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7 May 2001

Honorable Orrin Hatch
Chairman
Senate Judiciary Committee
Dirksen Building, Room 224
Washington, D.C. 20510

Re: Supplemental Written Questions from Senators Leahy and Grassley following the Senate Judiciary Committee Hearing of April 25, 2001 on "Issues Surrounding the Use of Polygraphs"

Dear Senator Hatch:

Thank you for the opportunity to provide additional information to the Judiciary Committee regarding polygraph testing. I have tried to answer these questions, which deal with important topics, as best I can given my expertise in the area. If you would like additional information or I can be of assistance in any way, please feel free to call on me.

To expedite your receipt of these materials, the attached document was faxed to Jane Butterfield earlier today.

Sincerely,

William G. Iacono, Ph.D.
Distinguished McKnight University Professor

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**TO: Orrin G. Hatch, Chairman
Senate Judiciary Committee
FAX: 202-228-1115**

**FROM: William G. Iacono, Ph.D.
Professor**

DATE: 7 May 2001

RE: Response to Follow-Up Questions Regarding Polygraph Testing from Senators Leahy and Grassley

Questions from Senator Leahy (Questions have been shortened and paraphrased)

- 1. Is there any report in the scientific literature establishing that polygraph screening has a higher accuracy rate than 90%?*

No. If anyone says this is true, they are likely to be either misrepresenting the scientific literature or citing nonscientific opinion from polygraph or police trade journals.

- 2. Regarding the likelihood that Robert Hanssen would have reacted with greater than 99% certainty had he taken a polygraph, is there any reliable basis to estimate the probability that a particular person would or would not pass a national security screening polygraph?*

No. The claim that Hanssen could have been detected with greater than 99% certainty is impossible to support using any credible scientific data. Besides the fact that these tests are not capable of such accuracy, Hanssen would probably have been smart enough to learn how to use countermeasures to defeat any test he took. As I mentioned in my oral Senate hearing testimony, information about countermeasures can be obtained at libraries, from books (e.g., David Lykken's "A Tremor in the Blood"), and the internet (at <http://antipolygraph.org/pubs.shtml>).

- 3. A) Given that there are 3 spies per 10,000 people, is it not likely that if you give polygraphs to 10,000 people in order to catch three spies, you will get hundreds of false positive responses?*

If the charts were scored according to government standards so that individuals responding more strongly to relevant questions would be deemed to have failed the polygraph, it is likely that there would be over 2,000 false positives. The only reason such high rates of false positives are not currently in evidence is that government examiners, fully aware of the high rate of false positives, pass most of those whose charts indicate a failed polygraph to avoid the embarrassment and chaos that would follow if large numbers of individuals failed.

B) Given that the three spies failed tests are included among those of hundreds of innocent people who failed the test, how are investigators going to be able to find the three real spies and not unfairly cast suspicion on all of the innocent employees who have false positive results?

There is no way these dual objectives can be attained. The only way to be certain all three spies would fail the tests would be to fail every single person who takes one. Likewise, false positives can be eliminated by passing everyone. If the test was 90% accurate (very unlikely) and none of the spies used countermeasures (also unlikely), with 10,000 people tested, the three spies would be caught at the expense of 1,000 innocents failing. It would be very difficult to identify the few spies in this large group. It would be even more difficult to do so without negatively impacting the careers of the 1,000 innocents as their lives are turned upside down by the type of thorough investigation that would be needed to resolve conclusively every failed polygraph.

4. Should someone be excluded from government employment solely because the person failed a polygraph?

No. The vast majority of those who fail are not guilty of any offense that should preclude employment. Using these invalid tests to deny them employment is a violation of their civil rights and it deprives the government of highly qualified employees. It is also cost ineffective because often polygraph tests are administered after lengthy, costly procedures have been completed and the determination made that the applicant is likely to be suitable for employment.

- What specific steps should be taken to make sure no one is denied employment for failing a polygraph test?

A law passed by Congress is required because current law does not prohibit this from occurring.

5. If someone is told they have failed a polygraph, is it more likely a person will have an adverse reaction to a second polygraph?

No studies have been carried out to address this question. In fact, no studies have been done to determine if polygraph tests produce consistent results from one occasion to another. Nevertheless, it is highly likely that retesting a person and requiring that both tests be failed for adverse action to result will not protect the rights of an employee. First, it is virtually never the case that a second test is conducted with the examiner blind to the results of the first test. That being the case, the only way someone can pass the second test is if the second examiner finds the first examiner, a likely friend or colleague, was wrong, an unpalatable outcome. Second, innocent people do not fail tests at random. The factors that caused them to fail the first test are likely to cause them to fail the second test, especially now that they have no reason to believe the tests are accurate.

6. Can chemical substances affect the results of a polygraph, and is there a comprehensive list of substances known to affect polygraph results?

