

Verbal and Nonverbal Cues in the Perception of Lying

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Two experiments examined strategies observers use to see through self-presentations. In the first, five male actor subjects lied or told the truth in simulated job interviews. Forty-one observers were moderately accurate in judging the actors' truthfulness. Actors were consistently good or poor liars, but judges were not consistently good or poor. When actors lied, they gave less plausible, shorter answers with longer latencies. Observers seemed to use the plausibility and latency, as well as an answer's vagueness and consistency and an actor's smiling, postural shifting, and grooming, to determine whether he was lying. The second study experimentally manipulated the content of an answer and a nonverbal cue. Observers were more likely to judge a female job applicant as lying when her answers were self-serving. A long hesitation before an answer made observers more suspicious of an already self-serving answer and more certain of the truth of an already forthright one.

According to sociological social psychologists such as Mead (1934), Goffman (1959), and Turner (1968), we continually play roles and manage the impressions of ourselves that we give off. We continually strive to give the impression that we are acting consistently with the expectations associated with the positions we occupy, and most of the time we get away with it. Most actors sincerely believe in the roles they play, incorporating them into their identities, and most audiences believe that actors are what they portray (Jones & Nisbett, 1971). Indeed, Goffman (1959) argues that most social behavior occurs in what could be called a conspiracy mode. In this mode, we act as if we believed that a person and his or her role are identical, that the per-

son has a legitimate right to the role, and that he or she is adequately meeting the expectations associated with it. Even if we are suspicious about the performance of a role partner, at least for the duration of a social interaction, we act as if we believe.

Occasionally, however, social behavior operates in an agonistic or sparring mode. In this case, the interaction resembles a contest in which the actor tries to present himself in one way and the audience tries to see through this presentation to the actor's real qualities. Presidential debates, job and psychiatric interviews, labor-management negotiating sessions, first dates, defense testimony, and police interrogations are often performed in the sparring mode.

The focus for this research is determining how an observer spars. That is, how does an observer discount, disregard, convert, or interpret an actor's manifest behavior to infer a different underlying reality? When and how does the observer decide that an actor is lying?

Social psychologists have suggested two general rules that observers may use when they are trying to see through self-presentations and sort facade from reality. The first might be called the ulterior motive rule, a variant of

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Kelley's discounting rule (Kelley, 1967). According to this rule, one should discount an actor's behavior as a reflection of his or her true nature to the extent that the behavior furthers the actor's short-term self-interests. In their classic experiment, Jones, Davis, and Gergen (1961) showed that observers use this rule; they learned less about a job applicant from his behavior when the behavior was consistent with job requirements than when it was inconsistent with them. Walster, Aronson, and Abrahams (1966), Jones and Wortman (1973), and Frankel and Morris (1976) have all presented data and made observations consistent with the ulterior motive rule: Obviously self-serving behavior is believed less.

The second major rule that observers may use to decide if an actor's behavior reflects his or her true nature might be called the controllability rule. According to this rule, one should believe most in those aspects of a person's performance that the person is least able to deliberately and consciously control (Goffman, 1959). If one cannot control it, one cannot fake it. Professionals whose task is to distinguish truth from lie have systematically looked at difficult-to-control behaviors to determine if their clients were lying. Freud and the clinical psychologists and psychiatrists who have followed him have used the controllability rule by relying on dreams, associations, forgettings, slips of the tongue, and other difficult-to-control behaviors to discover problems their patients might be hiding both from the clinicians and from themselves. Police use galvanic skin response (GSR) and other relatively uncontrollable physiological responses in mechanized lie detectors, and technically less sophisticated interrogators have used similar, if more primitive, techniques for centuries (Lykken, 1974).

Research on lie detection, with few exceptions, has assumed that uncontrollable behavior reveals the truth about a potential liar and has focused on the actors and ways in which their uncontrollable behavior might accurately reflect their internal states. A research tradition in psychophysiology has tried to establish the accuracy of polygraph and other lie detector techniques (see Lykken, 1974, for a review). Assuming that lying is more stressful

than truth telling because of the difficulty of the task, the guilt associated with deception, the fear of being found out (Davis, 1961), or the knowledge of secret information (Lykken, 1974), a polygraph should be able to measure physiological concomitants of stress. In clinical psychology, the search has been for observable nonverbal and other uncontrollable behaviors that clinicians could use to assess a patient's emotional state (e.g., Kasl & Mahl, 1965; Krout, 1935).

Very little systematic work has examined whether naive observers use the controllability rule to determine if someone is lying and, if they do, what cues they use in making their judgments. The exceptions to this are in work by Ekman and Friesen, by Krauss, and in the work reported below. In a series of articles, Ekman and Friesen (1965, 1967, 1969, 1974) have shown that naive observers can distinguish between actors who are experiencing pleasant emotions or unpleasant ones when they view the actors' bodies, hands, and feet, but not when they view only faces and heads. Actors who were lying used fewer illustrator hand movements and had higher pitched voices (Ekman, Friesen, & Scherer, 1976). Research by Krauss and his colleagues (Streeter, Krauss, Geller, Olson, & Apple, 1977; Krauss, Geller, & Olson, Note 1) shows that naive observers can identify deception in nonemotional interviews. They were more accurate when they judged from a video image only, especially when the interviewee did not know that he or she could be observed; they were next most accurate at judging from audio tape and least accurate at judging from both audio and visual images simultaneously. When the interviewees lied, their speech had a higher fundamental pitch and was judged to be more nervous and less fluent. Observers were more likely to judge less fluent, less serious, less empathic, and more nervous answers as lies.

