

Evaluating Truthfulness and Detecting Deception

By DAVID MATSUMOTO, Ph.D., HYI SUNG HWANG, Ph.D.,
LISA SKINNER, J.D., and MARK FRANK, Ph.D.



@ Mark Frank, Ph.D.

While interviewing the suspect who claims ignorance about an incident, the witness who saw it happen, or the informant who identified the perpetrator, the detective asks a question that will eviscerate the perpetrator's story. As the suspect prepares to answer, he looks up and to the left, purses his lips, tenses his eyelids, and brings his eyebrows down.

The investigator knows that a suspect displaying shifty eyes and gaze aversion and looking up and to the left when answering uncomfortable questions is exhibiting signs of lying. The suspect is not totally disinterested, but he is reluctant to participate in the interview. Because the suspect's behavior suggests dishonesty, the detective prepares to drill still deeper in the questioning.

Unfortunately, this investigator likely would be wrong. Twenty-three out of 24 peer-reviewed studies published in scientific journals reporting experiments on eye behavior as an indicator of lying have rejected this hypothesis.¹ No scientific evidence exists to suggest that eye behavior or gaze aversion can gauge truthfulness reliably.

Some people say that gaze aversion is the sure sign of

lying, others that fidgety feet or hands are the key indicators. Still others believe that analysis of voice stress or body posture provides benchmarks. Research has tested all of these indicators and found them only weakly associated with deception.²

Relying on false clues, or signs, about lying can have dire consequences.³ It can lead to inaccurate reads that witnesses, suspects, or informants are lying when they are not or that they are telling the truth when there is more to the story. Reliance on false clues leads to misplaced confidence about the strengths and weaknesses of cases and can lead an investigator down dead-end paths. Moreover, a false read can have deadly consequences.

BEHAVIORAL CUES

Years of research have led the authors to focus solely on the most verifiable behavioral cues to lying.⁴ Many studies have involved a randomly selected sample of people assigned by chance to lie or tell the truth. Unfortunately, such studies feature participants with no personal, financial, or emotional investment in the lie or any fear of exposure to sanction if they are caught. No stakes are involved—no punishment for getting caught and no reward for fooling the investigator.

The authors' studies involve people motivated to act against a person or group with a different ideology, placed in a situation where they choose whether to commit a crime (e.g., steal a check made out to

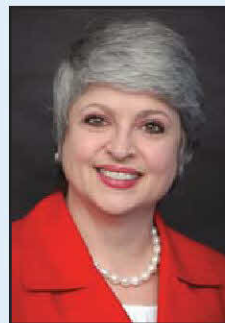
the group they despise), and then interviewed by a retired law enforcement officer, offering them the opportunity to tell the truth or lie. The stakes involved include facing detention, enduring blasts of white noise, or, for instance, having the stolen check donated to the group they hate. These consequences would occur if the person were not believed regardless of the truth because, in real life, consequences stem from judgments, not reality. Thus, truthful individuals often are nervous in police interrogations. The authors strive to make their research practical and analogous to real-world law enforcement situations and have found that, clearly, the behavioral cues to lying differ when people are not vested in



Dr. Matsumoto is a professor of psychology at San Francisco State University and currently is director of a private training and consulting firm in California.



Dr. Hwang is a research scientist at a private training and consulting firm in California.



Special Agent Skinner is an instructor in the Law Enforcement Communication Resources Unit at the FBI Academy.



Dr. Frank is a professor of communication and director of the Communication Science Center at the University at Buffalo in New York.

having their story believed and have no fear of detection.

The authors monitor their participants with sensors that record and analyze their facial behaviors, gestures, body movements, voice and speech characteristics, physiological indicators (e.g., heart rate, blood pressure, skin conductance, respiration), heat emanation from their faces and heads, pupil dilation, and gaze direction. In addition, the authors record their participants' spoken words and then examine their verbal statements and style. The results have demonstrated that when motivated people lie and face consequences upon detection, clues to deception emerge and appear as *leakage* across multiple channels. Four of these are nonverbal (facial expressions, gestures and body language, voice, and verbal style). A fifth channel of leakage is in the actual words spoken—verbal statements.

