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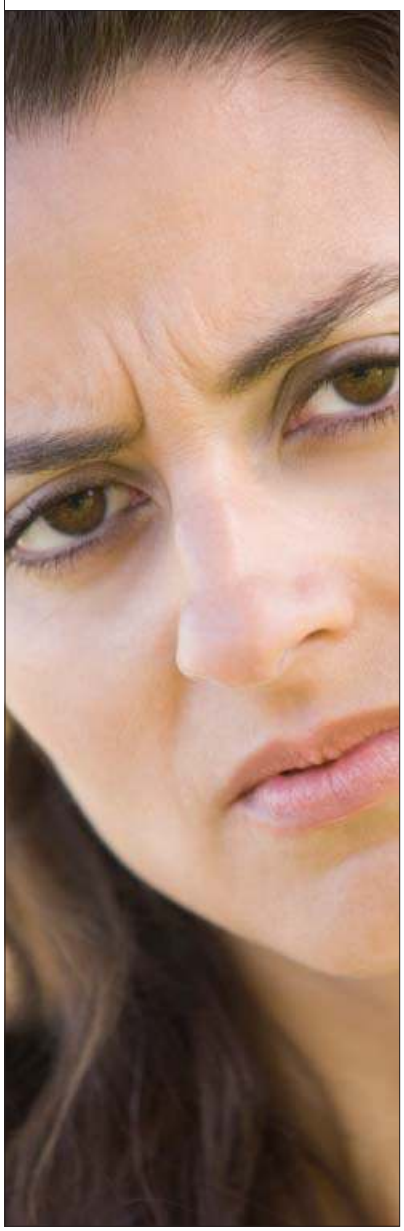

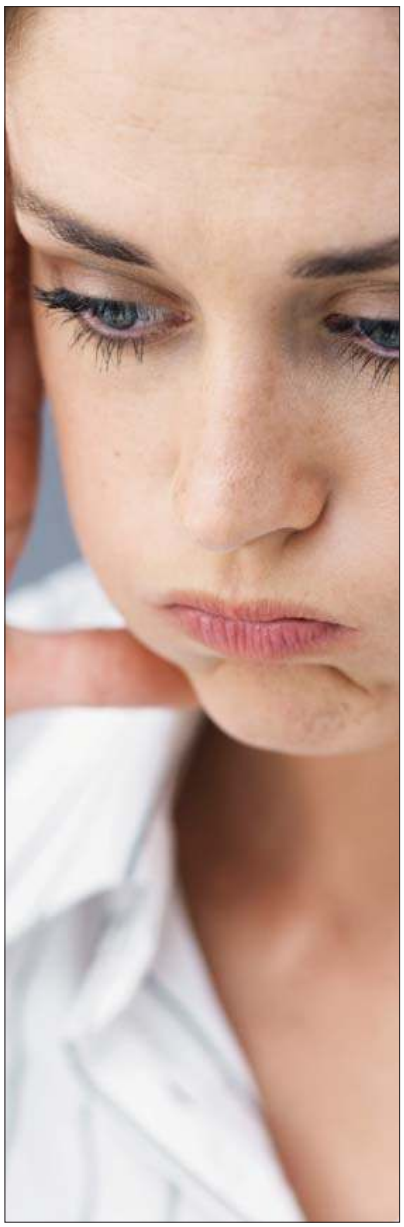


Detecting Deception

Evaluating Truthfulness and Detecting Deception

New Tools to Aid Investigators

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You're interviewing the suspect who claims he knows nothing about the incident, or the witness who was there when it happened, or the informant who gave up the suspect. You've asked a question that will eviscerate the suspect's story. As he's preparing to answer, he looks up and to the left, purses his lips, tenses his eyelids, and brings his eyebrows down.

You *know* that shifty eyes, gaze aversion, or eyes looking up to the left when answering hot questions are signs of lying. And in fact, *most* people around the world believe that gaze aversion is a reliable sign of lying (Global Research Team, 2006). He is not totally disinterested, but he is not a party. You prepare to drill still deeper in your questioning because you can see from his behavior that he is lying.

Unfortunately, you would likely be wrong. Twenty-three out of twenty-four peer-reviewed studies published in scientific journals reporting experiments testing eye behavior as an indicator of lying have rejected this hypothesis (Bond, Omar, Mahmoud, & Bonser, 1990). There is no scientific evidence to suggest that eye behaviors or gaze aversion are reliable signs of lying. It is a myth.

