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COMMONWEALTH OF MASSACHUSETTS

NORFOLK, ss

SUPERIOR COURT
CRIMINAL ACTION
NO. 1582CR00129

COMMONWEALTH

vs.

ADEYEMI JAIYEoba

MEMORANDUM OF DECISION AND ORDER ON DEFENDANT'S
MOTION TO ADMIT POLYGRAPH RESULTS

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The defendant, Adeyemi Jaiyeoba ("the defendant" or "Jaiyeoba") has moved for the introduction of the results of a polygraph examination administered to the defendant by his private polygrapher. On June 13, 2017, the court allowed the defendant's motion for an evidentiary Daubert-Lanigan hearing concerning the admission of the polygraph results. The defendant presented six witnesses from across the country over the course of five days in 2017 and 2018. Those witnesses were John Consigli ("Consigli"), Milton O. Webb ("Webb"), Donald Krapohl ("Krahpol"), F. Lee Bailey ("Bailey"), Dr. Frank Horvath ("Horvath") and Massachusetts State Police Sergeant Christopher Dolan ("Dolan"). The Commonwealth called Dr. William Iacono ("Iacono"). Over the course of the hearing, seventy-one exhibits were entered into evidence. The parties filed memorandums on or about October 15, 2018 and the court at that time took the matter under advisement. After consideration of all of the evidence, for the reasons stated below, the defendant's motion to admit polygraph results is DENIED.

Based on the testimony elicited and exhibits introduced during the hearing, as well as the reasonable inferences therefrom, the court finds the following facts:

THE POLYGRAPH

A polygraph machine is a recording instrument that can record physiological signals through a human body. Typically, it is used to record blood pressure from a cuff placed around the arm, sweat from the palms where electrodes are placed to detect sweat as well as on the fingertips and respiration from belts that are placed around the chest and abdomen. Relatively recently, a sensor has been added that the examiner sits on while the test is conducted. The classic polygraph device was a piece of equipment that monitored these signals and recorded them on a moving chart paper that was pulled through a polygraph machine that had pens that had a flow of ink that came out of the tips.. The ink pens would trace out the physiological reactions on moving chart paper.

Present day polygraphs are much more likely to be digitized and the data collected on laptop computers. Then, the information is digitally stored and printed out in a way that looks very much like the polygraph charts that were recorded by these field instruments that have been used for many years. The results are then scored by the polygrapher.

The polygraph involves measuring physiological reactions to inferences about whether or not a person is lying or telling the truth. Polygraph testing is a sub discipline of psychophysiology which is the science of monitoring physiological signals to make inferences about mental states.

THE POLYGRAPH TEST ADMINISTERED TO THE DEFENDANT

More than two years after his arrest and one month before trial, the defendant submitted to a polygraph examination on April 8, 2017, at his attorney's office. The exam was administered by Consigli, whom the defendant hired. The defendant worked with his private investigator, Joseph Brooks ("Brooks"), in a private room for two hours to draft a handwritten 23 paragraph statement about the facts in question, all before the administration of the polygraph.

Consigli testified that he did not know if defense counsel was also involved in writing the statement. Consigli was not present for or involved in drafting the statement and did not know how many drafts were completed. Consigli told Brooks and the defendant before they wrote the statement that it should be as short as possible to cover all pertinent information. Consigli testified that the final version was not short but was instead very long.

JOHN CONSIGLI

The court credits the following testimony of Consigli:

Consigli graduated from Northeastern University with a bachelor's degree in criminal justice in 1989. In 1991, Consigli graduated from Anna Maria College with a master's degree in criminal justice. Consigli worked for the State Police from 1975 until he retired in 2004. In 1987, Consigli received training at Backster School of Lie Detection in San Diego, California. In 1991, he transferred out of the District Attorney's CPAC unit to be in charge of the State Police Polygraph Unit until 2001. In 1991, he also went through the FBI's advanced law enforcement polygraph course in Quantico, Virginia. After Consigli retired in 2004, he started a private practice for polygraph examinations. For the past thirteen years, Consigli has worked as a polygraph examiner. Every year, Consigli receives at least thirty hours of continuing education on polygraph examinations. In 2010, Consigli completed the National Center for Credibility Assessment's senior examiner course in Florida.

Consigli is a member of several professional organizations for polygraph examinations, including: (1) the American Polygraph Association and has been elected to the Board of Directors, served as vice president of the law enforcement division, served as president in 2003 and 2004, and was chairman of the board in 2005; (2) American Association of the Police Polygraphist; (3) the Florida Polygraph Association; and (4) Maine Polygraph Association. The

American Polygraph Association is the largest polygraph association in the world with approximately 3,000 members in over thirty countries. The organization publishes periodical newsletters and a scientific journal.

