were from Eastern Europe, 10% ($n = 24$) from the Mideast and the remaining 16% ($n = 37$) were from either Western Europe, the Western Hemisphere (North, Central or South America) or Asia. The research sample consisted of subjects tested for a variety of criminal offenses. For instance, 43% ($n = 99$) were tested for theft, 19% ($n = 44$) were involved in a monetary dispute, 16% ($n = 37$) were tested regarding an issue related to sabotage, 5% ($n = 12$) were examined regarding an assault and battery, while the remaining 17% ($n = 39$) were tested on other criminal issues.

Polygraph Examiners/Apparatus

Each of the 230 polygraph examinations were conducted by one of three experienced polygraph examiners, the first examiner was a male with 19 years experience, the second was a female examiner with 13 years experience and the third, another male examiner, had four years experience. Each examination was conducted using a four-channel all electronic Lafayette Ambassador polygraph. Physiological data was recorded by first placing pneumatic tubes around the thoracic and abdominal areas of each subject to record respiratory activity. Next, skin resistance response was recorded by placing stainless steel electrodes to the volar surface of the index and fourth finger of either the subject's right or left hand. Finally, cardiovascular activity was recorded by placing a blood pressure cuff around the upper portion of either a subject's right or left arm and inflating it to a pressure of 60mm Hg.

Testing Procedure

Each examination was conducted in a small, quiet room, like those generally used for field examinations (Reid and Inbau, 1977). The test procedure used a traditional pretest interview which included a discussion of the

central test issue, and then the formulation of both comparison questions and relevant questions to be asked the subject on each test. Subjects were then asked to sign a consent form acknowledging that they understood the questions and would participate in the polygraph examination.

Each examination focused on a single specific issue using the ZCT polygraph examination format outlined above. The questions formulated during the pretest interview were then asked on each of the three to five tests (charts) administered during an examination. A stimulation/acquaintance test was conducted as the second test in each examination, using questions regarding the day of the week.

Scoring Procedure

The polygraph records were numerically scored using a three-position scale. The examiner would compare each relevant question with its adjacent comparison questions. If the response to a relevant question was greater than the comparison question's response, a score of -1 was assigned. Conversely, if the response to a comparison question was greater than that to the adjacent relevant question, a score of +1 was assigned. If the examiner noted little or no difference in the responses to the adjacent relevant and comparison questions, a score of 0 was given. Using this procedure, the maximum possible score for each question on a single test was ± 3 . To ensure uniformity, only the first three tests in each examination were scored, thus limiting the maximum possible examination total score for each question to ± 9 .

Results

Figures 1 and 2 show the distribution of scores for relevant questions 1 and 2 respectively. Visually, it can be seen that examinations using nonexclusive comparison questions resulted in a greater range of scores for both relevant questions, compared to examinations using exclusive comparison questions. Although it may be argued that this result is due to the larger number of examinations conducted using nonexclusive comparison questions, these results are

Figure 1. Distribution of scores using exclusive and nonexclusive comparison questions for numerical scoring of relevant question No. 1.

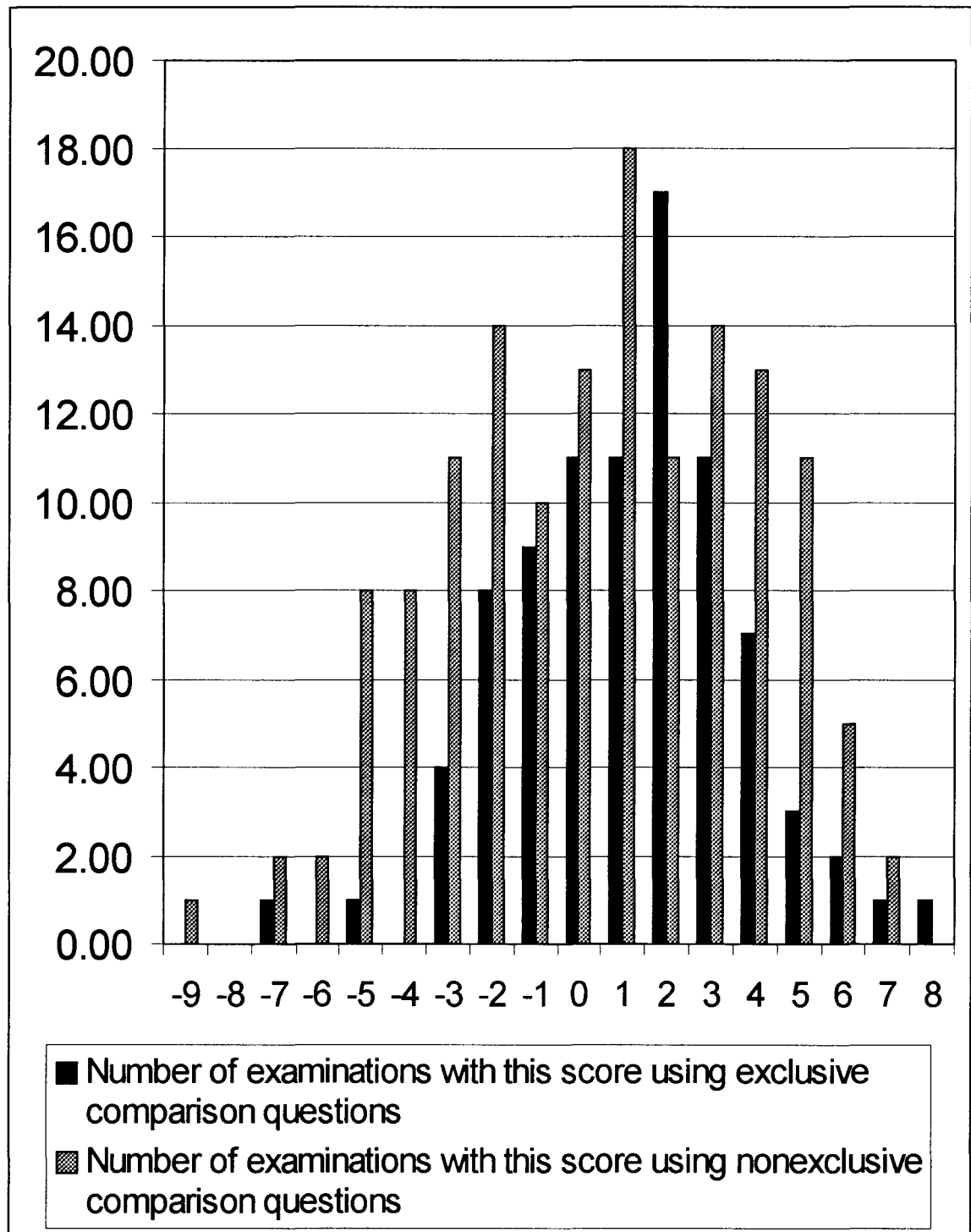
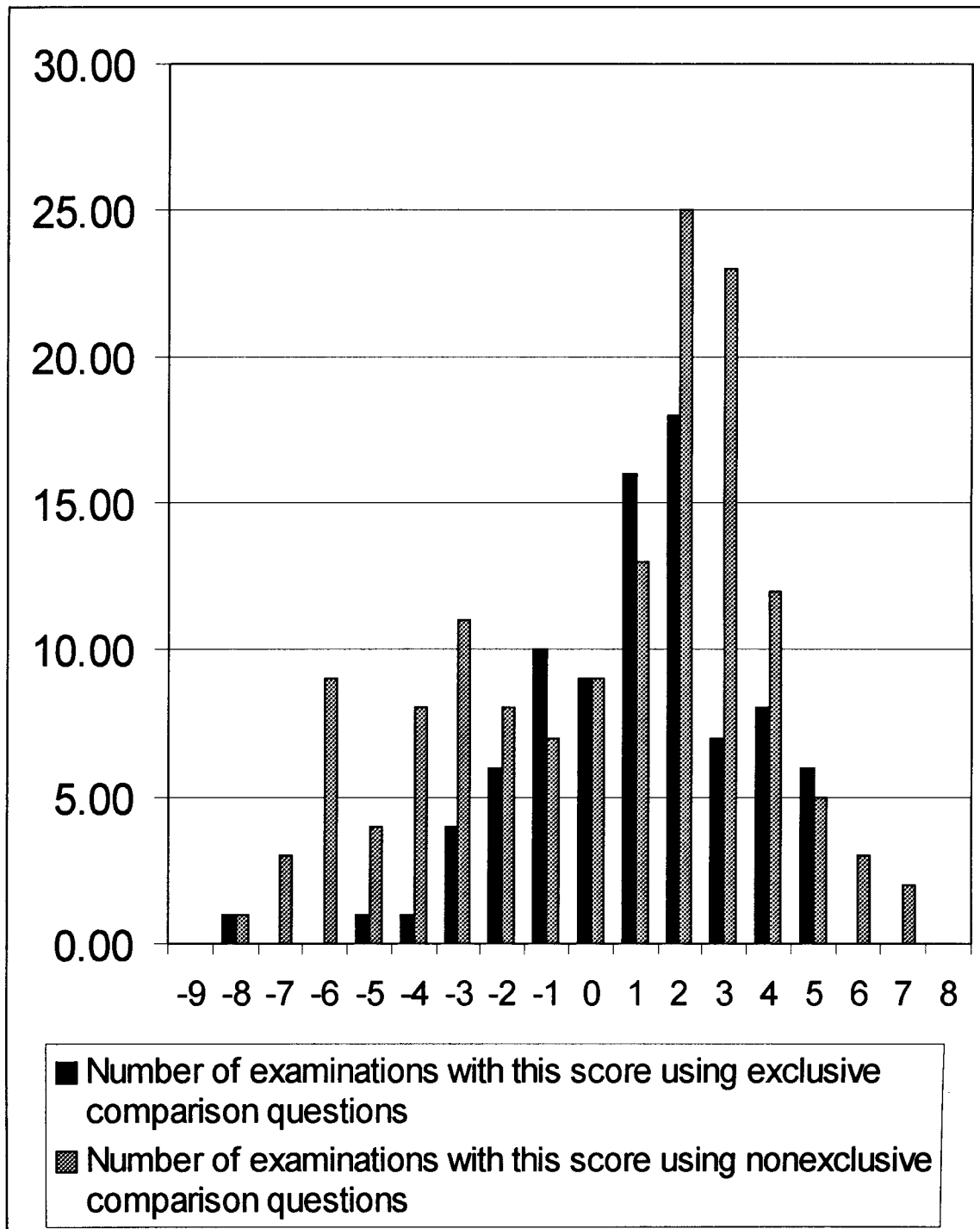


Figure 2. Distribution of scores using exclusive and nonexclusive comparison questions for numerical scoring of relevant question No. 2.



similar to those reported in earlier laboratory studies (e.g., Horvath, 1991; Palmatier, 1991).

Statistical analyses were begun by conducting a 2 x 2 ANOVA (component/examination total numerical scores by type of comparison question [nonexclusive/exclusive]) which showed, as the distribution of scores (see Figures 1 and 2) suggests, that there was a significant effect attributed to the type of comparison question used. Looking first at relevant question one, those examinations using nonexclusive comparison questions yielded a significantly greater absolute mean score [$M=2.99$] compared to examinations using exclusive comparison questions [$M=2.14$] [$F(1/229) = 13.472$, $p<.000$]. The results were similar for the second relevant question. Examinations having nonexclusive comparison questions again yielded a significantly greater absolute mean score [$M=2.87$] compared to examinations using exclusive comparison questions [$M=2.26$] [$F(1/229) = 5.981$, $p<.015$].

A series of planned *t*-tests were carried out using the examination/component total scores to determine whether the mean scores for the type of test (elimination test/non-elimination test), or the examiner conducting the polygraph examinations, were significantly different. These analyses showed that the absolute mean score for relevant question one used in elimination tests [$M= 2.75$] was not statistically different from that in question one in non-elimination tests [$M = 2.57$]. This finding was the same for relevant question two, that is, the absolute mean score for elimination tests [$M= 2.55$] was not statistically different from the mean score for non-elimination tests [$M= 2.75$]. The mean total scores for each examiner on both relevant question one and relevant question two were also not significantly different at the .05 level (Examiner one, relevant question one [$M= 2.40$] and relevant question two [$M= 2.53$]; Examiner two, relevant question one [$M= 3.01$] and relevant question two [$M= 2.88$]; Examiner three, relevant question one [$M= 2.79$] and relevant question two [$M= 2.45$]).

Statistical analyses were concluded by using the mean component/examination total

scores to conduct a final two-way ANOVA comparing status (truthful/deceptive) and type of comparison question (non-exclusive/exclusive), cases in which relevant question one and relevant question two having opposite signs, or values of zero, were excluded from this analysis. Figures 3 and 4 show the mean numerical scores when exclusive and nonexclusive comparison questions were used to evaluate relevant question one and relevant question two respectively. Looking first at the examinations employing the nonexclusive comparison question, the truthful had a mean score for question one of 2.88; question two, the mean was 3.17. For the deceptive, question one had a mean score of -3.78; question two the mean was -3.20. For examinations using exclusive comparison questions, question one for the truthful had a mean score of 2.60; question two's mean score was 2.94. With the deceptive, the mean score for question one was -2.44; the mean score for question two was -2.67. Analysis showed a significant effect for status (truthful/deceptive) [$F(1/1) = 952.024$, $p<.000$] and a significant interaction between status and the type of comparison question used [$F(1/1) = 9.617$, $p=.036$]. Both Figure 3 and Figure 4 clearly show that the mean total numerical scores for truthful and deceptive subjects differed depending on whether exclusive or nonexclusive comparison questions were used for numerical analyses.

Discussion

The results reported above strongly suggest that nonexclusive comparison questions may be superior to exclusive comparison questions for the conduct of CQ examinations in a field setting even when a ZCT format is employed. This conclusion is especially true when coupled with earlier laboratory research (e.g., Horvath, 1991; Palmatier, 1991). However, given the contradictory findings reported earlier by Podlesny and Raskin (1978) further research is certainly warranted.

Further, these findings, in concert with those discovered in the laboratory (e.g., Palmatier, 1991), strongly refute Matte's (1997) contention that Horvath's (1991) results were somehow the result of, or influenced by, the variation of CQ polygraph

Figure 3. Mean numerical scores for truthful and deceptive subjects using exclusive and nonexclusive comparison questions to score relevant question No. 1.

