LYING AND NONVERBAL BEHAVIOR: THEORETICAL ISSUES AND NEW FINDINGS

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ABSTRACT: Conceptual issues about deceit, in specific why lies fail and when and how behavior may betray a lie, provides the basis for considering the type of experimental situations which may be fruitful for the study of deceit. New evidence, integrating past reports with new unpublished findings, compare the relative efficacy of facial, bodily, vocal, paralinguistic and textual measures in discriminating deceptive from honest behavior. The findings show also that most people do not rely upon the most useful sources of information in judging whether someone is lying.

Lying and Nonverbal Behavior: Theoretical Issues and New Findings

I will report new findings interrelating measures of face, body, voice and speech to discriminate lying from truthful behavior. Before doing so, I will first summarize my theoretical framework (described in detail in my book *Telling Lies*, 1985) about why it is that such behaviors ever betray a lie. It is important to explain this because I believe that the behavioral clues to deceit are neither predictable nor understandable without a conceptual understanding of why and when these behaviors may appear in one or another deceptive context.

A sensible place to begin is with a brief definition of what I mean by deceit or lying, terms I will use interchangeably. In a lie one person deliberately makes the choice to mislead another person. No prior notification is given about this intent, although the social context may suggest to any reasonable person that lying is likely to occur.

The information reported here also appears in *Credibility Assessment—A Unified Theoretical and Research Perspective*, J. Yuille (Ed.), in press, Kluwer. The work described was supported by a Research Scientist Award from the National Institute of Mental Health (MH 06092) and a previous grant from NIMH (MH11976).

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Why Lies Fail

Not all lies fail. Many lies succeed. Those interested in detecting deceit need to understand when lies will fail and when they will succeed. Understanding this matter will not only tell us when behavioral clues may betray a lie, and what we should therefore attend to, but it will also provide guidelines for evaluating which aspects of the real world are represented by the various experimental deception scenarios which have been employed in social psychological research on deceit. Certainly, it is not the arena which determines the success or failure of deceit. It is not that all spousal lies succeed and all political lies fail. Within every arena of life (and when one begins to consider the matter, there are few arenas in which deception does not occur), some lies fail and others succeed.

Lies fail for a variety of reasons having nothing to do with the demeanor of the liar. For example, an informant may betray a lie, violating the liar's confidence by doing so, or having obtained the relevant information without the liar's assent. Liars may also be betrayed by many other kinds of evidence which expose the liar's claims as false. My focus is not upon these types of betrayal, but upon instances in which the liar's own behavior betrays the lie. I omit from such considerations instances in which the liar confesses (although much of my discussion is relevant to predicting when a liar will confess), or instances in which the liar might be judged to have acted in a way so that he or she would be caught. Instead I focus upon those cases in which some aspect of the liar's behavior, despite the liar's best intentions, betrays the liar's false pretense.

There are two reasons why lies fail, one to do with thinking and the other with feeling. Lies fail either because the liar failed adequately to prepare, or because of the interference of emotions.

I think that most often lies fail because the liar has not adequately prepared the false line he or she intends to maintain. One obvious example is when the liar forgets what he has said on one occasion and thoroughly contradicts himself on another occasion. Here the source of clues to deceit is in the verbal content. One must be cautious about this, however, since truthful people will contradict themselves. Clifford Irving, who pulled the famous hoax on *Life* magazine getting them to pay a million dollars for what he claimed was an authorized biography of Howard Hughes, noted that he purposefully contradicted himself when interrogated because he knew that only liars tell perfectly planned accounts (see discussion in Ekman, 1985 page 45–46). DePaulo, Lanier and Davis (1983) obtained evidence relevant to this showing that planned responses were judged more deceptive than unplanned ones. Nevertheless I believe when people

are fabricating without having prepared they are more likely to make blatant contradictions which betray them, and to be evasive and indirect in their accounts.

By failing adequately to prepare the false line I mean not anticipating what questions may be asked and not preparing credible and consistent answers to all such likely questions. When this has not been done the liar is caught off guard when asked questions for which the liar has no ready reply. In such a jam the liar must think of a credible answer on the spot. When doing so most people often evidence various behaviors which signify they are thinking about what they are saying as they are talking. Pauses, gaze aversion, speech disfluencies, and speech mannerisms may all increase over what is usual for that person. And, the use of the hands to illustrate speech (what Ekman and Friesen [1969a] termed *illustrators*) may decrease, while voice intonation may flatten.

