"I'm Innocent!": Effects of Training on Judgments of Truth and Deception in the Interrogation Room

Saul M. Kassin[1,2] and Christina T. Fong[1]

The present research examined the extent to which people can distinguish true and false denials made in a criminal interrogation, and tested the hypothesis that training in the use of verbal and nonverbal cues increases the accuracy of these judgments. In Phase One, 16 participants committed one of four mock crimes (breaking and entering, vandalism, shoplifting, a computer break-in) or a related but innocent act. Given incentives to deny involvement rather than confess, these suspects were then interrogated. In Phase Two, 40 observers were either trained in the analysis of verbal and nonverbal deception cues or not trained before viewing the videotaped interrogations and making their judgments. As in past studies conducted in nonforensic settings, observers were generally unable to distinguish between truthful and deceptive suspects. In addition, those who underwent training were less accurate than naive controls—though they were more confident and cited more reasons for their judgments. The implications of these findings are discussed in light of what is known about police interrogations, false confessions, and the wrongful conviction of innocent suspects.

When Robert Moore confessed to the capital murder of a New York taxi driver in 1996, the case appeared to be solved. After being interrogated by Nassau County detectives for 22 hr, Moore said that he and two acquaintances had killed the man in a robbery attempt. Moore was later released, however, when the real killers—who were arrested on other charges—produced the murder weapon. Moore said afterward that he had confessed because he was lonely, tired, and scared. "I wanted to go home," he said (Hoffman, 1998).

In recent years, numerous documented cases involving proven or probable false confessions have been uncovered by researchers, journalists, and legal scholars (for an excellent review, see Leo & Ofshe, 1998). Nobody knows the actual rate at which this occurs or has devised an adequate method of calculating its prevalence. Not surprisingly, then, researchers disagree in their estimates of the magnitude of the problem (Cassell, 1996, 1998; Huff, Rattner, & Sagarin, 1986; Radelet, Bedau, &

[1]Department of Psychology, Williams College, Williamstown, Massachusetts.
[2]To whom correspondence should be addressed at the Department of Psychology, Williams College, Williamstown, MA 01267 (e-mail: skassim@williams.edu).

Putnam, 1992; Schulhofer, 1996). Regardless of the precise numbers, which are in dispute, analyses of past and current cases have revealed that whereas some false confessions are voluntarily given, others are elicited by the police through various processes of social influence (Gudjonsson, 1992; Kassin, 1997; Kassin & Wrightsman, 1985; Ofshe & Leo, 1997; Wrightsman & Kassin, 1993).

Motivated by the concern that interrogations are "inherently coercive" (*Miranda v. Arizona*, 1966), that certain tactics may increase the risk of false confessions (Kassin & Kiechel, 1996; Kassin & McNall, 1991), and that juries are overly influenced by confession evidence (Kassin & Neumann, 1997; Kassin & Sukel, 1997), researchers have sought to document what transpires behind the closed doors of the interrogation room—the most private space in an American police station (Kamisar, 1965; Leo, 1996; Simon, 1991). In this regard, perhaps the most revealing glimpse is provided by the manuals that are used to train police detectives in how to extract confessions from crime suspects (Aubry & Caputo, 1980; O'Hara & O'Hara, 1981; Macdonald & Michaud, 1987; Zulawski & Wicklander, 1993). The most popular such manual is Inbau, Reid, and Buckley's (1986) *Criminal interrogation and confessions*. Based on the approaches presented in this book, the Chicago-based firm of John E. Reid and Associates trains law enforcement officials via courses, seminars, and a videotaped program in the "Reid Technique" of interviewing and interrogation.[2]

Inbau et al. (1986) advise interrogators to seat the suspect in a small, sound-proof, skeletally furnished room—thus creating a physical environment that is designed to promote feelings of social isolation, sensory deprivation, and helplessness. They go on to describe a multistep process of social influence in which the interrogator confronts the suspect with his or her guilt, refuses to accept statements of innocence and denial, offers sympathy and face-saving alternative explanations for the crime, and then gets the suspect to recount his or her guilty actions in a full written confession. According to Jayne (1986), this approach will lead guilty suspects to incriminate themselves by reducing the perceived negative consequences of confessing, while increasing the anxiety associated with deception. On the question of whether their admittedly powerful approach might also elicit confessions from innocent people, Inbau et al. (1986) note that only those suspects who appear guilty in a preinterrogation interview are subjected to these techniques. They go on to advise that by analyzing an individual's verbal and nonverbal behavior during this initial questioning, interrogators can reliably distinguish between denials made by those who are guilty and those who are innocent—and then proceed accordingly. To assist the police in making these judgments, specific training is offered on the analysis of verbal and nonverbal cues to deception.[3]

Research suggests that this unwavering faith and reliance in the interrogator's diagnostic skills is misplaced. Over the years, controlled studies have shown that people are poor intuitive judges of truth and deception (Zuckerman, DePaulo, & Rosenthal, 1981), and that police investigators and other so-called experts who

[2]According to John E. Reid and Associates, more than 65,000 law enforcement professionals have attended their 3-day seminars over the past 25 years (see http://www.reid.com).
[3]The recommendations are summarized in an unpublished booklet that accompanies the training videotape, which is commercially available.

routinely make such judgments are also highly prone to error (Ekman & O'Sullivan, 1991). Even training may not improve performance in this regard. Although modest gains have been reported (deTurck & Miller, 1990), many researchers have found that judgment accuracy is not appreciably increased by rehearsal, training, or performance feedback (DePaulo, 1994; Zuckerman, Koestner, & Alton, 1984), even among experienced police officers (Vrij, 1994). Part of the problem is that people who stand falsely accused of lying often exhibit patterns of anxiety and behavior that are indistinguishable from those who are really lying (Bond & Fahey, 1987). Thus, as Simon (1991) noted, "Nervousness, fear, confusion, hostility, a story that changes or contradicts itself—all are signs that the man in an interrogation room is lying, particularly in the eyes of someone as naturally suspicious as a detective. Unfortunately, these are also signs of a human being in a state of high stress" (p. 219).

In light of the vital importance of the initial, interview-based judgments that are made by police investigators, the present study was conducted with two objectives in mind. The first was to examine the extent to which people can distinguish between true and false denials made in the context of a criminal interrogation. The second was to test the hypothesis that people can be trained in the use of verbal and nonverbal cues to increase the accuracy of these judgments. To achieve these goals, we created a set of videotapes that depicted the interrogations of suspects who were guilty or innocent of various mock crimes and who were motivated to deny their involvement. Groups of observers were then either trained in the Reid technique or not trained before viewing the tapes and making judgments.

