THE EFFECT OF COMPARISONS ON DETECTING DECEIT

Maureen O'Sullivan
Paul Ekman
Wallace V. Friesen

ABSTRACT: The present study examined the impact of viewing condition on accuracy in detecting deception. In Experiment 1, observers saw: 1) a single interview for each subject and then judged whether it was honest or deceptive; or 2) two interviews for each subject, and then judged which one was deceptive. All observers were given the full audiovisual record; they were able to see the face and the entire body and to hear the speech as it was spoken. As predicted, detection accuracy when two interviews were available for comparison was significantly higher than accuracy for a single interview. In both cases, however, mean detection accuracy was not significantly different from chance. In Experiment 2, the impact of viewing order of the two interviews (honest first vs. deception first) was assessed. When honest interviews were shown first, judges' accuracy was significantly greater than when deceptive interviews were shown first, and it was also significantly better than chance. Heuristics such as anchoring and representativeness may account for this phenomenon. Reasons for observers' inability to detect deception in this, and other studies, are discussed.

A special case in impression formation is deciding whether another person is lying. This judgment will be affected by the heuristics and biases that affect any judgment under uncertainty such as representativeness, availability (Tversky & Kahneman, 1974), and anchoring (Helson, 1964). In addition, particular biases, such as the primacy of verbal as opposed to nonverbal information (O'Sullivan, Ekman, Friesen, & Scherer, 1985; Ekman, Friesen, O'Sullivan, & Scherer, 1980; Bugental, Kaswan, & Love, 1970), the truthfulness bias (Zuckerman, Koestner, Colella, & Alton, 1984),

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Correspondence concerning this article should be addressed to Maureen O'Sullivan, Human Interaction Laboratory, University of California, 401 Parnassus, San Francisco, CA 94143.

and the utility of relative versus absolute cues (Ekman, 1985) must be considered.

Many studies suggest that people often can't tell when another person is lying. In reviewing 21 studies of deception accuracy, Zuckerman, DePaulo and Rosenthal (1981) concluded "that most of the results fall in the .45–.60 range with a chance level of .50 . . . "(p.26). In almost all of these studies, the observers were asked to judge whether a target person was lying based on a single sample of the target person's behavior. It is possible that people may do better if given a comparison sample of honest behavior to use as a standard or anchor. Noting that individual differences in expressive behavior may provide misleading clues to deceit, Ekman (1985) hypothesized that lie detection accuracy would suffer unless the observer sees more than one sample of behavior. Only when comparing more than one behavior sample could an observer discount base line differences in nonverbal behaviors, attending instead to differences between the two samples in deciding which one is truthful and which one is deceptive.

Two studies of deception accuracy gave observers such comparison samples. Ekman and Friesen (1974) provided a sample identified as honest behavior, before presenting an interview segment which the observer had to evaluate as being either honest or deceptive. Another group of observers saw just the second sample without the prior comparison sample. Accuracy in judging the body (without speech) was better for the observers who had seen an honest comparison sample, but accuracy was only at chance for those who judged the face (without speech) regardless of whether they saw a comparison sample. Ekman and Friesen, however, did not evaluate the utility of a comparison sample when the usual interpersonal input of face, body and speech was available.

Brandt, Miller and Hocking (1980) were interested in the effect of increasing familiarity on the ability to detect deception. They showed the same comparison sample of honest behavior either zero, one, two, three, or six times, before asking for a judgment about the deceptiveness of a different sample of behavior. Accuracy increased with increasing familiarity, except when the comparison sample was seen six times. Then, perhaps due to fatigue, boredom or information overload, accuracy decreased.

These studies are inconclusive, however, either because they used only face or body, not the complete audiovisual record or because only an honest comparison sample was used. The present study is based on the complete audiovisual record and examines the effect of different anchor or comparison samples (i.e. honest or deceptive). Experiment 1 addresses the first concern by using the complete audiovisual record to examine hypoth-

esis 1: Lie detection accuracy will be greater when a comparison sample is available, than when a single sample is used.