It is not the mere presence or absence of behaviors, such as gaze aversion or fidgeting, that indicates lying. Rather, it is how these nonverbal cues change over time from a person's baseline and how they combine with the individual's words. And, when just the behavioral cues from these sources are considered, they accurately differentiate between lying and truth telling.⁵

The findings from these studies also have clearly indicated that no one indicator of lying exists; if so, research would have identified it by now, and almost everyone could unerringly detect when people lie. Of course, this would put an end to most competitive card games and prove generally destructive to society. No one could be polite, society would not function, and most groups and relationships would fall into chaos.

**“
Training and
practice can help
individuals and groups
leverage facial
expressions...other
nonverbal behaviors,
and statement analysis
to better evaluate
truthfulness....
”**

Because liars facing stakes betray their untruth by leakage that comes across as a complicated mass of signals, investigators make adequately processing this stream of information more difficult when focusing on inconsistencies in the story, rather than how it is told. The problem is that the liar also focuses on presenting a consistent, albeit

false, story. Ironically, liars also wrestle with their emotions and thoughts, actively trying to manage facial and body expressions, voice tone, verbal style, and words—all while monitoring the investigator's reaction. This allows reliable indicators of lies to pop out in the verbal and nonverbal leakage, which investigators often overlook because of their intense focus on the story.

VERBAL AND NONVERBAL LEAKAGE

Lies can be betrayed in verbal and nonverbal leakage independently. However, the authors have chosen to further examine this area, analyzing the *combined contribution* of verbal and nonverbal leakage to the prediction of deception or truthfulness. In their latest study, the authors examined videos of dedicated members of ideologically motivated groups. Separate studies analyzed two types of lies. One involved participants in a situation in which they chose whether to steal \$50 in cash from a briefcase and later were interviewed about their guilt (the crime scenario). In another analysis, participants decided to lie or tell the truth about their beliefs concerning their political cause (the opinion scenario). Each instance involved stakes—if researchers judged them as lying, the

subjects lost their participation fee and faced 1 hour of white-noise blasts while sitting on a cold, steel chair in a small, cramped room.

The authors selected videos of 10 individuals from each scenario and knew beforehand that half told the truth and half lied. After coding their nonverbal behaviors—facial expressions and gestures—the authors judged their consistency with the speech content according to time and context. The authors also transcribed what the participants said and annotated their statements using the concepts and linguistic features of statement analysis, such as examining minimizing and intensifying adverbs, editing adverbs, alterations in verb tense, equivocation, unique sensory details, and changes in nouns.

Analyses by the authors indicated that the liars produced significantly more nonverbal behaviors *inconsistent* with the context or content of their words than truth tellers. For example, a participant in the crime scenario may have denied stealing the check, but showed fear or distress while making that claim. Conversely, the nonverbal behaviors (e.g., nodding their heads up and down while saying “yes”) of truth tellers remained much more consistent with their verbal statements. Interestingly, the nonverbal

behaviors by themselves were not as indicative of truth telling or lying; instead, it was their level of consistency with the verbal statements or context that determined truthfulness at a high degree.

Also, the various statement analysis categories that were coded could differentiate liars from truth tellers at statistically significant levels. Greater use of minimizing and editing adverbs and changes in nouns and verbs

“

Microexpressions are fleeting expressions of concealed emotion, sometimes so fast that they happen in the blink of an eye....

”

all were associated with lying, while equivocation and spatial details indicated truth telling. These findings confirmed previous research on statement analysis.⁶

While these findings remained consistent with previous research, the authors also combined the nonverbal leakage and statement analysis cues in

attempting to differentiate truth tellers from liars. The authors found that inconsistent facial expressions combined with statement analysis annotations could correctly classify 90 percent of the participants in the videos as to whether they lied or told the truth. This seems to indicate that behavioral cues in both verbal statements and nonverbal behaviors collectively provide a much better source for gauging truthfulness. This potentially provides investigators with powerful aids in conducting investigations and interrogations.⁷