METHOD

This experiment was conducted in two phases. First, one group of participants— some who had committed a mock crime, others who had not—were apprehended and interrogated in sessions that were videotaped. Next, a second group of participants—some who were trained in the Reid Technique of analyzing verbal and nonverbal behavior, others who were naive—watched a subset of interrogation tapes and made judgments of guilt and innocence.

Phase One: The Interrogations

Participant Suspects

Sixteen male college students, all enrolled in introductory psychology courses, took part in this phase of the study in exchange for extra credit. By random assignment, half were instructed to commit one of four crimes, while the others were innocent of those crimes.[4]

[4]An additional 9 participants were excluded due to problems that arose during their interrogations. Attesting to the inherent power of the situation, 5 guilty suspects were excluded because they confessed or partially admitted to self-incriminating details and 2 innocent suspects were excluded because they said they were in a psychology experiment as a way to justify their actions to the detective. Two other suspects were also excluded, one because the session was interrupted by an outside party and the other because the session was too long.

After signing up for a "Communication Skills Study"—which was described, in only general terms, as a test of people's ability to communicate true and false statements in high-stakes situations—participants were informed that they *may* be asked to commit a mock crime. Before randomly assigning the participants to a guilty or innocent crime condition, we asked them to read and sign an informed-consent statement.[5]

The Mock Crimes

In order to create a varied set of interrogation tapes, we created, after extensive pretesting, four different mock crimes (each was accompanied by an innocent but related act): vandalism, shoplifting, breaking and entering, and a computer break-in. In all cases, a female experimenter administered the instructions for the guilty or innocent task.

Vandalism.   Participants assigned to the vandalism condition were given colored chalk and instructed to write a derogatory and obscene message on the wall of a designated campus building, then drop the chalk and walk away. In contrast, the innocent suspects in this condition were instructed to follow a walking path that led them to the wall on which the previous message had been chalked. They were told to stop, note the message and color in which it was written, and walk away. Moments later, both guilty and innocent participants were apprehended by a 21-year-old man posing as an undercover security officer. After showing a security badge, the officer escorted participants to an interrogation room.

Shoplifting.   In this condition, guilty participants were instructed to enter a local gift shop and shoplift either an item of jewelry or a stuffed animal. They were not told how to commit the crime, only that they were to remove the designated item from the store without being caught. The cooperating store owner pretended not to notice the theft. In this condition, innocent suspects were instructed to enter the store, browse, and exit. They were told that they would then see a paper bag on the ground outside and that they should pick it up and inspect its contents. At that point, participants were apprehended for interrogation.

Breaking and Entering.   In this condition, participants were scheduled during evening hours to appear at the site of a college building. Those assigned to commit the crime were instructed to break into that building and steal the answer key to an exam. They were told that although the building would be locked, they could climb in through an open window. The innocent suspects were told simply to enter through the front door (which was unlocked) to obtain a questionnaire. When they arrived, all participants found that all lights were off and that the building was empty. What they did not realize was that the site was protected by a security system armed with motion detectors. Thus, participants set off an alarm—and a synthesized voice which screamed, "Intruder! Intruder! Please leave the premises!"

---

[5]The consent form read as follows: "I have been told that for the purposes of this study, I may be asked to commit a mock 'crime' or some related innocent act and then undergo an 'interrogation' about the experience. I understand that the events are simulated, not real, and that all parties are aware that I am taking part in a psychology experiment. I also understand that the interrogation will be videotaped and that the tape may be shown at a later time to other research participants ... I understand that I may withdraw my consent and discontinue participation in this project at any time without penalty."

This alarm signaled the security guard, who located the participant (who was either standing in place, hiding, or trying to escape) and made the apprehension.

Computer Break-in. In the fourth crime, participants were told to enter a science computer laboratory and approach a specific terminal. Those assigned to the guilty condition received written instructions on how to access the college e-mail system and log onto the account of a female student (the account user's name and password were provided). Once in the account, they were told, they could read the student's personal e-mail. By design, the inbox contained three highly confidential messages. Innocent suspects were told to sit at the designated computer and log onto their own accounts. In doing so, however, they discovered that the other student's inbox was already open and a message was visible on the screen. At this point, the security guard appeared and took the participant to the interrogation room.

The Interrogations

Prior to their commission of the mock crimes or the related innocent acts, participants were instructed that they would be arrested and questioned about their activities. They were told that they would be asked to waive their *Miranda* rights, which they should do, but that they should maintain their innocence and refuse to sign a confession. Guilty suspects were told to come up with whatever alibis, excuses, or stories they needed to fabricate a plausible denial of the charges. Innocent suspects were instructed to tell the truth concerning their whereabouts and activities—except for the fact that they were taking part in a psychology experiment. All suspects were informed that the interrogator did not know if they were guilty or innocent, but that he would make a judgment subsequent to the interrogation. In order to increase performance motivation, all participants were told that, if judged deceptive and guilty, they would be escorted across campus to the security office and detained there for 5 min. Participants were told, however, that if judged truthful and innocent, they would receive a $5 bonus. Although the interrogator privately recorded his actual judgments, he publicly judged all participants innocent and awarded them the money. Following their apprehension, all participants were taken by the security officer to an interrogation room and asked to take a seat and wait for the detective in this case to arrive. Before leaving, the officer said, "Think about what you've done and how you are going to get out of the situation."

As specified by Inbau et al. (1986), the interrogation room was furnished with two straight-back chairs, a plain table, and a one-way mirror on the right wall. In addition, a videotape camera on a tripod was stationed behind the interrogator's chair so that it taped participants from a frontal view, over the detective's shoulder. To enhance the auditory portion of the recordings, a remote microphone was placed on the table that separated the interrogator and participant. As is common in many videotaped interrogations, a clock was mounted on the back wall and was visible on the tapes.

The interrogator in all the sessions was a 48-year-old man dressed in civilian clothing. After the participant had waited for 5 min, the interrogator entered the room, turned on the videotape camera and microphone, and formally introduced himself as Detective McCarthy. He carried a clipboard that contained a list of the

Miranda rights, a *Miranda* waiver form to be signed by the participant, a set of interrogation questions designed to fit each crime, and a handwritten confession statement. Prior to each session, he was informed of the crime that was being investigated but was blind as to whether the participant was guilty or innocent.