In administering the polygraph test on the defendant Consigli used the Federal Government's You-Phase or Bi-ZCT Test, which is the same as the Federal Zone test ("the Test"). The Test is considered to be a comparison question technique. The Test employs primary questions as the relevant questions, sacrifice relevant questions and probable lie comparative questions. Consigli explained that there are symptomatic questions and irrelevant questions.

First, the examination was audio/visual recorded, which Consigli's equipment synchronized on the polygraph charts. There was a pre-test interview during which Consigli established a rapport with the examinee and tried to calm the anxieties that examinees tend to have. During the pre-test Consigli asked for basic information such as the examinee's age, address, health, and places of employment.

Second, Consigli explained how the polygraph works, what they are looking for in the examination, and what happens physiologically when a person is being untruthful. Next, Consigli calibrated the instrumentation. After calibration, Consigli reviewed all of the questions with the examinee. The first test Consigli performed is called the familiarization or stim test, which is designed to familiarize the examinee with the polygraph examination before the main examination and for the examiner and computer software to become familiar with the examinee's physiology.

Fourth, Consigli then runs the Test, which he runs at least three times. Consigli testified that "[i]f it looks like there is not enough criteria for evaluation because of artifacts, a fourth and

possibly fifth chart could be run.” There is twenty to twenty-five seconds pacing between each question, which allows time for the response to occur and dissipate before the next question.

Finally, after the examination is completed, Consigli performs a post-test phase, which for him is simply analyzing the polygraph charts.

Consigli asked three questions in relation to the defendant’s statement. These questions are known as sacrifice relevant questions. The first question pertained to whether or not he falsified any part of the statement he signed at the examination and whether he intended to answer truthfully to the questions about the statement. The first question is not scored.

According to Consigli’s testimony, it is “the first time an examinee is exposed to the relevant issue and it’s not scored.” Consigli testified that the first question is asked during the actual in-test phase of the examination. However, Consigli testified that he did not know whether other people had administered the test to him prior to Consigli arrived to administer the examination.

The following two questions about the statement are scored. Consigli asked: (1) did the defendant falsify any part of the statement you signed today? and (2) did you falsify any part of the statement you signed today about that girl? These two questions are designed to be identical and vary usually only in length.

Consigli also asked symptomatic questions, which are designed to give an indication of whether there are is an earlier life transference danger. The questions are: (1) are you completely convinced that I will not ask you a question on this test that has not already been reviewed? (2) Is there something else you are afraid I will ask you a question about even though I told you I would not? Consigli testified that these questions are designed to indicate whether or not the examinee may have committed something more serious earlier in life that the examinee is more

concerned about. Consigli testified that, on rare occasions, examinees may react more strongly to those questions. Consigli explained that if the examiners do not see significant reactions to the symptomatic questions but the examinee reacts to the relevant or the probable lie questions, the examiner has the proper physiological set in the examination and examiner is not concerned with earlier life transference danger.

Next, Consigli asked relevant/irrelevant questions. The relevant questions are: did you do it? are you the one who did it? Consigli also asks irrelevant questions such as: is today Saturday? Are the lights on in this room? The irrelevant questions are designed to recognize the examinee's general anxiety. The anxiety usually stays throughout the examination and causes some physiological reaction.

Then, Consigli asks three probable lie questions: (1) before 2015, have you ever felt the need to lie about your sexual activity? (2) before 2015, do you remember ever lying or cheating to get something you did not deserve? (3) other than what you have told me before 2015, do you remember ever lying any other times to a person in authority to stay out of trouble?

Consigli's interpretation of the test administered to the defendant was that he was non-deceptive on the questions regarding whether he falsified his statement.

THE 2002 NATIONAL RESEARCH COUNCIL STUDY

In 2002, the United States Department of Energy requested the National Research Council of the National Academics of Science (the "NRC") to conduct a scientific review of polygraph examinations' reliability and validity, particularly focusing on personnel screening security and suggestions for further research. The NRC concluded that the evidence for polygraph examinations was "scanty and scientifically weak" overall. Specifically, the NRC stated that "[o]ur conclusions are necessarily based on the far from satisfactory body of evidence

of polygraph accuracy as well as basic knowledge about the physiological responses the polygraph measures.” Furthermore, the NRC concluded that “almost a century of research and scientific psychology and physiology provides little basis for the expectation that a polygraph test could have extremely high accuracy.” The NRC found: (1) the theoretical rationale for polygraph is weak, specifically in differential fear arousal or other emotional states triggered by relevant or comparison questions; (2) polygraph research has not accumulated knowledge or strengthened its scientific underpinnings significantly; (3) polygraph research on accuracy fails to reflect critical aspects of field polygraph testing for specific incident investigations; and (4) overestimation of polygraph accuracy and insufficient evidence allowing quantitative estimation of the overestimation size.