And there are many such myths. Some people say that gaze aversion is the sure sign of lying; others that fidgety feet or hands are the key indicators. Still others will have you believe that voice stress analysis or body posture analysis is the benchmark. Research has tested all of these indicators and found them only weakly associated with deception (DePaulo, et al., 2003). More myths.

Relying on such myths – that is, false clues to deception or about the signs of lying – can have dire consequences. It can lead to false reads that witnesses, suspects, or informants are lying when they are not, or that they are telling the truth when there's 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 paths that are actually dead ends. Moreover, a false read can have deadly consequences.[1]

The Science of Detecting Deception Through Behavioral Cues

Research has demonstrated convincingly that untrained observers are typically no better, and are often worse, than chance at accurately detecting deception (Bond & DePaulo, 2006). We have studied the behavioral cues associated with deception for many years (Frank, Feeley, Servoss, & Paolantonio, 2004), and our findings indicate that it's time to abandon the old myths and instead focus on verifiable behavioral cues to lying. Our studies are very different than most other studies out there in which a sample of people randomly selected from a population is randomly assigned to lie or tell the truth in an experiment. The fundamental flaw with those studies is that they test subjects who may be instructed to lie, but who have no personal, financial or emotional investment in the lie nor any fear of exposure to sanction if they are caught lying. This means there are no real stakes involved to the liar – no punishment for getting caught, no reward for fooling the investigator.

We study people who are *motivated* to do something against a person or a group (e.g., pro-choice vs. pro-life groups, pro- vs. anti-smoking ban groups, pro- vs. anti-capital punishment groups, etc.), who are placed in a situation where they choose whether to do a dastardly deed or commit a crime (e.g., steal a check made out to the group they despise), and who are then interviewed by a retired law enforcement officer who tries to determine whether these people are lying when they deny committing the act. There are also stakes involved, including detention, enduring blasts of white noise, or even having the check donated to the group they despise. These consequences would occur if the person were not believed, regardless of what the ground truth really was, because in real life consequences stem from judgments, not reality. This is why truthful individuals are often nervous in police interrogations. These characteristics make our research more practical and analogous to real world law enforcement situations. These are important points, because it is clear that the behavioral cues to lying are different when people are not vested in having their story believed and have no fear of detection.

We monitor the participants in our studies with sensors that record and analyze facial behaviors, gestures, body movements, voice and speech characteristics, physiology (heart rate, blood pressure, skin conductance, respiration), the heat emanating from their faces and heads, pupil dilation, and gaze direction, in addition to recording their spoken words and then analyzing their verbal statements and verbal style.

The results demonstrate that when motivated people lie, and there are stakes if they are caught, clues to deception do emerge, and appear as *leakage* across *multiple* channels. Four of these channels are nonverbal: (1) facial expressions, (2) gestures and

[1] The use of popularly held beliefs about indicators of truth and untruth still has a place in the investigator's arsenal, however, particularly if others, such as suspects, believe them and investigators can leverage those beliefs to obtain the whole story.

body language, (3) voice, and (4) verbal style. A fifth channel of leakage is in the actual words spoken – (5) verbal statements.

Now the discerning reader may stop at this point and say, "Wait a minute!" Some of the behaviors we said were myths earlier, such as gaze aversion or fidgeting, fall right into the categories immediately above. And you would be correct. But the research indicates that it's not the mere presence or absence of these behaviors that are indicative of lying; instead, it's *how* these nonverbal cues change over time from a person's baseline, and *how* they're combined with what is being said, that makes them powerful clues to deception. And when just the behavioral cues from these sources are considered, they accurately differentiate between lying and truth telling at much, much greater rates than the average person, who is typically only as good as guessing (Frank, 2009; Frank, O' Sullivan, & Menasco, 2009).

The findings from these studies are also clear that there is no such thing as a Pinocchio response; that is, there is no one indicator of lying. If there were a Pinocchio response, we would have figured that out by now and almost everyone would be able to unerringly detect when people are lying to them, which would be the end to most competitive card games and generally destructive to society. If we could always tell when others were lying, we could no longer be polite, and society would not function, and most groups and relationships would be in chaos.

When the stakes are high, liars betray their lie by leakage of clues across multiple channels that come across as a complicated mass of signals. Adequately processing this stream of information is compounded by the investigator typically focusing on inconsistencies in the stories being told, rather than the *way* the stories are told. The problem with the primary focus on the story is that the liar is also focusing on presenting a consistent, albeit false, story. This is ironic in that the liar is also wrestling with his or her emotions and thoughts, and actively trying to manage their expression through the face, body, voice tone, verbal style, and words – all while monitoring the reaction of the investigator to the liar's story! This is what allows reliable cues to lies pop out in the verbal and nonverbal leakage, which investigators often don't notice them because they are so attuned to the stories.