It is important to note that these behaviors I have just described are *not* signs of lying per se. There is no behavioral sign of lying itself, I maintain. But when these signs of thinking up a reply occur in contexts in which answers should be known without thought, they can betray the liar.

Emotions also may betray a liar. The simplest case is one in which the liar attempts to fabricate convincingly an emotion which is not felt. Few people are very good at this, although most of the time people get away with it, simply because most of the time the target of such a lie does not care whether the emotion displayed is feigned or real. This would be so in most polite lies about emotions; e.g., "I had a wonderful time at your party, so glad you invited me," when in fact that person was dreadfully bored and only came because they would otherwise cause an unacceptable affront.

There are what I call "reliable" behavioral signs of emotion, reliable in the sense that few people can display them at all or correctly. Narrowing the red margins of the lips in anger is an example of such a reliable sign of anger, typically missing when anger is feigned, because most people can not voluntarily make that movement. There are ways around this for the inventive liar, such as utilizing a Stanislavski like technique to create the actual emotion, so that its involuntary signs will then appear unbidden.

Usually lies about emotions involve more than just fabricating an emotion which is not felt. They also require concealing an emotion which is actually being experienced. Concealment often goes hand in hand with fabrication. The liar feigns emotion to mask signs of the emotion to be concealed. Such concealment attempts may be betrayed in either of two ways. (1) Some sign of the concealed emotion may escape efforts to inhibit or mask it, providing what Ekman and Friesen (1969b) termed *leakage*. (2)

What they called a *deception cue*, does not leak the concealed emotion but betrays the likelihood that a lie is being perpetrated. Deception cues occur when only a fragment leaks which is not decipherable, but which does not jibe with the verbal line being maintained by the liar, or when the very effort of having to conceal, produces alterations in behavior, and those behavioral alterations do not fit the liar's line.

Lies which are not about emotions may be betrayed by emotions the liar feels about the process of lying. Chief among these feelings about lying are the fear of being caught, guilt about lying, and what I have called *duping delight*, the pleasure and excitement of putting one over. Not all lies will call forth these emotions. Whether they do will depend upon characteristics of the liar, the target of the lie, and the content of the lie. Elsewhere (Ekman, 1985) I have described in some detail a lying check list which facilitates making a prediction about the likelihood that any of these emotions about lying will occur.

To give just a few examples, I propose that the fear of being caught is highest when the stakes for being caught, in specific, the punishment for being caught lying, is very high, the liar has not practiced the lie, and has not had the experience of having succeeded before in this very lie with this target, and when the target is known to be both suspicious and of extraordinary acumen. Guilt about lying will be highest when the liar shares values with and respects the target, when the target is not collusively aiding the lie and does not benefit from the lie, and when the lie is in no way authorized by any social group or institution. (See Miller & Tesser [1988] for some support from self report data about the determinants of guilt about lying). Duping delight is enhanced when others who are allies of the liar observe the liar's actions.

While the arousal of any strong emotion—fear, guilt or delight—produces changes in behavior which may be detectable, and thereby betray the lie if they do not fit the liar's line, each of these emotions produces some unique behavioral signs. Elsewhere (Ekman, 1985) I have explained in detail how these emotions, and the very process of managing emotions, are manifest in face, body, voice, and paralinguistic behavior. Perhaps here it would be useful to mention that there is no one channel which is the best or most sensitive source for clues to deceit. As the data I will describe later suggests, every aspect of behavior can provide such clues. And, there are hints of individual differences as well, in terms of what behavioral source may be most profitable to scrutinize.

I believe that one can be more effective in detecting lies if one evaluates each situation in terms of the likelihood that any of these emotions

will occur. By doing so the lie catcher will be alerted to the types of behavior which may provide leakage or deception cues. Also, such an exercise will alert the lie catcher as to when the truthful person may appear to be lying. One must not make *Othello's error*, of presuming that a sign of fear is a sign of lying. The truthful person, may under some circumstances, be afraid of being disbelieved, or guilty, or manifesting delight. The crucial issue is to examine the circumstances, and evaluate whether or not a truthful or lying person would be experiencing these emotions.