The polygraph has an unacceptably high known or potential rate of error. The polygraph utterly fails on the error rate factor. The NAS Report found that

[a]lthough psychological states often associated with deception (e.g. fear of being judged deceptive) do tend to affect the physiological responses that the polygraph measures, these same states can arise in the absence of deception. Moreover, many other psychological and physiological factors (e.g. anxiety about being tested) also affect those responses. Such phenomena make polygraph testing intrinsically susceptible to producing erroneous results.

“[I]nvestigation of whether individual differences in physiological responsiveness is associated with the accuracy of polygraph detection has barely began.” Accuracy is expected to differ across situations because “physiological responses vary systematically across examinees and social contexts in ways that are not yet well understood and that can be very difficult to control.” The accuracy index of laboratory studies of between 0.81 and 0.91 “should be interpreted with great care and *should not* be used as general measures of polygraph accuracy...”; it is an overestimate of likely application in the field. (Emphasis in original).

[T]hese index values do not represent the percentage of correct polygraph judgments except under particular, very unusual circumstances. Their meaning in terms of percent correct depends on other factors, particularly the threshold that is set for declaring a test result positive and the base rate of deceptive individuals tested.

NAS Report further states that “The theoretical rationale for the polygraph is quite weak, especially in terms of differential fear, arousal, or other emotional states that are triggered in response to the relevant and comparison questions.

In short, the bulk of polygraph research can be accurately characterized as atheoretical.

The polygraph studies that met our criteria for consideration do not generally reach the high levels of research quality desired in science. Relatively few of the studies are of the quality level typically needed for funding by the U.S. National Science Foundation or the U.S. National Institute of Health

As to countermeasures, the NAS Report noted that research is inadequate because all such studies are limited to the laboratory with experimenters or research assistants as the examiner; hence, application of laboratory studies to real world exams is “doubtful”. Ultimately, “[a]ll of the physiological indicators measured by the polygraph can be altered by conscious efforts through cognitive or physical means, and there is enough empirical research to justify concern that successful countermeasures may be learnable.

MILTON O. WEBB

The court credits the following testimony of Webb.

The defendant called Webb to testify. Webb has been certified as a polygraph examiner. Webb also attended the University of Virginia Advanced Polygraph Studies Program sponsored by the Federal Bureau of Investigation. Webb served as a criminal investigator in the United States Army for twenty-six years Webb was then hired to be the first civilian chief of the Army’s Criminal Investigative Polygraph Program and served in that capacity as a supervisory special agent until his retirement in 2014. Webb was a polygraph supervisor in quality control for many

years while a member of the United States Army. In that capacity, Webb conducted quality review of approximately twenty-five thousand polygraph tests. Since that time, Webb has taught polygraph use, acted as a consultant to attorneys regarding polygraph testing, conducting polygraphs and currently performs quality control review of polygraph charts upon request.

Webb conducted a quality control review of the polygraph examination of the defendant performed by Consigli. In essence, Webb agreed with Consigli's interpretation.

Webb conceded that test subjects can do things to frustrate the test, such as flexing one's arm on the blood pressure cuff, moving the fingers to cause the electro dermal sensor to change, tightening the buttocks muscles which causes the blood pressure to rise.

Webb also conceded that he could point to no empirical evidence supporting there is any pattern of physical or psychophysiological reaction that is unique to and only seen in human beings when a person tells a lie.

DR. FRANK HORVATH

The court credits the following testimony of Horvath:

Horvath trained at John Reid and Associates in Chicago for polygraph testing and subsequently remained on the staff as a polygraph examiner then became director of training. Thereafter, he became chief examiner for John E. Reid and Associates. He left in 1970 to attend graduate school at Michigan State University with fellowship from the Department of Justice. Horvath earned a doctoral degree in "criminology and criminal justice with a cognate area in a field called psychophysiology." Horvath explained that psychophysiology is the study of the "parent discipline" to polygraph testing and the examination of inner emotional states responding to stimuli externally applied. Psychophysiology is not a board certified or recognized discipline. Upon completion of his doctoral degree, Horvath remained at Michigan State

University as an assistant professor and eventually became associate professor. Thereafter, he became a full professor and remained at Michigan State University for thirty years. As a full professor, Horvath taught criminology but specialized in law enforcement, criminal investigations, and credibility assessment. He clarified that specialization meant he researched those areas.