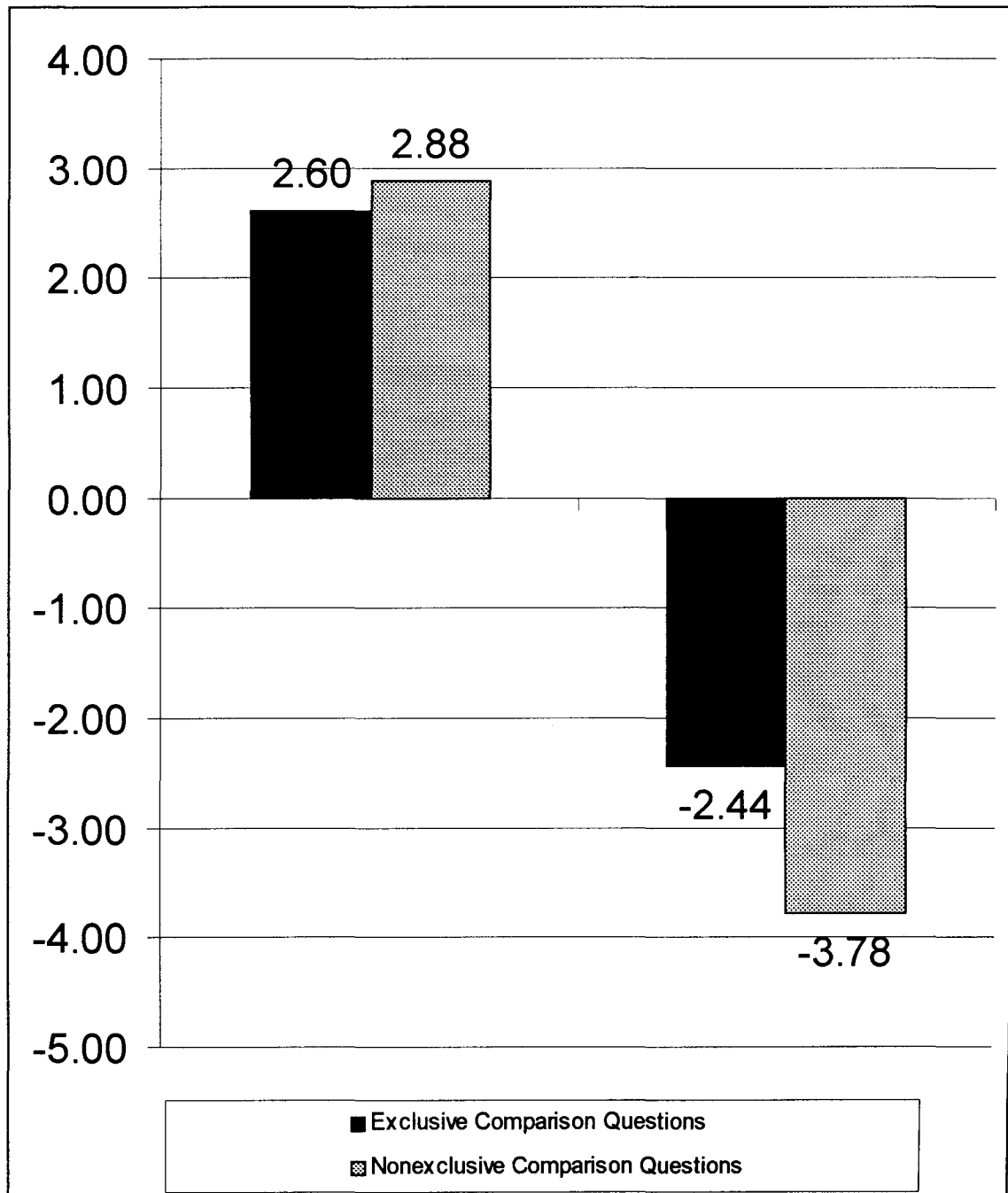
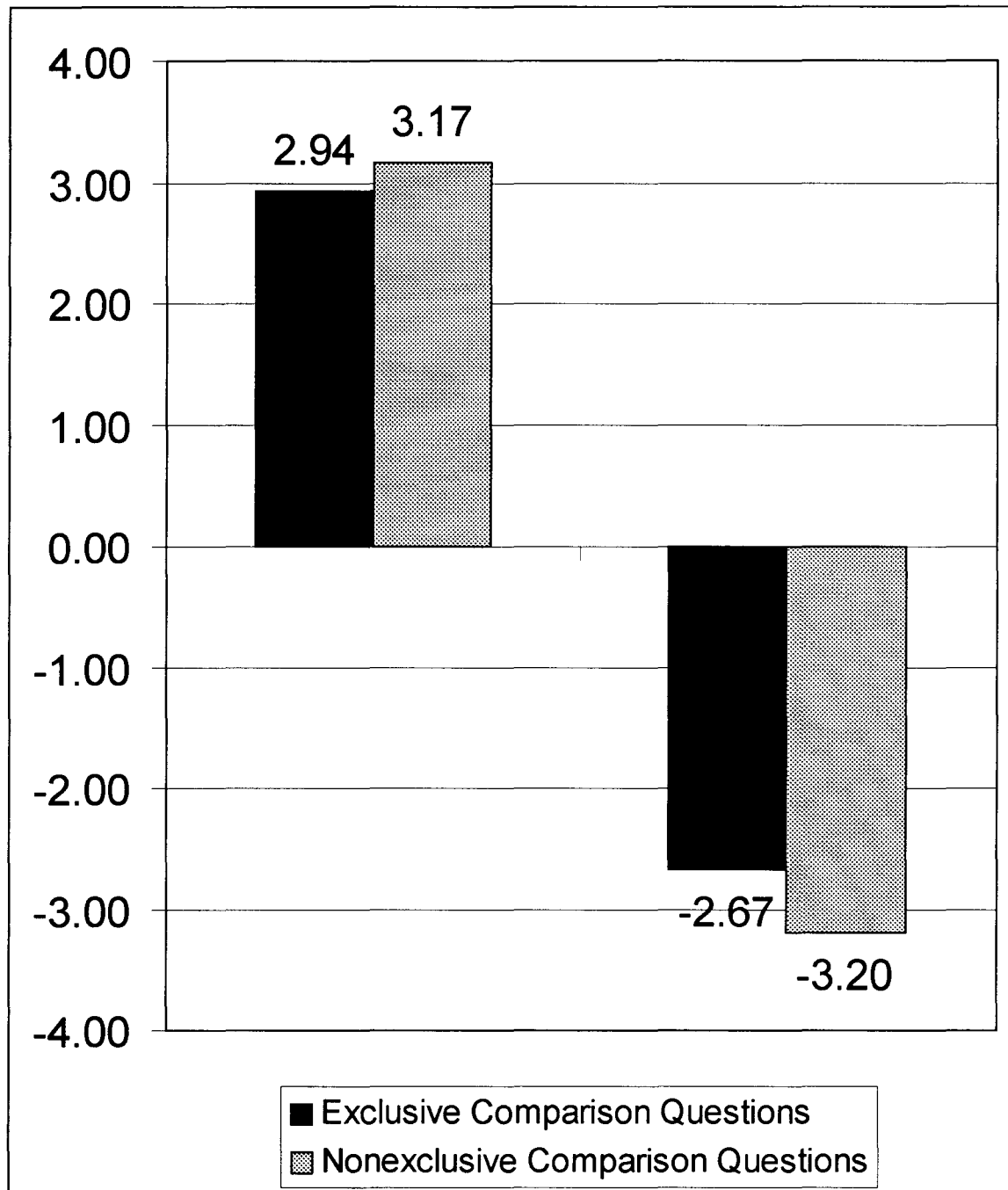


Figure 4. Mean numerical scores for truthful and deceptive subjects using exclusive and nonexclusive comparison questions to score relevant question No. 2.



examinations used for the conduct of that earlier study. The consistent findings of now three different studies addressing the same issue from somewhat different perspectives should suggest to all that the differences noted in polygraph examination results, using either exclusive or nonexclusive comparison questions, are more likely related to the type of comparison question used and not, as Matte suggests, due to the CQ polygraph format used. To date, it is believed, there is no empirical evidence to suggest that one CQ polygraph format is objectively superior to another CQ polygraph format. Unfortunately, the truth may be, like many other issues relevant to polygraph testing, that this type of research has yet to be conducted.

Certainly, these findings evolving from a field study should contribute in some manner toward diminishing the arguments raised by those who generally oppose the CQ polygraph technique, and by polygraph examiners who are opposed to the use of nonexclusive comparison questions. Based on the accumulated research findings it appears that arguments asserting that non-exclusive comparison questions include a period that is too broad in scope are without merit. In fact, it may now be possible to pose an argument that exclusive comparison

questions are in some contexts too narrowly focused. It is possible that examinees may view the exclusive comparison question as irrelevant to the investigation at issue. These results may also suggest some rationale why many earlier studies have reported substantially larger numbers of false positive errors compared to the number of false negative errors reported. The type of error made using exclusive and nonexclusive comparison questions should be of particular interest to field examiners.

Finally, the fact that the 230 polygraph examinations used for this study were conducted by three different examiners trained in different polygraph schools, with both genders and varying amounts of experience, yet resulted in no objective differences in performance, speaks loudly regarding the robust nature of the CQ polygraph technique. These findings may also suggest that differences in the CQ polygraph procedures, examinee gender, and perhaps even some examiner characteristics are possibly not as important as previously believed. Although these thoughts are arguably conjecture on the author's part, they should at the same time serve as fodder for future research endeavors.

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New Developments in Evidence 1998 - The Continuing Saga

Major Victor M. Hansen*

Expert Evidence

Last year was a banner year in the area of expert testimony and scientific evidence. Two of the most important cases come from the Supreme Court. In one, the Court addressed the standard of review that appellate courts should apply when reviewing a trial judge's decision to admit or exclude scientific evidence. In the second, the Court held that the judge's gate-keeping function applies to all types of expert evidence. Finally, the Supreme Court ruled on the constitutionality of MRE 707. The CAAF also addressed a number of expert evidence issues. For the first time, the court looked at the admissibility of expert testimony in the area of eyewitness identification. The CAAF also revisited a recurring issue regarding the scope of an expert's opinion.

Standard of Review

After the Supreme Court's opinion in *Daubert v. Merrell Dow Pharmaceuticals Inc.*,¹¹¹ the federal circuits were confused about the standard of review that appellate courts should apply when reviewing a trial judge's decision to admit or exclude scientific evidence. In *General Electric Company, et al.*

v. Joiner,¹¹² the Supreme Court resolved this dispute. In this case, the plaintiff claimed that his exposure to polychlorinated biphenyls (PCBs) manufactured by General Electric caused his lung cancer. To support this claim, the plaintiff intended to call two experts to testify about studies showing that exposure to PCBs caused cancer in laboratory animals. The trial judge ruled that the plaintiff's expert testimony did not show a sufficient link between PCBs and lung cancer. The court excluded the testimony and granted summary judgment for the defendant.¹¹³

The Eleventh Circuit Court of Appeals reversed the district court's ruling. The appellate court applied a "particularly stringent standard of review" when it reviewed the judge's decision to exclude the expert testimony. The court reasoned that this stricter standard was necessary because the federal rules of evidence governing scientific evidence display a preference for admissibility.¹¹⁴

The Supreme Court granted certiorari and reversed the Eleventh Circuit. The Court rejected the Eleventh Circuit's "particularly stringent standard." A unanimous Court held that abuse of discretion is the proper standard

* This paper is a portion of a larger published piece by Major Hansen. It is reprinted from the *The Army Lawyer*, Department of the Army Pamphlet 27-50-317, April 1999, at 40. The opinions and conclusions expressed herein are those of the individual author, and do not necessarily represent the views of the Judge Advocate General's School, United States Army, or any other governmental agency.

¹¹¹ 509 U.S. 579 (1993). In *Daubert*, the Supreme Court overruled the *Frye* test, which federal courts had used to evaluate the reliability of novel scientific theories. The Court set out factors that trial judges should use to evaluate the reliability of evidence developed through the scientific method. The Court also stressed the role of the trial judge as the gatekeeper, charged with keeping the courtroom free of "junk science."

¹¹² 118 S.Ct. 512 (1997).

¹¹³ *Id.* at 516.

¹¹⁴ *Id.*

for reviewing a trial judge's decision, and nothing in *Daubert* or the federal rules created a stricter standard with scientific or other expert testimony.¹¹⁵

Advice

This case reminds practitioners and judges that there is nothing so unique about the admissibility of expert testimony that required the appellate courts to apply a special standard to the trial judge's decision. As with most evidentiary rulings, the standard of review for the judge's decision is abuse of discretion. This holding, coupled with the Court's ruling in *Daubert*, gives the trial judge significant power over the admissibility of scientific testimony. The military judge must serve as the gatekeeper to ensure that only reliable scientific testimony reaches the fact finder. In that gatekeeper role, the judge has wide discretion and should not be second-guessed by the appellate courts simply because they disagree with the trial judge's decision.

Supreme Court Clarifies Daubert

In the second decision,¹¹⁶ the Supreme Court clarified another nagging issue that remained unanswered after their landmark opinion in *Daubert*.¹¹⁷ In clear, understandable language, the Court held that the trial judge's gatekeeping responsibility in evaluating the reliability of expert testimony applies not only to testimony based on scientific knowledge, but also to testimony

based on technical and other specialized knowledge.¹¹⁸ The Court also clarified that the trial judge can use the factors announced in *Daubert* as well as other appropriate factors to evaluate the reliability of scientific and non-scientific expert testimony.¹¹⁹ Finally, the Court's opinion reiterated the considerable leeway and broad latitude that the trial judge must have in making reliability determinations regarding expert evidence.¹²⁰

In an age of increasing reliance on expert evidence in courts-martial, *Kumho Tire* has important implications for criminal practitioners and military judges. When read in connection with *Daubert*, and *General Electric v. Joiner*,¹²¹ *Kumho Tire* completes a trilogy of cases on expert testimony and sets the course for admissibility of expert evidence for decades to come. There are several points practitioners must take away from this trilogy. First, the trial judge's gatekeeping responsibility applies to all types of expert testimony. Second, the trial judge can use the factors announced in *Daubert* as well as other appropriate factors to evaluate the reliability of expert evidence. Third, the role of the trial advocate in demonstrating the reliability of expert testimony is more important than ever before. Finally, military judges will enjoy broad discretion in deciding on the reliability and admissibility of expert testimony.

Polygraphs

In *United States v. Scheffer*,¹²² the Supreme Court reversed the CAAF, holding

¹¹⁵ *Id.* at 517.

¹¹⁶ *Kumho Tire v. Charmichael*, 119 S.Ct. 1167 (1999).

¹¹⁷ 509 U.S. 579 (1993).

¹¹⁸ *Kumho Tire*, 119 S.Ct. at 1171.

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ 522 U.S. 136 (1997).

¹²² 118 S.Ct. 1261 (1998).

that MRE 707,¹²³ which excludes polygraph evidence from courts-martial, does not unconstitutionally abridge an accused's right to present a defense.¹²⁴

The accused was charged with, among other offenses, wrongful use of methamphetamine. At trial, the accused offered an innocent ingestion defense and moved to introduce the results of an exculpatory polygraph test administered by the Air Force Office of Special Investigation in order to corroborate his in-court testimony. Citing MRE 707, the military judge refused to allow the accused to introduce or attempt to lay a foundation for the introduction of the polygraph examination results.¹²⁵

On appeal, the CAAF reversed the military judge, holding that MRE 707 violated the accused's Sixth Amendment¹²⁶ right to present a defense.¹²⁷ The CAAF adopted the Supreme Court's rationale in *Rock v.*

Arkansas,¹²⁸ where the court stated that a legitimate interest in barring unreliable evidence does not extend to an exclusion that may be reliable in an individual case.¹²⁹ The CAAF concluded that the trial court should rule on the admissibility of polygraph evidence on a case-by-case basis and remanded the case to the trial court for an evidentiary hearing on the admissibility of polygraph results.¹³⁰ The government appealed and the Supreme Court granted certiorari.¹³¹

On March 1998, the Supreme Court reversed, holding that MRE 707's exclusion of polygraph evidence does not unconstitutionally abridge the right of accused members of the military to present a defense.¹³² Writing for an eight-person majority, Justice Thomas held that rules restricting the accused from presenting relevant evidence do not violate the Sixth Amendment so long as they are not arbitrary or disproportionate to the purposes they are designed to serve.¹³³

¹²³ MCM, *supra* note 2, M.L. R. EVID. 707. This rule provides:

(a) Notwithstanding any other provision of law, the results of a polygraph examination, the opinion of a polygraph examiner, or any reference to an offer to take, failure to take, or taking of a polygraph examination, shall not be admitted into evidence.

(b) Nothing in this section is intended to exclude from evidence statements made during a polygraph examination which are otherwise admissible.

Id.

The President promulgated Military Rule of Evidence 707 pursuant to Article 36(a), UCMJ. The stated reasons for the ban were: (1) there is no scientific consensus on the reliability of polygraph evidence, (2) the belief that panel members will rely on the results of polygraph evidence rather than fulfill their responsibility to evaluate witness credibility and make an independent determination of guilt or innocence, and (3) the concern that polygraph evidence will divert the focus of the members away from the guilt or innocence of the accused.