The lying check list and the reasoning which underlies it also can be helpful in evaluating the utility and relevance of different deception scenarios which are employed in research. I argue that if we wish to learn about situations in which the stakes are high, we should study such situations in our laboratory, not just for the sake of verisimilitude, but because those stakes will generate behavior which will be absent if the stakes are low. High stakes are a two-edged sword. While they heighten the fear of being caught thus increasing the chances of being caught because of the burden they impose on the liar to conceal that fear, high stakes also motivate the liar to make a determined effort not to be caught.

The relevance of my framework to the design of research about lying can be illustrated by comparing two experimental deception scenarios. Riggio and Friedman (1983) studied undergraduates who had volunteered to participate in a videotaped experiment. The subjects sat alone in front of a video camera. They were given a folder which contained six magazine pictures. Instructions under each picture told the subject either to lie or tell the truth about that particular picture. After a few moments allowed for preparation, they were told "describe in a few sentences to the camera the picture you just looked at . . . colors, people, objects, etc." Not much was at stake, no punishment for being detected, no reward for success in the deceit. No reason, in terms of the subject's past life or future plans, to care whether he or she failed or succeeded in the lie.

The deception scenario which I and my colleagues devised was very different. We deliberately sought to model a particular real life lie—that of the suicidal patient who lies about emotions, concealing her anguish in order to be released from hospitalization to be able to commit suicide without interference. We showed our subjects gruesome medical training films to arouse strong negative emotions felt at the moment, which they were told to conceal. We created high stakes, by recruiting for this study student nurses, who knew they would have to confront such gory scenes and were concerned whether they would be able to do so. We enhanced the stakes by identifying our experiment as a study of communication skills relevant

to nursing, and telling them that success in our situation was a likely predictor of success as a nurse (which later studies did indeed bear out). The videocameras were hidden. The subject described her feelings as she watched the gruesome films to an interviewer who could not see the screen. The subject was instructed to conceal negative emotions and convince the interviewer she was watching a nature film of mildly pleasant content. For comparison purposes the subjects were also shown such a film which they were told to describe honestly.

These two deception scenarios—ours and Riggio and Friedman's—differ enormously in terms of the likelihood that behavioral clues to deceit will occur. In our study the lie is about strong emotions felt at the moment, and there should be leakage of those emotions or deception clues relevant to the attempt to manage those emotions. In the Riggio and Friedman study the subjects did not have to conceal emotions. In our study high stakes would induce both the fear of being caught, and considerable effort to succeed, while in the Riggio study, the stakes were probably very low. Neither study required preparation of a very elaborate line, and both gave a few minutes to prepare. In neither study should there be much guilt about lying, since the experimenter has sanctioned lying. (Later in describing our results I will discuss another feature of our deception scenario—that the subjects when lying felt negative emotions from two sources, their fear of being caught and the negative emotions aroused by the film).

The Riggio and Friedman study is unusual in that the subjects interacted with a camera, not a person. Our study was unusual in examining subjects' conversation while they attended a film. Both studies suffered from the limitation that the subjects did not choose whether to lie or be truthful, thus eliminating any individual differences associated with that choice which might moderate any evidence of behavioral clues to deceit.

We need empirical studies to determine to what extent findings from such different deception scenarios will generalize to specific real life deceptive interactions. While there is no direct evidence of this sort, I will describe findings later which suggest that our findings are relevant to serious, high stakes real life lies. The Riggio and Friedman deception scenario, like most others studied in experimental social psychology, might have relevance to white lies. Certainly, I would not expect their study and ours to obtain the same findings about behavioral clues to deceit. Although they did not actually examine the behavioral clues to deceit, DePaulo, Lanier, and Davis's (1983) finding that observers needed different sources of information to detect deception when the lies were told by more or less motivated liars is consistent with my view.