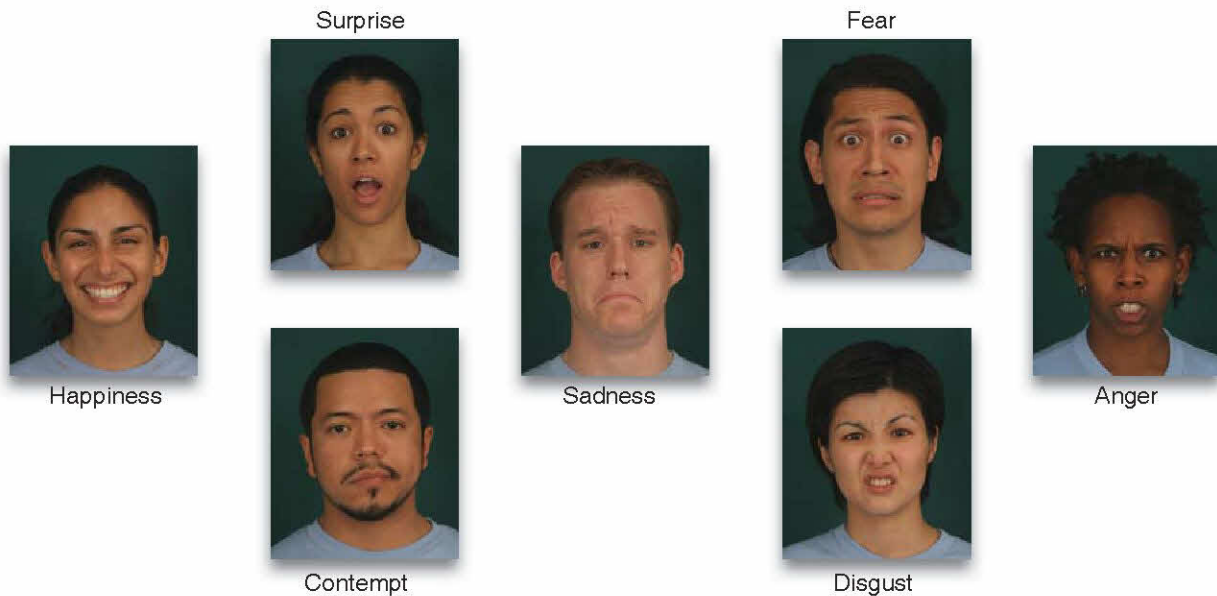
DETECTION OF LIES

Nonverbal Examination

Investigators can improve their ability to detect lies by becoming more aware of and skillful in reading the nonverbal cues to lying. In examining such important nonverbal behaviors as gestures, voice, and verbal style, officers first must focus on the facial expressions of emotion, especially those known as micro- and subtle expressions, because these both are involuntary and have demonstrated association with deception.⁸

Microexpressions are fleeting expressions of concealed emotion, sometimes so fast that they happen in the blink of an eye—as fast as one-fifteenth of a second. This results from

The Seven Universal Facial Expressions of Emotion



the individual's attempt to hide them. They generally go unnoticed in daily social interactions; the most reliable evaluations are done by the review of slow- and stop-motion videotape of the speaker.

However, people can learn to see them in real time. For instance, trainees at the FBI National Academy typically can increase their recognition of microexpressions to above 70 percent, in some cases over 90 percent; studies on other populations, including U.S. Coast Guard senior investigating officers, have shown average posttraining accuracy of better

than 80 percent.⁹ These same officers almost doubled their ability to accurately read individuals who displayed these microexpressions in real-world, real-time settings. This ability is retained weeks after initial training.¹⁰

Facial expressions of emotion, including macro-, micro-, and subtle expressions, are universal and independent of race, culture, ethnicity, nationality, gender, age, religion, or any other demographic variable. All people express emotions on their faces in exactly the same ways. Moreover, they are immediate, automatic, and

unconscious reactions. These are incredible characteristics of facial expressions because learning to read them means that someone can have a bigger window into the soul of almost anyone. It is a powerful tool for investigators because facial expressions of emotion are the closest thing humans have to a universal language.

Statement Analysis

Investigators also can improve their ability to detect lies by becoming skillful at statement analysis, which applies internalized grammatical rules that stem from the language

acquisition part of the brain to an individual's written or spoken words. In fact, people apply these rules to what they read and hear every day when they make a judgment about whether or not something is truthful or deceptive. While people may say that their belief is based upon their "gut," in reality, their brain is applying these internalized grammatical rules to the information. By doing so, investigators can gain valuable insight into a person's thoughts, motivations, and ideas.

Statement analysis involves examining several aspects of someone's words, including verbs describing communication and uncompleted action; changes in verb tense; minimizing, intensifying, and editing adverbs; extraneous information; unique sensory details; and statement structure, which identifies the person's focus—on the incident or somewhere else. Research has shown that distinct differences exist between a deceptive statement and a truthful one. By using the techniques of statement analysis, investigators can more readily detect truthfulness or deception in an individual's words. With these insights, investigators become more efficient and effective in their abilities and gain better focus on the investigation.