The present report describes two studies in which observers distinguished truths from lies. The first was exploratory and correlational. Spontaneous, simulated job interviews were videotaped, and characteristics of the answers that might have been associated with truthfulness judgments were measured. The second

study was hypothesis testing and experimental. Both the content and nonverbal style of one segment from a job interview were experimentally manipulated to test observers' use of the ulterior motive and controllability rules.

Experiment 1: Component Analysis of Lying and Lie Detection

Method

Overview

This exploratory research first asked whether observers agreed with each other and were accurate in evaluating the truthfulness of another person's statements and then tried to identify some of the cues influencing their judgments. Five college undergraduates each participated in a 15-minute-long simulated job interview in which they lied and told the truth about equally often. The interviews were videotaped. Each actor watched his own videotape and indicated the extent to which he was lying during each answer. Between 12 and 18 observers watched each tape and competed for a prize by judging the extent to which the actor was lying during each answer. Other judges rated verbal, paralinguistic, and nonverbal characteristics of each answer.

Subjects and Procedures

Five male college undergraduates who were about to apply for a dormitory advisor position were recruited for an experiment on interviewing strategies. They participated in a simulated job interview for a dormitory advisor position.

The interviewer was a graduate student in psychology with experience in clinical interviewing. Although topics had been selected in advance, the interview was unstructured. The interviewer asked questions about the applicant's academic background, personal characteristics, friends, drug use, counseling and organizational experiences, and his potential responses to such problems as depressed freshmen and drug selling in the dormitory.

Interviewees were instructed to role play the part of a job applicant, framing all their answers so that they gave the impression that they wanted and were qualified for the job and that they were sincere and honest. Since they were about to apply for a similar job within the month, there was an element of realism in the simulation. To heighten this realism and increase subjects' motivation to lie and tell the truth convincingly, the experimenter emphasized the usefulness of this simulated interview for improving applicants' job-seeking skills and promised them the opportunity to watch their own performances on videotape.

Behind the interviewer, in the candidate's line of sight, was a pair of signal lights that instructed the candidate to either lie or tell the truth on an answer.

After a 5-minute warm-up in which the lights always signaled "truth," the lights changed at the beginning of a question from "truth" to "lie" randomly, with a 50% probability.

Each interview lasted about 15 minutes. The interviews were videotape-recorded, with the interviewees' knowledge. Four of the interviewees were photographed from the waist up and the other from the chest up. A digital timer was also filmed, as an indexing system, using split-screen techniques.

Deception Judgments

Following the interview, actors viewed their own videotape and indicated via a switch whether at that moment they had been lying or telling the truth or whether the interviewer had been asking a question. As they made judgments about their interview in real time, a PDP Lab 8/e computer sampled the position of the switch once per second and recorded up to 900 seconds of their judgments. These judgments became the standard against which all observers' judgments were compared for accuracy. This procedure of determining when a lie occurred has two advantages over merely recording the experimental condition of an answer or asking for actors' global, retrospective judgments of the truth of an answer. It can deal conveniently with cases in which the subjects did not follow instructions or cases in which they combined truthful and deceptive elements in a single extended answer. However, the latter was rare. Actors switched from truth to lie or the reverse during an answer in less than 10% of their answers.

Observers were recruited through campus posters offering a \$25 prize for the person best able to accurately distinguish lies from truth when viewing a job interview. Recruiting observers to compete for a substantial prize increased their interest and the importance of the task for them. Observers judged two randomly selected videotapes in a dark, soundproof room on a large video monitor. They were given an accurate description of the manner in which the videotapes were made. They saw 2 minutes of warm-up in which an actor was telling the truth and then judged the extent to which he was lying throughout the rest of the interview. They made their judgments using the same apparatus and procedures used by the actors previously. Speed and accuracy in making decisions were stressed. Both the apparatus and special instructions may have prompted observers to make judgments on the basis of cues early in an answer and to underuse the context following them. As a result, the present research may underestimate observer accuracy, compared to a more relaxed, real-world setting, and may overestimate the importance of some nonverbal behavior, like speech latency, as a cue that observers use in judging deception.

Between 12 and 18 observers judged each interview, and each interview contained between 14 and 38 question-answer sequences. Because of unreliability in the speed of the videotape playback equipment and the time it took observers to begin making judgments

of an answer after listening to the question, short answers of less than 6 seconds have been excluded from these analyses. With these answers excluded, the mean answer length was 29 seconds over all five interviews and ranged from a mean of 44 seconds for the most wordy interviewee to 18 seconds for the most reticent. Over the five interviews, 106 question-and-answer sequences were analyzed.