Findings on Behavioral Clues to Deceit

The types of data we have collected in our study of deception are shown in Figure 1. Our study is unique in employing the most precise measurement currently available for the face (the Facial Action Coding System [FACS], Ekman and Friesen, 1978), in addition to measures of the voice (measures developed by K. Scherer [Scherer, 1982]), and body movement (utilizing methods described first by Ekman and Friesen (1969a). While some other investigators have used some of the voice or body measurement, no other study of deception has employed all of them, and no prior study has so precisely measured facial behavior.

Our study is also unique in not just obtaining precise behavioral measurement, but also showing the videotapes to observers and asking them to make inferential judgments about the behavior they observed. Again, other investigators have showed samples of behavior to judges, as we have, but no others have: (1) had some judges make attributions about personality, attitudes and affect and other judges make judgments about whether the subjects were lying; (2) obtained such judgments both on the full audiovisual input, as well as when the judges are exposed to only a portion of the usual input (face, body, voice, speech, written text); and, (3) also had precise measurements of face, body and voice, enabling a comparison of observers' judgments with behavioral measurements.

We found some behavioral clues to deceit within each modality: face, body, voice and text. Within the face, two kinds of smiling differentiated

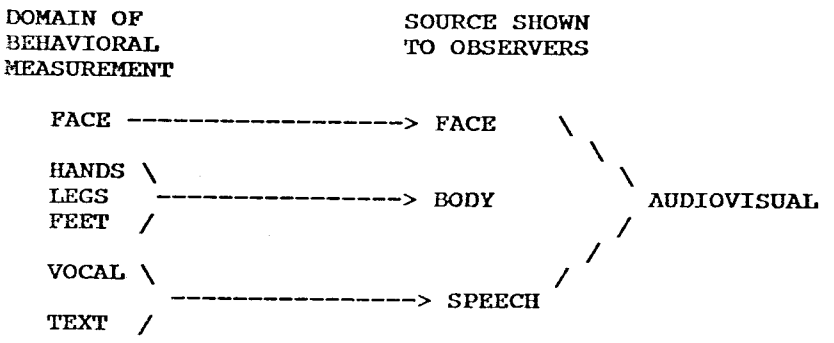

FIGURE 1

Types of data collected.

honest from deceptive behavior. The first is what we are calling Duchenne's smiles (Ekman, in press; Ekman, Davidson, & Friesen, under review), smiles which because they involve the muscle around the eye, in addition to the muscle which pulls the lip corners up, are posited to be signs of actual enjoyment. Duchenne's smile, as would be expected, occurred more often when subjects honestly described their reactions to a pleasant film (the honest interview) than when they feigned pleasant feelings, concealing the negative emotions they felt while watching the gruesome films. Masking smiles, smiles in which there are muscular traces of disgust, anger, fear, sadness, or contempt in addition to the smile, as expected, occurred more often when the subjects were trying to conceal such negative feelings than when they were actually enjoying themselves. (These findings have been fully reported in Ekman, Friesen & O'Sullivan, 1988).

As predicted, illustrators decreased when the subjects lied, and pitch level went up. (The findings on illustrators and pitch were reported in Ekman, Scherer & Friesen [1976], but that report only dealt with half the sample reported here). The only textual measure which revealed a difference was a reduction in the number of self references in the deceptive interview.

Recall that these subjects were highly motivated to succeed in their lie. A tribute to their effort is our finding that many of the indices of restlessness and difficulty in talking, actually *decreased* when these subjects lied. They showed less self manipulative activity, less leg movement, and shorter latencies in their speech!

Combining the facial measures and the pitch measures was the most productive way to discriminate honest from deceptive interviews. By using both sets of measures it was possible to achieve an accurate assignment rate of 84%. With no other combination of measures was it possible to reach such a high hit rate. (These findings are described in detail in Ekman, Friesen, O'Sullivan & Scherer, in preparation). This extraordinarily high hit rate compares very favorably with the most optimistic reports of those who advocate the use of the polygraph to detect lies. It is not possible to determine whether any other investigator who examined nonverbal behavior during deception could have achieved such accuracy, since no previous study examined, as we did, the hit rate when more than one behavioral measure is considered.

Let us consider why these behavioral differences occurred. It is easy to say why Duchenne's smile occurred less often when the people lied, because it is posited to be a sign of true not feigned enjoyment. If the honest interview did not involve actual enjoyment, there would have been no rea-

son for Duchenne's smile to have occurred more often during that interview than during the deceptive interview.