Proper Perspective

Investigators must remember that no "silver bullet" for identifying deception exists. Detecting microexpressions or inconsistent facial expressions of emotion and identifying areas of interest in a verbal statement via statement analysis never should be considered indicative of lying by themselves. Instead, they comprise tools that officers can use to guide them through

“

In many situations, interviewers focus primarily on a suspect's story, rather than how they tell it or what they show while conveying it.

”

an interview or interrogation. They help identify areas that need further probing—concealed thoughts, feelings, opinions, and omissions of parts of the story. But, investigators should keep in mind that these behaviors could result from reasons other than lying; perhaps, the suspect or witness feels embarrassed or fears retaliation by talking to the police. Or, maybe, the officer has not

established a relationship or has physically threatened the suspect. This shows the importance of building rapport; it reduces the amount of ambient anxiety found in any law enforcement interview.

Thus, recognition of facial expressions of emotion and statement analysis represent important tools that investigators can add to their toolkit to help them conduct interviews and interrogations more efficiently and accurately. But, like any such tool, they need to be supplemented with corroborating statements, physical and forensic evidence, and hard work. And, in the authors' experience, the best lie catchers do not jump to conclusions early based solely on facial expressions or word usage. Instead, they use them as a guide through an interview to get the best information possible. This enables further elicitation of information and better comparisons and contrasts with other statements and physical evidence—all of which lead to more informed decisions.

PRACTICAL APPLICATIONS

Training and practice can help individuals and groups leverage facial expressions of emotion, other nonverbal behaviors, and statement analysis to better evaluate truthfulness, detect deception, and assess

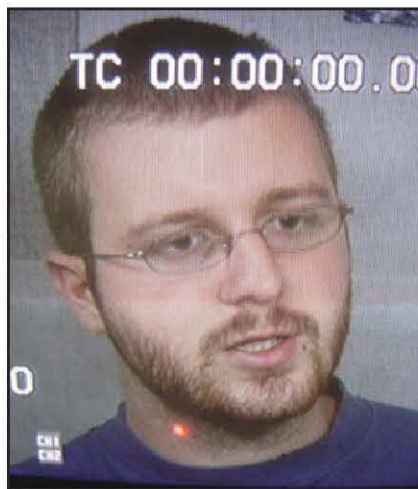
credibility. Improving these skills makes for a better interviewer and investigator. Although difficult, mastering such methods can make the officer faster, more efficient, and more accurate in conducting interviews. Investigators can follow some pointers to apply these skills in their police work.

If, while interviewing suspects, witnesses, or informants, investigators see a microexpression inconsistent with the words spoken or the emotions described, they should follow up until they can achieve reconciliation or get a more complete answer. For example, if suspects flash fear, distress, or contempt when saying they were nowhere near the scene of the crime, they may be omitting some of the story. Interviewers should probe that particular statement.

Similarly, if suspects show disgust when talking about another person, what does that mean? It depends on the context. Saying, for instance, they are “not a fan” of someone suggests that they truly dislike the individual. A statement like “He’s a great guy” suggests the suspect is lying.

Informants who show contempt when investigators request of them a particular action show a level of distrust. This suggests a need for better rapport before officers make the request.

When witnesses leak expressions inconsistent with their statements, their emotions show investigators how to dig deeper to unearth the hidden story. For instance, flashing fear when talking about the suspect may indicate that a witness feels threatened by the individual and, thus, apprehensive about sharing all details. Or, witnesses may fear getting caught lying about their relationship to the



@ Mark Frank, Ph.D.

suspect. Regardless, something about the suspect has produced an involuntary reaction in the witness. If investigators identify the emotion, they can leverage it to obtain the real story.

After taking a written statement from a suspect, investigators should apply statement analysis techniques to identify key areas to pursue in the interview. For example, if a

suspect’s statement jumps in sequence from the early evening to the next morning, ignoring the time that the crime occurred, it likely would be noted by editing adverbs (e.g., then, later). Additionally, noting changes in noun and pronoun usage and verbs of communication can prove critically important as they can signify areas for further exploration. Once officers complete their analysis, they can begin the interview by jumping straight to such areas in the statement, thereby catching suspects off guard because of the immediate attention on the part of their statement where they feel vulnerable.