In 2002, the NSA recruited Horvath to apply for a position in its polygraph testing program. He took a leave of absence from Michigan State University and joined the NSA, where he was assigned as Chief of Special Studies to the National Center for Credibility Assessment (“NCCA”) in South Carolina. The NCCA “is the sole training facility for all federal polygraph examiners in the United States.” As Chief of Special Studies, Horvath focused primarily on research and the research group and had some contact with the instruction group teaching new polygraph examiners. He worked at the NCCA for thirteen years. He retired in 2016.

Horvath is affiliated with and was the former president of the American Polygraph Association. He is also a member of the American Academy of Forensic Sciences and Society for the Psychophysiological Research. Horvath has published over 100 articles and presented papers annually at national and international conferences. When he worked for the NCCA, he organized international conferences for credibility assessment purposes for four years.

Horvath has testified in state and federal courts on issues related to polygraph testing and credibility assessment. He has specifically testified about credibility assessments utilizing instrumentation or other means and reviewing polygraph examination data.

According to *Scientific Evidence*, a treatise published in 2012 authored by Paul Giannelli and Edward Imwinkelreid and conceded by Horvath to be a reliable authority on the subject of polygraphy, “... disagreements among polygraph examiners are common and limit the validity

and utility of the technique in applied settings....” Horvath testified that ‘We have scientific theories that are used to explain what’s going on but the scientific community does not agree on a single mechanism for explaining why polygraph testing works....” Horvath went on to concede that none of these theories have been proved by empirical evidence.

Horvath testified that the polygraph machine does not determine whether someone is telling the truth or a lie, it is the polygrapher in interpreting the polygraph tracings that makes the determination as to whether the subject is telling the truth or telling a lie. Horvath also conceded that he does not know how a polygraph machine works-it just works. In many cases, Horvath admitted that even the polygrapher can’t tell if the subject is lying.

Horvath has testified in state and federal courts on issues related to polygraph testing and credibility assessment. He has specifically testified about credibility assessments utilizing instrumentation or other means and reviewing polygraph examination data.

Horvath testified that “there is no physiological response that we know of that is unique to lying, the things that occur when someone tells a lie are the same things that occur when they are maybe angry, when they are frightened, when they feel guilty about something and whatever.”

DR. DONALD KRAPOHL

The court credits the following testimony of Krapohl:

Krapohl earned a masters degree in psychology from Catholic University. Prior to receipt of his master’s degree, Krapohl attended a polygraph school called the Munford Institute of Polygraphy. Krapohl also attended an advanced FBI course on polygraphy.

Krapohl worked for the Central Intelligence Agency (CIA) from 1985 until 2006. Krapohl then worked for the Defense Intelligence Agency (DIA) until he retired in 2015. The

DIA is the parent organization for the National Center for Credibility Assessment where Krapohl was assigned from 1997 until his retirement. Krapohl is a very experienced polygrapher having conducted scores of screening polygraphs while working for the federal government.

Krapohl confirmed that the polygraph is based on psychophysiology which he defined as the use of physiological signals to uncover mental or cognitive processes. Krapohl also confirmed that psychophysiology is not a board-certified discipline. Krapohl admitted that “polygraph accuracy and detection of deception goes way down” when an examinee is trained on countermeasures by someone like an examiner when hooked up to the device.

Krapohl testified that the earliest studies in psychophysiology can be traced back to the 1800’s. However, Krapohl was unable to point to any advances in the field of psychophysiology with regard to polygraph testing within the past twenty years.

DR. WILLIAM IACONO

The court credits the following testimony of Iacono.

Iacono holds a Bachelor of Science degree in psychology from Carnegie Mellon University as well as a Ph.D. in psychology from the University of Minnesota and has been a professor of psychology at the University of Minnesota since 1985. At the time of his testimony, Iacono was a Regents Professor which is the highest honor given to any professor at the University of Minnesota which is conferred on less than one percent of the professors at the university. Iacono’s primary appointment is in psychology but also holds cross-appointments in neuroscience and psychiatry in the law school. Iacono’s experience has included being the research director of a training program about neurobehavioral aspects of personality and psychopathology. Psychopathology is an area of specialization in psychology that involves

reporting human physiological responses in an effort to make inferences about a person's psychological state. This is an area of Iacono's specialization.

