

TRUTH DOWN TO A SCIENCE

For all the human suffering war produces, its byproducts are many: The microwave oven. Communication satellites. The Internet. Unfortunately, few technological breakthroughs have advanced the cause of humanity as these godsend of everyday convenience have. Even the war on terror, though an unconventional conflict, has begun to bear the fruits of innovation, especially in a field that may prove to be this campaign's technological legacy: biometrics.

Simply defined as the use of measurable behavioral or physical characteristics to identify an individual, biometrics is hardly a new science; fingerprints were being collected in China as early as the 14th century. Recent advances, however, have allowed biometrics to move beyond mere identity recognition to the analysis and interpretation of human emotions and behavior — particularly in the fields of facial recognition and Layered Voice Analysis (LVA).

These advances hold great promise for market researchers because they can help pinpoint consumer response at a previously unattainable level. To get there, however, not only must the technology overcome cost barriers, but also marketers must learn how to harness the information that the technology provides.

The New Lie Detector

John Tidwell, the executive vice president of strategic marketing at Chicago-based V Resources, recently began using LVA in market research environments. He describes LVA as a way to measure the frequencies on which the human voice operates. Each frequency is associated with a different brain function. As a result, LVA software can indicate whether a person is lying and if it is a practiced lie or a spontaneous untruth. It can also measure different levels of emotion; whether a person is physically,





Biometrics has the potential to wildly improve the accuracy of market research by practically reading the minds of consumers, as long as the technology's costs and criticisms don't scare marketers away

BY JOHN PATRICK PULLEN

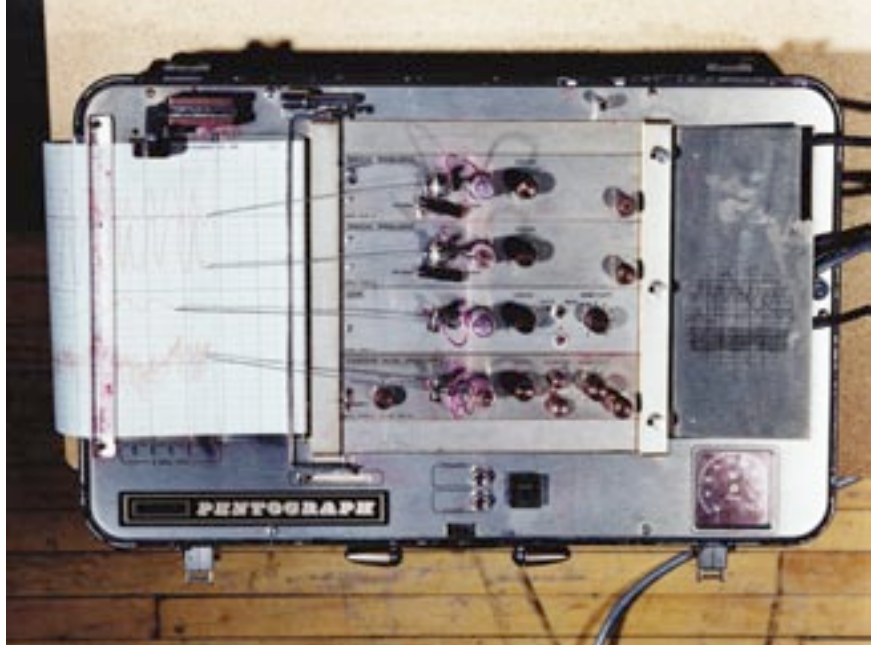


emotionally, or cognitively stressed; whether a person is being creative or pulling something up from repeat memory; or if a person is willingly speaking or being coerced.

LVA technology was invented by the Israeli government to interview terrorism suspects, but it has since penetrated the commercial space, mostly as a fraud prevention application used by insurance companies. It requires no physical contact with its subjects, only a microphone, a computer, specialized software, and an experienced operator. "It's such a powerful tool," Tidwell asserts.