The masking smile is another matter. Did it occur more during deception because the subjects were watching a gruesome film, or is it the result of lying? We theorize that it must be the consequence of lying, not the consequence of being emotionally upset. When people are upset, they usually don't smile too often, or if they do they manifest another type of smile, what Ekman (1985) called miserable smiles (which acknowledge being miserable) or compliance smiles. In a leakage smile the person is presumed to be trying to hide his misery, not acknowledging it. Such smiles should occur only when people are concealing, not when they are frankly showing their feelings.

In our deception scenario there were two sources for the arousal of negative emotions: negative emotions in response to the gory film and any negative emotions (most probably the fear of being caught) about lying itself. One could argue, (David Raskin, personal communication) that perhaps the masking smile is simply a sign of negative emotions produced by the film, not the consequence of lying about it. Other data show this is not so. Ekman (1972), Ekman Friesen and Ancoli (1980) and Ekman, Davidson and Friesen (under review) showed either these very same films or very similar ones to subjects who were not instructed to conceal their feelings. Masking smiles did not occur. Thus we can say that masking smiles, are, as we had predicted, a sign of deception about negative emotions. We will return to this question about our design again.

What emotion is leaking—the emotion produced by the film or the emotion about lying? To answer that question we looked more specifically to see what particular muscle movements were occurring within the smile. If it were fear, that would suggest it was the fear of being caught, but that rarely was evidenced. Instead we saw repeated instances of disgust or contempt, the very emotions which have been found to occur most often when subjects watched these films but did not try to conceal their feelings.

Consider next the finding that people showed fewer illustrators when lying. Such a decrease was predicted to occur when people are thinking about what they say, or inventing their replies. One could argue that this might not be what is responsible for the decrease in illustrators during deception, but that instead they decreased because people illustrate less when they talk about negative emotions. While we can not rule this out, it is improbable because many other investigators who study lies not involving emotions have also found support for our prediction that illustrators will decrease when people lie.

Lastly, let us consider why there is an increase in pitch. We do not

believe it is possible to be certain whether it is due to the fear of being caught or the emotional arousal produced by the film, or to both. Again it is important to note that an increase in pitch has been reported repeatedly by investigators who have studied lies which do not involve the concealment of emotions felt at the moment. (See a review of the literature by DePaulo, Stone and Lassiter (1985) for citations of those who have similar findings on pitch and illustrators during deception).

A number of those who have studied our findings have asked why we designed a deception scenario in which there were two different sources of negative emotions: those aroused by the film, and those aroused by the process of lying itself. The answer is that we wanted to generate findings relevant to those lies in which both factors are operative. The suicidal patient is concealing the anguish which is part of the psychopathological state, and may also be feeling guilty about lying or afraid of being caught. As I have just explained, the fact that negative emotions could have arisen from two different sources did not ambiguate the interpretation of why specific findings were obtained.

We believe our choice to study lies which involve the concealment of strong negative feelings is well justified by the fact that such lies occur in social life, and not just in the deceptive suicidal patient. Nevertheless, Krauss (personal communication, 1987) has suggested our choice of this type of lie confuses the issue of whether we were actually studying the detection of deceit. He reasoned that since our subjects in the deceptive interviews were experiencing negative emotions from two sources—feelings aroused by the gruesome film and feelings about lying—we cannot be certain what produced the behavioral clues which distinguish the honest and deceptive interviews. It might be that we were doing no more than distinguishing signs of negative emotions from the signs of positive emotions in the honest interviews, not signs of lying. Other data show this reasoning to be fallacious. Enormous differences in emotional behavior were found in subjects who viewed the negative and positive films, but were not instructed to lie, which was absent in the current study in which the subjects tried to conceal signs of negative emotions.

In studies in which subjects were shown the same films used in the present experiment, but were not asked to conceal their negative feelings (Ekman, Friesen & Ancoli, 1987; Davidson, Ekman, & Friesen, under review), measurement of the facial behavior showed virtually no overlap between the positive and negative film conditions. Only negative facial behavior occurred while watching the stressful film; only positive facial behavior occurred while watching the positive film. In contrast, measurement of the facial behavior of subjects in the present experiment found no

difference in either negative or positive facial expression in the honest and deceptive conditions. Only with fine-grained analysis of the positive facial behaviors were the differences within the positive emotions found, and these behaviors were not found in the studies in which subjects were not asked to lie.