Experiment 2 examines the effect on detection accuracy of viewing honest or deceptive behavior first. In previous studies, the comparison samples were always honest behavior, and identified as such. To detect deception, observers merely noted whether the following behavior was the same or different. They did not have to generate a model or schema of honest behavior against which to make their judgments. Unlike earlier research, the present study did not identify the comparison or anchor behavior as honest. This allowed us to examine hypothesis 2: Lie detection accuracy will be greater when the anchoring comparison sample is honest, than when the anchoring sample is deceptive; and hypothesis 3: When the anchoring comparison sample is deceptive behavior, lie detection accuracy will not be greater than lie detection accuracy based on a single sample.

These hypotheses were suggested by our understanding of the heuristics of availability and representativeness as applied to the lie detection task we used. Most people observe honest behavior more frequently than deceptive behavior. Honest behavior is more available to them. Therefore, observers are more likely to assume the first behavior they observe is honest. If this presumption is correct, their decision is relatively easy, and their lie detection accuracy will be relatively high. On the other hand, if the first sample is deceptive, the availability heuristic will mislead them by suggesting that the deceptive behavior is representative of honest behavior for that subject. With this incorrect representation, an accurate judgment about the deceptive behavior will be more difficult. As observers view the second (i.e. honest) behavior, it may seem even more honest than the first sample, which they had presumed to be honest. This contradiction or confusion makes the task cognitively more complex. Observers must recall and reevaluate the previously observed behavior; perhaps change their earlier decision (i.e., decide that the first sample was deceptive not honest); and then evaluate, again, the second sample of behavior. Occam's principle would predict, as we do, that observers will choose the path of parsimony. They will note that the second behavior sample is different from the first, but will not change their presumption that the first behavior sample was honest and will conclude, therefore, that the second behavior sample must be deceptive. Since the premise (suggested by the availability heuristic) is incorrect, their conclusion will be incorrect. Hence, our third hypothesis, that lie detection accuracy for comparison samples in which deceptive behavior is viewed first will be not greater than for single samples.

Method

Deceptive scenario. The stimulus persons judged by the observers in our experiment were student nurses who had been videotaped in each of two standardized interviews. In both interviews, the student watched a short film and answered an interviewer's questions concerning her feelings about it. In the honest interview, the subjects were in a relatively unstressful situation. Nature films designed to elicit mildly pleasant feelings were shown, and subjects were instructed to describe their feelings frankly. In the deception interview, subjects saw a film showing amputations and burns, intended to elicit strong unpleasant emotions. They were instructed to conceal negative feelings and to convince the interviewer they were watching another pleasant film. The interviewer sat with her back to the screen, unable to see what the subject was watching. The subject sat facing the screen and the interviewer. In the first minute of each interview the subject answered questions about her feelings about what she was seeing as she watched the film. Then the film ended, and for the next two to three minutes the interviewer continued to ask questions about the experience. Each interview averaged close to three minutes, with a range from two to almost five minutes.

This scenario was designed to resemble the lie of the depressed inpatient who, after a few weeks in a mental hospital, conceals anguish with a mask of positive feeling to win release from supervision so as to be able to commit suicide. In the experimental scenario the lie also involved concealing strong negative emotions felt at the moment of the lie, with a mask of positive feeling. The stakes for success or failure were also high. The Dean of the School of Nursing invited the student nurses to volunteer to participate in a study of communication skill. (One-hundred percent volunteered). We explained that they would see the type of upsetting material they would soon be confronting in an emergency room. We explained how they would need to conceal any fear, distress or disgust, obtaining cooperation from the patient and family by instead appearing confident and optimistic. Our experiment was a preview and a test of how well they could accomplish this. Their skill in concealing their negative emotion from the interviewer would predict how well they would do as a nurse. While this was only a hunch when we collected the data, we later found that those who were best able to mislead the observers who watched their videotapes received the highest rating from their clinical supervisors ($rho = .62$, $p < .01$). In these two respects—lying about strong negative emotions aroused at the moment of the lie, and high stakes for success or failure in lying—our deceptive scenario differed from virtually all the other experimental deceptive scenarios devised by other investigators.

