

THE MAN OF 1,000 FACES:

PAUL EKMAN AND THE SCIENCE OF FACIAL ANALYSIS

By Katherine Ramsland, PhD, CMI-V

Let's say that you're talking to someone, perhaps as an interviewer with a person of interest. The subject responds appropriately, but you have the vague sense that he's hiding something. It's just a quick impression, but you think something flitted across his face that contradicts his cooperative response. Was it contempt? Disgust? Anger? You can't really tell. Or can you?

The ability to read facial expressions is a natural part of human communication. We use it all the time, but we can easily misunderstand or even be tricked... unless we're trained in how to spot and interpret an emotion's most subtle manifestations.

Psychologist Paul Ekman, the author and editor of 15 books and countless articles, has been the leading researcher in this effort. A professor of psychology in the University of California at San Francisco's Department of Psychiatry for thirty-two years, Ekman is considered the world's foremost expert on facial expressions, particularly the subcategory of micro expressions.

He considers *Emotions Revealed* to be his most accessible book, which was written as he was retiring, but he has also published *Telling Lies*, *What the Face Reveals*, *Why Kids Lie*, and *Emotional Awareness* (with the Dalai Lama). In addition, he offers online training to help improve our ability to read subtle expressions and to enhance emotional awareness. It's no surprise that the American Psychological Association included him on its list of the 100 most influential psychologists of the 20th century. *Time* magazine also honored him in 2009 by selecting him as one of the 100 most influential people.

Ekman consults with government agencies, here and abroad, on detecting deception and expressions of deadly intent. His work inspired the television series, *Lie to Me*. He also offers trainings online that anyone can use. He is truly the man of 1,000 faces.

Training - Anger



VIDEO MENU

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EARLY INFLUENCES

Now in his seventies, Paul Ekman spent his childhood in Newark, New Jersey, as the son of a pediatrician. After his father joined the military, Ekman's family moved to the West Coast. He was just fifteen when he entered a special program at the University of Chicago, eventually gravitating toward the field of psychology. During the 1960s, several key influences led to Ekman's research on the behavior of the human face.

In a humanities course, he read Sigmund Freud's *Introductory Lectures* and enjoyed Freud's pre-emptive style of addressing potential questions and criticisms. Ekman became an avid student, able to quote Freud on any topic. Initially, he accepted Freud's notion that subconscious intent is easily discerned in external signals. "In my first paper on deception," Ekman said, "I quoted Freud saying that things will always ooze out of every pore." However, his own work would show that people can be quite secretive.

Reading Freud inspired an interest in becoming a psychotherapist. As Ekman trained for this, he watched people closely and was impressed by evidence that there was more going on than their words indicated. But his life would take a much different route than he anticipated.

Just after Ekman received his PhD in 1958, he was drafted. Returning to New Jersey by way of Fort Dix, he became the chief psychologist there. With plenty of subjects at hand, he devised projects that convinced him that solid research could inspire change that

would improve quality of life. To his delight, the military implemented several of his suggestions.

Soon, Ekman experienced a fortuitous meeting of the minds. He submitted a paper on body movements to a journal that had also received a paper on facial expressions from a psychologist named Silvan Tomkins. The editor suggested to each that they should meet. Ekman went to see Tomkins, the man who had developed Affect Theory, and Tomkins became a mentor.

"Silvan had a big influence on me," Ekman affirmed. "He was trained as a psychoanalyst and he was a real wizard on being able to show you the information in the face. It was Silvan who persuaded me to do research on the face, because I thought it was a graveyard for research. So many famous scientists had tried and failed to develop a method for extracting the information. It's so complicated and so fast. Sylvan showed me on a screen or in a photograph where he was getting the information. It was not intuitive. It was very explicit. So I figured, if it's there, I can develop a method so that anyone can measure it and get that information."

Tomkins also believed Darwin's notion that basic human expressions are universal and innate. Psychologists during this period thought otherwise, but there was little empirical research to support either position. In 1966, Ekman received a grant from the Advanced Research Project Agency to learn about what was universal vs. what was culturally specific about gestures and expressions.

The METT

At one point, Ekman filmed 40 confined psychiatric patients. Among them was a depressed, mid-forties housewife who had attempted suicide several times. She deceived her therapists by acting as if she was feeling better so she could leave the hospital for a brief family visit. She had intended to try again to kill herself. Then she admitted the lie.

This case inspired Ekman to study deception, which in turn led to his research and training on micro-expressions. Ekman studied tapes of this woman's clinical interviews, going over and over them until he finally saw the faint glimpse of her despair. It was fleeting but it was there.