The interrogation consisted of a brief five-part sequence of events. First, the interrogator read the *Miranda* rights and had the participant sign a waiver form. Second, he recapped the crime and situation leading to the arrest and asked the participant, in an open-ended manner, to account for his whereabouts and behavior during that period of time. Third, the interrogator refused to accept the statements of denial contained within the participant's story. At this point, he pounded his fist on the table and said, "Dammit, you were caught red-handed, so stop lying to me. I want to know *exactly,* minute by minute, where you were and what you were doing before you were picked up." This statement prompted the participants to reaffirm their innocence and restate their alibis, often in greater detail. Fourth, the interrogator tried to break down each participant's story by repeating it, noting omissions and inconsistencies, characterizing the story as implausible, and demanding further explanation. Fifth, the interrogator reacted to this final account by presenting a handwritten confession to the crime, reading it aloud, and telling the participant to sign it ("I admit that I ____. I am now under my own free will and I am sorry for what I did"). As instructed, the participant refused to sign the statement, at which point the interrogator tried again. After a second refusal, the interrogator exited, leaving the participant to await his judgment. Overall, the sessions ranged from 3.5 to 6 min in duration, with a mean of 4 min and 35 sec.

Postinterrogation Questionnaire

After each interrogation, the experimenter administered a brief questionnaire designed to assess participant reactions to the experiment. First, they rated the stressfulness of the prearrest experience (the crime situation) and postarrest experience (the interrogation) both on a 10-point scale, where 1 = not at all stressful and 10 = very stressful. Also on 10-point scales, the participants rated the amount of pressure they felt to confess, how intimidating the interrogator was, and how nervous they were during the questioning. Participants were then asked to predict whether the interrogator would judge them guilty or innocent, rate their confidence in that prediction, and then estimate the percentage of observers who would judge them to be guilty or innocent. Finally, participants estimated both the amount of time they spent waiting for the interrogator to arrive and the amount of time they spent being questioned. Afterward, all participants were told that the interrogator had judged them to be innocent, whereupon they were given the $5 reward, fully debriefed, and thanked.

Phase Two: Observations and Judgments

Participant Observers

Forty introductory psychology students (11 male, 29 female) from a local university took part in this second phase of the study as part of their course

requirement. To ensure that they would not recognize the suspects, this group was recruited from a neighboring institution. To further ensure that observers did not self-select into the naive and training conditions, they all signed up for a 2-hr experiment. For those randomly assigned to the naive (no-training) condition, however, the session lasted only 1 hr. All sessions were conducted in 3- to 6-person groups.

Training Manipulation and Assessment

Participants in the training condition were shown two 15-min videotape segments from *The Reid Technique: Interviewing and interrogation* produced by John E. Reid and Associates (1991). The entire seminar consists of four videotaped units. The first unit presents the psychology of interviewing, the fourth presents the nine steps of interrogation, and the second and third units—which were used in this study—purport to enhance one's ability to distinguish between truth and deception through an analysis of verbal and nonverbal behavior. Everyone in this condition watched these two tapes, took a 10-min break, and were then given 10 min to study a written summary of key points that form part of the training packet.

The first training tape trains police in the analysis of *verbal behavior*. According to the manual, truthful suspects are said to be direct, spontaneous, helpful, and concerned about the charges. Their denials are broad, sweeping, and unequivocal. They tend to use first-person pronouns and descriptive verbs ("I did not *steal* the money") and unqualified language ("Absolutely not! I would never do such a thing!"). By contrast, deceptive suspects are said to be guarded, unhelpful, and unconcerned about the charges. They often hesitate before stating their denials, shake their heads or mumble instead of vocalize clearly, respond to charges in ways that are overly general or evasive, omit details, and use phrases that are weak, narrowly defined, or qualified ("As far as I recall ...").

The second tape focused on *nonverbal cues* that betray truth and deception—cues pertaining to a suspect's posture, protective gestures, grooming gestures, barriers, illustrators, and eye contact. According to the training manual, for example, truthful suspects tend to sit comfortably upright, face the interrogator, lean forward as a sign of interest, use their hands and arms to emphasize a point, and maintain appropriate eye contact when answering key questions. By contrast, deceptive suspects are said to exhibit a rigid body posture, slouch backward rather than sit forward, align themselves nonfrontally with the interrogator, cross their arms or legs, exhibit various grooming gestures to relieve anxiety, cover their eyes and mouth, and either stare or avoid eye contact when answering key questions. Importantly, the manual cautions that no single behavior can be used to indicate truth or deception, which is why it is necessary to consider "behavioral clusters." The manual further states that the analysis of behavior can produce an accuracy rate of 80–85%, that most errors involve a judgment that someone innocent is lying, and that all evaluations of truth and deception should take other evidence into account.

Stimulus Tapes

Phase One of our study yielded 16 videotaped interrogations: 8 true denials and 8 false denials (2 of each per mock crime). Thus, there were 2 guilty suspects

and 2 innocents in the vandalism, shoplifting, breaking and entering, and computer break-in crime conditions. The 16 segments were then randomly divided into two eight-segment stimulus tapes (tapes 1 and 2), each containing one guilty suspect and one innocent suspect per crime.

Within the training and naive conditions, groups were randomly assigned to observe stimulus tape 1 or 2. Both tapes opened with a written set of task instructions similar to those that were given orally. Each interrogation was then preceded by a general, one-paragraph description of the crime and the circumstances under which the suspect had been arrested (there were a total of four descriptions, one per crime; these were identical for guilty and innocent suspects). Each interrogation was followed by a blank screen that directed participants to respond by giving a judgment, a confidence rating, and a list of reasons.

Procedure

Scheduled in small groups, participants were told that the experiment was designed to test their ability to determine when others, particularly crime suspects, are telling the truth or lying. Those assigned to the training condition underwent the procedures previously described; the others did not. Prior to being tested, participant observers completed a brief questionnaire in which they rated (1) how confident they were in their ability to succeed at the task, and (2) how easy they thought it was for people in general to tell when a stranger is telling the truth or lying. Both ratings were made on a scale from 1 to 10.

In both the training and naive conditions, participants were then administered a 20-item objective test designed to assess their knowledge of the Reid recommendations concerning the verbal and nonverbal cues that signal truth and deception (e.g., "What is an illustrator?"; "What are qualifying phrases, and who uses them?"; "Are truthful suspects or deceptive suspects more likely to make sweeping denials?"; "Are truthful suspects more likely to use first-person pronouns, second-person pronouns, or third-person pronouns when answering questions?"). This test was designed with two purposes in mind: to check on the effectiveness of the training manipulation and to examine the correlation between knowledge of the material and performance. Participants were credited one point per correct answer (there were three 2-part questions for which participants could receive partial credit), so scores could range from 0 to 20.