New Insights from Our Latest Studies: The Collective Contribution of Verbal and Nonverbal Leakage

While it may not be a 'news flash' to the up-to-date investigator that lies can be betrayed in verbal and nonverbal leakage independently, our latest studies have pushed the envelope in this exciting and important area, examining the *combined contribution* of both verbal and nonverbal leakage to the prediction of deception or truthfulness. In our latest study, we examined videos of individuals who were members of ideologically motivated groups, and who were strongly motivated for their cause. There were two types of lies studied. In one, participants were placed in a situation in which they could commit a crime (steal $50 in cash from a briefcase), and were later interviewed about whether they committed the crime or not (the crime scenario). In another condition, participants

chose to lie or tell the truth about their beliefs concerning their political cause (the opinion scenario). Regardless of the scenario, there were stakes involved; if they were judged as lying, they would lose their participation fee and face one hour of blasts of white noise while sitting on a cold, steel chair in a small, cramped room.

We selected videos of 20 individuals – 10 from the crime scenario and 10 from the opinion scenario, and because we knew ground truth, half were truth tellers and half were liars. We coded their nonverbal behaviors – facial expressions of emotion and gestures, and classified them as whether they were consistent or inconsistent with either the speech content at the time, or the context. We also transcribed what they said and annotated their statements using the concepts and linguistic features of statement analysis, such as, examining minimizing and intensifying adverbs, editing adverbs, change in verb tense, equivocation, unique sensory detail and change in nouns.

Our analyses indicated that liars produced significantly more nonverbal behaviors that were *inconsistent* with the context or the content of what was said than truth tellers. For example, a participant may have said that he didn't steal the check, but showed fear or distress when he said it. Truth telling was much more associated with nonverbal behaviors that were consistent with the verbal statements (e.g., nodding their heads up and down while saying "yes"). Interestingly, the nonverbal behaviors by themselves were not as indicative of truth telling or lying; instead it was whether or not the nonverbal behaviors were consistent or inconsistent with the verbal statements or context that could differentiate truth telling and lying at a very 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, changes in nouns and verbs were all associated with lying, while equivocation and spatial details were associated with truth telling. Indeed, these findings are consistent with previous research on statement analysis (Vrij, 2007).

Although the above findings were consistent with what has been found in previous research, what made this study unique was our attempt to combine both the nonverbal leakage cues and the statement analysis cues together in attempting to differentiate the truth tellers from liars. When we did so, we found that inconsistent facial expressions of emotion combined with statement analysis annotations could correctly and statistically significantly classify 90% of the participants in the videos as to whether they were lying or telling the truth. When compared to the average accuracy rate of 53% by most observers in previous studies (Bond & DePaulo, 2006), which is not much better than chance, our findings indicate that behavioral cues in both verbal statements and nonverbal behavior collectively provide a much better source for weeding out truth telling and lying than naïve observation. They potentially provide investigators with powerful aids in conducting investigations and interrogations.[2]

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[2] Moreover, post-hoc forensic analyses of the 10% that were misclassified strongly suggest a unique role for minimizing and editing adverbs. These occurred in individuals who were relatively sparse in their expressivity as well as verbal output. Thus the cues to

Improving Your Ability to Detect Lies

Investigators can improve their ability to detect lies by becoming more aware of and more skillful in reading the reliable nonverbal cues to lying. In the nonverbal behavioral world, the first step is to focus on the facial expressions of emotion, especially those known as micro- and subtle expressions of emotion, because these are both involuntary and have been shown to be associated with deception (Frank & Ekman, 1997; Warren, Schertler, & Bull, 2009). Microexpressions are fleeting expressions of concealed emotion, sometimes so fast they happen in a blink of an eye – as fast as $1/15^{th}$ of a second. The reason they are so quick is that the individual is trying to conceal them. Most untrained people do not see them in daily social interactions. Because of this, the most reliable evaluations are done by reviewing slow and stop motion videotape of the speaker. However, people can be trained to see them in real time. At training at the FBI National Academy, for instance, trainees are typically able to increase microexpression recognition from chance to above 70%, and in some cases over 90%. Studies on other populations including Coast Guard Senior Investigating Officers show average post-training accuracy better than 80% (Frank, Matsumoto, Ekman, Kang, & Kurylo, 2010). These same officers almost doubled their abilities to accurately read individuals who displayed these micro expressions in real world, real time settings. We also know that this ability is retained weeks after initial training (Matsumoto & Hwang, 2009).