Iacono received Distinguished Early Contribution Scientific awards from the American Psychological Association and from the Society for Psychophysiological Research. He has also been elected president of the Society for Psychophysiological Research. In addition, Iacono received a lifetime achievement award from this society. Furthermore, Iacono has been a member of the editorial board for the Journal on Psychophysiology which is a peer reviewed journal. Iacono has been published well over five hundred times in peer reviewed journals. The Journal of applied Psychology is published by the American Psychological association which publishes articles on the application of psychology. Polygraph testing is an example of one such application. Most of the articles regarding polygraph testing in this journal are quite critical of polygraph testing.

Iacono began studying the polygraph in the early 1980's. He has published papers and made presentations regarding polygraph testing over fifty times. He has received grants for his research on polygraph testing both from the Social Science and Humanities Resource Council of Canada as well as from the Department of Defense Polygraph Institute. He has testified as an expert on the scientific status of lie detection over forty-five times including testimony before the United States Senate Judiciary Committee. Finally, Iacono presented to the National Academy of Sciences in its formation of its 2003 report on Polygraph and lie Detection,

Despite his extensive study in the field of polygraphy, Iacono is unaware of any empirical evidence that any pattern of physiological reaction is unique to deception as opposed to anxiety or some other emotion. Iacono also was aware of no scientific report for the theory behind the comparison question test.

Iacono was also unaware of any scientific studies that support the validity of a polygraph test using the written statement method as was used by Consigli in administering the test on the defendant. Furthermore, Iacono was aware of no empirical evidence that would allow one to understand how a comparison question polygraph test would work and the type of test that Consigli administered to the defendant.

Credible evidence adduced at the hearing demonstrated that scientists do not agree that polygraph tests are reliable, and according to many experts, polygraph tests have unacceptable levels of reliability and validity.

DISCUSSION

A. History of Legal Decisions Involving the Polygraph

For more than fifty years, the admissibility of polygraph test results has been a subject of debate within the Commonwealth. The issue was first addressed by the Supreme Judicial Court (“SJC”) in 1963. See *Commonwealth v. Fatalo*, 346 Mass. 266 (1963). In *Fatalo*, the SJC adopted the rule articulated in *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923) that “[j]udicial acceptance of a scientific theory or instrument can occur only when it follows a general acceptance by the community of scientists involved.” *Id.* at 269. Applying that rule, the Court found that polygraph test results were properly excluded from evidence in a criminal case because “substantial doubts” revolved around polygraph testing. *Id.* at 270.

In 1974, the SJC again addressed the issue and took what it described as “a cautious first step toward the acceptance of polygraph testing.” *Commonwealth v. A Juvenile*, 365 Mass. 421, 432 (1974). The Court declined to conclude that “the standard in the *Fatalo* case ha[d] been met” but found that “polygraph testing has advanced to the point where it could prove to be of significant value to the criminal trial process.” *Id.* at 425. It held that polygraph evidence could

be admitted if: (1) the defendant agreed in advance to the test regardless of its outcome; (2) the trial judge ensured that the defendant's constitutional rights were fully protected; and (3) the trial judge performed a "close and searching inquiry" into the examiner's qualifications, defendant's fitness for testing, and testing methods. *Id.* at 425-426. Admissibility of the evidence was within the trial judge's discretion and the evidence was not "binding or conclusive." *Id.* at 426. See also *Commonwealth v. Vitello*, 376 Mass. 426, 442 (1978) (polygraph testing's "failure to achieve the standard of general acceptance need not freeze the evidentiary development of the polygraph in view of its unique potential as a tool of justice").¹

Fifteen years after the SJC took its "cautious first step toward the acceptance of polygraph testing," the Court reversed course. *Commonwealth v. Mendes*, 406 Mass. 201 (1989). "[S]upported by the overwhelming authority throughout the country," the SJC held in *Mendes* that "polygraphic evidence, with or without pretest stipulation, is inadmissible in criminal trials . . . either for substantive purposes or for corroboration or impeachment of testimony." *Id.* at 212. In reaching this conclusion, the Court noted that "the evidentiary shortcomings of polygraphy have not been alleviated in the slightest way" and that "it is clear from the extensive record in this case and the available literature that our hope that polygraphy would mature to the point of general scientific acceptance has not materialized." *Id.*

In 1994, the SJC rejected the *Frye* rule and adopted the principles of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) for the admissibility of scientific theory or process evidence. *Commonwealth v. Lanigan*, 419 Mass. 15, 26 (1994). Under the new rule, the so-called *Daubert-Lanigan* standard, general acceptance by the scientific community remained a

¹ The Court subsequently emphasized that expert testimony from the test examiner was "necessary to support the admission of polygraph evidence." *Commonwealth v. Wilborne*, 382 Mass. 241, 248-249 (1981).