Participants were instructed that they would see a videotape of eight male suspects being questioned by a detective about their possible involvement in various crimes. As in past studies (Frank & Ekman, 1997), we sought to deter participants from assuming that all suspects were either guilty or innocent by indicating within the instruction that between one fourth and three fourths are lying to protect themselves. Participants were then told that after each segment they would be asked to make a judgment by circling either "truthful" or "lying," rate their confidence in that judgment on a scale from 1 to 10, and write in their own words the bases for that judgment. After responses were obtained for all eight segments, participants completed a posttask questionnaire that was identical (except for the use of past tense) to the pretask questionnaire. Thus, they rated their confidence in their own performance and the general ease or difficulty of the task.

RESULTS

Suspect Self-Reports

Suspects were administered a questionnaire in order to assess the subjective impact of their experiences and to examine whether those experiences were different as a function of the crime for which the suspects were arrested and their guilt or innocence. On 10-point scales, suspects rated their prearrest (crime) and post-arrest (interrogation) experiences as moderately stressful (overall Ms = 4.56 and 5.69, respectively). As revealed via 2 (guilt status) × 4 (crime type) analyses of variance on these measures, there were no significant differences between guilty and innocent suspects or among those accused of the different crimes (all Fs < 1). Although self-reported stress was highest among guilty shoplifters, guilty vandals, and innocent e-mail intruders, the suspect guilt × crime interaction was not signifi-cant, $F(3, 8)$ = 3.44, p < .10; effect size, as measured by eta squared, or R^2, was .30).[6] On the other questions, suspects rated themselves as moderately nervous during the interrogation (M = 5.44), felt that they had been subjected to moderate pressure to confess (M = 5.25) and saw the detective as moderately intimidating (M = 5.24). Again, there were no significant effects on these measures.

Participants were asked to estimate the amount of time they had spent waiting for the detective and then being interrogated. Overall, they estimated that they waited for 3.31 min (the actual waiting period was set at 5 min) and were interrogated for 3.63 min (on average, the sessions lasted 4 min, 35 sec). A 2 × 4 ANOVA indicated that the time spent waiting for the detective felt longer for innocent suspects than for those who were guilty, Ms = 3.88 and 2.75, respectively; $F(1, 8)$ = 6.23, p < .05; R^2 = .438. No other significant effects were obtained.

Recent studies suggest that people tend to harbor an "illusion of transparency" by which they overestimate the extent to which their inner states are discernible by others (Gilovich, Savitsky, & Medvec, 1998). Thus, we asked suspects to pre-dict whether the interrogator would judge them to be guilty or innocent and then to estimate the percentage of observers who, upon viewing the tape, would see them as guilty or innocent. Illustrating the illusion of transparency, 13 of 16 suspects believed that the detective would judge them correctly. Specifically, 78% of those who were guilty believed he would judge them guilty, while 86% of those who were innocent believed he would see them as innocent—a difference that was statis-tically significant, Yates-corrected $\chi^2(1, N = 16)$ = 4.06, p < .05. Similarly, those who were guilty estimated that a mean of 65% of observers would judge them guilty, as compared to 46.5% among those who were innocent, $t(14)$ = 2.02, p < .06; R^2 = .226. In short, most suspects harbored the belief that their own guilt or innocence would be assessed accurately, both by the interrogator and by others who would observe their interrogations.[7]

---

[6] All effect sizes in this study are reported via eta squared or R^2. According to the conventions suggested by Cohen (1988), R^2s of .01, .06, and .14 correspond, respectively, to small, medium, and large effect sizes.
[7] This belief was statistically erroneous. After each session, the interrogator privately recorded his judgment of the suspect's guilt or innocence. He was correct only 6 of 16 times, for a 37.5% accuracy rate, which was significantly worse than suspects had anticipated, Yates-corrected $\chi^2(1, N = 16)$ = 4.66, p < .05.

Table 1. Summary of Results

Main measures	Trained	Naive
Training test scores	13.28	5.83***
Judgment accuracy	3.65	4.40*
Confidence ratings	6.55	5.91*
Number of reasons cited	3.96	2.98***

Note: $*p < .05$; $*** p < .001$.

Training Manipulation Check

To test adequately the hypothesis that training would improve performance, it is necessary to demonstrate that participants in the training condition learned the principles with which they were presented. All participant observers were thus administered an objective 20-item test concerning verbal and nonverbal indicators of truth and deception. As predicted, a 2 (trained vs. naive) × 2 (tape 1 vs. tape 2) ANOVA on these scores indicated a highly significant main effect for training: $Ms = 13.28$ and 5.83 in the trained and naive groups, respectively; $F(1, 36) = 98.60$, $p < .001$; $R^2 = .73$. There was no significant main effect for tape and no interaction (both $Fs < 1$).

Judgment Accuracy

The main purpose of the study was to examine the effects of training in the detection of truth and deception on various aspects of performance. All participants judged one of two sets of eight interrogations, four involving guilty suspects in one of four crime situations and four involving innocent suspects (accuracy scores could thus range from 0 to 8). Across conditions, the mean score was 4.13. This chance-level accuracy rate of 52% is low, but comparable to that found in other studies of deception detection (Zuckerman et al., 1981). The main results are summarized in Table 1.

A preliminary analysis indicated that there was no main effect involving gender and no interactions (all $Fs < 1$), so the data were collapsed across this variable. The resulting 2 (trained vs. naive) × 2 (tape 1 vs. tape 2) ANOVA on accuracy scores revealed two significant main effects. First, to our surprise, the naive observers significantly outperformed their trained counterparts, with a mean accuracy of 4.40 (a 55.63% accuracy rate) compared to 3.65 (a 45.63% accuracy rate), $F(1, 36) = 4.70$, $p < .05$; $R^2 = .115$. There was also an unexpected effect for tape, as one set of interrogations elicited higher accuracy rates than the other set: $Ms = 4.70$ and 3.35; $F(1, 36) = 15.22$, $p < .001$; $R^2 = .297$. Importantly, the interaction between the two factors was not significant ($F < 1$), as the adverse effect of training on judgment accuracy was found on both stimulus tapes.[8]

Inbau et al. (1986) caution that investigators have a tendency to see innocent suspects as deceptive, an admonition that is stated within the videotaped and written

---

[8]It is important to note that performance did not significantly differ from expected chance levels in the naive condition, $\chi^2(1, N = 160) = 1.02$, or in the training condition, $\chi^2(1, N = 160) = .61$.

training materials used in this study. To examine the effects of training on the tendency to make judgments of truth versus deception, we conducted a 2 × 2 ANOVA on the number of "lying" judgments out of eight that were made. This analysis indicated that while there was a nonsignificant tendency for participants to make judgments of deception rather than truth (55.37% vs. 44.63%), training had no effect on the number of such judgments that were made (Ms = 4.35 and 4.50 among the trained and naive participants, respectively), $F(1, 36) < 1$. There was also no main effect for tape and no interaction.