Facial recognition technology measures the parasympathetic nervous system, that is, the immediate fight or flight response by placing electrodes on involuntary smile and frown muscles, says Tidwell. Researchers can tell when someone is smiling because the electrodes measure the nano-voltage going to the muscles, as well as assess galvanic skin response for adrenaline, similar to how polygraphs function. Marketing use of this biometric varies from its security applications, as it requires interviewees to be wired. That could change as the technology matures (see sidebar on page 82). "You show someone a TV spot and you can tell if they are smiling or frowning, whether they are excited or bored," Tidwell explains. "For a 30- or 60-second spot, you will know [when] you've got something that somebody would watch or something that somebody would walk away from."

These two emerging technologies, while still in development, have tremendous potential to improve marketing research results when used in conjunction with time-tested research techniques. Facial recognition, for example, can help researchers understand subjects' unconscious or unvoiced responses without relying on subject-provided information typically derived from Perception Analyzer dial-up/dial-down testing. It is useful in media testing and eye tracking for both television and print advertisements. Although LVA can also be used in media testing, it is more helpful when applied to focus groups and interviews, where marketers can probe



WHILE MARKETERS CAN MEASURE THEIR BIOMETRICS WITHOUT CAMERAS, THE ALTERNATIVE IS USING ELECTRODES, WHICH CREATES AN UNNATURAL, AND POSSIBLY STRESSFUL, ENVIRONMENT FOR SUBJECTS.

difficult topics and determine what aspects of the content disturb interviewees. "The fundamental thing that makes these techniques very different is that they try to get past the human conscious response," Tidwell says.

A Penny for Your Thoughts

Tapping into the psyche, however, comes with its share of difficulties. Because of the high cost of biometric technology, market researchers often turn to an outside supplier and couple it with their in-house marketing expertise. "It's a small, but growing field, and we do not necessarily have the expertise to handle it in-house — we outsource it to a few other people," says Jon Kulok, a principal with Arlington, Va.-based Edge Research.

However, relying on vendors to administrate technologies can drive up the cost — a barrier to widespread adoption. "I think there's more interest in treating this as an experiment or as discretionary funding right now in order to explore," says Tom Welchans, president of Jacksonville, Fla.-based Welchans Research Group. "Relatively few companies right now — that's my impression — are willing to put big dollars into it and move away from traditional methods."

For using facial recognition in a security environment, the major expense is the

cameras, says Robert Allen, an analyst with the San Antonio, Texas-based research firm Frost & Sullivan. Digital video cameras that can scan faces consistently well cost between \$5,000 and \$10,000, he says, and standard video cameras don't perform well enough. "Are [digital video] cameras worth it in a market research environment? To some extent they are not even worth it in a security environment," Allen argues. "Some people would prefer to have a human verifying individuals than deploying 10 to 15 DV cameras across an airport, or whatever the case may be."

Yet while marketers can measure their biometrics without cameras, the alternative is using electrodes, which creates an unnatural, and possibly stressful, environment for subjects. Someday, unwired, camera-based biometrics could produce and process accurate data automatically, but in the meantime, the process still relies on analysis by trained researchers — and those people are hard to come by. "The vendors who have this technology are a little reluctant to share [it]," Welchans says. "They're keeping it relatively close to the vest now compared to vendors in other areas of marketing research."

Allen feels this proprietary system could potentially reduce biometrics' results and adoption in marketing

research. "I don't think they've got to the threshold where the return on investment makes perfect sense just yet," he says.

Tidwell disagrees. Instead, he sees the barrier to adoption being the abandonment of previous methods and data. "There are probably substantial costs initially, but I think what's going to happen in the long run is that it will take hold and eventually become the predominant way of doing things."

"Is it worth the cost? I think in some instances it is," argues Kulok, who estimates that biometric research can be 8 percent to 15 percent more accurate. That's critical, he says, when millions of dollars are at stake.

