Name:_____ Smigala[12]

Forensics: Introduction Unit Lie Detectors

Read the 2 attached articles about lie detectors and answer the following questions.

1. Match the following statements made by a suspect using body language in the "Lie detectors" article with the gestures that were made to imply them:
   a. "I'm not helping you"_____
   b. "I'm lying"_____
   c. "You won't get me, I'm smarter than you."_____

2. a. Distinguish between the terms objective and subjective. (You may need a dictionary to help you.)

   b. Is a polygraph objective or subjective?_____
   c. Is analyzing body language objective or subjective?

3. Distinguish between the gestures that adults versus children make when lying.
   Adults_____Kids_____

4. What gesture is considered a "disguised arm cross"?_____

5. Name the 4 physical changes that a polygraph test looks for to indicate that a person is lying.
   1.
   2.
   3.
   4.

6. What 1 small flaw that even an expert liar cannot overcome may be used in a future lie detection test in place of the polygraph?_____

7. Name 3 characteristics that can be identified about a person just from their voice by a forensic phonetician.
   1.
   2.
   3.

8. According to Ronald Barndollar, why are polygraph tests useful in criminal cases even though they're not admissible in court?

Lie detectors

In pursuit of the truth, crime investigators dream of a foolproof way to spot suspects' lies. The invention of the polygraph in the 1920s promised to make these dreams a reality. Today, however, many people question the value of this "lie detector," and more sophisticated technologies are being explored to supplement or replace it.

In a police station interview room, two detectives question a youth caught loitering in a parking lot. His replies are cool, confident, even cocky, and when the interview moves on to local car crime, his manner stays the same. But his posture changes. He folds his arms. When asked specific questions, he touches his lip. As the interview winds up, he leans back in his chair, crosses his legs, and puts his hands behind his head.

Showing him out, one detective mouths silently to the other: "He's our man." The police covertly keep watch on him, and a week later a CCTV camera catches the same youth stealing car radios.

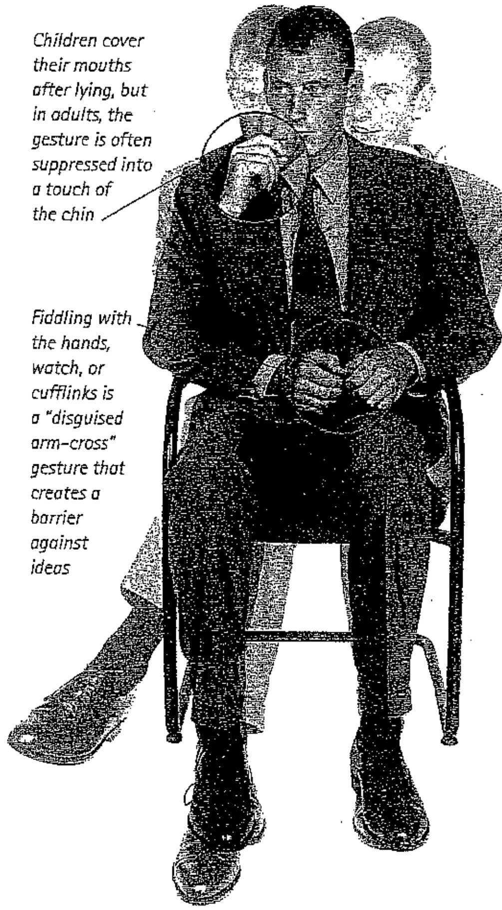
Body-language blunders

The two detectives simply used their experience and training to read the suspect's body language. His gestures said, "I'm not helping you," then "I'm lying," and finally "You won't get me, I'm smarter than you."

Reading a suspect's postures has always been a useful skill, but until the 1960s it was generally regarded as intuition. Then psychologists began research into nonverbal communication, and a 1971 book by Julius Fast popularized the subject. Today, it forms a standard part of interview-technique training.