Confidence Ratings

After each interrogation, participants rated their confidence in the judgment they made on a scale from 1 to 10. A two-way ANOVA on the total of these ratings revealed a significant main effect of training, $F(1, 36) = 5.57$, $p < .05$, with the trained observers reporting more confidence than naive observers (Ms = 6.55 and 5.91, respectively; $R^2 = .134$). There was no significant main effect for stimulus tape, $F(1, 36) = 2.50$, $p < .15$, and no interaction, $F(1, 36) = 1.83$, $p < .20$ (R^2s = .065 and .048, respectively).

We also measured each participant's confidence in his or her ability to detect deception in general terms both before and after the task. These measures were combined within a 2 (trained vs. naive) × 2 (tape 1 vs. tape 2) × 2 (pretask vs. posttask) mixed ANOVA with repeated measures on the last factor. In this analysis, the tendency for participants to exhibit greater confidence in the training condition than in the naive condition was not significant (Ms = 6.58 and 5.93, respectively), $F(1, 36) = 2.42$, $p < .15$; $R^2 = .063$. While the training × pre–post interaction was also not quite significant, $F(1, 36) = 2.14$, $p < .15$, $R^2 = .056$, separate 2 × 2 analyses showed that confidence ratings were somewhat higher in the training condition than in the naive condition before the judgment task, Ms = 6.80 and 5.85, respectively, $F(1, 36) = 3.37$, $p < .08$; but that there was no difference after the task, Ms = 6.35 and 6.00, respectively, $F(1, 36)$ $p < 1$; $R^2 = .01$.

To further assess pre- and post-perceptions of the task, we also asked participants to rate how easy or difficult it is, in general, for people to make judgments of truth and deception. As with pre- and post-ratings of confidence, these measures were combined within a 2 (trained vs. naive) × 2 (tape 1 vs. tape 2) × 2 (pretask vs. posttask) mixed ANOVA with repeated measures on the last factor. A significant pre–post main effect on this measure revealed that participants saw the detection of deception as more difficult after the task than before it, Ms = 6.03 and 5.45, respectively; $F(1, 36) = 5.66$, $p < .05$; $R^2 = .136$. Although the trained participants saw the task as somewhat easier than did the naive participants before the task, but not afterward (trained and naive Ms = 5.20 and 5.70, respectively, on the pretask measure; Ms = 6.15 and 5.90 on the posttask measure), the training × pre–post interaction was not quite significant, $F(1, 36) = 2.41$, $p < .15$; $R^2 = .063$.

Number of Reasons Cited

After each judgment and confidence rating, participants were asked to list the cues that formed the basis for their opinions. We then coded these open-ended

responses by counting the total number of discrete verbal and nonverbal cues that were cited, regardless of whether they argued for or against the judgment given (e.g., "He kept changing his story," "He is very sure of himself," "Doesn't know times," "Wouldn't look at the questioner," "Very nervous"). Overall, participants cited a mean of 3.47 reasons per judgment. Interestingly, a two-way ANOVA revealed a highly significant main effect for training, $F(1, 36) = 15.14$, $p < .001$, with more reasons cited in the training condition than in the naive condition (Ms = 3.96 and 2.98, respectively; $R^2 = .296$). Although there was not a main effect for which tape was used, a significant two-way interaction indicated that the tendency for trained participants to cite more reasons was more pronounced among those who judged one tape than the other, $F(1, 36) = 5.13$, $p < .05$; $R^2 = .125$.

We next examined whether training specifically increased the extent to which participants cited as reasons for their judgments the verbal and nonverbal cues described in the training condition. Independently, two coders categorized each reason according to whether or not it reflected use of the Reid technique. Across all items, there was a 94.5% intercoder agreement rate (instances of disagreement were jointly resolved by discussion). Overall, 70.2% of all reasons cited in the training condition reflected use of the Reid technique, compared to only 38.59% in the naive condition, $X^2(1, N = 40) = 110.77$, $p < .0001$. A two-way ANOVA on the number of Reid-based reasons cited thus revealed a highly significant main effect for training, $F(1, 36) = 54.00$, $p < .0001$), with more such reasons cited by trained than naive participants (Ms = 2.78 and 1.15 per judgment, respectively; $R^2 = .60$). There was no significant main effect for which tape was used on this measure, and no interaction (both Fs < 1). Further indicating that knowledge of the technique implied usage, there was a highly significant correlation between participants' training test scores (0–20) and the number of Reid-based reasons they later cited, $r(40) = .77$, $p < .001$.

Correlations Among Measures

To further examine the hypothesis that training can improve performance, we collapsed the data across conditions and correlated training test scores (0–20) and overall judgment accuracy (0–8). Consistent with the finding that observers did not benefit from experimental training in the Reid technique, this correlation was in a negative direction and nonsignificant, $r(40) = -.18$, $p < .20$ (in the training group, $r = .08$; in the naive group, $r = .22$; both ns). Both between and within conditions, knowledge of the cues contained in the Reid technique was not predictive of performance.

The pattern of correlations among the other dependent measures also proved informative. For example, while the trained observers were more confident in their judgments than naive observers were, and while they cited more reasons—and, specifically, more Reid-based reasons—as a basis for these judgments, neither confidence nor the number of reasons cited was predictive of accuracy, $rs(40) = -.01$ and .11, respectively (in fact, the number of Reid-based reasons cited was negatively, though not significantly, correlated with accuracy, $r(40) = -.25$). Interestingly, there was a significant positive correlation between overall mean confidence

ratings and the number of reasons cited, $r(40) = .42$, $p < .05$. Turning to the pretask and posttask confidence ratings, we found that these measures were highly intercorrelated, as participants who were more confident in their abilities before the task also tended to be more confident after the task, $r(40) = .62$, $p < .05$. However, neither measure was predictive of performance accuracy, $rs(40) = -.23$ and $.10$, respectively.