Were observers either consensual or accurate at judging deception? We can take a question-answer sequence as the unit of analysis. Let us classify as a lie any answer in which the actor indicated he lied at any time and look at the proportion of observers who judged it a lie at the moment at which the maximum number of observers were making judgments. There was consensus among observers in 54% of the 106 answers, where consensus means that observers significantly agreed among themselves at the 5% level or less according to the sign test. There was also substantial accuracy. The correlation between the actors' judgments and the proportion of observers agreeing with them was .49 ($p < .001$).

We can also take as a unit of analysis one observer judging one actor's total interview and use the phi correlation, based on the total number of seconds that an actor and an observer agreed in judging the actor's interview, as a measure of accuracy. The mean phi correlation was significantly greater than 0 for four of the five interviews, and for the five interviews it ranged from .39 to .08. On the other hand, the correlation between one observer's two accuracy scores did not differ significantly from 0 ($r = -.06$). These results mean that some actors were consistently good or poor liars across different observers, but observers were not consistently good or poor perceivers across different actors.

In summary, these data show moderate interobserver agreement and observer accuracy. For this result to occur, observers must have been attending to similar or, at least, correlated cues and processing them similarly. The search for these cues and the rules observers use to process them seems warranted.

Stimulus Characteristics

Both the prior literature on deception and on non-verbal indicators of anxiety and negative affect and observers' introspections suggest that the following cues may be associated with either the actual truth of an answer or observers' judgments of its truthfulness:

1. *Verbal, content cues.* (a) The *social desirability* of an answer (e.g., Baskett & Freedle, 1974); (b) *consistency* between a focal answer and prior answers, that is, consistency between the answer and knowledge about a particular actor; (c) *plausibility* of an answer, that is, its consistency with common sense and knowledge about the world generally, without specific knowledge of a particular actor; (d) *concreteness, specificity, and the amount of detail* in an answer.

2. *Auditory and paralinguistic cues.* (a) *Fluency of speech* (e.g., Boomer, 1963; Diberner, 1956); (b) *response latency* (e.g., Baskett & Freedle, 1974; Krauss

et al., Note 1); (c) *fundamental pitch* (e.g., Streeter et al., 1977); (d) *variations in pitch and loudness* (e.g., Friedhoff, Alpert, & Kurtzberg, 1964; Scherer, 1974); (e) *length of answer* (e.g., Mehrabian, 1971).

3. *Visual cues.* (a) *Smiles* (e.g., McClintock & Hunt, 1975); (b) *gaze avoidance* (e.g., Exline, 1970; McClintock & Hunt, 1975); (c) *postural shifts* (e.g., McClintock & Hunt, 1975; Mehrabian, 1971); (d) *self-manipulation* (e.g., McClintock & Hunt, 1975); (e) *hand and foot movements* (e.g., Ekman & Friesen, 1974; Krout, 1954; Luria, 1932; Mehrabian, 1971; Sainsbury, 1958); (f) *tongue showing and lip tucking* (e.g., Smith, Chase, & Biebllich, 1974).

The exploratory research reported here examined only a few of these potential cues:

1. *Concreteness.* The extent to which the answer was filled with detail rather than vague and lacking in detail, compared to what one would expect in response to a particular question; the extent to which it elaborated or specified the details surrounding the major facts.

2. *A priori plausibility.* The extent to which an answer was plausible or likely to have been said by a typical college-student job candidate rather than implausible or unlikely. For example, a student stating that he is friendly, studious, and unathletic is quite plausible, but one stating that he does not know his father's occupation is quite implausible.

3. *Consistency.* The extent to which an answer was consistent rather than inconsistent with those that came before in the interview; the extent to which the context and tone of a particular answer supported or contradicted facts or general impressions from earlier answers. For example, if the actor had given the impression during some answers of being shy and withdrawn and then said he partied a lot or gave the impression of being very friendly and social, he would have contradicted himself. If he said that he hated parties, he would have been responding consistently. Seven raters were given descriptions of the concreteness, plausibility, and consistency dimensions and were trained on sample interviews. Using only transcripts, they then rated on 7-point scales each answer from each interview on each dimension. The rating of an answer for each dimension was their mean judgment.

4. *Length.* Length of the answer in seconds.

5. *Percent hesitation.* The time from the end of the interviewer's question to the beginning of the actor's substantive answer divided by the length of the answer. The actor's substantive answer was the first words that he spoke, excluding filled pauses such as "Well, let me see," "I think," "you know," "ah," "um," and the like.

6. *Percent speech error.* The number of noticeable breaks in speaking indicated by stuttering, repetition of phrases, broken phrases, or the insertion of non-substantive phrases divided by the length of the answer. This set of speech errors combines Kasl and Mahl's (1965) ah, repetition, and stuttering categories. Both the hesitation and speech error measures were coded by one trained rater working from audio recordings and verbatim transcripts of the interviews.