Facial expressions of emotion – including macro, micro, and subtle expressions – are universal. That is, all people, regardless of race, culture, ethnicity, nationality, gender, age, religion or any other demographic variable, 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 one can have a bigger window into the soul of just about anyone on the planet whom one might talk to. It is a powerful tool to have in one's toolkit, because facial expressions of emotion are the closest thing we have to a universal language. Here are examples of the facial expressions of emotion that research over the past four decades has shown to be universally expressed and recognized:

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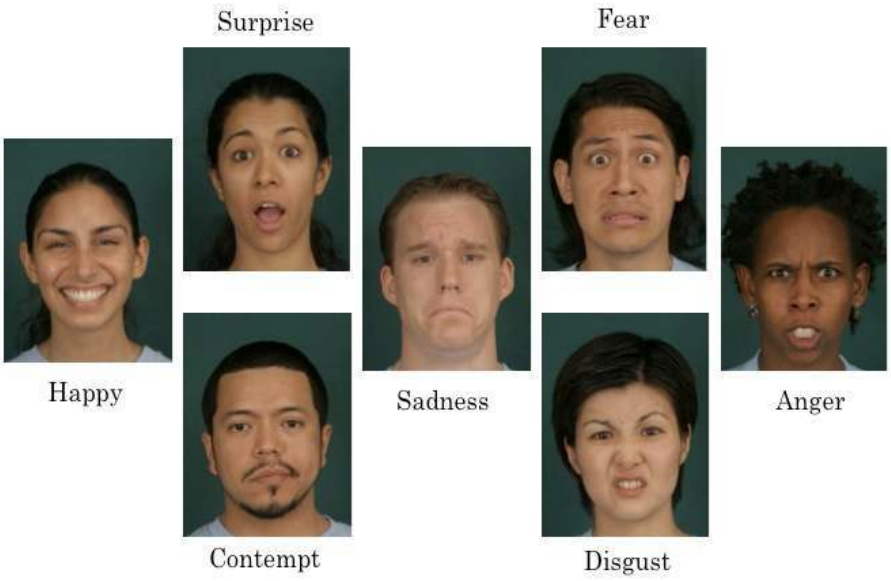
deception in such individuals may be very subtle, and we believe that one area in which such cues may occur may be in the use of minimizing or editing adverbs.



Other nonverbal behaviors are also important, including gestures, voice, and verbal style. The start, however, is always to focus on facial expressions, because the research has demonstrated that these are involuntary reactions and thus important nonverbal cues to deception (Frank & Ekman, 1997).

Investigators can also improve their ability to detect lies by becoming skilful at the techniques of statement analysis. The technique of statement analysis applies internalized grammatical rules, which stem from the language acquisition part of the brain, to an individual's written or spoken words. In fact, individuals 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. The individual may say that their belief is based upon their "gut", but in reality it is their brain applying the internalized grammatical rules to the information. By applying these rules, the investigator can gain valuable insight into the person's thoughts, motivations and ideas. Statement analysis involves examining several aspects of the person's words, to include change in verb tense, verbs of communication, verbs of uncompleted action, minimizing adverbs, intensifying adverbs, editing adverbs, extraneous information, unique sensory detail, and the structure of the statement, i.e. where is the person's focus – on the incident or somewhere else. Research has shown that there are distinct differences between a statement that is deceptive and one that is truthful. By using the techniques of statement analysis, investigators can more readily detect truthfulness and deception in an individual's words. When these insights are gained, the investigator becomes more efficient and effective in his abilities, and the focus of the investigation is more quickly realized.

Above all, it's important to remember that there's no silver bullet to detecting deception. Detecting microexpressions or inconsistent facial expressions of emotion, and identifying areas of interest in a verbal statement via statement analysis should never be considered signs of lying by themselves. Instead, they are tools that investigators can use to guide them through an interview or interrogation. They help identify areas that need to be probed more, where there are concealed thoughts, feelings, or opinions – where the whole story is not being told. But keep in mind they could be caused by reasons other than lying; they may occur because the suspect or witness is embarrassed about reporting what happened, or is afraid of being hurt or killed by others by talking to the police. Or, if the investigator fails to build rapport, or physically threatens the suspect, then there is a very clear reason outside of telling a lie as to why one might see subtle signs of fear on the part of the suspect. This is why we strongly recommend a rapport building style of interview as it reduces enormously the amount of ambient anxiety found in any law enforcement interview.