DISCUSSION

The present study investigated the extent to which people can make accurate judgments of truth and deception in the context of a mock interrogation, and tested the hypothesis that training in the use of verbal and nonverbal deception cues improves performance in this regard. As this research was based on the creation of suspect interrogation tapes high in forensic realism and the use of a professional training program for observers that is common in the law enforcement community, we believe that the results are informative in three ways.

First, judgment accuracy rates were comparably low to the chance levels often obtained when such research is conducted in nonforensic contexts (Zuckerman et al., 1981). This performance similarity is striking in light of the paradigmatic differences between our study and others, many of which had adopted Ekman and Friesen's (1974) initial method of having observers evaluate target persons who were instructed merely to express or conceal their emotional reactions to various stimulus materials. As in Frank and Ekman's (1997) more recent studies of deception detection for high-stake lies, our guilty suspects were motivated by both positive and negative incentives to deceive the interrogator, a factor that tends to increase performance anxiety, guilt, fear, and other emotions, and make deceit via nonverbal channels of communication easier for observers to detect (DePaulo, Lanier, & Davis, 1983; Ekman, 1985).

Our second important result is that training in the use of verbal and nonverbal cues did not improve judgment accuracy. In fact, it significantly impaired performance. Although modest gains are sometimes found in training studies (deTurck & Miller, 1990), this finding is generally consistent with the bulk of past research indicating the inefficacy of rehearsal and training (DePaulo, 1994; Zuckerman et al., 1984). Research shows that police officers hold the same erroneous beliefs as laypersons do about the verbal and nonverbal indicators of truth and deception (Akehurst, Kohnken, Vrij, & Bull, 1996). Thus, Ekman and O'Sullivan (1991) found that even professionals who regularly make such judgments for a living, such as detectives, psychiatrists, trial judges, and those who administer lie-detector tests for the CIA, FBI, secret service, and military, are highly prone to error.

As to why the training significantly impaired performance, we note that the training materials focus attention on cues that have not been shown to be diagnostic in past research. Nonverbal behaviors such as rigid posture, grooming, covering the mouth while speaking, and averting gaze may well betray a state of anxiety or distress, but there is no solid empirical basis for the proposition that these same cues reliably discriminate between criminals and innocent persons accused of crimes

they did not commit. Based on a review of over 30 studies, Zuckerman et al. (1981) concluded that there is a mismatch between the behaviors that actually signal deception and those that are used by lay perceivers. They noted, for example, that while certain vocal cues (e.g., rises in pitch, hesitations) are often revealing of deception, people tend to focus instead on channels of communication associated with the face and the body. Similarly, it is clear that the training materials used in this study explicitly direct observers to use cues not reliably linked to deception.

The forensic importance of our results is bolstered by two unique aspects of the present study. First, observers made their judgments on the basis of videotaped interrogations of moderately anxious suspects who were guilty or innocent of one of four mock crimes, and all of whom were motivated to deny involvement and be judged innocent. Second, training participants were instructed via videotaped and written materials published by John E. Reid and Associates, an approach that has been used over the years in the training of law enforcement officials.

Our third major finding pertains to the metacognitive aspects of performance. Recent studies have shown that people in general cannot accurately assess their own lie-detection skills, but rather exhibit high levels of confidence regardless of whether their judgments are correct or incorrect (DePaulo, Charlton, Cooper, Lindsay, & Muhlenbruck, 1997). Similar results have emerged in the literature on eyewitness testimony, where the correlation between identification accuracy and confidence is often not reliable (Wells & Murray, 1984; Penrod & Cutler, 1995; Sporer, Penrod, Read, & Cutler, 1995). Consistent with these observations, we found among both trained and naive participants that judgment accuracy and confidence were not significantly correlated, regardless of whether the measure of confidence was taken before, after, or during the task. Further demonstrating the metacognitive problems in this domain is that confidence ratings were positively correlated with the number of reasons (including Reid-based reasons) articulated as a basis for judgments, another dependent measure not predictive of accuracy. Training had a particularly adverse effect in this regard. Specifically, those who were trained compared to those in the naive condition were less accurate in their judgments of truth and deception. Yet they were more self-confident and more articulate about the reasons for their often erroneous judgments.

In light of the practical implications, it is important to consider the possible limitations and boundary conditions of our results. With regard to the finding that training in the Reid technique did not increase accuracy, the results are unambiguous. Trained participants scored higher than controls when tested for their knowledge of the training material, and they were more likely to use that material in their reasoning, yet their judgments were less accurate. In addition, test scores across conditions were not significantly correlated with accuracy rates.

The present study suggests that the Reid technique may not be effective—and, indeed, may be counterproductive—as a method of distinguishing truth and deception. At this point, however, the generality of our conclusion should be considered tentative. To begin with, all of our participant suspects were male, a feature that best models a normative interrogation. It could be argued that the exclusive use of male suspects might have impacted upon the difficulty of the judgment task. However, research suggests that while men and women betray their lie telling in

different ways, there is little or no difference in the accuracy with which people detect lies in male versus female senders (B. M. DePaulo, Personal communication, April 16, 1999).

There are three possible bases for the argument that our experiment did not optimally model the interview and interrogation process. First, one could argue that training would benefit police investigators more than naive college students, perhaps because training requires past experience or follow-up practice to be most effective. To address this point, future research should consider such variations in the subject population, particularly in light of observed individual differences in the ability to judge truth and deception (Frank & Ekman, 1997). In this vein, it is important to keep in mind that police and other experienced law enforcement professionals have not outperformed novices in related past studies (DePaulo & Pfeifer, 1986; Ekman & O'Sullivan, 1991; Kraut & Poe, 1980), in part because they approach the task in a suspicious frame of mind, biased toward perceptions of guilt and deception (Burgoon, Buller, Ebesu, & Rockwell, 1994).[9]

A second possible argument is that interrogators are better equipped to judge truth and deception than observers are by virtue of their firsthand and more extensive interaction with the targets of criminal investigations. It is clear, for example, that police detectives, unlike the observers in our study, are in a position to control the flow of information through the questions they choose to ask and the ways they react to the suspect's responses. It is not clear, however, that this more interactive role helps or hinders their ability to interpret accurately a suspect's behavior. Experiments in nonforensic settings have shown that preinteraction expectations influence the kinds of questions that interviewers ask (Snyder & Swann, 1978), and that this confirmatory hypothesis-testing bias can produce false support for these initial beliefs (Zuckerman, Knee, Hodgins, & Miyake, 1995; for reviews, see Hilton & Darley, 1991; Snyder, 1984). Moreover, research suggests that judgments of truth and deception are more accurate when made by observers than by conversational interactants. Buller, Strzyzewski, and Hunsaker (1991) had observers watch videotaped conversations between two other participants, one of whom was instructed to lie or tell the truth, and found that the observers were more accurate in their judgments of the target than were those who were engaged in the conversation.