Everyone can make the universal expressions voluntarily, but the face also has an involuntary system. Sometimes these systems work together, but when a person feels something that contradicts the emotion she wishes to present, the unconscious system can still leak through. These micro expressions, lasting about 1/25 of a second, generally require a trained eye to see. Ekman believed that, with practice, people could become adept detectors of micro expressions.

For recognizing emotional signals, Ekman developed the Facial Recognizing Suite, including the METT, or Micro Expression Training Tool. He turned this into an interactive video system, which is now available on his website. METT spends a lot of time teaching about emotions that can be confused with each other, such as fear and surprise. After viewing 30 or 40 examples of micro expressions in less than an hour, a person taking the training can develop a basic ability to spot these quick flashes. (There is also a Mini Expression Training Tool, or SETT Original.) The training demonstrates just how easy it is to miss them. If you blink, you won't see it.

He contacted Carlton Gajdusek, a neurologist who had been studying a disease called kuru in a Stone Age culture living in a remote area of New Guinea. Gajdusek had taken numerous films of the natives and he generously shared the extensive footage. Ekman realized that these people were free of media contamination, so their expressions should be completely natural to their culture. They offered the perfect subjects. He spent a year watching the facial close-ups and realized that the subjects' expressions were familiar. He had seen them all before. This seemed to confirm Darwin's notion of universal emotions.

DEVELOPING A SCIENTIFIC TOOL

Ekman decided to visit other cultures to learn how people extracted meaning from facial expressions. He traveled to Asia, South America, and Europe, taking photographs of faces that bore recognizable expressions, such as happiness, fear, and surprise, and asked research subjects to identify them. He found substantial agreement on how people interpreted certain basic expressions.

Few people are even aware of noticing a micro expression, although their brain picks up the information. If we see a happy expression, and no micro expression preceded it, we sense the person is happy. However, if a negative micro expression preceded the smile, we would sense the expression as sinister or manipulative. The inconsistency in the latter example gives us an uneasy feeling, no matter how broadly or how long the person smiles.

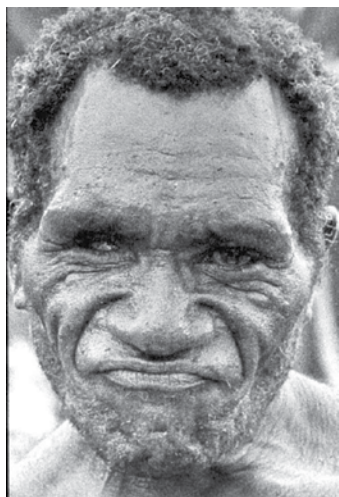
However, to develop lasting expertise takes not just practice but also feedback. "When we train a serious crime or counter-terrorism person," Ekman explained, "it takes us approximately 35 hours of instruction. You have to practice. I use the example of tennis. You can't even watch tennis on TV unless you know the rules. You need to have the knowledge. But just having the knowledge, you can't get the ball over the net. You need a coach and feedback and practice. So we give the knowledge, such as in my book, *Telling Lies*, but the main thing we give is practice and feedback, again and again, and again, with case examples.

"It gets to the point where you don't have to think about it. You recognize what we call hot spots – places where for some unknown reason, you're not getting a full account, and yet something's going on that's very important. When you see a hot spot – it can be in the face, in the voice, in the words themselves, in the posture, in the gaze—you have to try to figure out why by the questioning you do. But don't immediately assume that's proof of a lie. That's the last explanation, after you've ruled out other reasons why you're seeing a hotspot. Maybe they have to go to the bathroom and they don't know how to ask you. That will appear as a hotspot, too."

To date, over 70,000 people have taken the METT training. A very few people apparently don't need it.

To make a more definitive finding that avoided cultural cross-contamination like that found in developed countries, Ekman also went into the jungles of Papua New Guinea, where Gajdusek had worked. These people had never even seen a photograph before, and yet they made sense of the emotional expressions depicted. He recorded face after face until he had an enormous videotape library. His aim was to catalogue every expression of which the face was capable, but also to note those that were clearly universal. Ekman believed he could then devise a way to teach people who would then become adept face readers.

Within a decade, Ekman and his colleague, Wally Friesen, had compiled a comprehensive taxonomy of more than 10,000 combinations of facial muscles. Only about 3,000 combinations have some meaning, and a limited number are regularly useful. Some expressions are controllable, others involuntary. Some are easy to identify, others are subtle. The expansion and contraction of muscle movements involved in each expression became the basis for the Ekman Facial Action Coding System (FACS), first published as a 500-page, self-teaching manual with co-researcher Wallace Friesen in 1978.