Let us turn now to the question of whether the behavioral clues to deceit we have identified with our precise measurements are utilized by those who observed these videotapes. The videotapes were shown to groups of observers, both male and female college students. I will focus only on the observers who were told nothing about the situation, other than that they would observe a series of conversations. Other studies (Ekman & Friesen, 1974) have shown that when observers are told about the experiment and asked to judge when the person is lying, they do not much better than chance. Now let us consider the observers who were told nothing about the interview situation, and who were asked to make a variety of attributions, not just whether the person was lying.

No single observer saw a person in more than one of the two (honest or deceptive) interviews. After observing each interview the observers were required to rate the person on fourteen bipolar scales which dealt with trustworthiness, how outgoing the person was, how relaxed the person appeared to be, how pleasant the person felt, and how likable the person seemed to be.

We correlated all of the behavioral measurements with the observers' ratings. The overall finding was that when the subjects were lying, the observers' judgments of dishonesty correlated only with the text measures. Duchenne's smile, masking smiles, illustrators and pitch—all of which differentiated the deception from the honest interview—were not correlated with the dishonesty judgments made by the observers who were exposed to the full audio/video record of the deception interview. The only behavior which distinguished honest from deception interviews which did correlate with the observers' dishonesty judgments from the audio-visual record of the deceptive interview was mannerisms. The correlations between behavioral measures and observers' judgments when the subjects were being truthful, showed the same pattern with only a few exceptions.

One might think that these nonverbal and vocal behaviors which differentiated honest from deceptive behavior but which were not correlated with observers' judgments might not be detectable, might be too subtle for the observers to notice them. We have evidence that is not so. For when we examined the judgments made by observers who only saw the face, we found that Duchenne's smiles were correlated with judgments. Similarly when we examined the judgments made by observers who saw only the

body, illustrators correlated with observers' judgments and pitch was correlated with the judgments made by observers who heard only the speech. (The finding on pitch is similar to the results on pitch reported by Streeter, Krauss, Geller, Olson, and Apple [1977]).

In contrast to the nonverbal measures which were not correlated with the judgments of the audio/video presentation of the deception or honest interviews, nearly every measure of the verbal text and many of the vocal measures were correlated with observers' judgments of the audio-visual version of the interviews. The only text measure not correlated with observers' judgments—the number of I's—and the only vocal measure not correlated with observers judgments—pitch—were the only text and vocal measures which differentiated the honest from deception interviews.

Summarizing these findings, the face, body, voice and text clues which are most relevant to spotting deceit were ignored (with the exception of mannerisms). Those behaviors which were least useful for differentiating when someone was lying were most relied upon when the observers responded to the audio-visual presentation of the deception interview. (These findings are reported in detail in O'Sullivan, Ekman, Friesen, & Scherer [in preparation].) This apparent failure of the observers to make use of the behaviors most relevant to detecting deceit fits with Ekman's (1985) notion that, in social life, people unwittingly collude in maintaining rather than uncovering deception.

Conclusion

Our findings show there are behavioral clues to deceit that cut across channels and are evident in face, body, voice, and speech. When combined, the face and voice provide a very high hit rate in accurately detecting when someone was lying. Yet observers who are exposed to the usual interpersonal input—the full audio-visual presentation—ignore these behavioral clues and instead rely upon those aspects of voice and speech which do not differentiate deceptive from honest behavior.

Each of these findings requires replication. Such replications need to vary the nature of the population studied— we only examined college educated women. Replications should also consider the nature of the deceit itself, examining other types of lies about emotion, and lies about matters other than emotion. At some point it will be necessary also to consider whether the findings reported here will obtain when there is little at stake in whether the lie succeeds or fails.

A number of other questions also needed to be addressed. For exam-

ple, will the use of measures of nonverbal behavior enhance the accuracy of lie detection when made by the polygraph? And, could observers be taught to ignore the irrelevant behaviors and focus instead on those behaviors which differentiate deceptive from honest behavior?

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