Third, it is important to keep in mind that although training in the influential Reid technique did not improve judgments of interrogative truth and deception, other methods of credibility assessment may ultimately prove effective. Focused specifically on content analyses of verbal cues, several investigators have found that it is possible to make such judgments at better-than-chance levels of accuracy (Landry & Brigham, 1992; Sporer, 1997). Porter and Yuille (1996), for example, noted that people giving truthful accounts of a personal experience can be significantly distinguished from deceivers by the amount of detail they report, the logical coherence of their statements, and their willingness to admit a lack of memory for

[9]Horvath, Jayne, and Buckley (1994) reported that law enforcement professionals exhibited high levels of accuracy in making judgments of interrogative truth and deception, but they had hand-picked for testing only 4 subjects, with unspecified affiliations, all of whom were "trained and experienced" in the Reid technique.

certain aspects of the event. Others have similarly argued that it is possible to separate true and false confessions through linguistic analyses (Shuy, 1998).

Notwithstanding the possible limitations of the present study and the need for additional research, the practical implications of our results are clear. The investigator who makes an incorrect judgment of guilt and deception, and who does so with confidence and a well-articulated rationale, is likely to employ the powerful techniques of interrogation on innocent suspects (Inbau et al., 1986), techniques that may increase the risk of eliciting a coerced false confession (Gudjonsson, 1992; Kassin, 1997).[10] In light of the numerous documented instances in which police-induced false confessions have led to the wrongful arrest, prosecution, conviction, and incarceration of innocent people (Leo & Ofshe, 1998), further research is needed to examine the ways in which law enforcement officials make these initial, potentially self-perpetuating, judgments.

REFERENCES

Akehurst, L., Kohnken G., Vrij, A., & Bull, R. (1996). Laypersons' and police officers' beliefs regarding deceptive behavior. *Applied Cognitive Psychology, 10,* 461–471.
Aubry, A. S., & Caputo, R. R. (1980). *Criminal interrogation (3rd ed.).* Springfield, IL: Charles C. Thomas.
Bedau, H., & Radelet, M. (1987). Miscarriages of justice in potentially capital cases. *Stanford Law Review, 40,* 21–179.
Bond, C. F., & Fahey, W. E. (1987). False suspicion and the misperception of deceit. *British Journal of Social Psychology, 26,* 41–46.
Borchard, E. M. (1932). *Convicting the innocent: Errors of criminal justice.* New Haven, CT: Yale University Press.
Buller, D. B., Strzyzewski, K. D., & Hunsaker, F. G. (1991). Interpersonal deception: II. The inferiority of conversational participants as deception detectors. *Communication Monographs, 58,* 25–40.
Burgoon, J. K., Buller, D. B., Ebesu, A. S., & Rockwell, P. (1994). Interpersonal deception: V. Accuracy in deception detection. *Communication Monographs, 61,* 303–325.
Cassell, P. G. (1996). *Miranda's* social costs: An empirical reassessment. *Northwestern University Law Review, 90,* 387–499.
Cassell, P. G. (1998). Protecting the innocent from false confessions and lost confessions—and from *Miranda. Journal of Criminal Law and Criminology, 88,* 497–556.
Cohen, J. (1988). *Statistical power analysis for the behavioral sciences.* Hillsdale, NJ: Erlbaum.
DePaulo, B. M. (1994). Spotting lies: Can humans learn to do better? *Current Directions in Psychological Science, 3,* 83–86.
DePaulo, B. M., Charlton, K., Cooper, H., Lindsay, J. J., & Muhlenbruck, L. (1997). The accuracy–confidence correlation in the detection of deception. *Personality and Social Psychology Review, 1,* 346–357.
DePaulo, B. M., & Friedman, H. (1998). Nonverbal communication. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology (4th ed.,* pp. 3–40). Boston: McGraw-Hill.
DePaulo, B. M., Lanier, K., & Davis, T. (1983). Detecting the deceit of the motivated liar. *Journal of Personality and Social Psychology, 45,* 1096–1103.
DePaulo, B. M., & Pfeifer, R. L. (1986). On-the-job experience at detecting deception. *Journal of Applied Social Psychology, 16,* 252–267.
deTurck, M. A., & Miller, G. R. (1990). Training observers to detect deception: Effects of self-monitoring and rehearsal. *Human Communication Research, 16,* 603–620.
Ekman, P. (1985). *Telling lies: Clues to deceit in the marketplace, politics, and marriage.* New York: Norton.
Ekman, P., & Friesen, W. V. (1974). Detecting deception from the body or face. *Journal of Personality and Social Psychology, 29,* 288–298.

---

[10]Although it is considered a less costly, more tolerable error, the investigator who makes an initial incorrect judgment of truth and innocence is also at risk—to abandon the interrogation and lose the possibility of obtaining a true confession (Cassell, 1998).

Ekman, P., & O'Sullivan, M. (1991). Who can catch a liar? *American Psychologist, 46,* 913–920.

Frank, M. G., & Ekman, P. (1997). The ability to detect deceit generalizes across different types of high-stake lies. *Journal of Personality and Social Psychology, 72,* 1429–1439.

Geller, W. A. (1993). Videotaping interrogations and confessions. *National Institute of Justice: Research in brief.* Washington, DC: U.S. Department of Justice.

Gilovich, T., Savitsky, K., & Medvec, V. H. (1998). The illusion of transparency: Biased assessments of others' ability to read one's emotional states. *Journal of Personality and Social Psychology, 75,* 332–346.

Gudjonsson, G. H. (1992). *The psychology of interrogations, confessions, and testimony.* London: Wiley.

Hilton, J. L., & Darley, J. M. (1991). The effects of interaction goals on person perception. *Advances in Experimental Social Psychology, 24,* 235–267.

Hoffman, J. (1998). Police refine methods so potent, even the innocent have confessed. *New York Times,* March 30, 1998, pp. A1, B4.

Horvath, F., Jayne, B., & Buckley, J. (1994). Differentiation of truthful and deceptive criminal suspects in behavior analysis interviews. *Journal of Forensic Sciences, 39,* 793–807.