¹²⁴ *Scheffer*, 118 S.Ct. at 1261.

¹²⁵ *Id.*

¹²⁶ U.S. CONST. amend VI.

¹²⁷ *United States v. Scheffer*, 44 M.J. 442, 445 (1996). The court assumed but did not address whether the President acted in accordance Article 36(a) UCMJ in promulgating Military Rules of Evidence 707. *Id.*

¹²⁸ 483 U.S. 44 (1987)(striking down Arkansas' ban on post hypnotic testimony).

¹²⁹ *Id.* at 61.

¹³⁰ *Scheffer*, 44 M.J. at 449.

¹³¹ *United States v. Scheffer*, 117 S.Ct. 1817 (1997).

¹³² *United States v. Scheffer*, 118 S.Ct. 1261, 1263 (1998).

¹³³ *Id.* at 1264.

The Court then examined the reliability of polygraph evidence. The Court found that there was no scientific consensus that polygraph evidence is reliable. The Court noted that most state courts and some federal courts still impose a ban on polygraph evidence and that courts continue to express doubt about whether such evidence is reliable even in jurisdictions that do not have a ban.¹³⁴ Given the widespread uncertainty about the reliability of polygraph evidence, the Court held that the President did not act arbitrarily or disproportionately in promulgating MRE 707.¹³⁵

In a concurring opinion, Justice Kennedy, joined by three other justices, stated that the only valid interest served by MRE 707 is to prevent unreliable evidence from being introduced at trial. Because of the ongoing debate about the reliability of polygraph evidence, he was unwilling to require all state, federal, and military courts to consider this evidence.¹³⁶ Justice Kennedy then said that while MRE 707 is not unconstitutional, he doubts that a rule of exclusion is wise, and that some later case may present a more compelling case for the introduction of polygraph evidence.¹³⁷ He did not indicate what a more compelling case may be.

The only dissenter, Justice Stevens, said the President's promulgation of MRE 707 may violate Article 36(a) of the Uniform Code of Military Justice (UCMJ)¹³⁸ because there is no identifiable military concern that justifies a special evidentiary rule for courts-martial.¹³⁹ Justice Stevens also believed that polygraph evidence is as reliable as other scientific and non-scientific evidence that is regularly admitted at trial.¹⁴⁰ Given this reliability and

the very sophisticated polygraph program administered by the Department of Defense, Justice Stevens said it is unconstitutional to deny an accused the use of this evidence.¹⁴¹

Analysis

Scheffer guarantees that polygraph evidence will continue to be excluded from the trial phase of courts-martial. Despite this ruling, the case raises a number of questions. Eight justices held that, because there is no scientific consensus about the reliability of polygraph evidence, the President's ban is not unconstitutional. The majority opinion, however, does not give any guidance as to the level of scientific consensus required before MRE 707's ban would no longer be justified. Furthermore, neither Justice Thomas' opinion nor Justice Kennedy's concurrence discusses how a ban on polygraph evidence is compatible with *Daubert*, which gives wide discretion to the trial judge to admit or exclude scientific evidence.

Finally, the majority opinion did not address the issue raised by Justice Stevens in his dissent that the President's promulgation of MRE 707 may violate Article 36(a), UCMJ. The majority opinion did not discuss or note any unique military concerns that justify a special evidentiary rule for courts-martial.

In spite of the 8-1 decision upholding the constitutionality of MRE 707, the Court's support of this unwise ban is lukewarm. Given a more compelling case, four justices may join Justice Stevens and require trial courts to consider the introduction of this evidence.

¹³⁴ *Id.* at 1266.

¹³⁵ *Id.*

¹³⁶ *Id.* at 1269 (Kennedy, J. concurring).

¹³⁷ *Id.*

¹³⁸ UCMJ art. 36(a) (West 1999).

¹³⁹ *Scheffer*, 118 S.Ct. at 1272 (Stevens, J., dissenting).

¹⁴⁰ *Id.* at 1276 (Stevens, J., dissenting).

¹⁴¹ *Id.* at 1270 (Stevens, J., dissenting).

Polygraph Evidence in Preliminary Hearings

Military Rule of Evidence 104 states that the rules of evidence, except for those with respect to privileges, do not apply at preliminary hearings and other proceedings under Article 39(a), UCMJ.¹⁴² Is polygraph evidence then admissible at these pre-trial hearings because the rules do not apply? The CAAF noted, but avoided, this issue in *United States v. Light*,¹⁴³ a post-*Scheffer* case. In *Light*, the accused was convicted of larceny for stealing government equipment. During the investigation he failed a CID polygraph. The polygraph failure was one factor that a Texas justice of the peace used to justify granting a search warrant of the accused's civilian quarters. On appeal, the CAAF considered whether the polygraph results can be considered in deciding probable cause. The CAAF noted the apparent tension between MRE 104 and MRE 707, but decided the case on other grounds. The court did say that this is an area that the President may want to clarify in the future.¹⁴⁴ Nothing in MRE 707 or any other evidentiary rule prohibits the convening authority from considering the accused's passing or failing of a polygraph examination in deciding the appropriate disposition of the case.

Limits on the Expert's Opinion

One recurring issue that the appellate courts seem to face every year is the scope of an expert's opinion. The question most often arises in child molestation and sexual assault cases. Often the government seeks to introduce expert testimony about common reactions that victims of these crimes suffer. The expert then opines that the victim in the case at trial suffered similar reactions. The

problem is that often the expert's opinion can cross the line and become a comment on the victim or another witness's credibility. Military and federal courts have consistently held that such testimony is not helpful to the fact finders because the witness has no expertise on questions of witness credibility.

The case that best illustrates the point this year is *United States v. Birdsall*.¹⁴⁵ In *Birdsall*, the accused was convicted of indecent acts, indecent liberties, and sodomy of his two sons. Two psychologists interviewed both boys several times before trial. Both boys claimed that the accused fondled them and performed anal sodomy on them on several occasions. No physical evidence corroborated the molestation, and the accused denied ever touching the boys inappropriately.¹⁴⁶

At trial, the two doctors who interviewed the boys testified as experts in pediatrics and child abuse. Both experts testified about statements the victims made to them. Over a defense objection, the first doctor also testified that in his opinion the children were victims of sexual abuse. The second doctor testified that in her opinion the cases were founded and the children were the victims of abuse and incest. She further testified that the victims suffered post traumatic stress disorder because of sexual abuse. The defense counsel did not object to the second expert's testimony.¹⁴⁷

On appeal, the accused contended that it was plain error for the military judge to admit this testimony. The CAAF agreed. The court held that both experts exceeded their areas of expertise by commenting on the credibility of the victims, an issue reserved for the fact finder.¹⁴⁸ The court said the doctors'

¹⁴² MCM, *supra* note 2, MIL R. EVID. 104.

¹⁴³ 48 M.J. 187 (1998).

¹⁴⁴ *Id.* at 191.

¹⁴⁵ 47 M.J. 404 (1998).

¹⁴⁶ *Id.* at 407.

¹⁴⁷ *Id.* at 407-08.

¹⁴⁸ *Id.*

opinions that sexual abuse had occurred were neither useful nor helpful to the jury because the jury was equally capable of making this determination. The court stated that the expert cannot act as a human lie detector. According to the court, such opinions violate MRE 608(a)'s limits on character evidence and exceed the scope of the witness's expertise. This testimony also usurped the role of the panel, which has the exclusive function to decide witness credibility issues.¹⁴⁹

The testimony of these experts violated this rule because they both rendered an opinion as to the ultimate issue. The second expert also violated these rules because she testified that the boys were victims of incest. The court noted that she prefaced her testimony with the assertion that she was qualified to distinguish between founded and unfounded cases.¹⁵⁰

Advice

This case shows that counsel must walk a very thin tight rope when dealing with expert testimony. Qualified experts can inform the panel of the characteristics found in sexually abused children. A doctor who interviews the victim may also repeat the victim's statements identifying the abuser as a family member if there are sufficient guarantees of the statement's trustworthiness. An expert can also summarize the medical evidence and testify that the evidence in this case is consistent with the victim's allegations of abuse. The expert, however, cannot go beyond that and comment on the credibility of witnesses or testify that sexual abuse has occurred and identify the perpetrator of the abuse.¹⁵¹

Eyewitness Identification

In recent years, an increasing number of cases have involved expert testimony on eyewitness identification. Typically, the expert is used to undermine the reliability of an eyewitness's identification by testifying about a number of factors that adversely affect the eyewitness's ability to accurately observe and relate the identification. In two cases this year, *United States v. Brown*¹⁵² and *United States v. Rivers*,¹⁵³ the CAAF, for the first time, addressed the admissibility of expert opinion evidence relating to eyewitness identification. In both cases, the CAAF declined to announce a rule on the admissibility or inadmissibility of expert testimony on eyewitness identification. Rather, the court said the admissibility of this evidence would depend on the facts of each case.

In *Rivers*, the accused was convicted of distributing cocaine. On one occasion, the accused sold cocaine to a military police informant. On another occasion, he sold cocaine to the same informant and an undercover military police investigator. Prior to trial, the defense requested government funding for an expert in the field of eyewitness identification. The defense contended that the informant who identified the accused as the person who sold him the cocaine was lying. The defense also contended that the identification by the MPI investigator was unreliable because the investigator was inexperienced, nervous, excited, and of a different race than the accused.¹⁵⁴

The convening authority and the military judge denied the defense request for

¹⁴⁹ *Id.* at 409-10.

¹⁵⁰ *Id.* at 408.

¹⁵¹ *Id.* at 410.

¹⁵² 49 M.J. 448 (1998).

¹⁵³ 49 M.J. 434 (1998).

¹⁵⁴ *Id.* at 445.

an expert. The judge said that the defense-requested expert was properly qualified, that this was a proper subject matter of expert testimony, and the expert's conclusions are of the type reasonably relied on in the field. The judge, however, ruled that the probative value of the expert's testimony was substantially outweighed by the danger of confusing the issues, misleading the members, and wasting time. In making this ruling, the judge believed that this information would not help the panel members. According to the judge, under the facts of this case, the panel could consider any weaknesses in the identification without the aid of expert testimony.¹⁵⁵

In *Brown*, the accused was charged with resisting apprehension, reckless driving, wrongful appropriation of a vehicle, and fleeing the scene of an accident. As a result of a domestic fight, the accused was placed in military confinement overnight. The next day he was escorted back to his quarters to get his medical records. While at the quarters, the accused fought with his wife, threatened his escort with a knife and then fled the scene. According to the escort, the accused was wearing tennis shoes, faded blue jeans, a denim shirt, and a dark blue baseball cap with the letter "A" on it.¹⁵⁶

A few hours later, a utility worker stopped his truck at a gas station in Killeen, Texas. While getting gas, the utility worker noticed a man about forty feet away talking on a pay phone. According to the utility worker, the man was a thin black male, wearing blue jeans, a dark windbreaker, and a blue baseball cap with a white "A" on it. As the utility worker went to pay for the gas, the man in the phone booth got in the truck and started to drive away. The utility worker ran after him and got a look at his face before he drove off in the truck. Later that day, the stolen truck was involved in an accident, and the accused was subsequently apprehended at his on-post

quarters where he was hiding in a closet holding a butcher knife.¹⁵⁷

When the police searched the stolen truck, they found a blue baseball cap with the letter "A" on it and the name "Brown" embroidered on the side. The utility worker, whose truck was stolen, identified the accused in a photo line-up as the perpetrator.¹⁵⁸

Before trial, the defense requested that the convening authority appoint a Dr. Cole as an expert witness for the defense in the area of eyewitness identification. The convening authority denied the request, and the defense renewed the request to the military judge at trial. The defense claimed that Dr. Cole would testify that the eyewitness's identification of the accused was unreliable because of several errors in his perception. The military judge denied the defense's witness request.

The judge ruled that Dr. Cole was a properly qualified expert and he had a proper basis to form an opinion. The judge, however, said that the probative value of this evidence was outweighed by the danger of unfair prejudice, and it was misleading to the members. The judge said that the matters Dr. Cole would testify about could be adequately covered in instructions and were not matters outside the members' understanding, where expert testimony would be helpful.¹⁵⁹

The defense in *Rivers* and *Brown* appealed the military judges' decision to exclude this testimony. In both cases, the CAAF examined how other courts have treated the admissibility of eyewitness identification experts. The court noted that until recently, most federal courts excluded this testimony. The CAAF, however, noted a trend in both state and federal courts to admit this testimony on a case-by-case basis. In *Rivers*, the court went no further. The court said any error the judge made in excluding this

¹⁵⁵ *Id.*

¹⁵⁶ *Brown*, 49 M.J. at 449.

¹⁵⁷ *Id.* at 450.

¹⁵⁸ *Id.* at 451.

¹⁵⁹ *Id.* at 452.

testimony was harmless because ultimately a military judge tried the accused. The court said that even if the expert may have been helpful to lay court members, the expert would not have been helpful to the military judge because he was already fully aware of any problems with the identification.¹⁶⁰

In *Brown*, the CAAF did a more complete analysis. First, the court noted that the Army Court had ruled that the military judge erred in excluding some of the proffered expert testimony. According to the Army Court, some of the information regarding errors in perception, cross-racial identification, the impact of stress on memory, and the mental process of memory would have been helpful to the members.¹⁶¹ The CAAF said this part of the Army Court's opinion was consistent with numerous appellate court holdings.¹⁶² The CAAF then noted that several other courts have excluded this evidence because it is either not helpful to the fact-finder, or because of the risk of unfair prejudice. The court avoided adopting a bright line rule on the issue. Instead, the court held that as a general matter this evidence is not inadmissible.¹⁶³ The court did express doubt about the ability of the expert in this case to opine that the identification was unreliable. According to the court, there is nothing in the literature to suggest that an expert has the ability to render such a conclusory opinion.¹⁶⁴

Finally, the CAAF adopted the Army Court's reasoning, which held that even if the judge erred in excluding this testimony, the error was harmless. Because the government's identification case was strong, particularly considering that a baseball cap

with the accused's name on it was found in the stolen truck, the expert's testimony would not have had a substantial impact on the outcome of the case.¹⁶⁵

Advice

These cases provide some valuable insight into the CAAF's view of eyewitness identification evidence. Most importantly, this evidence may be admissible depending on the facts of the case. If the expert is qualified, and the testimony is relevant, reliable, and not unduly prejudicial, the military judge should admit this evidence. Arguments that eyewitness expert-testimony is inadmissible because it is unreliable and not helpful will not be successful. If there is a genuine need for the evidence and a qualified expert is able to testify, the military judge should admit this evidence.

Even if an expert is allowed to testify, according to the CAAF's dicta in *Brown*, the expert could not testify as to the ultimate issue--that the eyewitness's identification is unreliable.¹⁶⁶ The expert simply does not have the ability to render such an opinion, and it would not help the fact-finder. This is consistent with the CAAF's opinions in other areas, particularly experts in child abuse cases, who are precluded from opining about the ultimate issue. Therefore, practitioners who proffer this evidence must limit the expert's opinion to discussing what factors could affect the reliability of an eyewitness's identification. Likewise, opposing counsel must be wary of any attempt by an expert to opine that the identification is unreliable.

¹⁶⁰ *Rivers*, 49 M.J. at 447.

¹⁶¹ *United States v. Brown*, 45 M.J. 514, 517 (Army Ct. Crim. App. 1996).

¹⁶² *Brown*, 49 M.J. at 454.

¹⁶³ *Id.* at 456.

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

Statements and Fabrications

Military Rule of Evidence 801(d)(1)(B) exempts out-of-court statements from the definition of hearsay if the statements are consistent with the witness's in-court testimony and are offered to rebut a charge of recent fabrication.¹⁶⁷ Both the Supreme Court and the CAAF have held that, for an out-of-court statement to be logically relevant rebuttal evidence, it must have been made before the improper influence or motive to fabricate arose.¹⁶⁸ In two cases this year, the CAAF struggled with the question of how to determine when the improper motive arose.