“relevant factor [b]ut such acceptance, the essential ingredient of the *Frye* principle, [was no longer] the sole test.” *Id.* at 25. The SJC explained that:

If the process or theory underlying a scientific expert’s opinion lacks reliability, that opinion should not reach the trier of fact. Consequently the judge must rule first on any challenge to the validity of any process or theory underlying a proffered opinion. “This entails a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue.” . . . The judge thus has a gatekeeper role. . . . [I]f the judge rules the opinion evidence admissible, that ruling is not final on reliability of the opinion evidence, and the opponent of that evidence may challenge its validity before the trier of fact.

Id. at 26, quoting *Daubert*, 509 U.S. at 592-593. See also *Commonwealth v. Camblin*, 471 Mass. 639, 648-649 (2015) (evidence deemed admissible by the Legislature is not “automatically insulated from challenge and review on reliability grounds” in a *Daubert-Lanigan* hearing).

Thereafter, in *Commonwealth v. Stewart*, 422 Mass. 385 (1996), the SJC again addressed the admissibility of polygraph evidence. The Court noted that the reliability of the theory underlying polygraph testing was now subject to the new *Daubert-Lanigan* standard but indicated that absent proof “that a qualified tester who conducted the test had in similar circumstances demonstrated, in a statistically valid number of independently verified and controlled tests, the high level of accuracy of the conclusions the tester reached in those tests” polygraph evidence offered by a defendant would likely be found inadmissible. *Id.* at 389-390. See also *Commonwealth v. Kent*, 427 Mass. 754, 763 (1998) (juvenile made no showing “to meet the very demanding *Stewart* standard relating to the reliability of polygrapher who conducted his test”); *Commonwealth v. Duguay*, 430 Mass. 397, 402 (1999) (polygrapher must demonstrate the accuracy of his or her findings through independent testing).

Since *Stewart*, the Court has continued to express skepticism regarding the value of polygraph evidence. Most recently, in 2002, the Court held that “a defendant’s offer to submit to polygraph examination as evidence of consciousness of innocence is not admissible” because there is no risk in making the self-serving offer since the results are not admissible and “the sincerity of the offer can easily be feigned, making any inference of innocence wholly unreliable.” *Commonwealth v. Martinez*, 437 Mass. 84, 88 (2002).

B. Admissibility of Polygraph Evidence in the Present Case

This case represents a renewed effort to establish the admissibility of polygraph evidence in criminal trials. The defendant contends that he has presented sufficient evidence to satisfy the *Daubert-Lanigan* standard and therefore should be permitted to admit the results of his performance on the polygraph into evidence through expert testimony. The Court, however, concludes otherwise. Despite testimony from six witnesses and the introduction of 71 exhibits, the defendant has not carried his burden of proving by a preponderance of the evidence that the reasoning and methodology underlying the polygraph is sufficiently reliable.² See *Commonwealth v. Camblin*, 478 Mass. 469, 476 (2017) (“Because the admissibility of expert testimony is a preliminary question of fact, the proponent’s burden of proof to demonstrate the reliability of the expert opinion is by a preponderance of the evidence.”). Significantly, the defendant cannot demonstrate that in the decades since the SJC expressed disappointment that polygraphy had failed to mature to the point of general scientific acceptance, see *Mendes*, 406 Mass. at 212, the state of affairs is any different today.

² Because the Court finds that the defendant has failed to show that the polygraph is scientifically reliable under the *Daubert-Lanigan* standard, the Court does not address the Commonwealth’s other arguments concerning admissibility.

Under the *Daubert-Lanigan* standard, the Court considers five nonexclusive factors in determining the reliability of proposed scientific evidence, which include “whether the scientific theory or process (1) has been generally accepted in the relevant scientific community; (2) has been, or can be, subjected to testing; (3) has been subjected to peer review and publication; (4) has an unacceptably high known or potential rate of error; and (5) is governed by recognized standards.” *Id.* at 475-476 (internal quotation marks omitted). The weight to be accorded each factor is within the Court’s “broad discretion.” *Id.* at 476 (internal quotation marks omitted). As explained below, based on the above factors, the Court finds that the defendant’s polygraph test result should not be introduced as evidence in this action.