▲ This collection of four black and white photographs show members of a stone age tribe from New Guinea posing expressions of happiness, anger, disgust and sadness. These images were first used by Paul Ekman in the *Afterward* which appeared in his edited edition of *Darwin's Expression of Emotions in Man and Animals*. These photos are often used to illustrate the universality of emotional expression.

According to FACS, true expressions follow a natural flow onto and off of the face. Each has a moment of gathering, a peak, and a breaking point. Ekman and Friesen categorized each movement as an Action Unit (AU), finding 43 distinct AUs. All facial expressions can be dissected into AUs, according to how long they last, how intense they are, and whether or not they shape the face symmetrically. AU 9, for example, is a wrinkled nose. A lip corner pull is AU 12, while a jaw drop is 26. The intensity scale ranges from A (a trace) to E (maximum).

When two muscles are used, there are 300 possible combinations; with three, there are over 4,000. With painstaking work, Ekman and Friesen identified 23 combinations that were related to seven emotions with universal facial manifestations: disgust, anger, sadness, happiness, fear, contempt, and surprise. Happiness combines AU 6 and 12 (raised cheek and lip corner), while fear uses six AUs. By learning to read AUs, we can distinguish between, for example, a sincere and insincere smile.

Oddly, neither shame nor guilt, both of which are universal human experiences, is on this list. "I can speculate about the reason," Ekman said. "Think: how often might you want people to know

you're ashamed? Perhaps we did not develop a signal, because it was not useful for the person experiencing shame or guilt to have others know it. I don't know if it's true, but it fits as a finding, and for now, it'll stand. If I look sad and cover my face and turn away, this suggests there might be shame, but people who feel remorse or despair do exactly the same thing."

Confirming what he had noticed from his early interest in psychotherapy, Ekman can demonstrate that "words cannot adequately express emotional states. You have to be a poet to really convey the nuances of emotion that the face and voice convey in ordinary emotional conversation. A word like 'anger' is a representation; it's not the emotion. I can say 'anger' in an angry fashion, and then you get the emotion, but anger is a shorthand term for a family of related states. I might be frustrated, or exasperated, or self-righteous. I think we have fourteen different names for types of anger in the English language.

"There are emotions that everyone experiences, but you might not have a name for it in your language. *Schadenfreude*, for example. The Germans have a name for the enjoyment of an enemy's suffering, but we don't. Does this mean we can't feel it, because we don't have a name for it? That's ridiculous."

Once the emotions were systematized, the next step was a training tool. It's easy to see overt expressions, but what about the emotional states we try to hide? They do manifest, but so quickly that few can see them. Ekman found that Freud was wrong about our unconscious issues oozing from every pore, but he discovered that suppressed feelings will find expression, if only for a fraction of a second.

NATURALIS

Ekman teamed up with Maureen O'Sullivan at the University of San Francisco. As they worked with FACS, they found that a select few people are "naturalis," i.e., they are highly accurate at instinctively spotting a liar. When the stakes are high, such as during a threat assessment, they proved to be even better at spotting micro expressions, because they were more vigilant. They "heard" the gesture's intent more clearly than the spoken words.

Ekman and O'Sullivan formed the Diogenes Project to further study these "wizards." They found that this talented elite often described other people in a complex fashion and displayed a nuanced grasp of social, racial, and individual differences. The wizards also showed a higher level of imagination and more comprehensive attribution schemata. Such people are a perfect fit for security positions and law enforcement.

Ekman had plans to take this research further, hoping to identify more wizards, but with the death of his research partner, the Wizard Project came to a premature end.

Nevertheless, with enough training and feedback, others can master this skill to the same degree of accuracy. To become an expert, a person must be highly motivated, because developing an internal database is a long, slow process that involves a lot of practice and plenty of accurate feedback. Also, they must avoid books or training programs that promise a quick or simple set of rules, because these shortcuts can interfere with their ability to acquire more reliable information.

In addition, the would-be expert must become aware of his or her own need for closure. Those who need closure tend to make judgments sooner than those who can remain open-minded. They like the idea that "some truth is better than no truth" but this is antithetical to developing real skill in this area. In other words, expert face readers would be less likely to act like the lead character in the television series that Ekman inspired.