7. *Percent smiling.* The seconds of smiling divided by the length of the answer. This measure was coded by two to five trained raters using event recorders and watching only the video portion of each interview. The mean Pearson correlation reliability estimate of the number of seconds of smiling during an answer for the five interviews was .80.

8. *Percent postural shift.* The seconds in which the interviewee moved his whole body back and forth or rotated it in a swivel chair divided by the length of the interview. This measure was coded by three trained raters using event recorders and watching only the video portion of each interview. The mean Pearson correlation reliability estimate of the number of seconds of postural shifting during an answer for the five interviews was .69.

9. *Percent grooming.* The seconds in which the interviewee touched and manipulated his body or face with his hand divided by the length of the interview. Scratching, smoothing, and stroking are examples, but holding one's chin stationary in one's hand is not. Because one actor was photographed from the chest up and other actors had their hands offscreen for various lengths of time, the grooming measure represents only grooming and self-manipulation seen by observers but not all the grooming that actually occurred during an interview. This measure was coded by three trained raters using event recorders and watching only the video portion of each interview. The mean Pearson correlation reliability estimate of the number of seconds of grooming during each answer for the five interviews was .77.

Results

Figure 1 summarizes the relationships among the truth of an answer as judged by

the actor, the stimulus characteristics of the answer as judged by independent raters, and observers' judgments of the answer's truth. The actor's judgment measure is coded 0 for a lie and 1 for a truthful answer. The observers' judgment measure is the mean percentage of time that observers judged an answer as true minus the mean percentage that they judged it as a lie.

Figure 1 shows that when actors told the truth, they gave longer, more plausible answers with shorter hesitations before their answers. Observers judged more plausible answers with shorter hesitations as true, and the use of these cues increased their accuracy. In addition, observers were more likely to judge as true consistent and concrete answers in which the actor smiled less, shifted his position less, and groomed himself more. The use of these cues did not increase observers' accuracy because they were unrelated to the actual truth of an answer.

It is interesting to note that the plausibility of an answer was the single best predictor of both its actual truth and observers' judgments of its truth. This verbal cue, a characteristic of the content of the answer, was measured by judges who rated transcripts of the interviews while denied paralinguistic and visual information. Although nonverbal cues added to the prediction, they may not have had the

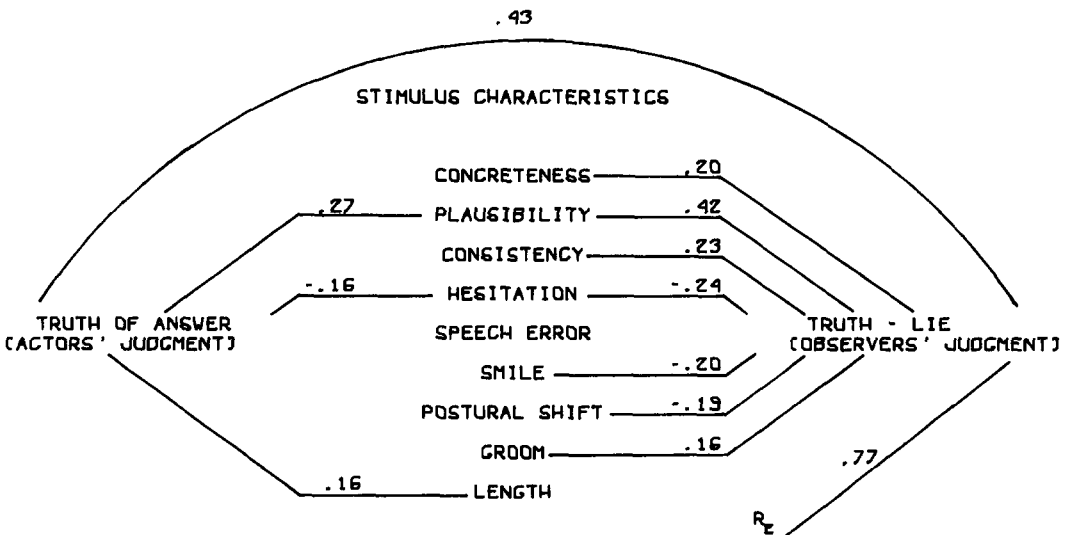


Figure 1. Pearson correlations for truth of answer, stimulus characteristics, and observers' judgments.

overwhelming importance that some researchers (e.g., Archer & Akert, 1977) have ascribed to them.

Forty-one percent of the variance in observers' judgments can be accounted for by the truth of the answers and rated stimulus characteristics: The multiple correlation coefficient is .64. Thirty-two percent of the variance in observers' judgments can be accounted for by the measured stimulus characteristic of each answer: The multiple correlation coefficient is .56. Eighteen percent of the variance in observers' judgments can be accounted for by the actual truthfulness of an answer: The point biserial correlation is .43. Of this 18%, which we might think of as accuracy variance, 10% is mediated by measured stimulus characteristics, and another 8% is not. The partial correlation of the actual truth of an answer and observers' judgments of its truth, with the measured stimulus characteristics held statistically constant, is .31.