Verisimilitude dictated that we not attempt to separate the negative emotions aroused by the negative film (the analog to the patient's anguish) from the fear of being caught and any more general stress associated with lying. They were confounded on purpose. Another limitation was that there was no control for the order of the honest and deceptive interviews. The honest interview always came before the deceptive interview, because we found in pilot studies that when the order was reversed the negative impact of the negative film lingered, spilling over into what was intended to be a positive experience in the honest interview.

Stimulus persons. Forty-seven student nurses were recruited after they had been admitted, but before starting in the School of Nursing. Ten subjects were not

able to maintain the deception, five did not follow instructions, and one subject refused consent when, after the experiment, she was told it had been recorded on videotape. The mean age of the remaining 31 female subjects was 20.7; the range was from 19 to 26. All of these subjects reported after the experiment that it had been helpful in preparing them for their work as nurses, and all of them volunteered when offered an opportunity to go through the experiment a second time.

Stimulus materials. One-minute segments from the start of each honest and each deception interview were edited in a randomized order onto two videotapes (Tapes A and B) so that each stimulus person was shown in only one interview (honest or deceptive) on each videotape. Each videotape contained 31 interviews, about half of which were honest and the other half, deceptive. Each tape was preceded by one practice interview of a stimulus person who was not used in the experiment. The black-and-white videotape showed a head-on view of the stimulus person seated in a chair, next to a table, with the entire face and body, including the feet, visible. The interviewer's voice could be heard, but she was not visible.

Experiment 1

Experimental viewing conditions. In the single interview condition, observers saw only one videotape. After each interview, they decided whether the stimulus person's description of her feelings about the film had been honest or deceptive. Each observer saw 31 interviews (either the honest or the deceptive interview for each of 31 nurses). Two groups of observers were required, one for each videotape, so that judgements of both the honest and the deceptive interviews could be obtained from observers who saw only one interview per subject, not influenced by the other interview.

In the comparison interview condition, a third group of observers saw Tape A and Tape B, that is, both interviews for each of the 31 stimulus persons. After seeing both interviews for a single subject, the observers judged which interview was deceptive. Then the two interviews for the next subject were presented, and so on for all 31 subjects. Whether the first interview was honest or deceptive was randomized across the 31 subjects.

Observers. The observers were 109 undergraduate students enrolled in psychology classes at the University of San Francisco, who received class credit for participation. In the single interview condition, 26 American females and 16 American males, 16 foreign females, and 18 foreign males served as observers ($N = 76$). In the two interview condition, 14 American females, 9 American males, 7 foreign females and 3 foreign males were observers ($N = 33$). (Most of the foreign students came from Pacific Rim countries such as Japan, Hong Kong and the Philippines.)

Scores. The accuracy scores for both viewing conditions (single interview or comparison interviews) were the percentages of interviews correctly identified. For the single interview condition, this was the total number of honest and deceptive interviews correctly identified by each observer divided by the 31 subjects whom they had judged. Although response biases might influence whether an observer consistently judged interviews as honest or deceptive, averaging across all inter-

views neutralizes this bias, since total accuracy is based on an equal number of honest and deceptive interviews. For the comparison condition, the accuracy score was the number of deceptive interviews correctly identified, divided by 31.

Results

A 2 × 2 × 2 ANOVA was performed with total accuracy as the dependent variable and experimental condition (single vs. comparison interview), gender (male vs. female) and country of origin (American vs. foreign born) as independent variables. The main effect for experimental condition (single vs. comparison interviews) was significant $F(1,101) = 7.39$, $p < .008$, but neither of the other main effects nor any of the interaction effects were significant. Using the ratio of the sum of squares for experimental condition to total sum of squares as an estimate of eta squared yielded an estimate of the percentage of explained variance of 6.6%. Although there is a significant main effect, it accounts for only a small proportion of the variance.

Although the single and comparison interview means are significantly different from one another (.48 vs. .54), single sample t tests with μ set at .50, indicated that neither of these means was significantly different from chance.