In *United States v. Faison*,¹⁶⁹ the accused was convicted of indecent acts with his thirteen-year-old stepdaughter. On the evening of 18 February 1994, the accused had an argument with his stepdaughter. Later that night, the accused went into her room and, according to the stepdaughter, he fondled her. The next day, the victim reported this incident to her friend. At trial, the defense challenged the victim's credibility. On cross-examination of the victim, the defense elicited testimony that she had gotten rid of one of her mother's previous boyfriends by alleging that he abused her. The victim also admitted that she was angry at the accused on 18 February 1994 because he told her she could not call her boyfriend anymore. The victim also conceded that there were other times when she thought the accused punished her unfairly. During this cross-examination, the defense implied that the victim made the allegations against the accused, in part,

because she was angry with him over the argument they had on 18 February 1994.¹⁷⁰

On redirect, the trial counsel asked the victim about statements she made to her friends in August 1993 and January 1994. In these statements, the victim told her friends that the accused was "messing" with her. The government proffered this testimony under MRE 801(d)(1)(B) because they preceded her fight with the accused on 18 February 1994. The defense argued that this evidence was inadmissible hearsay because the victim was upset with the accused as early as August 1993 and, therefore, these statements were not made before a motive to fabricate existed. Although, the military judge denied the defense's objection, he did not receive the evidence under MRE 801(d)(1)(B). Instead, he said the statements were admissible, but could only be considered to rebut the defense's attack on the victim's credibility. He then gave a limiting instruction to the members, telling them that they could not consider this statement substantively.¹⁷¹

In *Allison*,¹⁷² the accused was convicted of sodomizing his stepson. The victim reported the abuse to a teacher. Soon after this report, the victim provided a videotaped statement detailing the accused's sexual molestation of him. At trial, the defense proffered several theories to show that the victim's testimony was unreliable. One theory was that initially the victim's mother did not believe the accusations, but manipulated the victim to establish grounds for divorce, obtain a monetary settlement, gain custody of the

¹⁶⁷ MRE, *supra* note 2, MIL. R. EVID. 801(d)(1)(B). This rule states:

(d) A statement is not hearsay if:

The declarant testifies at the trial or hearing and is subject to cross-examination concerning the statement, and the statement is (B) consistent with the declarant's testimony and is offered to rebut an express or implied charge against the declarant of recent fabrication or improper influence or motive.

Id.

¹⁶⁸ See *Tome v. United States*, 513 U.S. 150 (1995). See also *United States v. McCaskey* 30 M.J. 188 (C.M.A. 1990).

¹⁶⁹ 49 M.J. 59 (1998).

¹⁷⁰ *Id.* at 61.

¹⁷¹ *Id.* at 62.

¹⁷² 49 M.J. 54 (1998).

children, and remain in Germany. The defense also presented other theories to challenge the reliability of the victim's testimony.¹⁷³

To rebut the claim that the victim's testimony was a product of his mother's manipulation, the government introduced the videotape that the victim made. At the time this videotape was made, the victim's mother did not yet believe the accused had abused her son. The government introduced this evidence under MRE 801(d)(1)(B). The defense objected, claiming that there had been a number of improper motives that affected the victim's testimony, and many of them had arisen before he made the videotape.

In both cases, the CAAF had to decide if the prior statements were made before a charge of improper motive or recent fabrication was made. In both cases, the court said the statements were made before a charge of improper motive and were admissible. In *Faison*, the defense implied that the argument on 18 February 1994, gave the victim a motive to fabricate her accusations against the accused the next day. According to the defense, her overall motive to fabricate arose earlier than her statements on August 1993 and January 1994.¹⁷⁴ In *Allison*, the defense contended that the victim had more than one motive to fabricate and several of these motives preceded the victim's videotaped statement.¹⁷⁵

The CAAF said the defense's focus on when the motive to fabricate developed is misplaced. Military Rule of Evidence 801(d)(1)(B) is concerned with rebutting an express or

implied charge by the party opponent that an impropriety occurred. The court said that, because it is often difficult, if not impossible, to determine the precise moment that an improper motive arose, the proper focus is on when the charged impropriety occurred, not when the underlying motive developed.¹⁷⁶

In *Faison*, the defense implicitly charged that the victim's argument with the accused on 18 February 1994 gave rise to at least one motive to fabricate and any statements prior to that date would rebut that charge.¹⁷⁷

The court made a similar point in *Allison*, using much clearer language. In this case, the court held that, where multiple motives or improper influences are asserted, the statement need not precede all such motives or inferences, only the one it is offered to rebut.¹⁷⁸ In *Allison*, the CAAF said the military judge did not err in admitting this evidence of a prior consistent statement.

Advice

In these cases, the CAAF seeks to clarify the proper focus for rebuttal evidence under MRE 801(d)(1)(B). So long as the prior consistent statement was made before at least one charge of improper motive or fabrication occurred, the statements are admissible to rebut that charge. By focusing not on when the motive may have developed, but on when the incident giving rise to the improper motive occurred, the court has opted for a pragmatic solution to an otherwise difficult proof problem. In doing so, however, the CAAF limited its earlier holding in *United States v. McCaskey*.¹⁷⁹ In *McCaskey*, the court focused

¹⁷³ *Allison*, 49 M.J. at 55-56.

¹⁷⁴ *Faison*, 49 M.J. at 61.

¹⁷⁵ *Allison*, 49 M.J. at 57.

¹⁷⁶ *Faison*, 49 M.J. at 61.

¹⁷⁷ *Id.* at 62.

¹⁷⁸ *Allison*, 49 M.J. at 57.

¹⁷⁹ 30 M.J. 188 (CMA 1990).

on when "the story was fabricated or *the improper influence or motive arose*."¹⁸⁰ That language is certainly broader than the court's holding in either *Allison* or *Faison*.

These cases have important implications for both trial and defense counsel. Counsel must be very precise when attacking a witness's credibility. They must look to the earliest possible incidents that gave rise to a witness's motive to fabricate. They should expressly state that these early incidents are what gave rise to the witness's motive to fabricate. Hopefully, these incidents occurred before the witness made any consistent statements. This alone, however, will not protect counsel from rebuttal evidence if they also allege other incidents that gave rise to improper influence or motive and these incidents occurred after the witness made a statement consistent with his in-court testimony. According to the court's holding in *Allison*, so long as the witness's consistent statement preceded any one of these charged incidents, it is admissible under MRE 801(d)(1)(B). Thus, the counsel attacking the witness may be forced to put all their eggs in one basket by looking for the earliest possible incident giving rise to a motive to fabricate, and not addressing any motives that arose after the witness made a consistent statement.

On the other hand, the counsel proffering the witness should focus very closely on the various incidents that the opponent implies affected the credibility of the witness's testimony. If, for example, the defense alleges that one incident affecting the witness's in-court testimony was rehearsing his testimony with the trial counsel, any consistent statements that preceded these rehearsals are admissible as rebuttal evidence under MRE 801(d)(1)(B).

Hearsay Review

In *United States v. Haner*,¹⁸¹ the CAAF reviewed three of the most commonly used hearsay exceptions. The court provided insight into the court's most recent view of these exceptions. In *Haner*, the accused was charged with assault and indecent assault on his wife. On the date of the offense, the accused stripped his wife, bound her, beat her with a belt, cut her with a knife, and inserted the handle of the knife into her vagina. The victim eventually escaped wearing nothing but a blanket and ran to a friend's house, where she called the police. When the police arrived about twenty minutes later, the victim was very upset, still wearing nothing but a blanket, shaking, and crying hysterically. She told the police that her husband beat her and threatened her with a knife.¹⁸²

The next day, the police officers and the district attorney referred the victim for medical treatment to document her injuries. Both a doctor and a social worker saw the victim. The victim told both of them what the accused had done to her. The doctor and social worker both testified that they saw the victim both to document the injuries and to provide any necessary medical treatment.¹⁸³

Two days after the assault, the victim moved to Michigan to get away from the accused. A week later, the accused called her and made several threats against her. The victim immediately called the police who came to her home. She typed and signed a sworn statement to the police detailing everything the accused had done to her a week earlier. This statement provided the most detailed account of the assault.¹⁸⁴

¹⁸⁰ *Id.* at 192 (emphasis added).

¹⁸¹ 49 M.J. 72 (1998).

¹⁸² *Id.* at 74.

¹⁸³ *Id.* at 76-77.

¹⁸⁴ *Id.* at 75.

Once the victim learned that the Army preferred charges against her husband, she recanted her earlier statements. She claimed that the incident was consensual, sado-masochistic, sexual activity. Faced with these recantations, the government offered the statements she made to the police and to medical personnel as hearsay exceptions. The military judge admitted all three of the statements. On appeal, the CAAF analyzed the admissibility of each statement.¹⁸⁵

The defense first challenged the admission of the victim's statements to the police just after the incident. The military judge admitted these statements as excited utterances under MRE 803(2).¹⁸⁶ The CAAF noted that the victim made these statements about twenty minutes after she fled from her husband, and at the time she was still upset and crying. The court held that these statements were clearly admissible because the victim made them under the stress of excitement caused by the incident.¹⁸⁷

Next, the defense challenged the admission of the statements the victim made to the medical doctor and to the social worker. The military judge admitted these statements under MRE 803(4), the medical treatment exception.¹⁸⁸ The defense argued that because law enforcement officials directed the victim to see the doctor and the social worker, the purpose of the visit was to preserve evidence; therefore, they did not fall within the medical treatment exception. The CAAF disagreed. According to the CAAF, it was not critical that law enforcement agencies directed the victim.

The critical question was whether the victim had some expectation of treatment when she talked with medical personnel. The court agreed that there was sufficient evidence of the victim's expectation of medical treatment, and the statements were properly admitted. The court also noted that statements to social workers fall under the medical treatment exception.¹⁸⁹

Finally, the defense challenged the admissibility of the statement the victim made to the police in Michigan a week after the incident. The military judge admitted this statement as residual hearsay under MRE 803(24). The CAAF affirmed the judge's decision. The court said that the statement was material, necessary, and reliable. The court noted the following factors that showed the statement to be reliable: (1) the victim made the statement the day after the accused threatened her and one week after the incident, (2) she prepared the statement free of police questioning, (3) the victim was still in fear that the accused may come to Michigan and attack her, and (4) she took an oath and signed and initialed each page of the statement.¹⁹⁰

Advice

This case serves as an excellent review of three of the most commonly used hearsay exceptions. Most significant is the court's holding that statements made to law enforcement officials can be admitted under the residual hearsay exception if they have sufficient indicia of reliability. The court noted

¹⁸⁵ *Id.*

¹⁸⁶ MRE, *supra* note 2, MIL. R. EVID. 803(2). This rule defines an excited utterance as "(a) statement relating to a startling event or condition made while the declarant was under the stress of excitement caused by the event or condition."

Id.

¹⁸⁷ *Haner*, 49 M.J. at 76.

¹⁸⁸ MCM, *supra* note 2, MIL. R. EVID. 803(4). This rule describes the medical treatment exception as "(s)tatements made for the purposes of medical diagnosis or treatment and described medical history, or past or present symptoms, pain, or sensation, or the inception or general character of the cause or external source thereof insofar as reasonably pertinent to diagnosis or treatment."

Id.

¹⁸⁹ *Haner*, 49 M.J. 76-77.

¹⁹⁰ *Id.* at 77-78.

that the military judge made very specific findings that clearly demonstrated the reliability of these statements. Practitioners should review this case and these factors when litigating the admission of statements made to law enforcement officials under the residual hearsay exception.

Conclusion

Evidence is an ever-changing and dynamic part of our criminal law practice.

Indeed, the rules are the heart of our criminal practice and embody the values of our system of justice. Because these values change, courts and legislatures will continue to reevaluate and redefine these rules. Likewise, creative counsel will continue to push courts to interpret the rules in new ways and develop new law. These influences guarantee that this evidence saga will continue for many years to come. Get ready, because the 1999 installment is just around the corner.

Latent Aggression and Human Behavior: An Additional Approach to Polygraphy

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Abstract

The presented paper proposes an ethologically-oriented approach to the description and analysis of human behavior in the context of communications. The behavioral glossary that includes typology of human nonverbal behavior in facial expression, gesture, and posture has been suggested as an additional methodology to the analysis of the latent behavioral markers of aggression. Thus, it is proposed that the suggested methodology can serve as an effective tool in the descriptions of the behavior of offenders.

Key words: aggression, communication, ethology, nonverbal behavior.

Despite that polygraph technology occupies a meaningful place in the evaluation of human behavior, it is clear that evaluation based only on a psychophysiological base needs new integrative approaches. According to Ekman (1985) about 65% of all informative value in a communicative network belongs to nonverbal features of behavior, i.e. to facial expression, posture, and gesture. Boas (1938) pointed out that the basis of language is unconsciousness and gestural. The analysis of nonverbal typology helps to recognize the latent behavioral patterns, including aggressive drives, and recently these perspectives have been connected with polygraph methodology (Montgomery, 1998; Undeutsch, 1983).

According to Wilson (1975) aggression is the most prevalent and easily released characteristic of a species. Aggression is a serious problem in human society. Every day we hear or read about incidents involving violence and cruelty, and undoubtedly, thousands more go unreported. If we are to provide a safe environment for everyone, we must learn more about the causes of aggressive behavior. Many factors probably influence a person's tendency to commit acts of aggression, including childhood experiences, exposure to violence on television and in the movies, peer group pressures, hormones

and drugs, and malfunctions of the brain. Various aspects of aggressive behavior have been studied by zoologists, physiological psychologists, sociologists, social psychologists, political scientists, and psychologists who specialize in the learning process.

The utility of species-typical behaviors, such as sexual activity, parental behavior, food gathering, and nest construction, is obvious; we can easily understand their value to survival. But violence and aggression are also seen in many species, including our own. If aggression is harmful, one would not expect it to be so prevalent in nature (Carlson, Buskist, 1997).

Aggression is a dynamic quantity. Tinbergen (1963) demonstrated that aggressive behavior is displayed in postures, movements, and signals, and originates as a rule from intention movements. In the development of aggressive acts there are three main stages: (1) aggressive-preventive actions; (2) aggressive-conflict actions, and (3) aggressive-contact actions. The primary stage of an aggressive act is the latent threat, and contains latent motivation, whereas the individual does not recognize the destructive drive.

Aggressive behavior is closely connected with conflict, and the aim of

aggression is the causing of psychological or material damage. Thus, the recognition of aggressive traits leads to the possibilities of blockage or correction of aggressive actions.

Material and Methods

The aim of our work is the ethological analysis of human nonverbal behavior, with an attempt to describe latent features of aggressive behavior in the common behavioral repertoire. The expectation is that with such descriptions we can find signs of latent aggressive drives and motivations. Our study was based on the ethological methodology. The ethological approach differs from behaviorist and psychological methods in that it is mainly based on the descriptions of individual behavior in natural conditions without experimental interventions and modifications (Eibl-Eibesfeldt, 1989). Thus, the studied object is not treated as an automatic machine, with clear parameters of entry and output, that characterizes behaviorism, or some sum of responses to standard tests that would be typical for psychological experiments. The human individual is recognized as an object of observation, the result of evolutionary and social history, in surroundings that are natural for him. Ethologists study behavior through the methods of objective registration: photography, video taping, sonographing, and composition of ethograms.

The core method is the standard ethologically-physiological analyses of nonverbal markers of aggressive behavior during communications. We compose specific behavioral glossaries of human aggressive behavior. Based on longitudinal observations, we have described several elements of nonverbal behavior: 7 were facial expression, 9 in posture, and 8 in gesture. Taking into account that aggressive behavior is often a dynamic interactive process, we classified all elements into three groups: aggressive-preventive - 14 elements, aggressive-conflict - 10 elements, aggressive-contact - 2 elements.