▲ CANNES, FRANCE - MAY 17: Tim Roth (star of the hit show *Lie to Me*) attends the 'De Rouille et D'os' Premiere during the 65th Cannes Film Festival at Palais des Festivals on May 17, 2012 in Cannes, France. Photo Credit: cinemafestival / Shutterstock.com

Lie to me

In 2009, *Lie to Me* aired its first of three seasons. Creator Samuel Baum had learned about Ekman's work and was keen to develop a series around the notion of scientifically detecting deception. It had so many applications, but most notably for national security. For the show, Baum created The Lightman Group, a private consulting company,

and Tim Roth was cast as Dr. Cal Lightman. At its peak, the award-winning show attracted more than 12 million viewers. Lightman made sharp, specific, and lightning-speed judgments about micro expressions he spotted, which he usually interpreted as lies.

To enhance drama, the series strayed from what the research showed, so Ekman posted a blog to provide information about specific expressions and gestures, as well as to correct errors and avoid misperception.

"There's an upside and a downside to having social science as the primary focus of an entertainment television show," he observed. "This is the first time it's all been based on the work of one scientist. It made the issue more salient for a lot of people. I opened my blogs by saying that catching a liar is never as easy or as certain or as fast as Dr. Lightman is, but this is entertainment and he has only 44 minutes. Nevertheless, of the people who saw the show, only 10 percent went to my blog. It's a big readership for a scientist to get, but the negative effect is that viewers may have gotten the impression that this is easy to do and that it always works. Some day, someone may sit on a jury and misjudge a person. That's why I started writing the blog."

The show, which often used items from Ekman's actual research, did raise awareness about the fact that deception detection has attracted an abundance of research in recent years.

RECOGNIZING DECEPTION

Lies are best identified in context, when compared over a period of time to other deceptive behaviors or narratives. Veracity is usually assessed with two or more systems of cues (e.g., rich detail, with a confident manner). It's easier to catch a liar when paying attention to both speech and bodily expressions.

"It would be simpler for the person trying to spot a lie," said Ekman, "if behaviors that betray one person's deceit are also evident when another person lies; but the signs of deceit might be peculiar to each person." He claims that there is no single sign of deceit in itself, no telltale Pinocchio's nose. If there were, people would lie less than they do.

To predict the behaviors that distinguish a deceptive person, the lie catcher must learn a lot about that individual's emotional base. Critical principles for recognizing when someone is lying include establishing his or her behavioral "constants," which become default or reference points. From there, we can look for deviations. Those deviating behaviors that appear in clusters are more likely to signal deception.

Even so, there are a limited number of emotions that offer clues: fear or anxiety, guilt that manifests in avoidance behaviors, or the excited delight in manipulation, known as duping delight.

To test lie detection abilities, Ekman and his colleagues designed a study in which some participating nurses were shown a beautiful film about nature, while others saw a disturbing film about burn victims and amputations. All participants were told to say they had been viewing the nature film (so some were instructed to lie). Those who had seen the disturbing film were told to conceal their negative

emotions so that they could convince an interviewer that they had seen the nature film. Then all were filmed describing their viewing experience.

Subjects who viewed the films answered numerous questions about the nurses, although the only judgment being monitored was their ability to spot dishonest statements. Participants included law enforcement officers, judges, federal agents, trial attorneys, and psychotherapists, all of whom had expressed confidence in their ability to spot a liar. Those who saw only the film-seers' faces or heard only their words performed the worst, but very few performed above chance. In another version in which the evaluators were told to decide whether the nurses were honest or deceptive, they fared no better in the accuracy of their assessments. A few nurses were poor liars and easy to spot, but most of the amateur liars misled the judges. Confidence in one's lie detection ability was clearly no predictor of actual skill.

A natural extension of deception detection is learning to lie better. Some people, such as those who employ spies or run for a political office, might view such training as beneficial to their ambitions. However, Ekman would resist any such request.

"In the past," he said, "I've been approached by political candidates, but the word has gotten out that I won't do it. I don't run a school for liars, only for lie-catchers."

He's uninterested in being part of any approach that puts *more* lies out there. In fact, Ekman has published a book specifically to assist parents to train their children to be truth-tellers. In *Why Kids Lie*, he explains the motivations behind the lies that kids tell, how they prepare to lie, and how their lies change as they mature. He offers parents some tips for encouraging honesty.

A GUIDE FOR PARENTS

Tip number one

Ekman offered, “is to be truthful yourself. Your kids watch you; you’re a model. If they see you engage in even a trivial lie – for example, they see you say, ‘I’m sorry I can’t talk to you right now, I’m cooking,’ but you’re not – then you’re teaching them that you can avoid an awkward social situation by lying. When my daughter was born, I decided to see if I could live my life never lying. It was quite a bit of work at first, but I found that, with few exceptions, I could deal with things in honest ways.