There is no list of substances known to affect polygraph tests because there is very little research on this question. There are hundreds of drugs that could influence test outcomes, only a few of which have received any study at all. The effects of illicit street drugs have

received no research attention. I have published three papers in which the effects of propranolol, diazepam, meprobamate, and alcohol were examined using different types of polygraph tests (but not a screening-type test). None of the drugs enabled guilty individuals to pass their test. For a drug to affect directly polygraph outcome, it must attenuate the response to the relevant question while having no comparable effect on the control question. It is unlikely that many drugs could be expected to have such a selective effect. However, there are ways drugs may indirectly affect polygraph outcome. For instance, the effects of drugs that specifically affect the physiological measures that compose polygraph tests have received little attention. Sweat glands (GSR channel) and cardiovascular activity (cardio or blood pressure channel), for example, are both innervated by neurons that use the neurotransmitter acetylcholine. Drugs that block this neurotransmitter (there are many) may greatly attenuate the likelihood that the GSR and cardio channels are responsive enough to be useful distinguishing the size of response between relevant and control questions. This would leave the outcome of a test to be determined primarily by respiratory activity. Respiration is the least reliable of the three channels that compose a polygraph test, and is under voluntary control, thus making it easy to manipulate. Hence, the use of these drugs could confer an advantage to a guilty person taking a polygraph.

7. *Is there any research showing that certain personality types have an easier time passing a polygraph?*

There is research investigating a subtype of antisocial personality disorder called psychopathy. Psychopaths are skilled liars who experience no remorse for their antisocial behavior. Two studies have found that psychopaths do not have an easier time passing polygraphs when the outcome of the test is based on the physiological data. However, the government's own data indicate that many individuals who fail the physiological test nonetheless are passed by their examiners because they convince them they have done nothing seriously wrong. Impression management through lying is exactly what psychopaths are good at. Hence, there is good reason to believe they could pass screening tests.

8. *Is there any research showing that certain ethnic or social groups have an easier time passing a polygraph?*

There are no investigations examining how ethnicity of the examinee affects his or her physiological responses. Nor is it known how the ethnic biases of an examinee tested by a polygrapher of different ethnicity affect the physiological data. However, as noted above, whether a person passes a test depends on the subjective judgment of the polygrapher. If the polygrapher holds racial stereotypes or has ethnic biases, these attitudes will affect how the polygrapher decides the outcome of the test.

9. *How do you ensure that routine polygraph tests do not probe into purely private matters? Are there any questions that are off limits? What safeguards exist to prevent the release of private information?*

Apparently with the exception of the CIA, government policy prohibits tests that get into lifestyle issues. However, examinees I have spoken with state that once the standard question set has been asked, examiners frequently delve into private matters in an effort to "clarify" the meaning of reactions they get to certain questions. The only way to guarantee employee rights is to video or audiotape all polygraph tests, giving a copy to the examinee as soon as the test is over. Then examiners will avoid these kinds of questions because they will know they can be held accountable. Currently, tests are either not recorded or they are and the examinee is not

given immediate access to the tapes. Hence, examinee claims of mistreatment cannot be verified.

Questions of Senator Grassley

1. *How do agencies deal with a polygraph that ends in a deceptive result with no admission of guilt?*

Government data from the DOD annual reports to Congress reveal that typically no formal action is taken against employees in this position when they take counter intelligence scope polygraphs. However, left unanswered is how the careers of these persons are affected by such an outcome. Do they get good assignments and are they promoted? Jeffrey Smith, former CIA General Counsel, has noted that in the CIA (CIA testing is not included in the DOD annual reports to Congress) there have been many employees whose careers were put on hold as a consequence of deceptive polygraphs. What ultimately has happened to these people's careers?

2. *How about an inconclusive result?*

Inconclusive results require additional testing until the examiner is willing to make a deceptive or truthful verdict.

3. *Can we expect journeyman level polygraphers to adequately administer polygraphs to senior officials in their own agency?*

No. Examiners are only human. They know they cannot fail a superior without corroborating evidence of wrongdoing. The only way to get around this problem would be to guarantee polygraphers job security and career advancement no matter how they call cases. This would be bad policy, however, because it would formally establish polygraphers as a type of judge/jury that answers to no one.

4. *Will there be adverse consequences for employees who refuse to take polygraphs?*

By law, they can be denied access to classified data. This can have a substantial effect on their careers, and likely would involve re-assignment to other jobs for which the employee is qualified. DOE has admitted however, that if such jobs do not exist within commuting distance of an employee's current job location, termination of employment may result.

5. *If there are adverse consequences for not taking the exam, will this create an uncooperative emotional condition that could affect the results of the exam?*

Yes. The polygraph profession's code of ethics requires that exams not be given without an individual's consent. Government workers cannot voluntarily give consent, and the consent forms DOE examiners use no longer contain the word "voluntary." Being forced to take an exam is likely to make examinees overly anxious, increasing the likelihood of false positive outcomes.

6. *Regarding the FBI, will failing a national security update polygraph when all other factors are in order result in an adverse action?*

This is a question for the FBI to answer, but I would encourage the government to conduct the following study: Identify all individuals who have had deceptive outcomes on polygraph tests. Then match them to a group of employees of similar rank and qualifications. Follow the career paths of both groups for five years and determine if the members of the two groups experience similar career advancement. I am worried that those in the failed group will be disproportionately likely to quit and find their careers stalled. Such a study could be done now using DOD data from all the people tested with counter intelligence scope polygraph tests.