Putting faith in the polygraph

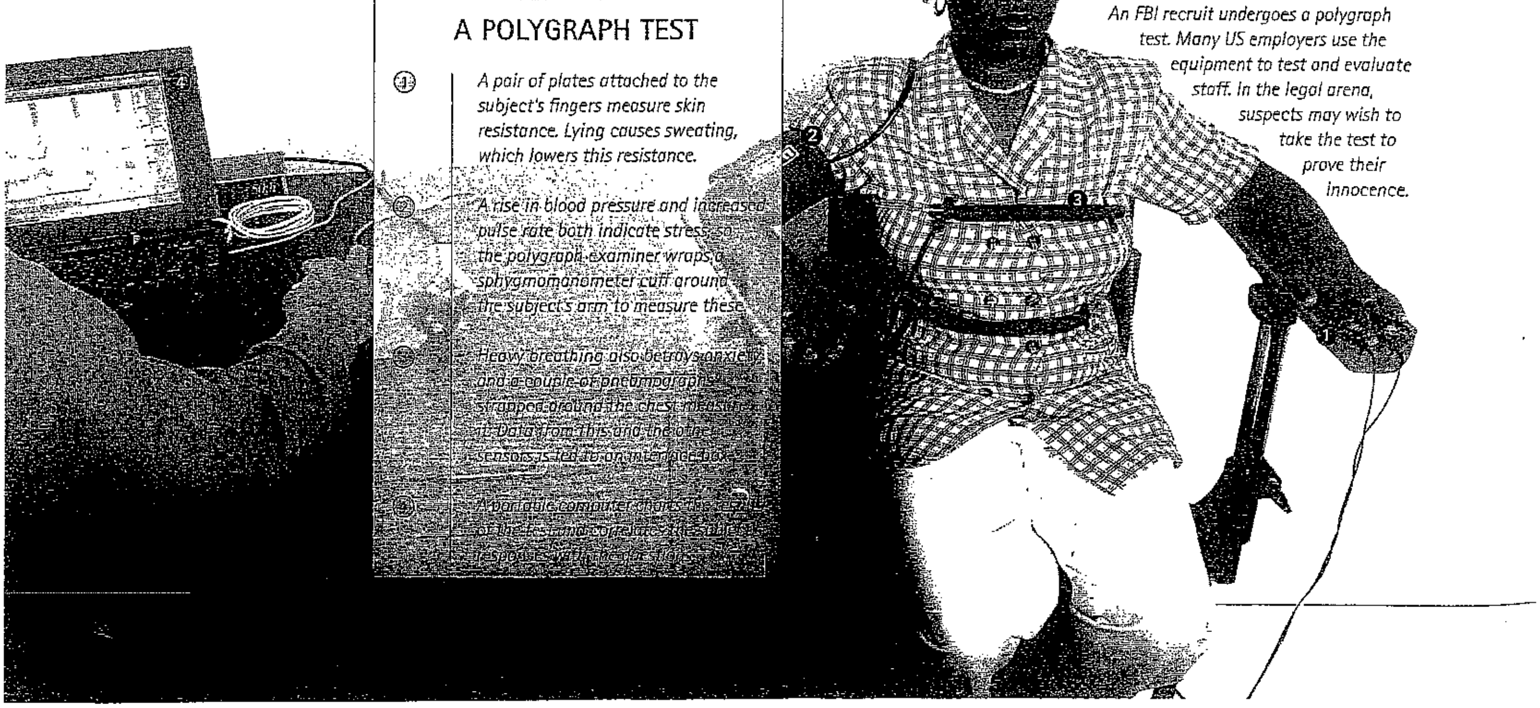
Useful though body language is, it is subjective. The polygraph, by contrast, appears to be utterly objective, and produces a permanent record of a suspect's responses. The polygraph measures the body's response to stress. For example, we are all familiar with the "sweaty palm"



Children cover their mouths after lying, but in adults, the gesture is often suppressed into a touch of the chin

Fiddling with the hands, watch, or cufflinks is a "disguised arm-cross" gesture that creates a barrier against ideas

BODY LANGUAGE ▲
It can be easy to read body language; just look carefully at how people sit, and what they do with their hands.



◀ TESTING, TESTING!
An FBI recruit undergoes a polygraph test. Many US employers use the equipment to test and evaluate staff. In the legal arena, suspects may wish to take the test to prove their innocence.

