In this series on the polygraph, I’m reviewing some of the applications and issues of interest to security personnel considering polygraphs as a tool for pre-employment screening and in investigations of possible in-house computer crimes.

The most significant study of the reliability of polygraph testing was carried out by a distinguished panel of scientists convened under the auspices of the National Research Council of the National Academies of Sciences (NAS) of the United States. Published in 2003, _The Polygraph and Lie Detection_ (ISBN 0-309-08436-9) <http://www.nap.edu/catalog.php?record_id=10420> which I cited in part 1 of this series. An anonymous writer for _Government Executive_ 38(19):11 (Nov 1, 2006)<http://govexec.com/features/1106-01/1106-01buzz.htm> wrote, “The polygraph has proved to be a questionable indicator. . . . [T]he National Academy of Sciences …. noted the danger of incorrectly implicating innocent staffers and suggested that testing would lower morale and productivity and deter people with scarce and valuable skills from working in organizations that use it.” The same author pointed out that the Department of Energy stopped using the polygraph in pre-employment screening at the end of September 2006 “for general screening of applicants for employment and incumbent employees without specific cause.”

The Executive Summary of the NAS report includes this warning: “For employee screening, there is no specific event being investigated, and the questions must be generic (e.g., “Did you ever reveal classified information to an unauthorized person?”). Both examinee and examiner may have difficulty knowing whether an answer to such a question is truthful unless there are clear and consistent criteria that specify what activities justify a “yes” answer. Examinees may believe they are lying when providing factually truthful responses, or vice versa. Polygraph tests might elicit admissions to acts not central to the intent of the question and these answers might be judged either as successes or failures of the test. In this regard, we have seen no indication of a clear and stable agreement on criteria for judging answers to security screening polygraph questions in any agency using them. / The use of polygraph testing for preemployment screening is even more complicated because it involves inferences about future behavior on the basis of information about past behaviors that may be quite different (e.g., does past use of illegal drugs, or lying about such use on a polygraph test, predict future spying?).” (pp 1-2)

The NAS panel made a strong point about studies of polygraph accuracy in specific incidents where the truth was known versus predictive applications such as pre-employment screening: “Because actual screening applications involve considerably more ambiguity for the examinee and in determining truth than arises in specific-incident studies, polygraph accuracy for screening purposes is almost certainly lower than what can be achieved by specific-incident polygraph tests in the field.” (p 4)

To be fair, the American Polygraph Association (APoA) claims that the accuracy figures often misrepresented by critics: “One of the problems in discussing accuracy figures and the
differences between the statistics quoted by proponents and opponents of the polygraph technique is the way that the figures are calculated. At the risk of over simplification, critics, who often don't understand polygraph testing, classify inconclusive test results as errors. In the real life setting an inconclusive result simply means that the examiner is unable to render a definite diagnosis. In such cases a second examination is usually conducted at a later date. / To illustrate how the inclusion of inconclusive test results can distort accuracy figures, consider the following example: If 10 polygraph examinations are administered and the examiner is correct in 7 decisions, wrong in 1 and has 2 inconclusive test results, we calculate the accuracy rate as 87.5% (8 definitive results, 7 of which were correct.) Critics of the polygraph technique would calculate the accuracy rate in this example as 70%, (10 examinations with 7 correct decisions.) Since those who use polygraph testing do not consider inconclusive test results as negative, and do not hold them against the examinee, to consider them as errors is clearly misleading and certainly skews the figures."< http://www.polygraph.org/faq.cfm >

Nonetheless, the fundamental issue of the reliability of polygraph verification of backward-looking questions (“Did you spy for the Chinese government?”) compared with the validity of projections of future behavior based on inference (“The subject had particularly wiggly lines for this question and that and therefore is more likely to pass our secrets to the Chinese government”) still stand.

My own impression so far is that pre-employment use of polygraph examinations for _candidate screening_ is under severe challenge and has dubious validity. For a roiling, boiling collection of anti-polygraph data, documents, and diatribes, visit the AntiPolygraph organization.< http://antipolygraph.org/ > In particular, you may be touched by the sad story of what seems to be an honorable veteran who was railroaded by inappropriate use of poor-quality polygraph data and interpretations.< http://antipolygraph.org/lie-behind-the-lie-detector.pdf >

In my next column, I’ll report on new techniques using newer brain-scanning techniques such as functional magnetic resonance imaging (fMRI) to spot lies.

* * *

M. E. Kabay, PhD, CISSP-ISSMP is Program Director of the Master of Science in Information Assurance < http://www.graduate.norwich.edu/infoassurance/ > and CTO of the School of Graduate Studies at Norwich University in Northfield, VT. Mich can be reached by e-mail at <mailto:mekabay@gmail.com> ; Web site at < http://www.mekabay.com/index.htm >.

Copyright © 2008 M. E. Kabay. All rights reserved.

Permission is hereby granted to Network World to distribute this article at will, to post it without limit on any Web site, and to republish it in any way they see fit.