Thus, facial expressions of emotion and statement analysis are important tools that investigators can add to their toolkit that help them conduct interviews and interrogations more efficiently and more accurately. But like any tool in the investigator's toolkit, they need to be supplemented with corroborating statements, physical and forensic evidence, and good old hard work. And in our experience, the best lie catchers are those who do not jump the gun and draw conclusions early on based solely on facial expressions or word usage, but instead use them to guide themselves through an interview to get the best information possible. This information enables further elicitation of information, 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 use statement analysis in order to better evaluate truthfulness, detect deception, and assess credibility. Improving these skills will make one a better interviewer and investigator. It's difficult, but mastering such skills can make the investigator faster (and thus more efficient) and more accurate in conducting the interviews. Here are some pointers for how these skills can be applied in police work:

- When you are interviewing suspects, witnesses, or informants and you see a microexpression inconsistent with the words being spoken or the emotions being described, follow-up until you are able to reconcile them or get a more complete answer. For example, if a suspect says they were nowhere near the scene of the crime but flashes fear, distress, or contempt when they say that, there may be more to the story than is being told, and probing that particular statement would be necessary.
- Similarly, a suspect shows disgust when talking about another person. What does that mean? As we stated above, you must look at the context. If they say they are 'not a fan' of this person, this disgust expression suggests they truly dislike this other person. If they instead say 'he's a great guy' that suggests the suspect is lying.

- If you have an asset/informant who shows you contempt as you request he or she do a particular action, this suggests he or she may not fully trust you – and that you would need to build better rapport before requesting the action.
- When a witness is leaking expressions inconsistent with his statements, the emotion you see will guide how you drill down deeper to unearth the hidden story. Flashing fear when talking about the suspect, for example, may be a sign that the witness feels threatened by the suspect, and this threat may be hindering giving up the whole story. Or, it may be the witness feels a fear of getting caught lying about his or her relationship to the suspect. Regardless, something about the suspect produced an involuntary reaction in the witness. If you spot the emotion, you can leverage it to better flesh out the real story.
- When you have taken a written statement from a suspect, take some time to go through the statement using statement analysis techniques to identify key areas of the statement that you want to pursue in the interview. For example, if a suspect's statement jumps in time from the early evening to the next morning and ignores the time that the crime occurred, that would likely be noted by editing adverbs (e.g., "then, so, later.."). Additionally, noting changes in noun and pronoun usage, and verbs of communication, can be critically important, as they can signify areas that should be explored in order to obtain more complete information. Once your analysis is complete, begin the interview by jumping straight to such areas in the statement, thereby catching the suspect off guard because your immediate attention is to the part of his statement where he is vulnerable and which he hoped you would avoid.
- When you are questioning the suspect, watch for their emotions and other nonverbal behaviors. They will be signs that there was something meaningful that was glossed over. Showing fear or distress when you jumped straight to that point in time, for instance, may be a sign that there was something to hide. Showing surprise or nothing may be a sign that the skipping was incidental. This is an example of how statement analysis and nonverbal behavioral analysis can work hand in hand in an interview.
- When an interview turns to an interrogation, use the signs of emotion to know when to push or back off. If a suspect shows anger, contempt, or disgust, for example, it might be best to back off and try another approach (but not always); if he shows fear, however, it might be time to drill. If he shows distress, he might be about to roll. In this instance, use logical reasons as to why he might have committed the crime and continue to press for the confession.
- Understanding facial expressions also can let an investigator know when someone is faking an emotion. There are times when a person may express anger at being accused – is it a real expression of anger, or is it fake? A liar is much more likely to fake their anger. If you know the all the signs of anger, you can more accurately determine whether this anger you see is fake or not. The same applies to happiness. There is a reliable signal within a smile for a genuine feeling of happiness, and if you know that, you can tell whether a person who says they feel very happy at that moment is actually experiencing happiness.

Because microexpressions, other facial expressions of emotion, and cues in verbal statements are subtle, they typically require focused attention to detect. In many situations, the investigator is primarily focused on the story being told, and not so much

how it is told and what is being shown when it is told. Much as multi-tasking has been shown to dilute skills being attempted (Ophir, Nass, & Wagner, 2009), so investigators are challenged to do more than be aware of expressions, with the ability to instantly react to it being diluted by the multiple demands on their attention. With training and practice, however, investigators can become more aware of what they are seeing in the form of microexpressions and hearing as they apply the concepts of statement analysis. Once investigators become aware of microexpressions and how to spot them, and basic techniques of statement analysis, and learn them well enough so that they become automatic then they will not interfere with their processing of interviews, but instead augment their skill set. They will be armed with powerful investigative tools that leverage the most cutting edge science available.

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