Experiment 2

Experimental viewing conditions. In this experiment subjects saw the comparison interview condition of Experiment 1, but Tapes A and B were reversed, so that the Tape B interviews were presented first. For example, in Experiment 1, the first subject was shown in a deceptive-honest order. In Experiment 2, the first subject was shown in an honest-deceptive order. Table 1 presents the viewing conditions for experiments 1 and 2.

Observers. The observers were two groups of students enrolled in psychology classes at the University of San Francisco. As part of a validity study of various measures of the ability to detect deceit, 18 students observed 16 of the 31 nurses (11 judges were female, 7 were male). In a second administration, 17 students observed the remaining 15 subjects (10 were female, 7 were male). In each of the judge groups, one student was foreign born.

Scores. Our interest in Experiment 2 was not in mean observer accuracy (a between-groups design), but accuracy depending on the order in which the interviews were observed (repeated measures over nurses). Consequently, average accuracy for each of the 31 nurses was determined separately for comparisons in which the honest interview was seen first and comparisons in which the deceptive

TABLE 1

Viewing Conditions in Two Experiments

Experiment 1			Experiment 2
Group 1	Group 2	Group 3	Group 4
Tape A only	Tape B only	Tape A interview followed by Tape B interview	Tape B interview followed by Tape A interview
31 interviews	31 interviews	62 interviews	62 interviews

interview was seen first. We chose this method of analysis in part because the repeated measures approach reduced the error involved in determining the contribution of presentation order and in part because the data for group 4 were based on two subsets of judges and did not permit us to obtain observer accuracy over all 31 nurses. To contrast this measure of lie detection accuracy with the single interview condition, the mean accuracy for each nurse was determined by summing over the accuracy rates for both Tape A and Tape B (See Table 1). The research hypotheses were that 1) mean accuracy would be higher when the honest interview was shown first, than when the deceptive interview was shown first and 2) that mean accuracy when the deception interview was shown first would not differ from accuracy when only a single interview was shown.

Results

Since the results for Experiment 1 indicated no effect for gender or country of origin, these variables were not examined further in Experiment 2. Mean accuracy when the honest interview was presented first was determined using the relevant interview pairs from Experiment 1 (i.e., group 3, see Table 1) and Experiment 2 (i.e., group 4). Mean accuracy, across the 31 nurses, when the honest interview was shown first, was .596; mean accuracy when the deceptive interview was shown first was .480. This difference was significant (matched $t(30) = -3.78$, $p = .001$), as hypothesized. Also, as predicted, there was no significant difference between mean accuracy for single interviews and for comparison interviews when the deceptive interview was shown first. Further, a single sample t-test with μ set at .50 indicated that mean accuracy when the honest interview was shown first was significantly different from chance, $t(30) = 2.27$, $p < .038$. No other mean accuracy score (single sample, comparison sample or comparison sample when deceptive interview was first) differed from chance.

Discussion

This study demonstrated that increasing information, presented in an optimal order, increases accuracy in detecting deceit. Observers were more accurate in detecting emotional deceit when they were given two samples of behavior rather than one, but the level of accuracy achieved in either case was unimpressive. Although judgments based on comparing two interviews were significantly better than judgments of a single interview, such judgments were better than chance only when the honest interview was viewed first. We predicted this would occur because the observers' judgment heuristic would be to assume honest behavior as the most likely (most available). When this assumption was correct, the decision was relatively easy—to note that the following behavior is different, that is, deceptive. When the assumption of honesty was incorrect (i.e., the deceptive interview was presented first), the observers had to deal with two incongruities. The first was the disparity between their template or representation of honest behavior and the deceptive (presumed honest) behavior in the first interview. Then, the second (actually honest) interview is viewed. Since the observers expect deception, the second incongruity occurs. This (presumed) deception now seems more honest than the first (presumed) honest interview. We suggest that this increased cognitive complexity underlies the greater error rate in detecting deception when the deceptive interview is observed first.

