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Suspects, Lies, and Videotape: An Analysis of Authentic High-Stake Liars

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This study is one of the very few, and the most extensive to date, which has examined deceptive behavior in a real-life, high-stakes setting. The behavior of 16 suspects in their police interviews has been analyzed. Clips of video footage have been selected where other sources (reliable witness statements and forensic evidence) provide evidence that the suspect lied or told the truth. Truthful and deceptive behaviors were compared. The suspects blinked less frequently and made longer pauses during deceptive clips than during truthful clips. Eye contact was maintained equally for deceptive and truthful clips. These findings negate the popular belief amongst both laypersons and professional lie detectors (such as the police) that liars behave nervously by fidgeting and avoiding eye contact. However, large individual differences were present.

KEY WORDS: deceptive behavior; real-life high-stake lies; suspect interviews.

When asked what behaviors to look for in a liar, most people, often including professional lie detectors such as the police and customs officers, will reply “avoiding eye contact with the target and an increase in nervous fidgety movements” (Akehurst, Köhnken, Vrij, & Bull, 1996; Vrij & Mann, 2001; Vrij & Semin, 1996). Behaviors such as gaze aversion and fidgeting are signs of nervousness (Vrij, 2000). Apparently, observers expect liars to behave nervously. However, previous research into deception has repeatedly demonstrated that rather than increase in fidgety behavior, most people decrease in nonfunctional movements and become unnaturally still (DePaulo, 1988; Ekman, 1989; Vrij, 1995). Previous studies have also shown that liars do not decrease eye contact. In fact, there is no relationship between eye contact and deception (DePaulo, Stone, & Lassiter, 1985a; Vrij, 2000). See Vrij (2000) for a review of more than 40 studies about how liars behave.

To date, insight into the behavior of liars has been almost exclusively obtained via experimental laboratory studies. Their designs typically involve asking a participant

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to lie or tell the truth about various issues, such as about beliefs and opinions (DePaulo & Rosenthal, 1979; DePaulo, Stone, & Lassiter, 1985b), about personal facts such as the course they study (Vrij & Holland, 1998), about films or pictures they have just seen (Bell & DePaulo, 1996; Ekman & Friesen, 1974; Vrij & Heaven, 1999), about feelings about an object or person (DePaulo et al., 1985b; DePaulo, Lanier, & Davis, 1983; DePaulo, LeMay, & Epstein, 1991; Ekman & Friesen, 1974; Frank & Ekman, 1997; Riggio, Tucker, & Throckmorton, 1988), or about the possession of an object (Vrij, 1995; Vrij, Akehurst, & Morris, 1997). Also, people have been induced to cheat and then to lie about it (deTurck & Miller, 1985), or given the opportunity to take money and, if taken, to lie about this in a subsequent interview (Frank & Ekman, 1997). Although in many of these studies creative designs were employed to simulate real-life settings, some essential elements nevertheless differ from real-life settings. Therefore, it is arguable that the behavior exhibited in such experiments may differ from real-life lying situations. We have the following elements in mind.

Firstly, because the participant has been asked to lie, he or she need feel no guilt about deceiving the target. Some experimenters have tried to address this problem by allowing participants to choose whether to put themselves into the lying or truth-telling condition (Frank & Ekman, 1997). However, the lie is still told for the sake of the experiment. Secondly, the participant will most likely be videotaped and will be aware that this is entirely for the purpose of enabling at least one person who knows when he or she is lying or truth telling, to scrutinise and analyze their performance later. Thirdly, previous research is generally based on participants telling lies of negligible consequence. Although researchers can offer monetary or other rewards to encourage a convincing impression from the liar, they cannot ethically offer a substantial punishment as motivation. Thus there remains the possibility that in high-stake situations liars do exhibit the nervous behaviors that most people associate with deception (Vrij & Mann, 2001; Vrij & Semin, 1996).