A POLYGRAPH TEST

1. *A pair of plates attached to the subject's fingers measure skin resistance. Lying causes sweating, which lowers this resistance.*
2. *A rise in blood pressure and increased pulse rate both indicate stress, so the polygraph examiner wraps a sphygmomanometer cuff around the subject's arm to measure these.*
3. *Heavy breathing also betrays anxiety, and a couple of pneumographs strapped around the chest measure it. Data from this and the other sensors is fed to an interface box.*
4. *A portable computer charts the results of the test and correlates the subject's responses with the questions.*

sensation experienced when under pressure. Perspiration lowers the skin's electrical resistance, and the polygraph gauges this using electrodes on the fingers. The machine also measures depth of breathing, pulse rate, and blood pressure, plotting each of these stress measures on a paper trace or, increasingly, as a graph on a computer screen.

To administer a polygraph test, the examiner must first ask the subject a series of innocent questions. These determine a baseline for each measurement, against which to compare the subject's responses to later questions about the crime itself. In theory, their body will betray them when they answer falsely, leading to a peak on the chart.

Polygraph problems

In practice, subjects' responses are not so clear-cut. Many physical factors, such as drug and alcohol use, and even hunger, can mislead the machine. Pathological liars can cheat it, and simple techniques such as self-inflicted pain—perhaps by biting the tongue—can send readings awry. Results can also be misinterpreted if the examiner fails to establish a reasonable baseline, due to poor training.

Without supplementary evidence, a polygraph test cannot overcome "reasonable doubt," so it is rarely used as evidence in court. However, suspects fear its reputation, and some change their plea to guilty either after failing a test or in anticipation of one.

Crime on the brain

Newer technologies may succeed where the polygraph has failed. Some of the most promising use the electroencephalograph (ECG), used by researchers since the 1930s to study the electrical waves that surge through our brains when we think.

Most of the researchers working on this technology concentrate on one wave in particular: the P300, which surges when we see something we recognize.

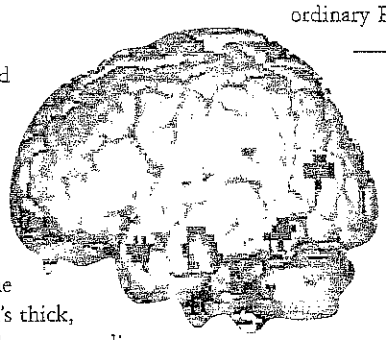
One organization has worked with the CIA and the FBI to develop and formulate a test nicknamed "Brain Fingerprinting." This test works by monitoring the P300 wave as the suspect looks at images or phrases associated with the crime scene, and at unconnected images and words. The spark of recognition, so-called "guilty knowledge," triggers a change in the brain wave, which ECG equipment detects. Wrongly accused suspects who were never at the crime scene should show the same response to all images.

Though this test sounds similar to the polygraph, it is not as susceptible to cheating. People with guilty knowledge cannot stop themselves from reacting, so there are no false positives.

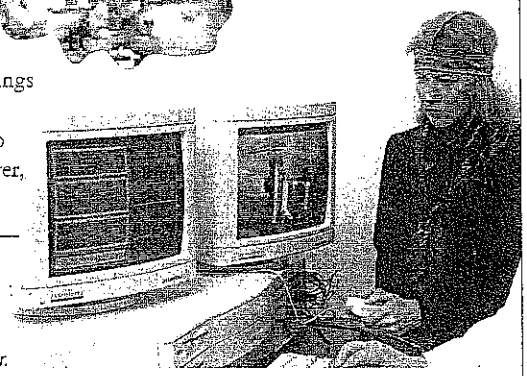
Magnetically minded

ECG is a comparatively old technology, and there are now more sophisticated ways to monitor brain activity, such as magnetic resonance imaging (brain scans or MRI). This highlights areas of the cerebral cortex—the brain's thick, thinking "skin"—where the nerve endings spark most vigorously. This technique may one day allow forensic scientists to probe the criminal mind. So far, however, MRI has defied attempts to untangle complex brain activity to produce a standard, easily administered truth test.

Ironically, a simple new lie detection technique may eventually replace the polygraph. Research at the University of Michigan suggests that liars briefly hesitate before responding to a question. Even with training they cannot hide the pause. The technology is still incomplete, but as one researcher puts it, it is a "cheap and easy way of doing the guilty knowledge test: all you need is an ordinary PC, and no electrodes."



◀ BRAIN ON FIRE
This false-color positron emission tomography (PET) scan highlights the areas of the brain triggered during image recognition.