An alternative explanation is that the honest interview behavior is more internally consistent, and makes a stronger first impression. This consistent, clear impression provides a more easily-recalled baseline against which to assess the honesty of the second, deceptive interview. When the deceptive interview is observed first, the deceptive behavior is more inconsistent across channels leading to a less focused, less memorable baseline for comparison purposes. Our data do not support one explanation over the other, but we prefer the first. Earlier research (O'Sullivan et al., 1985) demonstrated that raters use all available verbal and nonverbal channels when rating honest behavior. When judging deceptive behavior, raters depended much more on the verbal channel alone. This suggests that discrepancy is met with a simplifying cognitive strategy, which ignores inconsistent information. From this logic, one would expect a more simplified impression from the deceptive interview than the honest one.

Zuckerman and his colleagues (1984) examined a concept similar to our availability heuristic which they termed truthfulness bias, " . . . the tendency of lie detectors to interpret messages as truthful rather than as de-

ceptive, irrespective of their actual nature"(p.302). We agree that in the ordinary case, this bias exists, although we view it as a specific of the generic availability heuristic. If observers believe that deception is likely to occur and are asked to judge behavior as honest or deceptive, our data with college students (this report) and lie detection professionals (Ekman & O'Sullivan, 1988) indicates that observers will guess "deceptive" much more frequently than "honest," unless given careful instructions not to do so. Toris and DePaulo (1985) also found that observers who expected deceptive behavior found it more frequently than naive observers. Even in Zuckerman's study, the truthfulness bias was most apparent when observers were rating attitudes such as liking and dominance. When observers rated lies about negative states they tended to rate them as untruthful.

The low rate of lie detection accuracy in this and other studies deserves comment. When the honest sample preceded the deceptive one, lie detection accuracy was 60%. Although this accuracy is significantly different from chance, it is rather meager. Only three out of 109 observers were accurate in 70% or more of their judgments. Why are most people so poor in detecting deceit, for that is the general finding now across many studies regardless of whether one or two samples of behavior are judged.

It can not be that our observers were taken unawares, for in our study, as in most others, the issue of lying was salient for them. Further, the observers were given a great deal of information about the context within which the lying occurred. It is not that there are no behavioral clues to deceit, for the stimulus materials used in this study have been subject to objective measurement and differences in voice, body (Ekman, Friesen, & Scherer, 1976) and facial expression (Ekman, Friesen, & O'Sullivan, 1988) have been found. Why don't observers utilize these behavioral cues to deceit?

Missing and Misleading Clues

A major problem facing human lie detectors is the lack of clues specific to deception that always indicate lying in every liar. These missing clues make the lie detection task a difficult one. Lying must be inferred from misplaced or inappropriate behavior or speech and such inferences are subtle, requiring knowledge, experience and motivation (Ekman, 1985).

Observers often ignore information that might be helpful in detecting lies. As we have already mentioned, one strategy observers seem to use in

processing deceptive behavior is to ignore nonverbal channels, in favor of verbal ones. Although the verbal message is more easily controlled and should, therefore, be more suspect, it has the advantage of greater predictability and consistency.

The literature on nonverbal cues to deception (DePaulo, Stone & Lassiter, 1985) also suggests that observers attend to the wrong cues. Most observers report using eye gaze as a sign of deception. But since liars also regard this as a sign of deception, they may control eye gaze to appear honest. In any event, there is no difference between honest and deceptive behavior in the amount of eye gaze that occurs.

Observers also confuse behavioral signs of nervousness and behavioral signs of deception. Some people are naturally "twitchy." Their constant foot shaking or hand twisting will mislead the unwary observer. Ekman (1985) termed this tendency to be misled by individual differences in behavioral style the "Idiosyncracy Error."

Analogue Limitations

Observers may seem unreasonably poor in detecting deception because the usual laboratory analogue in deception involves judging strangers. Although a number of professions require their practitioners to assess the honesty of strangers, this is not usual for most people. Our findings, and those of other researchers, do not address the question of how accurate observers are at telling whether family, friends or acquaintances are lying. Our study is limited to the ability of observers to judge the honesty of strangers based on a first impression.