1. *General Acceptance by the Relevant Scientific Community*

In determining whether certain evidence is generally accepted, the Court “may properly consider not only the testimony of experts in the record ... but also articles written by experts and the conclusions of other courts.” *Commonwealth v. Kater*, 388 Mass. 519, 527 (1983); see also *Commonwealth v. Ortiz*, 93 Mass. App. Ct. 381, 386 (2018). Here, both case law and scholarly publications indicate that many in the scientific community remain seriously concerned about the reliability of the polygraph.³

Since the SJC’s 1989 decision in *Mendes*, other state and federal courts, including the U.S. Supreme Court, have noted that continued skepticism exists regarding the validity of polygraph testing. See, e.g., *United States v. Scheffer*, 523 U.S. 303, 309 (1998) (acknowledging that “there is simply no consensus that polygraph evidence is reliable” and that “[t]o this day, the scientific community remains extremely polarized about the reliability of polygraph

³ The SJC has indicated that the relevant scientific community “includes physiologists and psychologists.” See *Mendes*, 406 Mass. at 207.

techniques.”); *Gosciminiski v. Florida*, 132 So.3d 678, 701-704 (Fla. 2013), cert. denied, 135 S. Ct. 57 (2014) (concluding based on its examination of the relevant scientific evidence, that polygraph results are not generally accepted in the scientific community); *United States v. Rodríguez-Berrios*, 573 F.3d 55, 73 (1st Cir. 2009) (observing that “[p]olygraph results are rarely admissible at trial.”); *Acosta v. Lynch*, 819 F.3d 519, 526 (1st Cir. 2016) (“[p]olygraph results have long been considered of dubious value”).⁴

Scholarly publications have also indicated continued concern as to the reliability of the polygraph within the scientific community. Dr. Iacono’s 1997 peer-reviewed article in the *Journal of Applied Psychology* concluded, based on two surveys conducted with members of the Society for Psychophysiological Research and fellows in the American Psychological Association, that there was a great degree of scientific skepticism about the claims made by the polygraph profession. See W.G. Iacono and D.T. Lykken, *The Validity of the Lie Detector: Two Surveys of Scientific Opinion*, *Journal of Applied Psychology*, Vol. 82, No. 3, 426 (1997); More recently, in 2003, the NAS Report, authored by a committee comprised of members from several scientific disciplines (including the psychological sciences and psychophysiology), concluded after a review of polygraph research, that the evidence of the polygraph’s validity was “scanty and scientifically weak.” NAS Report at 212.

The defendants have presented little evidence that the polygraph has gained acceptance in

⁴ To the extent defendant relies on *United States v. Crumby*, 895 F. Supp. 1354 (D. Ariz. 1995), which held that the polygraph evidence at issue was admissible after applying *Daubert*, the Court does not find this case persuasive.

the scientific community since the SJC's 1989 decision. Accordingly, this Court concludes that the polygraph has yet to obtain acceptance in the relevant scientific community.

2. *Amenability to Testing*

The 2003 NAS Report concluded, after months of reviewing polygraph research, that laboratory studies of the polygraph have “serious inherent limitations for generalizing to realistic situations, including the fact that the consequences associated with being judged deceptive are almost never as serious as they are in real-world settings” and that field studies of the polygraph “have used research designs of no more than moderate methodological strength and are further weakened by the difficulties of independently determining truth and the possible biases introduced by the ways the research has addressed this issue.” *Id.* 120. The report therefore indicates that, while the polygraph has been tested, such testing has not necessarily produced accurate outcomes.

The defendant has failed to present any credible evidence suggesting that the 2003 NAS Report was incorrect or that its conclusions no longer remain accurate. Indeed, Dr. Horvath and Kraphol's testimony call into further doubt whether the polygraph is presently the subject of reliable testing. Dr. Horvath testified that there was little to no research on how daily differences affect an exam's accuracy even though it was possible, due to daily physiological changes, for an examinee's result to be different from one day to the next. Kraphol likewise conceded that few, if any, such studies had taken place. Accordingly, this Court concludes that the theories and techniques underlying the polygraph have not been sufficiently tested.