The observational setting was made standard for all examined persons. The area was 3 x 4 square meters. The examined person and expert faced one another, with a distance of 1.5 meters between them. After

adaptation to experimental conditions, the examined person would be required to answer a series of standard questions.

Glossary of Visual Elements of Human Aggressive Behavior

Aggressive-preventive elements (A-P):

1. Intent look (look fixation more than 5-7 sec.)
2. Opened mouth, semi-grin (teeth showing)
3. Threatening lips
4. Chewing
5. Muttering (moving of lips without verbal components)
6. Eyebrow threat
7. Rapid head movements (up, down, toward, in side)
8. Threat by lifting of shoulders
9. Threat by moving apart of legs
10. Raising posture
11. Tension of body's muscles
12. Compressing of fists
13. Hands on the waist
14. Looking sideways (non-differentiated)

Aggressive-conflict elements (A-K):

1. Grin (lips are separated, uncovering the teeth)
2. Wide hand movement
3. Sharp hand movements
4. Threatening gesture (at interlocutor)
5. Threatening fist (toward interlocutor)
6. Strike on subject
7. Strike to own body
8. Thrust of body (sharp body movement toward partner)
9. Pelvic thrust (sharp pelvis movement toward partner)
10. Feet stamping (excluding stereotypes)

Conclusion

The presented method is aimed toward the description and analysis of nonverbal markers of aggressive behavior to help identify aggressive actions in an examined group. A clearly outlined description of aggressive behavior, within the general context of the human behavioral repertoire, can help prevent the escalation of aggressive tendencies. Our studies found various nonverbal markers of

aggressive drives in different ethnic groups. For one ethnic group the markers may be manifested as facial expression, in others such markers may be found in gestures, postures, etc. Although the descriptions of nonverbal patterns in the lower parts of the human body (e.g. the legs) are often beyond the observer's attention, they are quite important in general descriptions of the nonverbal behavioral repertoire (Samohvalov, 1995). The focus of the typical observer's attention is the subject's facial expressions or head movements, though only about 40% of the relevant literature is

dedicated to nonverbal cues from the head and facial area. (Montgomery, 1998).

The present approach can help us to distinguish the features of aggressiveness in the context of human behavior. Though the polygraph remains the pivotal method for the determination of truth and deception, we hope that it may be augmented by new approaches. From this perspective, ethological studies of human nonverbal behavior could be one additional tool for our understanding of the nature of offenders and their behaviors.

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The Role of Polygraphy with the Professional Board

Stan Abrams

Abstract

Professional boards in psychology, medicine, dentistry, and law have begun to demonstrate a need for the polygraph testing of their membership when accusations have been made against them. Generally, these complaints relate to unethical or unprofessional conduct that the member denies. He or she may reject this examination, but at that time the board might offer this test to the complainant. The polygraph findings will then be considered along with the other evidence and the board will then make its decision accordingly. The polygraph techniques employed, the difficulties inherent in this manner of testing, and the advantages to the board and to polygraphy are discussed.

Key words: exculpatory polygraph testing.

While a continued debate exists as to the acceptance of polygraphy by the scientific community, it is of interest that professional boards in a number of states have begun to utilize polygraph testing to evaluate those members who have been accused of improper conduct. While the professional board in some ways functions as a union and serves to protect its membership, it also polices its members. While many of the complaints have related to drug use by those individuals who have ready access to medications, an equally significant number of cases relate to inappropriate sexual contact with patients or clients. Since accusations of this nature are usually one on one, with no evidence available other than the statements of the two individuals involved, definitive findings are often difficult to obtain. It is conceivable that the accuser is lying in an attempt at obtaining revenge for what was perceived as inappropriate treatment or even financial gain through litigation. Another possibility is that the individual making the allegations has simply misperceived or misunderstood what the professional was doing. Finally, the professional simply could have been behaving inappropriately. This results in polygraph testing being of considerable value in assisting the board in reaching its conclusions. As professionals have become more sophisticated,

they have sought out private ex parte examinations which might be accepted if the board recognizes the work of that examiner or if the board's examiner agrees with the technique, the questions, and chart findings of that polygraphist after evaluating the case facts. Of course, as in a legal situation, if the subject is found to be deceptive in an ex parte situation, the board may never know the results of that test or even that it has been administered. Should the professional refuse the examination, the board might well offer the test to the victim. While corroborating tests tend to be weaker, this situation is not at all similar to a rape case because the victim in this case does not suffer the highly emotional impact associated with the force, violence, and fear that occurs in a rape. Therefore, it is believed that these tests can be quite valid.

The increased need for the use of polygraphy in this area is the result of a number of factors. In the past, patients and clients have been reluctant to make claims of sexual acting out by their doctors because they were concerned that they would not be believed, that their allegation would serve no purpose, and because it would be a personally embarrassing experience. Now, with both the greater liberation of women and the awareness of the general public that some professionals

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have acted in this manner, many more accusations have been made. This has served to apprehend those who have acted out in this manner, but also to make other professionals aware that they also could be accused of acts of this nature. Therefore, it has served as a deterrent that has reduced some unethical behavior.

It has been found that when one patient or client complained and this reached the news media, then other women made similar accusations. While not all of these might have been legitimate, it does appear that if a particular professional acted in this manner with one individual, there were often many others whom he had abused. In every case of which this writer is familiar, because of some involvement in the case, the offender has been a male. In almost every incident the alleged victim has been a woman, but there have been a few adult male victims and a number of minors. There is some personal awareness of a few female professionals who have become sexually involved with male patients, but rather than being offended, the males were rather pleased and proud that the advances were made. This may be true of some of the female patients as well until they became aware that the professional had been involved with others, and then they felt as though they had been used. It should be noted that the rules for sexual contact by attorneys vary from state to state.

It must be recognized that when these accusations are made, it is devastating to a professional regardless of whether he or she is guilty or innocent. If the board finds that the professional is guilty of these accusations, the person is very likely to lose his or her license, and therefore, much of his or her earning power. Litigation often follows which can eradicate completely any savings that have been accumulated since most insurance carriers now do not cover a professional who has been accused of sexually offending patients. Even if a divorce does not result, the family can become highly disrupted, and a professional who had been viewed as a pillar in his society, now has lost the respect of both his colleagues and society in general. Therefore, there is a real risk of suicide.

To be valid, specific polygraph testing must meet certain requirements. Perhaps, one of the most important is that the subject must have something to lose if his or her lie is to be detected. Undoubtedly, the professional has as much to lose as many criminals facing a possible prison term. An accepted technique with research proven validity must be employed in cases that are comparable to similar cases that have been studied. Finally, the tests must be numerically scored by an approach that also has been demonstrated by research to be a valid procedure. It is believed that testing of professionals in this situation should meet all of these requirements. To further enhance the accuracy of this testing, it is strongly recommended that single issue testing be employed as much as it is feasible even if it requires the administration of additional examinations. If all of these conditions are met, it is believed that this type of testing can be as valid as specific criminal examinations.

Polygraph testing of this nature, however, has some rather unique problems associated with it. Professionals are probably of a higher intelligence based on, if nothing else, the fact that they were able to complete post-graduate training. Moreover, because they went through so many years of college, they are accustomed to gaining information from books, and now from the Web. Therefore, it is felt that there is an even greater likelihood of their learning more about polygraphy, the concept of the comparison question, and countermeasures, thereby, making them more difficult to accurately test. If the professional is an attorney, he or she might have had a great deal of experience with polygraph testing. Most people in the sciences, which include physicians, psychologists, dentists, and others in the helping professions have a good working knowledge of physiology and are well acquainted with bio-feedback, meditation, hypnosis and similar approaches. Many of these individuals also have ready access to a wide variety of drugs and are aware of their effects. Regardless of whether any of these methods are significantly able to negatively impact on polygraph accuracy, the examiner must be aware that this degree of knowledge exists. One must also recognize that in some

instances a no opinion (NO) result is almost as valuable to a lying subject as a finding of truthfulness.

Another significant potential difficulty is associated with the issue of intent. In those instances in which physicians have been accused only of fondling or digital penetration during pap smears or breast checks, there obviously has been contact with these areas. While physicians are prone to state that this is simply part of their everyday routine and that they are not stimulated by this, this is highly unlikely. Based on this writer's interactions with physicians, it is apparent that there is definitely a degree of arousal, particularly when the patient is a relatively young and attractive woman. Here the risk is that of a false positive result (calling a truthful person deceptive) because the physician might experience some concern since he was aroused during the breast check and becomes fearful of responding deceptively to that question despite being truthful. Therefore, it is most important to add such qualifying phrases to the questions as "Purposely for sexual reasons..." and deal with these issues during the pre-test phase of the examination.

The issues to be tested will vary with the professional population just as much as it does in the general population. In some instances, the professional only talks about sex in detail, but refrains from any contact. He might be very interested in the patients' or clients' sexual activities or fantasies and wish to discuss his own. Others will have definite sexual contacts, but they will be limited to the physical examination and carried out surreptitiously under guise of being part of the examination. In contrast to that, some will do it openly in the office and even arrange to see that patient when no nurses are about so that he can have intercourse with that person. But in other situations, these contacts might grow into a dating situation that might last for years. In those instances, the office becomes a handy place to pick up women. There are also cases in which sexual acts are committed while the patient is under general anesthesia, amnesiacs, or even under hypnosis. While a fair number of cases of this nature have been seen, there is often some partial memory under the first two drugs and complete recall in the latter case. This, however, has not

stopped a number of individuals who were employing hypnosis to make sexual advances to subjects in this state.

In specific testing, all of the above problems might be seen. Countermeasures might be very sophisticated or quite primitive. It is dependent on the individual. If the subject is found truthful, which is actually rather rare, the board will usually be quite influenced by these findings if the results are consistent with the board's investigators' findings. Again, if the professional rejects an examination it could be that he has already been examined in an ex parte test and has been found deceptive. Should the accused be found deceptive, the board is interested in learning if his was a rare occurrence or something that has been happening over the years. If it is found to have been the former, the professional is not likely to lose his license, but rather, the board would place him on probation with the requirements that he obtain treatment for his sexual problems and always have a nurse present when treating a woman. If the victim has been a minor, he would never be allowed to treat a child again. In addition to that, he would have to undergo a periodic test every year to determine if he were re-offending. On the other hand, if the professional were to have been found to have had a history of this activity, he would lose his license to practice which would mean that he could never practice again anywhere in the United States.

It is possible to administer three separate types of polygraph examinations. The specific test obviously would be the first examination. The relevant questions, as in any specific test should be short, relatively non-emotional, clear, and to the point. "Did you ever have sexual intercourse with Betty Smith?" The comparison questions could relate to sexual acts, lying, or particularly effective are those that relate to breaking any of the other rules of their profession. If the subject is found deceptive in that test, a disclosure test must be administered to determine the extent of his sexual acting out. Unlike a disclosure test with a pedophile, the examiner is not interested in any issues other than patients, however, the examiner must clarify what the word encompasses. While generally, it is not acceptable to treat friends

or relatives, that line is frequently bent. Therefore, a wife, for example, must be excluded since she has been treated by the professional at times and he also has had intercourse with her. The polygraphist must determine how many others fall into that category. One might end up with a sizable list and the examiner has to be wary that he is not including any who are primarily patients who the subject is attempting to pass off as an old flame. A typical relevant question might be, "Excluding the six women we discussed, did you have intercourse with any other patient?" The victim or victims admitted to in the specific test should be part of the six women. Their names should also be determined so that the board investigators can ascertain if they were paramours first and patients later. The final test to be administered is the periodic examination given to those professionals who were allowed to continue practice with certain conditions. One test a year is adequate with the relevant questions dealing with whether they have had any manner of purposeful

sexual contact with a patient since their last examination.

Interrogating professionals has been found to be relatively easy despite all that they have to lose. While they are bright, they lack the street sense of typical criminals. Therefore, they can be rather easily convinced that there are very good reasons for them to make an admission.

Adding this approach to the polygraph's armamentarium serves many purposes. Clearing a falsely accused professional is of major value because he has so much to lose. While apprehending the abuser protects society, it also assists that particular profession in cleansing their group of an individual who will stigmatize their field at a time when many professions can ill afford this. However, it is also very valuable to the field of polygraph since it demonstrates further acceptance of this approach by a wide variety of members of the scientific community.

Standardization of Pre-Employment Police Applicant Screening Test Results

Michael A. Eller

Abstract

The purpose of this report is to propose a standard way of interpreting test results on pre-employment police applicant screening. The American Polygraph Association (APA) and the International Association of Chiefs of Police (IACP), have both published model policies on pre-employment polygraph applicant screening, but they do not detail what hiring action should be taken, based on the test results. If this is a decision only each department can answer, then one must turn to the courts for guidance, so that a sound legal decision can be made. An agency cannot blindly eliminate an applicant without doing so with just cause.

Hiring only the most qualified police applicants has always been the goal for police departments throughout the United States. Given the complex nature of police work, with its physical and emotional demands, the personnel section must use all available resources to ensure only the most qualified applicants become police officers.

Many of today's police agencies have a multi-phase pre-employment hiring process, so only those applicants who are able to complete all phases, ultimately are hired. These phases include written and physical examination, oral interviews, and background investigations (Bartlett, 1991). For many police departments, the polygraph examination is included in the multi-phase process. The polygraph examination is used by many police departments as a vital phase that an applicant must successfully pass in order to continue to be considered a viable candidate. Since the early 1950s, polygraph examinations have been a part of the selection process, leading to its wide usage in the 1990s (Bartlett, 1991). When EPPA was signed into law in 1988, law enforcement agencies were exempt, due to the unique nature of their job. Law enforcement however, was not exempt from the Americans with Disabilities Act of 1990. Police agencies were mandated to follow the same ADA

guidelines as the private sector when conducting pre-employment screening of applicants before a conditional job offer has been granted.

All agencies that include the polygraph in the hiring process should have a written policy covering how the polygraph is to be used for applicant screening.

The following polygraph questions were posed to this writer by the personnel section of a police agency.

1. If polygraph test results are deceptive or inconclusive with no confession, can you eliminate the applicant based on those results?
2. When should a re-test of an applicant be conducted?

The answers to these two questions depend upon many factors, but the main factor is the way in which the police agency utilizes the polygraph in applicant processing. Many police agencies maintain written policies for their polygraph programs, including its use in pre-employment applicant screening. The present paper is a guide for personnel sections for adopting the right policy when considering

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test results, to ensure fair and equal consideration of each applicant.

Standardization

Test Results

The first issue is to establish a policy for pre-employment applicant screening using the polygraph. The policy should contain a statement that includes something similar to the following: "The applicant must successfully

complete the polygraph examination in order to continue in the hiring process." One must then define "successfully complete the polygraph examination." This should be defined as completing the polygraph examination with no deceptive responses on relevant issues that have not been resolved to the satisfaction of the police agency.

Below are the possible test results after conducting an examination.

<u>Code</u>	<u>Meaning</u>
NDI	No Deception Indicated
DI/Confession	Deception Indicated/ Confession Obtained
DI/No Confession	Deception Indicated /No Confession Obtained
Inc/Confession	Inconclusive/Confession Obtained
Inc/No Confession	Inconclusive/No Confession Obtained
NO	No Opinion

When an applicant completes the polygraph examination, a policy defining each possible test result should be in place. Below are such recommendations.

NDI - The applicant has successfully completed the polygraph examination and the test results are forwarded to the personnel section. An NDI result would mean no unresolved relevant issues exist and the applicant has been found truthful.

DI/CONFESSION - A detailed report will be forwarded to the personnel section explaining the deceptive responses and what the applicant confessed. The personnel section will then make the decision as to the applicant's status based on the confession. An example of DI would be the applicant was deceptive on a drug issue and the post-test interview revealed the applicant lied, and now admits to using a drug that he/she earlier did not disclose.