When questioning the suspect, investigators should watch their emotions and other nonverbal behaviors. Signs will arise that something meaningful was glossed over. For instance, suspects showing fear or distress when officers jump straight to a particular point in time may indicate that there was something to hide. Conversely, displaying surprise or, perhaps, nothing, may show that the skipping was incidental.

When an interview turns into an interrogation, officers can use the signs of emotion to know when to push further or retreat. For example, if suspects show anger, contempt, or disgust, it may, but not always, be best to stop and try another

approach. However, if they show fear, it might be time to drill deeper. If they show distress, they may be about to call it off. In this instance, investigators should use logical reasons as to why the suspect may have committed the crime and continue to press for the confession.

Understanding facial expressions also can let investigators know when someone fakes an emotion. Sometimes, a person may express anger at being accused. Is it real? A liar more likely will fake anger. Officers who know all of the signs of anger more accurately can determine the authenticity of anger. The same rules apply to happiness. There is a reliable signal within a smile for a genuine feeling of happiness, and, if investigators know that, they can tell whether a person who says they feel very happy at that moment actually are experiencing happiness.

CONCLUSION

Because of the subtlety of microexpressions, other facial expressions of emotion, and cues in verbal statements, investigators must devote focused attention to detect them. In many situations, interviewers focus primarily on a suspect's story, rather than how

they tell it or what they show while conveying it. Investigators must do more than simply be aware of expressions while not allowing such multitasking to dilute their skills.

With training and practice, investigators can become more aware of what they see in the form of microexpressions and hear as they apply the concepts of statement analysis. Officers should become aware of microexpressions and how to spot them, as well as the basic techniques of statement analysis. They should learn them well enough so that they become automatic and, rather than interfere with their processing of interviews, augment their skill set. In doing so, they will be armed with powerful investigative tools that leverage the most cutting-edge science available. ♦

Endnotes

¹ C.F. Bond, A. Omar, A. Mahmoud, and R.N. Bonser, "Lie Detection Across Cultures," *Journal of Nonverbal Behavior* 14 (1990): 189-204.

² B.M. DePaulo, J.J. Lindsay, B.E. Malone, L. Muhlenbruck, K. Charlton, and H. Cooper, "Cues to Deception," *Psychological Bulletin* 129, no. 1 (2003): 74-118.

³ The use of popularly held beliefs about indicators of truth and untruth still proves relevant for investigators, particularly if others, such as suspects, believe them and investigators can leverage those beliefs to obtain truth.

⁴ M.G. Frank, T.H. Feeley, T.N. Servoss, and N. Paolantonio, "Detecting Deception by Jury, I: Judgmental Accuracy," *Journal of Group Decision and Negotiation* 13 (2004): 45-59.

⁵ M.G. Frank, "Thoughts, Feelings, and Deception," in *Deception: Methods, Motives, Context, and Consequences*, ed. B. Harrington (Palo Alto, CA: Stanford University Press, 2009), 55-73; and M.G. Frank, M. O'Sullivan, and M.A. Menasco, "Human Behavior and Deception Detection," in *Handbook of Science and Technology for Homeland Security*, ed. J.G. Voeller (New York, NY: Wiley and Sons, in press).

⁶ A. Vrij, "Criteria-Based Content Analysis: A Qualitative Review of the First 37 Studies," *Psychology, Public Policy, and Law* 11 (2007): 3-41.

⁷ Moreover, post hoc forensic analyses of the 10 percent misclassified strongly suggest a unique role for minimizing and editing adverbs. These occurred in individuals relatively sparse in their expressivity, as well as verbal output. Thus, the cues to deception in such individuals may be very subtle, and the authors believe that one area in which such cues may occur may be in the use of minimizing or editing adverbs.

⁸ M.G. Frank and P. Ekman, "The Ability to Detect Deceit Generalizes Across Different Types of High-Stake Lies," *Journal of Personality and Social Psychology* 72 (1997): 1429-1439; and G. Warren, E. Schertler, and P. Bull, "Detecting Deception from Emotional and Unemotional Cues," *Journal of Nonverbal Behavior* 33 (2009): 59-69.

⁹ M.G. Frank, D. Matsumoto, P. Ekman, S. Kang, and A. Kurylo, "Improving the Ability to Recognize Microexpressions of Emotion" (manuscript submitted for publication).

¹⁰ D. Matsumoto and H.S. Hwang, "Training the Ability to Read Microexpressions of Emotion Improves Emotional Competence on the Job" (manuscript submitted for publication).