3. *Peer Review and Publication*

“The peer-review prong of the *Daubert-Lanigan* standard serves a function similar to the general acceptance test; in essence, it requires a judge to determine whether the scientific theory underlying the disputed evidence has been accepted by the relevant scientific community.” *Camblin*, 478 Mass. at 478. Here, while the polygraph has been subjected to publication and peer review, those publications do not indicate that the scientific theory underlying the polygraph has been accepted by the relevant scientific community. The NAS Report explained that: “The fact that a sizable number of polygraph studies have . . . appeared in good-quality, peer-reviewed journals probably reflects two facts: the practical importance of the topic *and the willingness of journals to publish laboratory studies that are high in internal validity but relatively low in salience to real-world application.*” *Id.* at 108 (emphasis added). Dr. Iacono, in turn, testified that most of the articles published in the *Journal of Applied Psychology* are “actually quite critical of polygraph testing.” The defendant, however, has not demonstrated that there is presently a greater consensus with regard to polygraph testing as demonstrated by peer-reviewed publications. While the polygraph profession has its own journal, which has subjected articles to a review process since 2003, the Court is not convinced, and the defendant has offered little to show, that the articles therein represent the current consensus within the scientific community.⁵

4. *Error Rate*

The NAS Report found that:

Almost a century of research in scientific psychology and physiology provides little basis for the expectation that a polygraph test could have extremely high accuracy. The physiological responses measured by the polygraph are not uniquely related to deception. That is, the responses measured by the polygraph do not

⁵ The Court notes that the rigor of the review process is somewhat unclear. Thus, the Court is unsure whether the journal can properly be put in the same category as other peer-reviewed publications.

all reflect a single underlying process: a variety of psychological and physiological processes, including some that can be consciously controlled, can affect polygraph measures and test results. Moreover, most polygraph testing procedures allow for uncontrolled variation in test administration (e.g., creation of the emotional climate, selecting questions) that can be expected to result in variations in accuracy and that limit the level of accuracy that can be consistently achieved.

Specifically, it noted that “[a]ll of the physiological indicators measured by the polygraph can be altered by conscious efforts through cognitive or physical means, and there is enough empirical research to justify concern that successful countermeasures may be learnable.” Moreover, a treatise published in 2012 and conceded by Dr. Horvath to be a reliable authority on the subject of polygraphy, found that “... disagreements among polygraph examiners are common and limit the validity and utility of the technique in applied settings....” The defendant has failed to convince this Court that the situation is any better today. In fact, Dr. Kraphol admitted that training on countermeasures significantly affects the polygraph’s ability to detect deception and that the current “primitive countermeasure detective system” is “fairly simplistic.” Accordingly, the Court finds that the polygraph’s potential rate of error is unacceptable. Cf. *Ortiz*, 93 Mass. App. Ct. 388 (in upholding judge’s determination that the defendant failed to establish the reliability of the penile plethysmograph (PPG) exam, noting “the test’s vulnerability to manipulation by the subject, who may opt to direct his thoughts or attention elsewhere than intended by the examiner.”).

5. *Governance by Recognized Standards*

There are no recognized universal standards, minimal educational requirements, or licensing requirements, or board certifications applicable to polygraph examiners, even though the examiner has a great influence over the results of any polygraph examination. Moreover, as

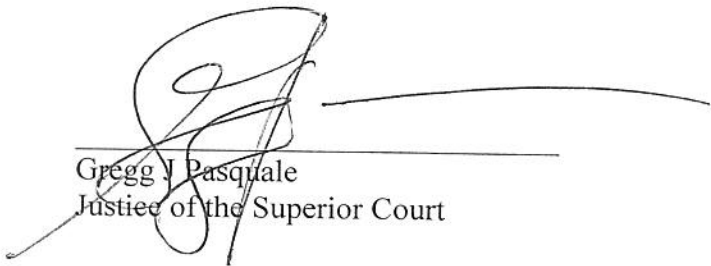
noted above, the polygraph is not a standardized test whose results can be replicated. Thus, the Court concludes that the polygraph is not governed by recognized standards.⁶

C. Conclusion

The concept of using lie detectors to determine the veracity of witnesses who testify under oath in court is not novel. The courts of this country have been employing lie detectors for the past two hundred years. However, the lie detectors used are not called polygraphers, they are called jurors. The introduction of polygraph evidence threatens to intrude upon this crucial function of the jury. The defendant has failed to demonstrate that polygraph evidence is sufficiently reliable to justify that risk. As a result, the Court will exclude the defendant's polygraph examination results from evidence at his trial.

ORDER

For the forgoing reasons, Defendant's Motion to Admit Expert Opinion Evidence Regarding Polygraph Results is **DENIED**.



Gregg J. Pasquale
Justice of the Superior Court

Dated: 12-21-18

⁶ The Court was also troubled by Dr. Horvath's testimony that the profession has yet to coalesce around a theory for why the polygraph accurately measures deception.