DI/NO CONFESSION - If you have test results that are deception indicated and the applicant offers no explanation as to why the responses

are deceptive, nor makes any confessions, the following procedures should be followed:

1. A second test will be administered using the same relevant questions.
2. The specific date for the test will be determined by the examiner and the personnel section. The second test will be a minimum of 24 hours after the first examination. A different examiner will administer the test. This will enable the applicant an impartial test without claims of examiner bias. This also allows the second examiner to explore any deceptive responses in the posttest interview using a fresh approach.
3. If the applicant's test results are again deceptive with no confession, the results will be forwarded to the personnel section, and no further testing will be conducted.

INCONCLUSIVE/CONFESSION - A detailed report will be forwarded to the personnel section explaining the inconclusive responses and to what the applicant confessed. The

personnel section will then make the decision as to the applicant's status based on the confession. (This would follow the same guidelines as Deception Indicated/Confession.)

INCONCLUSIVE/NO CONFESSION - If you have test results that are inconclusive and the applicant offers no explanation nor makes any confessions to relevant issues, then the following procedures should be followed:

1. A second test will be administered using the same relevant questions.
2. The specific date for the test will be determined by the examiner and the personnel section. The second test will be a minimum of 24 hours after the first examination. The same polygraph examiner will conduct the second examination unless circumstances dictate otherwise.
3. If the applicant's test results are again inconclusive with no confession, a detailed report will be forwarded to the personnel section who will then decide if the applicant should be tested a third time or be allowed to continue in the hiring process.

Regardless of the number of examinations conducted, if the results are inconclusive and the applicant makes no confessions that would normally eliminate the applicant, the personnel section would have to give the benefit of any doubt to the applicant and allow him or her to continue in the hiring process. The decision not to hire an applicant based solely on inconclusive test results from a polygraph examination would be difficult to defend in court. This is due to the lack of documented court decisions supporting such a decision, and the fact that a polygraph examination is not 100% accurate in detecting deception. If at any time during the hiring process, any information is obtained that sheds light on why the test results might have been inconclusive, the applicant can always be re-tested based on the new information.

NO OPINION- this would be an examination that could not be completed due to a variety of reasons, and a complete test could not be conducted. Depending on the exact reasons

for the no opinion result, the applicant may or may not be rescheduled for another polygraph examination. (i.e. The applicant refuses to cooperate during the examination. This lack of cooperation would be a reason for no further testing of the applicant.)

Quality Control

It should be standard procedure that quality control be conducted on every polygraph examination of applicants. This should be done regardless of test results. There should be only one person conducting quality control and that should be the most senior examiner. This would help eliminate any claims of biased review and would allow for uniformity. If the senior examiner finds error during quality control, appropriate action should be taken, depending on the error.

Countermeasures

Countermeasures are defined as those things a subject will do to deceive the examiner in order to alter the test results. Any applicant caught using countermeasures, anytime during the testing process, will be automatically eliminated from the hiring process. Countermeasures will be viewed as cheating and such disqualifies the applicant. It should be well documented the type of countermeasure is observed and what, if any, warnings are given to the applicant, instructing him or her to cease the conduct. The applicant should be informed prior to the test that using a countermeasure could be grounds for being eliminated from the hiring process.

Defending Test Results of Deception/No Confession

Given all the possible test results, the one that presents a significant dilemma for the personnel section is the test result of deception indicated with no confession. Eliminating an applicant based on such results can expose the department to a lawsuit. Though one cannot control who decides to initiate a lawsuit, having your research completed and standing ready to defend the policy is appropriate. Defending such a decision starts with the technique used in the screening process.

Are the technique(s) used by the department both valid and reliable?

One of the most common polygraph formats for pre-employment screening is the Relevant-Irrelevant technique. If, after the initial testing a specific issue test needs to be conducted, the ZCT (zone comparison) and MGQT (modified general question) techniques are the methods of choice for most agencies. All three of these techniques have been validated, and independent research has found them reliable.

Having met those criteria, one then must know what, if anything, the courts have decided regarding the issue of polygraph test results. A recent decision dealing with the issue of rejecting an applicant based solely on a polygraph examination was in Colorado. This case was decided in 1996 and known as *David Law v. City of Colorado Springs, Colorado*.

Nature of the Case

The plaintiff David Law applied for the position of police officer with the Colorado Springs Police Department in 1989, 1990, and 1991. In 1990 and 1991, the plaintiff proceeded to the phase of the hiring process where both a background investigation and a polygraph examination were conducted. The same polygraph examiner conducted the polygraph test in 1990 and 1991. The examiner utilized the Relevant-Irrelevant (R-I) technique. The examiner "concluded that plaintiff was deceptive in four areas: (1) theft from employers, (2) criminal activity, (3) marijuana usage, and (4) illegal drug usage." The plaintiff did not receive an offer of employment from the Colorado Springs Police Department. The plaintiff then sued in 1992 limiting his claim to the 1990 polygraph examination. The plaintiff argued that the Relevant-Irrelevant technique used by the polygraph examiner, "...is not scientifically valid and that it is arbitrary and irrational for defendants to use and rely on such test results to disqualify plaintiff from employment as a police officer." It is the plaintiff's belief the police department should have used the CQ (comparison question) technique, which the plaintiff concedes is a valid polygraph technique.

The court first decided on the issue of whether the police department substantially relied on the polygraph results as the basis of

not hiring the applicant. The court found "...that the polygraph examination was a substantial factor in causing the plaintiff not to be hired as a police officer with the Colorado Springs Police Department." The chief of the police department, James Munger, could not specifically recall, other than the polygraph results, why the plaintiff wasn't hired.

The court found that police officers are always called upon to document and support decisions that are made. (i.e. applying for a search and seizure warrant, the police officer documents the probable cause for the issuance of the warrant.) Given the lack of an explanation by the chief, the court found the polygraph examination was the basis of the plaintiff not being hired.

The court then decided on the issue of whether the R-I technique is valid. To support the argument the R-I technique is valid, the defendants relied on testimony from Dr. William Yankee and Norm Ansley. The plaintiff's expert opinion came from Dr. David Raskin and Dr. Charles Honts. The court viewed the defendant experts more as practitioners in the field of polygraph, and the plaintiff's experts were viewed as academics and researchers. The court found in favor of the defense based on the following reason. The court took notice that Dr. Yankee had published three studies which supported the R-I technique, with the plaintiffs expert witness (Dr. Honts) agreeing they were well done. The court further stated, "if Congress wished to prevent government agencies' use of the R-I polygraph testing technique for screening of governmental employees, it could have prevented the use of that particular technique and allowed the generalized use of the CQ technique or some other polygraph testing technique."

The court also noticed how many police departments throughout the country utilize the R-I technique, and that "...the R-I technique is considered a good testing procedure for identifying deceptive individuals."

The court then further stated,

"...from the perspective of the Colorado Springs Police Department, the police

department has a legitimate government interest in separating those applicants who are deceptive in their response to those areas made a subject of the department's polygraph examination from nondeceptive applicants. Although the polygraph test does not set forth the degree of deception it does provide information as to the trust-worthiness of the candidate. As set forth above, the court finds that being trustworthy is a legitimate consideration in selecting police officers. The court acknowledges that it is unfortunate that some truthful individuals may be identified as untruthful. However, the court finds that it is not unreasonable for the Colorado Springs Police Department to conclude and believe that the use of the polygraph, and specifically the R-I polygraph technique employed by Jeannie Overall, (polygraph examiner) results in identifying a pool of candidates who are better suited for employment as a police officer that they would get without it. The court finds that the Colorado Springs Police Department's use of the R-I technique was not arbitrary or irrational or otherwise in violation of any arguable substantive due process right of Plaintiff."

In conclusion, the court agreed with the Defendants when they made the decision not to hire the Plaintiff based on the polygraph results.

When your first test result is found to be deceptive with no confession, the policy of a different examiner administering the second test is valid. This eliminates any claims the applicant might have about unfair testing, and further strengthens the test result of deception. (Given the second test is scored to be deceptive.)

FBI's Legal Opinion on Deception/No Confession

The Office of General Counsel for the FBI issued a legal opinion in November 1996 regarding the decision not to hire an applicant who had a polygraph examination leading to

an inconclusive result. The FBI opinion first states that "...an individual who seeks to challenge the Government's decision not to employ him or her must still establish that he or she has a constitutionally protected interest in a particular Government job."(p. 4)

The FBI would argue that an applicant does not have the "constitutional right," to be an FBI Agent, given the unique nature of the job. The FBI would then argue the decision would then pass the "rational basis" test that the Supreme Court resorts to when no other law or decisions exist. The decision not to hire an applicant whose test result was inconclusive could be made due to the applicant being responsible for that result. The FBI has relied on the argument that, given the classified and sensitive information an agent would have access to, it is reasonable to allow the government the discretion not to hire someone who has not been candid and totally truthful. The FBI concludes that an applicant must "pass" the polygraph examination in order for the FBI to make the decision the applicant is "trustworthy and reliable."

Given the FBI's stance with an inconclusive result, having a policy of eliminating an applicant based on two examinations of deception, is even a higher standard of rejection.

Conclusion

Defending test results, other than deception with no confession, is straightforward and highly defensible. Applicants challenging these test results are poorly positioned to argue that they were eliminated from further testing without sufficient cause.

A police department must have all documents and be fully prepared to defend their position of eliminating an applicant based on two test results of deception with no confession. As in any police function, the more one has documentation to support a decision, the better. Simply stated, record everything that goes into making a personnel hiring decision.

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Effect of Demographic Variables on Psychophysiological Detection of Deception Examination Outcome Accuracies

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Abstract

This study was designed to assess whether or not demographic variables and individual differences, specifically, residence (urban/rural), income level (less or more than \$20,000.), gender, age, education, and role (innocent or guilty) affected the outcome accuracies of Modified General Question Technique (MGQT) and Zone Comparison Test (ZCT) psychophysiological detection of deception (PDD) examinations. The study utilized 211 military and 168 civilian examinees. Two hundred and thirty-two examinees were male and 147 examinees were female. Examiners were 24 students enrolled in the Department of Defense Polygraph Institute (DoDPI) Basic Polygraph Examiners Training Course (91-1) and three Federally certified examiners on staff at the DoDPI. Examiners participated in the study during the 7th, 8th, 10th, and 11th weeks of the course. All examiners used standard field polygraph instruments. A variety of scenarios (rape, murder, robbery) were used to program examinees guilty or innocent. All examinations were conducted according to DoDPI standards and guidelines. Analyses of the data concerning income and residence was limited to data from the civilian examinees. Results suggest that these PDD techniques are relatively robust with respect to the examined demographic variables. In general, there were no significant results. The accuracies of the tested PDD techniques were not influenced by the examined demographic variables or individual differences.

Key words: Accuracy, demographics, education, gender, income, modified question technique (MGQT), psychophysiological detection of deception (PDD), rural, urban, zone comparison test (ZCT)

Psychophysiological detection of deception (PDD) examinations are administered to a wide variety of individuals. Anecdotal reports from the field suggest that some demographic variables might influence or moderate the accuracies of different testing techniques. For instances, many examiners believe that intelligence level has an influence on test outcome. This study assessed the effects of some demographic variables and some individual differences on the outcome accuracy of PDD examinations. Analyses were computed for each of the following variables: 1) residence - urban/rural; 2) income level - less than \$20,000/greater than \$20,000; 3)

gender; 4) age; 5) educational level; and 6) accuracy difference between innocent and guilty examinees for each of the variables.

Method

Subjects

Subjects included U.S. Army personnel assigned to Fort McClellan, AL either during their basic training or as permanent party personnel and civilian personnel recruited from the surrounding communities. All subjects volunteered to participate in the study.

Acknowledgements

This research was supported in part by NSA. Thanks to the members of the Department of Defense Polygraph Institute (DoDPI) Basic Polygraph Examiners Training Course (91-1), for their participation in collecting the data, and to the instructors of the DoDPI who participated. This study was supported by funds from the DoDPI as project DoDPI89-P-0010, and designated as report DoDPI93-R-0007. The views expressed in this article are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

Military personnel. A total of 211 (172 male and 39 female) military personnel participated as part of their military training. They participated on 19, 20, 21, 22, 25, 26, and 27 FEB and 1, 19, and 20 MAR 1991. One hundred and six of the military examinees were Caucasian, 50 African American, 52 Hispanic and 3 Native Americans. The ages ranged from 18 to 55. Residency and income information were not obtained on the military personnel.

Civilian personnel. A contract was let to a temporary services agency to supply 30 individuals per day for a six day period (21, 22, 26, 27, 28, and 29 MAR 1991). The examinees were paid \$50.00 for their participation. A total of 168 psychophysiological detection of deception (PDD) examinations were conducted on civilian personnel. Due to illness, either the examinee's or the examiner's, 12 civilian personnel were not administered PDD examinations. Sixty of the examinees were male and 108 were female. There were 110 Caucasians, 45 African Americans, 10 Hispanics, 2 Asians and 1 other. The ages ranged from 18 to 66. Twenty-four of the examinees lived in an urban locality with a standard metropolitan statistical area (SMSA) population of more than 500,000 (Birmingham, AL) and 135 lived in a rural locality with an SMSA population of less than 500,000 (Anniston, AL, and surrounding communities). Thirty-three of the examinees reported an income greater than \$20,000 per year (determined from the highest annual income within the last five years). The remaining 127 examinees reported annual incomes of less than \$20,000 per year.

Examiners

Examiners were 24 students enrolled in the 14 week Basic Polygraph Examiner's Training Course (91-1), at the Department of Defense Polygraph Institute. Seventeen of the students were criminal investigators from several Department of Defense (DoD) agencies, six were from non-DoD federal agencies and one student was from the Anniston Police Department, Anniston, AL. Data collection occurred during the 7th and 8th weeks of the polygraph course and again during the 10th and 11th weeks. Students had completed more than 20 hours of instruction in test

evaluation and had conducted more than 56 hours of PDD examinations. The 24 students included 3 African-American students (2 male and 1 female), 3 Hispanic students (all males) and 1 Caucasian female. In addition to the student examiners, three (1 Caucasian, 1 African-American and 1 Hispanic - all male) DoD instructors conducted examinations during weeks 10 and 11. The student examiners conducted one exam per day and the faculty examiners, when possible, conducted two exams per day. Half of the students conducted their examinations during the morning and the other half conducted their examinations during the afternoon.

Apparatus

The student examiners used Lafayette Factfinder polygraphs to conduct the examinations. The instruments recorded four physiological channels - two pneumograph, one electrodermal and one cardiovascular. During weeks 10 and 11, six of the students utilized GSR (resistance) couplers while the other 18 used GSG(r) (conductance) couplers. In addition, 6 student examiners used the standard plate electrodes without electrode paste, 6 used standard plate electrodes with electrode paste (mixture of a neutral base with physiological saline), and 12 used silver-silver chloride (Ag/AgCl) electrodes (6 with GSR couplers and 6 with GSG(r) couplers). Subjects were assigned randomly to the different equipment configurations, which was part of another study. Faculty examiners use their individual standard field instruments.

Testing Techniques

During the 7th and 8th weeks, the Zone Comparison Technique (ZCT) format was used and during the 10th and 11th weeks, the Modified General Question Technique (MGQT) format was used. Both tests were conducted as taught during the DoDPI Basic Polygraph Examiner's Training Course. The examinations included the standard rights advisement, and a consent form. Examiners scored their own examinations (unassisted) using a 7-point scale. The decision criteria for the ZCT examinations format required a -3 in any spot for a decision of deception indicated (DI) and a total score of +6 with each spot $\geq +1$ for a no deception indicated (NDI) decision. Any other score was an inconclusive

decision (INC). The decision criteria for the MGQT technique was the same as the ZCT for the DI decision. However, an NDI decision required a minimum of +3 in every spot. Military personnel were employed during the ZCT format and during the first two days of the MGQT format. The remainder of the MGQT format employed the civilian examinees. Data was not collected during the first day of either technique. This allowed the students an opportunity to become familiar with the technique.