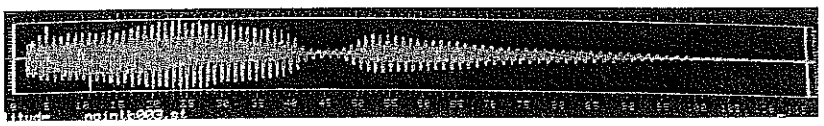
THE HEADBAND OF TRUTH ▶
Brain fingerprinting involves fewer invasive sensors than the polygraph. Terminals on a headband pick up the ECG waves, and the subject's responses are monitored on a computer.

A PATTERN OF LIES

Can the sound of your voice betray your lies? That is a question for forensic phoneticians. These experts train for eight years in the field of linguistics and phonetics (language and speech science) before helping to solve legal cases. They have been known to deduce a suspect's age, sex, and race from their voice, as well as matching different recorded telephone calls to a particular caller.

Voice spectrography, popularized in the 1960s, used a graphic representation of sound: a "voiceprint." The voiceprint below shows the sound made by someone saying "baby." The graph measures amplitude—the strength of sound over time—and shows the two different syllables as bursts of lines on the graph. But forensic phonetics is not solely about voiceprints. Trained experts must use their strong academic background to interpret the prints in combination with phonetic analysis and acoustic measurement.

Experts have argued about the value of voiceprints, but most agree that the psychological stress evaluator, a device that uses tremors in speech as a measure of stress, is not a reliable way of detecting lies.



Search for Truth Never Ends for Retired FBI Polygraph Expert

Profile

By BILL BITTAR
Correspondent

Ron Barnollar explains tracings of physiology displayed on his compter. A person's physiology changes as they lie.

Recently retired FBI special agent Ronald Barndollar's home office is covered with plaques honoring his 34-year career in law enforcement and framed photos, including a picture of he smiling agent standing next to U.S. Attorney General John Ashcroft and another of him posing with "America's Most Wanted" host John Walsh when Barndollar was handling the Connecticut portion of the Unabomber case. But a framed Newsweek magazine cover may initially seem out of place. It features a dominant photo of a Duke lacrosse player holding his racket with two smaller head shots of the players who were wrongly accused of raping a stripper. The main headline says "Sex, Lies & Duke," and the bottom line reads: "Who's Telling The Truth?"

"That's what it's all about," the bespectacled Barndollar, 57, said enthusiastically when asked about the magazine cover. "Who is telling the truth?"

When Barndollar wants to know who's telling the truth, he prefers to measure their breathing, pulse, heart rate and brain activity. The FBI polygraph examiner had been the lead supervisor in New England before the bureau's mandatory retirement age ended his career as a special agent last year. But his never ending search for truth continues with his private practice, Credibility Assessment Associates LLC.

"I conduct polygraph examinations for private clients, mostly for criminal defense attorneys and other clients," Barndollar said one recent Friday morning, while sitting in the kitchen of his Guilford home. His loyal golden retriever, Barney, lay at his feet under the table.

Some of Barndollar's former colleagues have ribbed him about going to the "dark side" by working with defense lawyers. The bottom line is to get to the truth," Barndollar said.

Well-known Connecticut attorney Richard T. Meehan Jr. was the first lawyer to hire Barndollar in his private business.

"I had a couple of clients he tested when he was with the FBI that I was convinced were telling the truth," Meehan said of Barndollar. "And they didn't pass the test. I watched through the glass as they broke down and admitted their guilt in the crimes they steadfastly denied in the past. I used Ron a couple of times since he retired."

Though failing a polygraph often leads to a defendant telling the truth, Meehan said the test is not admissible in court room. Nevertheless, it is effective tool for law enforcement, especially when entertaining a plea where there are questions over whether the defendant really is telling the truth.

"In our practice," Meehan said of defense attorneys, "if our client passes in a real doubtful case, we bring it to a prosecutor and it carries weight in getting the case resolved."

Though Barndollar now performs polygraph exams for the both sides of the legal aisle, there are times when he will refuse a client. One of them was a woman who kept calling him and pleading for an exam of her husband, who she thought was cheating on her because strange pairs of panties were turning up around her house.

"I referred her to someone else," Barndollar said with a smile. "A good rule of thumb is, don't ask if you can't handle the answer."