To summarize in less technical language this partitioning of the variance in observers' judgments, observers were moderately accurate in judging whether an actor was lying or telling the truth. In addition, one can predict reasonably well whether observers thought an actor was lying or telling the truth on an answer by knowing the measured stimulus characteristics of each answer. However, observers' accuracy was based only in part on these stimulus characteristics, since holding them constant statistically through partial correlations left about 46% of the accuracy variance still unaccounted for.

Why is it that the measured stimulus characteristics can account for more of the observers' truthfulness judgments but less of their accuracy? One possibility is that the present experimental situation is a relatively affect-free one, in which the guilt and fear of exposure that characterize lying outside the laboratory were not sufficiently aroused. Since nonverbal affect cues themselves did not differentiate the actors' lying from truth telling, observers could not use them to increase their accuracy. However, it follows from the moderate accuracy of observers' truthfulness judgments that they were basing their judgments on some public behaviors, perhaps as yet unmeasured. It may be that they were

using subtler, second-order cues, such as the breakdown of the normal patterning of conversation, as well as the first-order cues measured, such as speech errors or postural shifts. If these subtler cues were less controllable by the actors, they could be the basis of observers' accuracy. That is, observers may be sensitive to violations of some structural rules of social interaction (e.g., Birdwhistle, 1970; Duncan & Fiske, 1977) as well as to the occurrence of a few meaningful nonverbal behaviors (e.g., Dibner, 1956; Mehrabian, 1971). However, the view that observers are sensitive to subtle violations of normal patterns becomes less plausible when one considers that they were not even sensitive to individual differences in the frequency of behavior, as demonstrated by the analysis of standardized measures discussed below.

Standardizing the measures of stimulus characteristics for differences between actors did not increase these cues' ability to predict observers' deception judgments. Actors showed large differences in how often they displayed a nonverbal behavior. For example, the mean percentage of time that different actors smiled ranged from less than 1% to over 12%, and the mean percentage of time they spent shifting in their seat ranged from less than 7% to over 41%. Yet, using scores standardized for individual differences in a regression analysis accounted for 22% of the variance in observers' deception judgments, versus 23% for the nonstandardized scores. Observers seemed less sensitive to idiosyncratic patterns of behavior and deviations from them than one might expect (cf. Ekman & Friesen, 1974).

Experiment 2: Pauses and Contexts

The research just described, as well as previous research (e.g., Baskett & Freedle, 1974; Ekman & Friesen, 1974), has shown that observers can use both verbal and nonverbal cues to judge the truthfulness of a statement. It is unlikely that they are continually monitoring all potential cues, if only because of the information overload this would cause. Verbal statements are simultaneously the most easily accessible sources of information about a speaker and yet the least reliable, since they are so easily controlled. One way that ob-

servers could cope with the potential information overload and the potential unreliability of verbal statements is to apply the ulterior motive rule and the controllability rule sequentially. That is, they can accept at face value all that speakers say about themselves until a self-serving, implausible, contradictory, or otherwise suspicious statement is made. At this point, observers can shift down a level of controllability and seek evidence confirming their suspicions from information sources less subject to the speaker's conscious control.

The experiment described below examined the ways in which observers might use these two rules in judging a stimulus person's truthfulness. One hypothesis is a conceptual replication of Jones et al. (1961): Observers will believe a stimulus person's self-serving statements less than those that are not self-serving. The second hypothesis is about observers' attempts to deal with the tension between the accessibility and reliability of verbal statements. Observers will use relatively uncontrollable nonverbal cues to modify their judgments of the truthfulness of an answer based on its verbal content. Specifically, a nonfluency in a stimulus person's speech, such as a long hesitation before answering, will be a cue to an observer that the stimulus person is lying when the hesitation precedes an already suspicious, self-serving statement, but not when it precedes a self-damaging one.

Method

Overview

Seventy-four subjects listened to a 5-minute excerpt from a simulated interview in which a female applicant applied for a job as a dormitory counselor. When the male interviewer asked if the candidate smoked marijuana, he gave the impression that he either strongly opposed its use or supported its use. The job candidate answered either that she did not smoke it and found its use distasteful or that she smoked it recreationally several times a week. Her answer was preceded by either a 7-second pause or a 1-second pause. Subjects estimated the job candidate's use of marijuana and related attitudes, indicated their confidence in these estimates, and judged the candidate's honesty in the interview.

Stimulus Materials

The excerpt that subjects heard was taken from tape recordings of a spontaneous but simulated job

interview in which a candidate applied for a position as a dormitory counselor. The interviewer's and interviewee's instructions were to act as if the simulation were an actual job interview, with the additional requirement that they give the impression that they either approved of marijuana use in one version of the interview or disapproved of its use in the other. The interview was conducted with interviewer and interviewee separated, communicating with each other through microphones and earphones.