Scenarios

The scenarios included robberies, murders, and sexual assault mock crimes typical of those used during the Zone and MGQT portions of the DoDPI Basic Polygraph Examiner's Training Course. The scenarios were set by faculty examiners experienced in setting criminal scenarios for the basic course. The examinees were either all programmed guilty or all programmed innocent for any given day. During the ZCT format, the examinees were innocent on three days and guilty on four days. During the MGQT, the examinees were programmed innocent on three days and programmed guilty on six days. Since only two days of the MGQT included military personnel, they were programmed guilty one day and programmed innocent the other. For comparison purposes, the civilian personnel had one programmed innocent and one programmed guilty day during the first two days. Other than these four days, the order of programmed innocent and programmed guilty scenarios was randomly selected.

Questionnaires

Demographic and subcultural information was obtained from the examinees by the examiner during the pretest examination. Examiners asked the examinee specific information contained on the questionnaire in Appendix A. Prior to the PDD examination, civilian personnel completed the additional questionnaire in Appendix B. The residency and income information was obtained for the civilian personnel but was not available for the military personnel. Since the students were in training, it was decided to not interrupt their normal examination process by having them

ask additional information of only some of their examinees.

Procedure

When the examinees arrived at the institute they were briefed regarding the nature of the examination and were asked to sign a consent form (Appendix C) granting permission for them to participate in the study. The scenario was enacted and each examinee was assigned to an examiner. The PDD examinations were conducted, the examinees were debriefed and released.

Results

Frequency cross tabulations were constructed for each of the following variables; gender, age, residence, income, and education. Unless otherwise stated, the tables depict the levels of the variable by the examiners' decisions; no deception indicated (NDI); deception indicated (DI); inconclusive (INC). The percentages are included in parentheses next to the frequencies. Separate cross tabulations were computed for programmed innocent examinees and for programmed guilty examinees on each variable. Four analyses were conducted on each table - 1) to assess the entire table, 2) to compare correct decisions against non-correct decisions (e.g. on innocent examinees the NDI decisions would be compared against the INC + DI decisions), 3) correct decisions against errors (NDI vs DI), and 4) errors against inconclusives (e.g. on innocent examinees - DI vs INC). When the analyses resulted in a 2 x 2 comparison, *Fisher's exact two-tailed test* was calculated. If the comparison was not a 2 x 2 and the cell sizes were adequate, a χ^2 statistic was calculated. Due to the large number of analyses, statistics were considered significant only if $p < .015$. Appendix D contains the statistics for all the tables - whether significant or not.

Residence

Residency information was obtained only for the civilian personnel. Therefore the cross tabulations of examinee's residence with examiner's decision contain data from civilian examinees only. Also, residency information was missing on nine of the examinees. Tables

1 (Innocent) and 2 (Guilty) depict the residency data. None of the statistical analyses was significant. There were no differences in

decisions for individuals living in urban areas compared to individuals living in rural areas for either innocent or guilty examinees.

Table 1
Cross Tabulation for Civilian Examinee's Residence by Examiner's Decision,
for Innocent Examinees

		Examiner's decision			
		NDI	INC	DI	
Innocent	Urban	6 (46.2)	5 (38.5)	2 (15.4)	13
	Rural	14 (35.9)	15 (38.5)	10 (25.6)	39

Table 2
Cross Tabulation for Civilian Examinee's Residence by Examiner's Decision,
for Guilty Examinees

		Examiner's decision			
		NDI	INC	DI	
Guilty	Urban	2 (18.2)	2 (18.2)	7 (63.6)	11
	Rural	13 (13.5)	30 (31.3)	53 (55.2)	96

Income

Income information was obtained only for the civilian personnel. Therefore the cross tabulations of examinee's income with examiner's decision contain data from civilian examinees only. Also, income information was missing for eight examinees. Tables 3

(Innocent) and 4 (Guilty) depict the income data. None of the statistical analyses were significant. There were no differences in accuracy for individuals with incomes greater than \$20,000 compared to individuals with incomes less than \$20,000 for either programmed innocent or programmed guilty examinees.

Table 3
Cross Tabulation for Civilian Examinee's Income by Examiner's Decision,
for Innocent Examinees

		Examiner's decision			
Innocent	> \$20,000	NDI 5 (50.0)	INC 3 (30.0)	DI 2 (20.0)	10
	< \$20,000	16 (37.2)	17 (39.5)	10 (23.3)	43

Table 4
Cross Tabulation for Civilian Examinee's Income by Examiner's Decision,
for Guilty Examinees

		Examiner's decision			
Guilty	> \$20,000	NDI 4 (17.4)	INC 10 (43.5)	DI 9 (39.1)	23
	< \$20,000	11 (13.1)	22 (26.2)	51 (60.7)	84

Gender

Tables 5 (Innocent) and 6 (Guilty) contain the cross tabulation data for examinee's gender with examiner's decision.

None of the analyses were significant. There were no differences in accuracy for females compared to males for either innocent or guilty examinees.

Table 5
Cross Tabulation for Examinee's Gender by Examiner's Decision,
for Innocent Examinees

		Examiner's decision			
Innocent	Male	NDI 55 (46.2)	INC 38 (31.9)	DI 26 (21.9)	119
	Female	16 (30.8)	25 (48.1)	11 (21.2)	52

Table 6
Cross Tabulation for Examinee's Gender by Examiner's Decision, for Guilty Examinees

		Examiner's decision			
Guilty	Male	NDI 8 (7.1)	INC 30 (26.6)	DI 75 (66.4)	113
	Female	14 (14.7)	29 (30.5)	52 (54.7)	95

Because the civilian and military populations differed in their distribution of males and females, cross tabulations for gender by examiner's decision were generated for civilian and military personnel separately. To keep the groups as similar as possible, only the first four days (2 civilian and 2 military) of the Modified General Question Technique (MGQT), were utilized. Tables 7 (Innocent

Military), 8 (Guilty Military), 9 (Innocent Civilians) and 10 (Guilty Civilians) depict the data. None of the analyses was significant. There were no differences in examiner decisions for males compared to females for either the military personnel or the civilian personnel, for programmed innocent or programmed guilty personnel.

Table 7
Cross Tabulation for Examinee's Gender by Examiner's Decision, for Innocent Military Examinees (Days 1 and 2 of the MGQT)

		Examiner's decision			
Innocent	Male	NDI 6 (40.0)	INC 4 (26.7)	DI 5 (33.3)	15
	Female	3 (25.0)	7 (58.3)	2 (16.7)	12

Table 8
Cross Tabulation for Examinee's Gender by Examiner's Decision, for Guilty Military Examinees (Days 1 and 2 of the MGQT)

		Examiner's decision			
Guilty	Male	NDI 1 (9.1)	INC 4 (36.4)	DI 6 (54.5)	11
	Female	1 (7.1)	6 (42.9)	7 (50.0)	14

Table 9
Cross Tabulation for Examinee's Gender by Examiner's Decision, for Innocent Civilian Examinees (Days 3 and 4 of the MGQT)

		Examiner's decision			
Innocent	Male	NDI 7 (63.6)	INC 3 (27.3)	DI 1 (9.1)	11
	Female	8 (50.0)	4 (25.0)	4 (25.0)	16

Table 10
Cross Tabulation for Examinee's Gender by Examiner's Decision, for Guilty Civilian Examinees (Days 3 and 4 of the MGQT)

		Examiner's decision			
Guilty	Male	NDI 0 (0.0)	INC 2 (22.2)	DI 7 (77.8)	9
	Female	4 (21.1)	6 (31.6)	9 (47.4)	19

Age Group

Age information was missing on one examinee. Tables 11 (Innocent) and 12 (Guilty) contain the cross tabulation data for examinee's age group with examiner's decision. Due to the small cell sizes the chi-

square was inappropriate and it was not possible to employ *Fisher's exact* test since the tables were not 2 x 2. Therefore, the age groups were collapsed into two groups - 18 to 25 and 26 and older. Tables 13 (Innocent) and 14 (Guilty) depict the data.

Table 11
Cross Tabulation for Examinee's Age Group by Examiner's Decision, for Innocent Examinees

		Examiner's decision			
Innocent	18-25	NDI 52 (40.0)	INC 49 (37.7)	DI 29 (22.3)	130
	26-35	9 (47.4)	6 (31.6)	4 (21.1)	19
	36-45	6 (50.0)	6 (50.0)	0 (0.0)	12
	46-55	3 (37.5)	1 (12.5)	4 (50.0)	8
	56+	2 (50.0)	1 (25.0)	1 (25.0)	4

Table 12
Cross Tabulation for Examinee's Age Group by Examiner's Decision, for Guilty Examinees

		Examiner's decision			
		NDI	INC	DI	
Guilty	18-25	7 (5.4)	37 (28.7)	85 (65.9)	128
	26-35	6 (18.8)	6 (18.8)	20 (62.5)	32
	36-45	6 (22.2)	9 (33.3)	12 (44.4)	27
	46-55	3 (42.9)	3 (42.9)	1 (14.3)	7
	56+	0 (0.0)	3 (25.0)	9 (75.0)	12

Table 13
Cross Tabulation for Examinee's Age Group by Examiner's Decision, for Innocent Examinees

		Examiner's decision			
		NDI	INC	DI	
Innocent	18-25	52 (40.0)	49 (37.7)	29 (22.3)	130
	26-56+	20 (46.51)	14 (32.56)	9 (20.93)	43

Table 14
Cross Tabulation for Examinee's Age Group by Examiner's Decision for Guilty Examinees

		Examiner's decision			
		NDI	INC	DI	
Guilty	18-25	7 (5.4)	37 (28.7)	85 (65.9)	129
	26-56+	15 (19.0)	22 (27.8)	42 (53.2)	79

None of the results were significant for the innocent examinees. The examiner's decisions were not different for older innocent examinees compared to younger innocent examinees. For the guilty examinees, the distribution of decisions was different for the

two age groups, $\chi^2 (2,208) = 9.831, p < .0073$. The comparison of correct decisions versus wrong decisions also was significant, *Fisher's*, $p < .0035$. The older (26 - 56+) age group guilty examinees were more likely to receive incorrect NDI decisions and less likely to

receive the correct DI decision than were the younger (18 - 25) age group examinees. Table

15 depicts the 2 x 2 cross tabulation.

Table 15
Cross Tabulation for Guilty Examinee's Age Group by Correct and Wrong Decisions

		Examiner's decision		
		Correct	Wrong	
Guilty	18-25	85 (92.4)	7 (7.6)	92
	26-56+	42 (73.7)	15 (26.3)	57

Because the civilian and military populations differed in their distribution of age group, cross tabulations for age group by examiner's decision were generated for civilian and military personnel separately. To keep the groups as similar as possible, only the first four days (2 civilian and 2 military) of the MGQT were utilized. Tables 16 (Innocent

Military), 17 (Guilty Military), 18 (Innocent Civilians), and 19 (Guilty Civilians) depict the data. None of the analyses was significant. There were no differences in examiner decisions for younger compared to older examinees for either the military personnel or the civilian personnel, for programmed innocent or programmed guilty personnel.

Table 16
Cross Tabulation for Examinee's Age Group by Examiner's Decision for Innocent Military Examinees (Days 1 and 2 of the MGQT)

		Examiner's decision		
		NDI	INC	DI
Innocent	18-25	9 (39.1)	9 (39.1)	5 (21.7)
	26-56+	0 (0.0)	2 (40.0)	3 (60.0)

Table 17
Cross Tabulation for Examinee's Age Group by Examiner's Decision for Guilty Military Examinees (Days 1 and 2 of the MGQT)

		Examiner's decision		
		NDI	INC	DI
Guilty	18-25	2 (8.3)	10 (41.7)	12 (50.0)
	26-56+	0 (0.0)	0 (0.0)	1 (100.0)

Table 18
Cross Tabulation for Examinee's Age by Examiner's Decision for Innocent Civilian Examinees
(Days 3 and 4 of the MGQT)

		Examiner's decision			
		NDI	INC	DI	
Innocent	18-25	4 (33.3)	5 (41.7)	3 (25.0)	12
	26+	11 (73.3)	2 (13.3)	2 (13.3)	15

Table 19
Cross Tabulation for Examinee's Age by Examiner's Decision for Guilty Civilian Examinees
(Days 3 and 4 of the MGQT)

		Examiner's decision			
		NDI	INC	DI	
Guilty	18-25	0 (0.0)	5 (38.5)	8 (61.5)	13
	26	4 (26.7)	3 (20.0)	8 (53.3)	15

Education

examinee's educational level with examiner's decision.

Tables 20 (Innocent) and 21 (Guilty) contain the cross tabulation data for

Table 20
Cross Tabulation for Educational Level by Examiner's Decision for Innocent Examinees

		Examiner's decision			
		NDI	INC	DI	
Innocent	No diploma	9 (50.0)	6 (33.3)	3 (16.7)	18
	Diploma/GED	28 (45.9)	13 (21.3)	20 (32.8)	61
	College	34 (37.4)	42 (46.2)	15 (16.5)	91

Table 21
Cross Tabulation For Educational Level by Examiner's Decision for Guilty Examinees

		Examiner's decision			
Guilty	No diploma	NDI 2 (9.2)	INC 6 (27.3)	DI 14 (63.6)	22
	Diploma/GED	6 (6.2)	31 (31.6)	61 (62.2)	98
	College	14 (16.1)	22 (25.3)	51 (58.6)	87

Due to the small cell sizes the chi-square was inappropriate and it was not possible to employ *Fisher's exact* test since the tables were not 2 x 2. Therefore, the educational levels were collapsed into two

groups - individuals with no college experience and individuals with some college experience. Tables 22 (Innocent) and 23 (Guilty) depict the data.

Table 22
Cross Tabulation for Educational Level by Examiner's Decision for Innocent Examinees

		Examiner's decision			
Innocent	No college	NDI 37 (46.8)	INC 19 (24.1)	DI 23 (29.1)	79
	College	34 (37.4)	42 (46.2)	15 (16.5)	91

Table 23
Cross Tabulation for Educational Level by Examiner's Decision for Guilty Examinees

		Examiner's decision			
Guilty	No college	NDI 8 (6.7)	INC 37 (30.8)	DI 75 (62.5)	120
	College	14 (16.1)	22 (25.3)	51 (58.6)	87

None of the results were significant for the guilty examinees. Examiner's decisions were not different for guilty examinees with college experience compared to examiner decisions for guilty examinees without college experience. For the innocent examinees, the chi-square was significant, $\chi^2(2,170) = 9.68$, $p < .0079$, and the Fisher's test comparing the

wrong decisions to the inconclusive decisions also was significant, $p < .0063$. Table 24 depicts the data. If a correct decision was not made, examinees with no college experience compared to examinees with college experience were more likely to receive a DI decision rather than an INC decision.

Table 24
Cross Tabulation for Innocent Examinee's Educational Level by
Wrong and Inconclusive Decisions

		Examiner's decision		
		Wrong	Inconclusive	
Innocent	No college	23 (54.8)	19 (45.2)	42
	College	15 (26.3)	42 (73.7)	57

Because the civilian and military populations differed in their distribution of educational level (Reed, 1991), cross tabulations for educational level by examiner's decision were generated for civilian and military personnel separately. To keep the groups as similar as possible, only the first four days (2 civilian and 2 military) of the MGQT were utilized. Tables 25 (Innocent

Military), 26 (Guilty Military), 27 (Innocent Civilians) and 28 (Guilty Civilians) depict the data. None of the analyses were significant. There were no differences in examiner decisions for individuals with college experience compared to individuals without college experience, for either the military personnel or the civilian personnel.