The bottom rung

Ronald Barndollar was born outside of Pittsburgh and grew up in Albany, N.Y. He went on to attend Johns Hopkins University in Baltimore, where he initially studied medicine.

"I started in premed before I ran afoul of organic chemistry," he said. "I switched my major to psychology, but was not accepted to graduate school."

After earning his bachelor's degree, Barndollar joined the FBI.

"I was looking for a job that would be interesting," he recalled. "I didn't want to be in sales or to sit in an office all day and law enforcement seemed challenging and interesting – not a run of the mill type of job."

Barndollar needed two years of experience before he could become an agent, so he worked in the computer systems division for $5,166 a year, and then in the laboratory division. But after the two years were up, the FBI had a hiring freeze in 1974.

"I went to graduate school while working full time to get a master's of science degree in forensic science at George Washington University to improve my hire-ability," Barndollar said. "I absolutely started at the bottom rung. You apply yourself, persevere, make connections and work your way up. It's all about self improvement."

After the hiring freeze had ended, Barndollar passed an agents class in Quantico, Va., in 1976. He and 17 other agents of the 23-member class were sent to the FBI's New York office, the "least desirable" destination. "They sent a bunch of us because we were new and they thought we would stay," he said.

Barndollar started out in Organized Crime unit. "About a year after I was following [Bonnano Family crime boss] Carmine Galante around, he was killed outside a restaurant in Brooklyn with a cigar in his mouth," Barndollar said. "He was with Hoffa and he encouraged the Mafia to get involved with drugs."

The young agent soon transferred to Foreign Counter Intelligence, where he was involved with Russian espionage cases. " recalled. "

It was difficult work,it was interesting an exciting," he continued. "We helped to win the Cold War."

The proof is in the readings

In 1983, Barndollar took a polygraph course at the U.S. Army Military Police School at Fort McClellan in Alabama. He said it was his underlying interest in physiological psychology that lured him to the field.

"Polygraphs have been around since the 1940s in one form or another," Barndollar said. "Some studies say it has a 90 percent success rate and some critics say it's no better than a coin toss, which is bogus. If done properly by a competent ethical examiner, I think the accuracy is in the 90s. There's nothing that's 100 percent – even DNA testing."

Barndollar set up his laptop on the island in his kitchen and showed diagrams of the human brain. Red areas on the brain indicated activity, and he noted how there was more brain activity when the subject a lie than when he told the truth.

A grid appeared on the computer screen on which different colored lines represented readings for breathing, perspiration and heart rate. A polygraph examiner looks for significant fluctuations when a subject answers a question.

"A girl in a class was asked to write down a number on a piece of paper and told to lie to me about it," Barndollar said, pointing to a heavy zigzagging line above number seven, he added, "Her perspiration is off the charts."

Other tests when the student was asked about the numbers in a different order all showed strong reactions to number seven, which turned out to be the number she wrote down.

"There are psychopaths and con men who are good at influencing other people and getting them to trust them," Barndollar said. "But the polygraph measures bodily functions that you can't control."

A critical eye

High profile cases Barndollar was involved in include the Unabomber and John Walker, who was part of a family of spies, and other Cold War cases.. Now Barndollar spends his time getting his private practice off the ground and embarking on his 20th year of officiating high school boys' Lacrosse games. He is the current chairman of the Connecticut Lacrosse Officials Association.

Barndollar wants to spend more time with his two sons, Todd, 23, and Kyle, 19, two stepdaughters and two step-grandchildren. And he and his wife, Nancy, plan to travel.

"I enjoyed my career," Barndollar said. "I was reluctant to leave. I'm happy to move on to the other challenges in my life and still be of service to the justice system."

The retired FBI agent will still be following the nation's televised cases on the news. While he watches, he admits to wishing he could give the defendants polygraphs "all the time." Though he puts his faith in the readings, Barndollar has developed a critical eye over the course of his career.

He remembers watching Susan Smith being interviewed on "Larry King Live" before being convicted of drowning her two boys. She told the TV host that a black man kidnapped her children, but Barndollar read her body language. Max Thiel, who Barndollar befriended in the FBI, called him and asked if he was watching the program.

"She's lying, isn't she?" Thiel asked.

"Yeah. She's lying," Barndollar said, adding he called the authorities after hanging up with Thiel. "I said, 'You better give her a polygraph,' and they said, 'We already did. She failed.'"