Huff, C. R., Rattner, A., & Sagarin, E. (1986). Guilty until proven innocent: Wrongful conviction and public policy. *Crime and Delinquency, 32,* 518–544.

Inbau, F. E., Reid, J. E., & Buckley, J. P. (1986). *Criminal interrogation and confessions (3rd ed.).* Baltimore, MD: Williams & Wilkins.

Jayne, B. C. (1986). The psychological principles of criminal interrogation. Appendix. In F. Inbau, J. Reid, & J. Buckley, *Criminal interrogation and confessions (3rd ed.).* Baltimore, MD: Williams & Wilkins.

John E. Reid and Associates (1991). *The Reid Technique: Interviewing and interrogation* [Videotape].

Kamisar, Y. (1965). Equal justice in the gatehouses and mansions of American criminal procedure. In A. Howard (Ed.), *Criminal Justice in our Time* (pp. 11–38). Charlottesville, VA. University Press of Virginia.

Kassin, S. M. (1997). The psychology of confession evidence. *American Psychologist, 52,* 221–233.

Kassin, S. M., & Kiechel, K. L. (1996). The social psychology of false confessions: Compliance, internalization, and confabulation. *Psychological Science, 7,* 125–128.

Kassin, S. M., & McNall, K. (1991). Police interrogations and confessions: Communicating promises and threats by pragmatic implication. *Law and Human Behavior, 15,* 233–251.

Kassin, S. M., & Neumann, K. (1997). On the power of confession evidence: An experimental test of the "fundamental difference" hypothesis. *Law and Human Behavior, 21,* 469–484.

Kassin, S. M., & Sukel, H. (1997). Coerced confessions and the jury: An experimental test of the "harmless error" rule. *Law and Human Behavior, 21,* 27–46.

Kassin, S. M., & Wrightsman, L. S. (1985). Confession evidence. In S. Kassin & L. Wrightsman (Eds.), *The psychology of evidence and trial procedure* (pp. 67–94). Beverly Hills, CA: Sage.

Kraut, R. E., & Poe, D. (1980). On the line: The deception judgments of customs inspectors and laymen. *Journal of Personality and Social Psychology, 39,* 784–798.

Landry, K. L., & Brigham, J. C. (1992). The effects of training in criteria-based content analysis on the ability of detecting deception in adults. *Law and Human Behavior, 16,* 663–676.

Leo, R. A. (1996). Inside the interrogation room. *Journal of Criminal Law and Criminology, 86,* 266–303.

Leo, R. A., & Ofshe, R. (1998). The consequences of false confessions: Deprivations of liberty and miscarriages of justice in the age of psychological interrogation. *Journal of Criminal Law and Criminology, 88,* 429–496.

Leo, R. A., & Thomas, G. C. (1998). *The Miranda debate: Law, justice, and policing.* Boston: Northeastern University Press.

Macdonald, J. M., & Michaud, D. L. (1987). *The confession: Interrogation and criminal profiles for police officers.* Denver: Apache.

Miranda v. Arizona, 384 U.S. 336 (1966).

Munsterberg, H. (1908). *On the witness stand.* Garden City, NY: Doubleday.

Ofshe, R. J., & Leo, R. A. (1997). The social psychology of police interrogation: The theory and classification of true and false confessions. *Studies in Law, Politics, and Society, 16,* 189–251.

O'Hara, C. E., & O'Hara, G. L. (1981). *Fundamentals of criminal investigation.* Springfield, IL: Charles C. Thomas.

Penrod, S. D., & Cutler, B. (1995). Witness confidence and witness accuracy: Assessing their forensic relation. *Psychology, Public Policy, and Law, 1,* 817–845.

Porter, S., & Yuille, J. C. (1996). The language of deceit: An investigation of the verbal cues to deception in the interrogation context. *Law and Human Behavior, 20,* 443–458.

Radelet, M. L., Bedau, H. A., & Putnam, C. E. (1992). *In spite of innocence: Erroneous convictions in capital cases.* Boston: Northeastern University Press.

Schulhofer, S. J. (1996). *Miranda's* practical effect: Substantial benefits and vanishingly small social costs. *Northwestern University Law Review, 90,* 500–564.

Shuy, R. W. (1998). *The language of confession, interrogation, and deception.* Thousand Oaks, CA: Sage.

Simon, D. (1991). *Homicide: A year on the killing streets.* New York: Ivy Books.

Snyder, M. (1984). When belief creates reality. *Advances in Experimental Social Psychology, 18,* 207–303.

Snyder, M., & Swann, W. B. (1978). Hypothesis-testing processes in social interaction. *Journal of Personality and Social Psychology, 36,* 1202–1212.

Sporer, S. L. (1997). The less travelled road to truth: Verbal cues in deception detection in accounts of fabricated and self-experienced events. *Applied Cognitive Psychology, 11,* 373–397.

Sporer, S. L., Penrod, S. D., Read, J. D., & Cutler, B. L. (1995). Choosing, confidence, and accuracy: A meta-analysis of the confidence–accuracy relation in eyewitness identification studies. *Psychological Bulletin, 118,* 315–327.

Vrij, A. (1994). The impact of information and setting on detection of deception by police detectives. *Journal of Nonverbal Behavior, 18,* 117–136.

Walkley, J. (1987). *Police interrogation: Handbook for investigators.* London: Police Review.

Wells, G. L., & Murray, D. M. (1984). Eyewitness confidence. In G. Wells & E. Loftus (Eds.), *Eyewitness testimony: Psychological perspectives.* New York: Cambridge University Press.

Wrightsman, L. S., & Kassin, S. M. (1993). *Confessions in the courtroom.* Newbury Park, CA: Sage.

Zuckerman, M., DePaulo, B. M., & Rosenthal, R. (1981). Verbal and nonverbal communication of deception. *Advances in Experimental Social Psychology, 14,* 1–59.

Zuckerman, M., Knee, C. R., Hodgins, H. S., & Miyake, K. (1995). Hypothesis confirmation: The joint effect of positive test strategy and acquiescence response set. *Journal of Personality and Social Psychology, 68,* 52–60.

Zuckerman, M., Koestner, R., & Alton, A. O. (1984). Learning to detect deception. *Journal of Personality and Social Psychology, 46,* 519–528.

Zulawski, D. E., & Wicklander, D. E. (1993). *Practical aspects of interview and interrogation.* Oxford: Elsevier.