The 5-minute excerpt that subjects heard was created by editing and splicing together three questions and answers from the tape recording of the interview and rerecording the edited version. The first and third questions and answers were the same for all experimental conditions. In the first, the interviewer asked about the candidate's experience in handling discipline problems in a dormitory. The candidate discussed students' use of forbidden electrical appliances and claimed to have handled problems successfully by gaining her students' respect and appealing to their empathy for fellow students. In the third question, the interviewer asked how the candidate would deal with suspected drug selling in the dormitory. She replied that she would remind the suspected seller of the seriousness of this action and of the severe university and legal sanctions and threaten to report the seller to a dean.

The second question and answer and the candidate's paralinguistic behavior prior to this answer were experimentally manipulated. Both versions of the interviewer's question asked if the candidate smoked marijuana. One version of the question gave the impression that he disapproved of marijuana use and the other that he approved of its use. The anti-marijuana question was phrased as follows:

We've just recently been having trouble with drugs in the dorm. A lot of the kids, especially freshmen, have been getting really offended when they have roommates who smoke dope or when they go to a dorm party and there's dope being smoked, and they have a perfect right to be. The dorm is essentially their home, and they should be able to allow what they want to occur in their home . . . What's more, we've been getting some complaints from parents who seem to be worried that this easy access to drugs and having role models around who give the impression that smoking is OK and that . . . students don't have to spend much time in academics are going to lead their kids into the same sort of thing. I kind of agree with what those parents are saying. I am lucky that I don't have kids, but if I did, I might be worried the same way. In a second I'm going to ask you what you think you would be doing if you found out that there was drug selling in your dorm. But before I do, let me ask you this: Do you use drugs?

The promarijuana question was phrased in the following way:

One of the problems that we're really having in the dorms now is the use of drugs. I really don't

care what kids do in the dorms for their own personal use, but we've been getting a lot of complaints . . . both from the kids themselves and just recently from some of their parents, about people who are using drugs and especially grass in the dorms. There are a bunch of kids that must have come from convents in the midwest or something—I don't know—but they get really upset when they get assigned a roommate who smokes or they go to a party where there is smoking. And they also have been complaining to their parents and it gets back to the dean . . . We may have to figure out something to do about the indiscreet use of drugs in the dorm, and I'm going to ask you what you think you might do. But before I do that, just let me ask you whether you use drugs?

The job candidate answered this question by saying either that she did not currently smoke marijuana and found its use distasteful or that she smoked several times a week.¹ The antimarijuana answer was:

No, I had at one point in time used it on a couple of occasions. (Q: What sort of thing?) Pot, grass. I found it distasteful, frankly; I don't smoke otherwise. (Q: you mean cigarettes?) I don't smoke cigarettes. I found the process distasteful, for starters. I didn't enjoy it. So frankly, I saw no sense to continuing it. As well as I have seen people . . . when I was in college, which was when I tried some, use it a lot and become potheads and dissipate what I thought was some good potential, and so I guess I never got really interested in it. Drink, sometimes, but not very often.

The promarijuana answer was:

Yes, I do use drugs. Probably on the average of twice, maybe three times, a week. (Q: What sort of thing?) I smoke grass. And that's about it. But I do, and feel, of course in so far as I do live with one other roommate and it's not bothersome to her, that it doesn't matter. I enjoy it. It helps me to relax some. So it's something I do twice or three times a week.

Silence Manipulation

The paralinguistic cue was manipulated by inserting a 7-second partially filled pause between the interviewer's marijuana question and the candidate's answer. Four seconds of blank tape, an "uh" spoken by the candidate and taken from another of her answers, and 3 seconds of blank tape were spliced into the interview, starting at the last sounds of the question. This length of silence seems to be at the limits of those that appear in normal conversation, at least with a fluent speaker like the present job candidate. Thus, the silence, according to pretest results, was noticed by virtually all subjects but did not appear unnaturally long to them.² In the other version, no silence was inserted between the question and answer, and the naturally occurring hesitation of approximately 1 second was retained.

Subjects and Procedures

Seventy-four undergraduates were randomly assigned to listen to one version of the interview and make judgments about the interviewer and candidate and rate the confidence of their judgments. Subjects were reminded that people often try to manage the impression they give off and that their task was to discover what a job candidate was really like after listening to a brief excerpt from a job interview. In addition, they were informed that the candidate had previously been a dormitory counselor and therefore had considerable experience both in performing the job and in job interviews. Only the 11 subjects who asked were told that the interview was simulated. They were spread approximately evenly across conditions. Subjects listened to the interview over earphones. The experimenter giving instructions was blind to the subjects' experimental conditions throughout their participation.

Results

The dependent measures represent two groups. The first comprised subjects' judgments about the amount the candidate smoked marijuana and attitudes that are consistent with this, such as her attitude toward marijuana and her political ideology. The second group consisted of judgments of the candidate's honesty, how well subjects thought they knew the candidate based on the interview, the amount she distorted her views in order to impress the interviewer, the amount that she lied about her marijuana smoking, and her candor and honesty in the interview.