Critical Thinking

Regardless of the technology's cost of entry, in an industry driven by metrics and measured return, the biggest hurdle that biometrics faces perhaps is its ability to prove itself in the boardroom — to show that the data are actually applicable and actionable, and that current systems can adapt to these new methodologies. "It's a matter of building models that prove that the measures you're collecting actually explain something that a businessman cares about," says Chuck Young, CEO of Ameritest.

The Albuquerque, N.M.-based company uses nonbiometric methods to elicit information from people, selected through preconscious filtering. "It's not biometric in the sense that we are getting information over a wire," Young explains. "We're measuring what the preconscious eye, in the blink of an eye, is saying." For example, Ameritest will slice commercials into individual screen shots, shuffle the images, and chart the shots on the basis of what images the subjects recall. Armed with that information, the company will help clients improve their advertisements. Ameritest's methods of eye-flow charting are arguably more pragmatic than those developed for biometric measurement, and likely less expensive. "[Biometricians are] purely engaged in showing descriptive statistics, without telling you the meaning of those statistics," Young says.

"It is true with the biometric, when you

From Classified Info to Commercial Use

The war on terror's first image — Mohammed Atta passing through airport security on September 11, 2001 — was one of the biggest catalysts for government research in biometrics. Before 9/11, it was an already established, though underutilized, science, but critics of airport security lamented that had a system been in place to monitor surveillance footage, Atta might have been stopped at the gate. So, under the provisions of the USA Patriot Act, the National Institute of Standards was mandated to measure the accuracy of biometric technology in the hopes of improving technology and bettering the country's security.

The agency sponsored 2002's Face Recognition Vendor Test, a recurring demonstration of companies' showing government agencies where and how facial recognition technology works best. According to Lisa Ludwig, vice president of marketing and business development for Animetrics, a face recognition and facial imaging software developer in Conway, N.H., the test concluded that three obstacles prevented the technology from performing at a suitable level of accuracy: the face's position, the lighting around the face, and the face's expression. Once the technology matured and overcame these obstacles, facial recognition technology could be applied with confidence.

Then came the government grants. "Initially after 9/11, the government was throwing a lot of money into biometrics overall," Ludwig says. "It started to decline a little bit in 2005, but there still is money certainly going into it."

According to Ludwig, the initial barrier of facial positioning has been mostly overcome and many biometricians have solved issues with lighting. It is in the area of expression that biometrics faces its biggest challenge — and best potential for applications in the marketing research industry. — J.P.P.

take someone through a TV spot, that it really doesn't tell you why they reacted in that way; it just tells you that they did," Tidwell adds. "A good interviewer will talk to the person about what they seemed to like and dislike and try and get out of them what it was about those things that bothered them." In some cases, just being able to identify the specific point in the biometric where someone's readings changed might be all that's necessary. Other times, when there's a gradual decline in interest, a researcher can ask, "Why are you getting bored with this?"

"The data is only as good as the person interpreting the data — it can be misread," Kulok of Edge Research Group says. "The accuracy of biometrics versus dial testing ... I really can't speak to the quantitative data we get back and say it is better. Everything I know in marketing research and psychology tells me it's so."

Biometricians acknowledge that this is the boardroom challenge. "At the end of

the day, the top management of these companies want hard metrics that oftentimes are not familiar to them when they see this kind of research," Welchans says. "That kind of information has to find a way, in a useful form, back into product development."

Tidwell disagrees. To him it's the previous methods that are ineffective, noting that despite the advancements in technology, predictive modeling really hasn't improved at all. "We're not any better at predicting new product uptake, [and] focus groups have never been anything but people's opinions," he says.

For now, it's more of the same for market researchers. "There will probably come a tipping point when everything will converge and people will realize that something like biometrics makes more sense than using the dials, but I don't think that day is in the next year or two," Kulok says. "It's probably some five or 10 years out." ■