Different Observers

Our observers were college students. Perhaps more experienced or more motivated observers would be more accurate. One study, however, which examined age within the adult range as a variable in lie detection (Parham, Feldman, Oster, & Popoola, 1981) did not find an advantage for older as compared with younger adults. And debriefing our college student observers suggested that they were highly motivated. Studies of people whose vocation might provide relevant experience in detecting lies and motivation for succeeding have not found them to be any more accurate. Kraut and Poe (1980) found that customs inspectors were not better than college students in detecting deceit, while DePaulo and Pfeifer (1986) found that federal law enforcement agents were not better than college students in detecting deception, although they thought they were. More re-

cent data, however, suggests that there may be certain groups who are good lie detectors (Ekman & O'Sullivan, 1988).

Different Lies

Perhaps our observers did so poorly because of the kinds of lies sampled. This seems unlikely, however, since deception research has sampled many kinds of lies, from social "fibs" to the emotion-based ones used in the present study. Krauss (personal communication, 1987) has suggested that our emotion-based lie confuses the issue of whether we were studying the detection of deceit or the detection of emotion. 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 can not be certain what produced the behavioral clues which allowed observers to make accurate judgments. It might be that the observers were doing no more than distinguishing the signs of negative emotions in the deceptive interviews from the signs of positive emotions in the honest interviews, not judging lying. Other data suggests this is unlikely. When subjects were shown the same films used in the present experiment, but were not asked to conceal their negative feelings (Ekman, Friesen, & Ancoli, 1980), measurement of the facial behavior showed virtually no overlap between the the positive and the 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 negative facial expression between the honest and the deceptive conditions, and quite subtle differences in the positive facial expressions (Ekman et al., 1988).

Different Liars

There is no reason to believe that our subjects—the 31 student nurses—were a special group of highly skilled liars. They had received no special training in lying, nor had their previous careers provided special practice in lying. It is not as if we had studied poker players, super salesman, con men, or actors. A priori, no one would have predicted these young, nursing students would be so successful in fooling the observers.

And, not all of them were. Roughly one-fifth of the subjects who tried to lie (10 to 47 original subjects) were not able to maintain their lie throughout the interview. And, among the 31 who did, some nursing students were usually correctly identified while others were rarely accurately

identified. For most of the nurses, the mean percentage of observers who correctly identified them as lying when they were lying is about chance, with a bell-shaped distribution. We found only a few significant correlations between the accuracy with which a nurse's deception was detected and scores on the California Psychological Inventory (CPI). The nurses who were good liars, however, knew that they were and reported being able to lie well in everyday life (Ekman, 1985). Some studies, however, have suggested that good liars may be more Machiavellian (DePaulo & Rosenthal, 1979; Geis & Moon, 1981) or higher in self-monitoring (Siegman & Reynolds, 1983; Miller, deTurck & Kalbfleisch, 1983), while other studies, assessing these dimensions of personality, have failed to find these differences (O'Hair, Cody & McLaughlin, 1981).

Future Directions

Teaching people about the known behavioral clues to deceit, should be undertaken to determine whether detection accuracy will then increase. There is some evidence (Zuckerman, Koestner & Colella, 1985) that training may increase accuracy, at least for selected verbal and nonverbal channels. Data on the efficacy of such training using the entire audiovisual record is needed. Determining the accuracy of lie detection among friends and family members would provide necessary data about the generalizability of the findings of this and other studies concerning the low level of lie detection accuracy. Another avenue for research is investigating special groups of observers who, because of motivation, skill, experience, or all of these factors, may be better able to detect deceit than our nursing students were to perpetrate it. Our results suggest that observers with a truthfulness bias will be better able to detect deception when it occurs in an honest person. Observers with a deception bias, because of their professional experience, for example as police officers or lawyers, may be more likely to view all behavior as deceptive and therefore have a heuristic which will permit them to classify deceptive behavior correctly, but which will be misleading in evaluating honest behavior. Research on the effect of varying judgment heuristics is an obvious next step.

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