Subjects' judgments of the amount that the candidate smoked marijuana and related attitudes were influenced almost exclusively by what the candidate said. Subjects believed that she smoked more, $F(1, 66) = 114.8$; had a more positive attitude toward marijuana, $F(1, 66) = 123.8$; and had a more liberal political ideology, $F(1, 66) = 53.4$, when she said that she smoked marijuana than when she said that she did not. These results seem

¹ Neither answer was true. The candidate, in fact, smoked marijuana socially, neither finding its use distasteful nor smoking it regularly.

² It is interesting to note that a 7-second pause without the interjected "uh" gave the impression that the attention of the candidate had wandered and that she had suddenly returned it to the interview at the start of her answer. With the interjected "uh," the silence gave the impression of a person in thought, making up her mind what to say.

Table 1
Observers' Judgments of an Experimentally Manipulated Job Interview

Dependent measure	M								F tests					
	Antimarijuana question				Promarijuana question				Question (Q)	Pause (P)	Answer (A)	Q X A	P X Q	P X A
	No pause		Pause		No pause		Pause							
	Anti answer	Pro answer	Anti answer	Pro answer	Anti answer	Pro answer	Anti answer	Pro answer						
Candidate's marijuana attitude	2.20	5.12	2.40	5.11	2.44	5.00	2.33	5.56			123.0			
Confidence in judging candidate's marijuana attitude	4.90	4.87	4.00	6.33	3.56	5.10	3.67	6.00			16.3			4.4
Candidate's honesty	3.20	3.62	2.70	4.89	3.89	2.82	3.00	4.11			4.2	4.7		10.0
Candidate's truthfulness about marijuana use	2.80	4.38	2.00	4.78	4.00	3.20	2.67	3.89			10.0	7.1		5.0
How well known candidate is on basis of interview	5.20	5.75	4.90	4.00	5.44	4.90	5.78	4.44		3.6	4.3	3.8		2.9
How much candidate distorted view to please interviewer	3.30	2.83	3.30	2.00	2.78	3.59	2.78	3.00				5.7		
Interviewer's marijuana attitude	2.10	3.00	2.20	1.67	3.12	2.90	4.33	3.78	18.7					7.4

Note. All means were based on 7-point scales and have been recoded so that a higher number indicates more favorable marijuana attitudes (strongly disapproves to strongly approves), greater confidence in making judgments (very low confidence to very high confidence), greater honesty (very dishonest to very honest), greater truthfulness (completely lying to completely truthful), more knowledge of the candidate (not at all known to very well known), and less distortion (very much to not at all). There were 1 and 66 degrees of freedom for each analysis of variance. Only the results of *F* tests significant at the .05 level or lower are included.

only to reflect the subjects' repetition of the information they received, without substantial cognitive work on their part (see Table 1).

Two sets of results show that observers used the ulterior motive rule to judge the candidate's honesty. As shown in Table 1, the candidate was seen as more honest and truthful, and observers believed they knew her better and were more confident in judging her marijuana attitude, when she admitted smoking marijuana several times a week than when she denied smoking it. When subjects wrote brief statements describing how they made their judgments, 53% of them discussed the social desirability of marijuana smoking, and *all* of these subjects indicated that marijuana smoking decreased one's chances of obtaining the counselor job and not smoking increased them. Thus, subjects believed that the candidate was more honest when she said she smoked marijuana, because in doing so she worked against her own self-interest.

The second set of findings provides more convincing evidence that subjects were using the ulterior motive rule to judge the job candidate's truthfulness. Within limits, subjects should believe that the candidates' agreement with a superior is ingratiating (Jones, 1964).

If subjects were using the ulterior motive rule, they should have discounted the agreeing statements as possibly motivated by self-interest and put trust in the disagreeing statements, even though the content and delivery of these answers were identical, since they were copies of the same piece of audiotape. In fact, subjects did this on all appropriate dependent measures. While, in general, the antimarijuana answer was believed less than the promarijuana answer, the antimarijuana answer following an antimarijuana question and a promarijuana answer following a promarijuana question were believed least. In this case, the candidate was believed less when she agreed with a powerful other.

The most interesting results involve the pause. Consistent with the controllability rule, subjects used nonverbal cues to judge the truthfulness of a statement, but in ways more complex than might be first expected. The results can be best summarized by the statement that the nonverbal cue acted as an amplifier for the verbal content.

The 7-second pause increased subjects' suspicion of the candidate when they were already suspicious. Compared to subjects who heard only the candidate's denial of marijuana

use, subjects who heard a long pause and then the denial thought the candidate had been less candid and lied more in the interview, believed they knew her less well on the basis of the interview, and were less confident in making a judgment about her marijuana attitude. On the other hand, when they already thought the candidate was being truthful, the pause further increased this belief. Compared to subjects who only heard the candidate admit to smoking marijuana, subjects who heard a long pause and the admission thought she had been more candid in the interview and more honest about her marijuana use, believed they knew her better on the basis of the interview, and were more confident in making judgments about her marijuana attitudes (for all comparisons, $.01 < p < .05$).