Table 25
Cross Tabulation for Educational Level by Examiner's Decision for Innocent Military
Examinees (Days 1 and 2 of the MGQT)

		Examiner's decision		
		NDI	INC	DI
Innocent	No college	1 (14.3)	2 (28.6)	4 (57.1)
	College	8 (38.1)	9 (42.9)	4 (19.0)

Table 26
Cross Tabulation for Educational Level by Examiner's Decision for Guilty Military Examinees
(Days 1 and 2 of the MGQT)

		Examiner's decision			
Guilty	No college	NDI 1 (8.3)	INC 6 (50.0)	DI 5 (41.7)	12
	College	1 (7.7)	4 (30.7)	8 (61.5)	13

Table 27
Cross Tabulation for Educational Level by Examiner's Decision for Innocent Civilian
Examinees (Days 3 and 4 of the MGQT)

		Examiner's decision			
Innocent	No college	NDI 9 (60.0)	INC 2 (13.3)	DI 4 (26.7)	15
	College	6 (50.0)	5 (41.7)	1 (8.30)	12

Table 28
Cross Tabulation for Educational Level by Examiner's Decision for Guilty Civilian Examinees
(Days 3 and 4 of the MGQT)

		Examiner's decision			
Guilty	No college	NDI 1 (9.1)	INC 4 (36.4)	DI 6 (54.5)	11
	College	3 (17.6)	4 (23.5)	10 (58.8)	17

Examinee's role

The following analyses were designed to assess whether any of these variables differentially influenced the accuracy rates of guilty and innocent examinees. Analyses used only the civilian personnel. Cross tabulations of innocent and guilty examinees were generated

for each of the following variables - males, females, urban residence, rural residence, over \$20,000 income, less than \$20,000 income, 18 to 25 years of age, 26 years of age or older, no diploma or General Equivalency Diploma (GED), and either diploma or GED. Tables 29 through 33 depict the analyses with significant results.

Table 29 contains the cross tabulation data of role by hit rate for civilian examinees with incomes less than \$20,000. The overall table was not significant. However, the comparison of correct to non-correct was

significant, *Fisher's*, $p < .0149$ (Table 30 depicts the data). For examinees who earn less than \$20,000, a non-correct decision was more likely for innocent than for guilty examinees.

Table 29
Cross Tabulation of Role by Hit Rate for Civilian Examinees who Earn Less than \$20,000

	Hit rate			
	Correct	INC	Wrong	
Innocent	16 (37.2)	17 (39.5)	10 (23.3)	43
Guilty	51 (60.7)	22 (26.2)	11 (13.1)	84

Table 30
Cross Tabulation of Role by Correct and Non-correct Decisions for Civilian Examinees who Earn Less than \$20,000

	Hit rate		
	Correct	Non-correct	
Innocent	16 (37.2)	27 (62.8)	43
Guilty	51 (60.7)	33 (39.3)	84

Table 31 contains the cross tabulation data of role by hit rate for civilian examinees between the ages of 18 and 25. The chi-square of the overall table was not appropriate due to small cell sizes. The comparisons of correct to wrong, *Fisher's*, $p < .0031$ (Table 32 depicts the data) and correct to non-correct,

Fisher's, $p < .0036$ (Table 33 depicts the data) were significant. For examinees 18 to 25 years of age, a non-correct decision was more likely for programmed innocent than for programmed guilty examinees and a wrong decision was more likely for the programmed innocent than for the programmed guilty.

Table 31
Cross Tabulation of Role by Hit Rate for Civilian Examinees 18 to 25 Years of Age

	Hit rate			
	Correct	INC	Wrong	
Innocent	9 (30.0)	13 (43.3)	8 (26.7)	30
Guilty	26 (66.7)	11 (28.2)	2 (5.1)	39

Table 32
Cross Tabulation of Role by Correct and Wrong Decisions for Civilian Examinees
18 to 25 Years of Age

Hit rate			
	Correct	Wrong	
Innocent	9 (52.9)	8 (47.1)	17
Guilty	26 (92.9)	2 (7.1)	28

Table 33
Cross Tabulation of Role by Correct and Non-correct Decisions for Civilian Examinees
18 to 25 Years of Age

Hit rate			
	Correct	Non-correct	
Innocent	9 (30.0)	21 (70.0)	30
Guilty	26 (66.7)	13 (33.3)	39

Discussion

These analyses suggest that these psychophysiological detection of deception (PDD) techniques are relatively robust with respect to these specific demographic variables. Given the number of analyses that were conducted, the very small number of significant results suggest that the accuracies of these testing techniques are not influenced by these demographic variables. However, it should be kept in mind that the residency and income variables were tested using only the Modified General Question Technique (MGQT) format. Where significant results occurred, one possible explanation of the results is the effectiveness of the probable lie control questions.

Accuracies were influenced by the age of the examinee. Younger examinees were more likely to receive an incorrect decision if they were innocent than if they were guilty. There was no such difference for the older innocent and guilty examinees. In addition,

the older guilty examinees were more likely to receive a wrong decision than were the younger guilty examinees. A possible explanation for these results is the effectiveness of the control questions on younger and older individuals. One might speculate that control questions would be more effective on older individuals, since they have had more life experiences and therefore, more time and opportunity to generate control material. This might explain the difficulty with the young innocent examinees. The control material is not as powerful. Similarly, it would explain why the older guilty examinees received more incorrect decisions. The control material is so strong that it was more significant to the examinee than the mock crime issue. An alternative and parallel explanation, is that the ethical and moral foundation for younger individuals is not as strongly established as it is for older individuals. Although control question material may be available, it may not be of as great a concern to the younger individuals.

The strength of the control questions might also explain the influence of education on the accuracies. Again, education effected only the innocent examinees. If a correct decision was not made, the examinee was more likely to receive an inconclusive decision if (s)he had some college experience and more likely to receive an incorrect deception indicated (DI) decision if (s)he did not have college experience. Perhaps individuals with college experience have had more opportunity to generate control material, or the moral foundation is more firmly established. An alternative explanation is that individuals who attend college are smarter and therefore, understand or comprehend the ground work that the examiner established for the control questions.

The influence of income might be explained as a function of the other variables. For individuals with incomes less than

\$20,000.00, the examination was less accurate on innocent individuals than on guilty individuals. The same was not true for individuals with incomes greater than \$20,000.00. It is possible that the individuals with incomes less than \$20,000.00 were also the younger examinees and had not attended college. In fact, both age ($r = .3008$, $p < .0001$) and education ($r = .2458$, $p < .0017$) were significantly correlated with income.

This study suggests that the role of the probable lie control question should be investigated further. In addition, the components of the skill necessary for setting good control questions should be investigated. It will be beneficial to evaluate and augment what we currently know about the psychological aspects of developing control question material and setting controls.

Appendix A

AUTHORITY: Title 5, United States Code, Section 301

PRINCIPAL PURPOSE: Personal data furnished shall be feeder data for compiling scientific information for demographic studies.

ROUTINE USES: The information asked for will be used in tracking of collected demographic data used in compilation of statistic for research purposes. The requested personal identifying information will not be released outside of the DoD.

MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION. Voluntary. However, failure to furnish data requested could result in invalid results of computer generated data.

POLYGRAPH EXAMINATION AND DEMOGRAPHIC WORK SHEET

CASE NUMBER _____ BEGIN TIME _____ END TIME _____

NAME _____ EXAM PURPOSE _____

PREVIOUS POLYGRAPH _____
place date purpose

EXAMINER _____ ORGANIZATION _____ DATE _____

- 1) How accurate do you think the polygraph is in general? _____ %
How accurate will the polygraph be with you today? _____ %

SUBJECT INFORMATION AND BACKGROUND

- 2) AGE _____
3) GENDER: 1 - MALE 2 - FEMALE
4) RACE: 1 - CAUCASIAN 2 - AFRO-AMERICAN 3 - HISPANIC
4 - ASIAN 5 - NATIVE AMERICAN 6 - OTHER (specify) _____

- 5) FAMILY BACKGROUND (Name, Age, POB, and occupation for each):

Mother _____
Father _____
Brother(s) _____
Sister(s) _____
Children _____

-
- 6) EDUCATION: #YEARS COMPLETED _____ DEGREE _____ MAJOR _____
Last school attended _____ GT (IQ) _____

- 7) EMPLOYMENT (Month & Year, Employer, Examinee's Position):

- 8) MILITARY SERVICE (Month & Year, Service, Location, Rank):

- 9) ARREST RECORD (Month & Year, Location, Offense, Disposition – Civilian/Military):

- 10) LEISURE ACTIVITIES (Sports and Hobbies):

- 11) MEDICAL HISTORY

Date of last Physical _____
 Date last hospitalized _____ Reason _____
 Most recent ailment _____
 Color Blind: 1 – YES 2 – NO Height _____ Weight _____

- 12) PRESENT HEALTH:

Health Problems 1 – NONE 2 – Not Bad 3 – Mild 4 – Moderate
 5 – Bad 6 – Very Bad

Pain/Discomfort Today: Reason _____
 1 – NONE 2 – Not Bad 3 – Mild 4 – Moderate
 5 – Bad 6 – Very Bad

Medication (past 24 hrs) Name _____
 Quantity _____ Time Taken _____

- 13) SUBSTANCE USE:

Narcotics/Drugs (past 24 hrs) TYPE _____
 Caffeine 1 – NO 2 – Past hour 3 – Past 24 hours 4 – This week
 Alcohol 1 – NO 2 – Past hour 3 – Past 24 hours 4 – This week
 Tobacco 1 – NO 2 – Past hour 3 – Past 24 hours 4 – This week

- 14) SLEEP:

Amount of sleep during the past 24 hours _____
 Time subject woke up today _____
 Number of hours subject has been awake _____

- 15) COMMENTS:

***** EXAM COMPLETED *****

- 16) Has this exam changed your opinion of the accuracy of the polygraph? YES NO
- Now how accurate do you believe the polygraph is? _____%

EXAMINATION INFORMATION

- 17) TEST TYPE: 1 - MGQT 2 - CSP 3 - ZCT 4 - RI 5 - GQT 6 - POT
- 18) DECISION: Examinee's _____ Instructor's _____
- 1 - NO deception 2 - Inconclusive 3 - Deception 4 - Incomplete
- 19) TOTAL TIME: (Minutes) _____
- 20) Role of Subject: 1 - Innocent 2 - Guilty 3 - Other
- 21) Scenario Number: _____
- 22) How alert was the subject:
- 1 - Fell asleep often
 - 2 - Fell asleep once or twice
 - 3 - Didn't fall asleep, but was not very attentive
 - 4 - Reasonably attentive
 - 5 - Very alert
- 23) Any Errors? (specify)
-

Appendix B

DEMOGRAPHIC SURVEY

DATE _____
 (21, 22, 26, 27, 28, 29)
 TIME _____
 (AM/PM)

NAME _____
 (PLEASE PRINT)

PHONE _____ ALTERNATE PHONE _____

ADDRESS _____

MARK ONE

1. MALE _____
 FEMALE _____
2. AGE - 18 - 25 _____
 26 - 35 _____
 36 - 45 _____
 46 - 55 _____
 56 AND OLDER _____
- BIRTHDATE _____
3. NO HIGH SCHOOL DIPLOMA _____
 HIGH SCHOOL DIPLOMA (INCLUDING GED) _____
 SOME COLLEGE WORK COMPLETED- _____
4. BLACK _____
 CAUCASIAN _____
 HISPANIC _____
 OTHER _____
5. BIRMINGHAM RESIDENT _____ (URBAN)
 CALHOUN COUNTY RESIDENT _____ (RURAL)

HAVE YOU MADE AN INDIVIDUAL INCOME OF OVER \$20,000 WITHIN THE LAST FIVE YEARS?

YES _____ NO _____

THIS INFORMATION IS FOR THE USE OF THE POLYGRAPH INSTITUTE ONLY. INFORMATION WILL NOT BE COPIED, TRANSFERRED, STORED, FILED OR IN ANY OTHER WAY RETAINED BY TEMPORARY RESOURCES, INC. OR ITS SUBCONTRACTOR, MANPOWER.

Appendix C

The Department of Defense has asked me to voluntarily participate in a polygraph exercise. I have been told that I have the absolute right to refuse for any reason and that I do not have to reveal that reason if I do not desire. I understand that if I refuse nothing will happen to me now or in the future because I refused. I will not be punished by anyone to include anyone in my company. I understand that I will be observed and listened to during parts of this exercise by staff of the Department of Defense Polygraph Institute and anyone that may be permitted to observe and listen. I understand that I will be recorded on video and audio tape recorders. I understand that this general release and consent remains in effect forever. I understand that I will be required to sign appropriate rights waivers and polygraph examination consent forms following complete explanations of them. I agree and consent completely to:

- a. Participate as directed by the staff of this Institute.
- b. Be tested as many times as requested on a polygraph instrument (lie detector).
- c. To be interviewed or interrogated and to answer any and all questions as directed.
- d. To reveal any sickness, injury, or condition (mental or physical) that I now have or have had only for the purpose of making sure that I am a fit person to be tested and to prevent any injury.
- e. To be photographed and recorded on video and audio tape recorders.
- f. To allow the government to use my name in connection with this exercise to identify video and audio tapes and polygraph tracings.
- g. To allow the government to use anything connected with this exercise in any way and in any form and as many times as they see fit. I give up any and all ownership rights I may have in any writings, photographs video and audio recordings and polygraph tracings, now and forever no matter how they are used ever by anyone the government allows.

I give this release and consent without any hope of reward or compensation (money or anything else) now or anytime in the future. I have not been ordered to consent and I have not been threatened in any way. I give this consent to everything stated above and agree to follow the directions of the staff of this Institute.

(WITNESS SIGNATURE)

(SIGNATURE)

(WITNESS PRINTED NAME)

(PRINTED NAME)

(WITNESS RANK)

(DATE)

(COMPANY)

(DATE)

Appendix D

Statistics for all tables

Table	Initial analysis	correct/ wrong	correct/ non-correct	wrong/ inconclusive
1	$X^2(2,52) = .7111, p < .7008$	.6757	.5292	.6833
2	$X^2(2,107) = .8402, p < .6570$	1.0000	.7522	.5829
3	$X^2(2,53) = .5684, p < .7526$	.6918	.4923	1.0000
4	$X^2(2,107) = 3.542, p < .1701$	.4448	.0960	1.0000
5	$X^2(2,171) = 4.648, p < .0979$	.4844	.0654	.3902
6	$X^2(2,208) = 4.293, p < .1169$	.0629	.0896	.1169
7	NA	1.0000	.6828	.3348
8	NA	1.0000	1.0000	1.0000
9	NA	.6027	.6960	.5758
10	NA	.2487	.2232	.5152
11	NA			
12	NA			
13	$X^2(2,173) = .591, p < .7442$	.8203	.4792	1.0000
14	$X^2(2,208) = 9.831, p < .0073$	.0035	.0793	.0228
15		.0035		
16	NA	.0824	.1440	.6027
17	NA	1.0000	1.000	NA
18	NA	.2898	.0574	1.0000
19	NA	.1166	.7177	.0808
20	NA	$X^2=NA$	$X^2(2,170)=1.656, p < .4369$	$X^2(2,99)=10.50, p < .0053$
21	NA	$X^2=NA$	$X^2(2,207)=.333, p < .8465$	$X^2 = NA$
22	$X^2(2,170) = 9.684, p < .0079$	.4262	.2175	.0063
23	$X^2(2,207) = 4.885, p < .0870$	.0615	.0653	.0451
24				.0063
25	NA	.1312	.3715	.3189
26	NA	1.0000	.4338	1.0000
27	NA	.6126	.7068	.2424
28	NA	1.0000	1.0000	.5758
29	$X^2(2,127) = 6.403, p < .0407$.0544	.0149	.7917
30			.0149	
31	NA	.0031	.0036	.2508
32		.0031		
33			.0036	

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