Tip number two

Explain what the rules of disclosure are: what your children need to tell you and what they have the right to keep private. Teens have the right to privacy, for example, about who they have a crush on. Make clear what their obligations are for revealing. As they get older, you have to give them more autonomy and privacy. If you don’t, they’ll lie to get it.

Tip number three

Don’t be the policeman, be the teacher. Your job is not to catch the lie. Your job is to teach them why lying is a bad strategy. If you lie as a strategy, nobody will trust you, so it’s hard to maintain relationships.”

Ekman is particularly interested in devoting himself to helping others to improve their emotional awareness and responsiveness.

“Almost everyone I’ve ever encountered,” he said, “would like to have a choice about two things: 1) what they become emotional about, and 2) how they behave when they are emotional. Individuals differ to the extent to which they can learn to change, but the first step is to be aware. You have to use training techniques that will increase your awareness of what triggers your emotions. The next step is hard. It’s about change. The paradox is that the people who most need to make change, because they’re most abrasive, will have the hardest time doing it. It’s not impossible, but I believe that nature did not design emotions to be very changeable. And yet, although we all get angry or afraid, we don’t do it in the same ways. You have to keep practicing.

“The Dalai Lama told me that when he’s on a trip and he doesn’t get a chance to meditate, he starts getting short-tempered. That’s a man who spends most of his life meditating three or four hours a day. He slips. But so do concert pianists if they don’t practice. Change is possible if you work at it and if you set realistic goals.”

With this in mind, Ekman has already designed several more online tools.

FUTURE PROJECTS

“Currently, we have contracts with two major British law enforcement groups. We’re negotiating with a group in Southeast Asia and a Scandinavian country. In the U.S., we’ve had a contract with the TSA for 3 years. We also have a continuing relationship with the NYPD counter-terrorism unit.”

Among his newly designed tool is the METT-Plus and the METT-Profile, which provide more training, tests, and feedback, as well as practice in seeing micro expressions in profile.

Another tool is the RE3, which involves learning to respond effectively to emotional expression (i.e., raising the level of one’s emotional intelligence).

“It’s the next step,” Ekman said, “Suppose you tell your teenager that they have to babysit their little sister because the babysitter canceled. They respond with a sad or angry or contemptuous expression. What’s the best thing for you to say? For each of four potential emotions, we offer seven different responses, and for each response you pick you get feedback from me about the pros and cons.

“Before you do this, you’ve already checked off that you have a close or a strained relationship, so how you respond differs, depending on the nature of the relationship. And once you’ve gone through all the emotions and responses for a strained relationship, let’s say, we ask you to do it all over again for a close one. You don’t have to, but it’s free, and you can take as long as you want to go through it all, and come back as many times as you want.

“That’s just one scenario. Scenario 2 is a manager telling an employee they didn’t get the promotion. They’ve already made the commitment. Number 1, they hope the employee will take this as a hint to quit, or number 2, they can’t afford to lose their employee. In the scenario, the employee responds with different emotions, and the respondent has several response choices, and whenever they make a choice, I pop up on the screen giving them feedback. It’s the same structure as Scenario 1, but a different situation. Instead of focusing on the quality of the relationship in this one, it’s their goal for the future.

“Then there’s a third scenario. This one is useful for law enforcement. You’re interrogating a suspect, and you know he committed a felony, but none of the evidence you have can be introduced in court, so unless you get a confession, he’ll walk. Or, you don’t need a confession.”

One more tool is Charting Your Anger Profile. “You do this with another person with whom you have a close relationship in which disagreements arise,” Ekman explained. “Let’s use the example of a spouse. You move things graphically for how you see yourself and for how you see the other person. And they do it for how they see themselves and how they see you. And you get to see where the discrepancies are. Individuals can use this tool, and it’s also useful for therapists.”

Most ambitious for the future is the threat detector, “a tool which will back you up in being able to spot potential threats from people who are on the verge of violence.” He’s not sure if he’ll succeed, but he’s going to try.

Ekman’s sustained, innovative research offers a legacy of improved emotional awareness and lie detection. He has proven certain assumptions wrong and opened up areas of research that will have endless and beneficial applications in many areas of life. ■

ABOUT THE AUTHOR

KATHERINE RAMSLAND, PhD, CMI-V has published over 1,000 articles and 46 books, including *The Mind of a Murderer* and *Beating the Devil’s Game: A History of Forensic Science and Criminal Investigation*. Dr. Ramsland is a professor of forensic psychology at DeSales University in Pennsylvania and has been a member of the American College of Forensic Examiners International since 1998.



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