This interaction of the silence and the candidate's attitude manipulations suggests that subjects were sensitive to irregularities in a sample of speech and then used available clues to search for the meaning of the irregularity. Goldman-Eisler (1968) has shown that hesitations in speech are multiply caused. In the present experiment, the pause served as an indicator to subjects that the candidate's thought and speech processes were disturbed for some reason—that some private and internal processing was delaying the start of her answer; the verbal content following it helped provide the reason. If the answer following the pause was an obviously self-serving one, the answer was interpreted as a lie, and the pause was interpreted as the time needed to create the lie. This consistency of motive and opportunity convinced more subjects that a lie was being told than did either alone. If the statement following the pause was a self-damaging one, the pause provided the time both to decide to say it and to phrase it in the least damaging way. If the candidate needed to think before her admission and still admitted marijuana use, she must have considered her admission to be especially damaging. According to the ulterior motive rule, especially damaging statements are especially truthful. Thus, it seems likely that subjects used the candidate's statements to make nonverbal behavior less ambiguous and then used the nonverbal behavior to further comment on the statement.

The interaction of the silence and interviewer's attitude manipulations works similarly. The interviewer's questions seemed more leading when they were followed by a pause. Both interactions suggest that the interpretative process used by subjects is recursive rather than linear and additive.

Discussion

A danger in research on impression management and on the detection of lying is to treat verbal and nonverbal cues associated with deception as if they were analogous to cues associated with emotion and, thereby, underestimate the importance of the context in providing them with meanings (cf. Morris, 1977). It is unlikely that any behaviors are invariably linked to deception attempts. It may be more helpful to think of the information that signals deception to an audience as comprising two fundamentally different types, performance cues and motivational cues, which differ in the extent to which they are separable from the specifics of a deception attempt and the extent to which they depend on context to provide them with meaning. With performance cues, the audience perceives that an actor has failed to adequately control some aspect of his deceptive performance. As such they are inseparable from the specifics of a performance. Ekman and Friesen's (1969) leakage and deception cues are subsets of the performance cue category. With leakage cues, some of the to-be-hidden information is transmitted despite the actor's deception attempt. The information may be transmitted either verbally or nonverbally and, depending on the content, can often be interpreted independently of context. With deception cues, the actor also loses control of his performance, but without revealing the content of his deception. Deception cues can also be verbal or nonverbal, and because they can be caused by many stressors other than lying, they often need a context to be interpretable.

Motivational cues are situations or verbal contexts in which deception is likely. Unlike performance cues, which are inseparable from what a particular actor does, these motivational cues often have their origins in social norms outside the actor's performance. These

norms provide the standards against which a particular performance is judged. For example, the need for a favorable self-presentation, and therefore the likelihood of a deception attempt, is built into job interviews, police-citizen encounters, and leading questions. An audience compares the behavior demanded by a situation with an actor's performance to determine if deception could plausibly have occurred.

In Experiment 1, the cues used by observers can all be seen as instances of performance cues. The experimental instructions provided motivation to the actors to lie. Thus, behavior that seemed to observers to indicate that the actor had failed to control his performance on either a verbal or nonverbal level was evidence of deception, although it may not have been in other contexts. In Experiment 2, a performance cue, the long pause, was seen as evidence of deception only in an appropriate motivational context, when it preceded a self-serving answer.

In summary, the results from these experiments show that (a) observers were moderately accurate in judging whether an actor was lying or telling the truth in a simulated job interview; (b) actors were consistently good or bad liars, but observers were not consistently good or bad at detecting lies; (c) actors, when they lied, were more likely to give less plausible and shorter answers with longer hesitations prior to starting; and observers seemed to use the plausibility and the length of hesitation, as well as the vagueness and lack of detail of the answer and its consistency with earlier statements, the amount the actor smiled, shifted and groomed, and other, as yet unidentified, cues to determine whether the actor was lying. The first two of these cues helped them make accurate statements whereas the last five did not. (d) In addition, a nonverbal cue can amplify the suspiciousness of a statement, with a long pause preceding a statement causing a prior self-serving statement to be believed less and a prior self-damaging statement to be believed more.

The research described here, in which naive subjects made judgments of the truthfulness of either simulated or experimentally contrived job interviews, has the advantage that the experimenter could specify the information

that the observer received, either by coding it or manipulating it. Both have the disadvantage that the simulated or contrived interview format probably played havoc with the cues associated with deception in nonexperimental settings. This may be especially true because both experiments used simulations within simulations, experimentally induced lies within a mock job interview. In Experiment 1, especially, actors may not have behaved as they would if the deception attempt had been more consequential.

The problems of ecological validity and small numbers of actor subjects should make one cautious about generalizing from the present results. On the other hand, the simultaneous search for cues that actors are emitting and cues that observers are receiving is valuable and can be made more so by extending the search to more natural settings. In addition, supplementing the present passive, information-processing approach with an investigation of observers' attempts to actively probe deception would make research on deception, particularly, and person perception, generally, more realistic.

Reference Note

1. Krauss, R. M., Geller, V., & Olson, C. *Modalities and cues in the detection of deception*. Paper presented at the meeting of the American Psychological Association, Washington, D.C., September 1976.

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