In view of these points, a study was devised to examine the behavior of liars who have lied spontaneously of their own volition, in very high-stake situations: suspects in police custody. To date it has been hard to conduct field research into the nonverbal behaviors actually accompanying deception, because it is difficult to capture on tape people lying spontaneously where it is known for sure that they are lying, and at which point. Vrij and Mann (2001) examined videotapes of a murderer when he was questioned by the police regarding his crime. The participant initially denied having committed the crime, but following the presentation of indisputable evidence, confessed. This study gave valuable insight into a genuine, high-stake liar in an authentic situation. However, clearly it is necessary to examine more than one liar to draw any conclusions. This study extends the work of Vrij and Mann (2001) by studying videotapes containing the truthful and deceptive behavior of 16 suspects in their police interviews.

The severity of their situations does not imply that the participants, as a group, will display an increase of behaviors associated with nervousness while lying. For example, the murderer in Vrij and Mann's study did not show such behaviors (Vrij & Mann, 2001); neither did Saddam Hussein while he lied during a CNN interview during the Gulf War (Davis & Hadiks, 1995). Liars may not exhibit nervous behaviors

because they are probably simultaneously experiencing other processes, particularly increased cognitive load and/or attempted behavioral control (DePaulo et al., 2001; Vrij, 2000), which will negate their nervous behaviors.

First, the liars in this study will probably have to think hard in order to make their lies convincing, and fit in with what the interviewer already knows or could easily discover. A contradiction in the story could lead to a conviction, which for the majority of participants in this study would mean a custodial sentence (and for 4 of the 16 participants this could be a life-term sentence). Evidence has demonstrated that people engaging in cognitively complex tasks make fewer movements such as fewer illustrators (arm and hand movements that are designed to modify and/or supplement speech), self-manipulations (scratching the head, wrists, etc.), and other subtle hand movements, and suggests that the increase in cognitive load results in a neglect of body language, reducing overall animation (Ekman & Friesen, 1972). Also increased cognitive load can result in increased speech disturbances (both speech fillers and speech errors) and longer pauses before giving an answer (Goldman-Eisler, 1968). Finally, it has been found that increased cognitive demand results in eyeblink suppression (Bagley & Manelis, 1979; Bauer, Stroock, Goldstein, Stern, & Walrath, 1985; Wallbott & Scherer, 1991).

Second, liars often attempt to control their behavior in order to give a credible impression to the interviewer. DePaulo and Kirkendol (1989) found that the higher the motivation to succeed in the lie, the greater the likelihood that liars will attempt to control their behavior. They called this the motivational impairment effect. Hocking and Leathers (1980) have argued that liars' attempts to control their behavior will affect those behaviors that fit the cultural stereotype of liars. Because there is a widespread belief that liars increase their movements and look away (Vrij & Semin, 1996), liars will try to refrain from making too many movements and will try to maintain eye contact to hide their deceit (DePaulo & Kirkendol, 1989). However, because most people are not aware of how much body language they exhibit in day-to-day truth-telling situations (Vrij, Edward, & Bull, 2001a; Vrij, Semin, & Bull, 1996), the outcome is often overzealous control, resulting in deliberate movements and rigidity (DePaulo & Kirkendol, 1989). On the other hand, liars are often able to control their gaze direction quite well, often maintaining eye contact with the target as much during deception as during truth telling (Ekman, 1992).

In summary, even in high-stake situations the presence of nervous behaviors (gaze aversion, increase in blinking, increase in movements, increase in speech disturbances) is not certain and we might even find behaviors consistent with cognitive load and/or attempted behavioral control (decrease in blinking, decrease in movements, increase in pauses).³

³Ekman (1992) has argued that high-stakes lies may result in fraudulent facial emotional expressions, so-called "microexpressions." These are facial expressions that are displayed for only a fraction of a second but clearly reveal the liar's true feelings before being quickly covered with a false expression. Ekman also argues that fake facial expressions, for example, smiles, differ from genuine expressions (Ekman, Friesen, & O'Sullivan, 1988). The majority of the targets to whom lies are directed are unlikely to pick up on such subtle changes, and therefore, liars are able to mask their true feelings quite successfully. The quality of the police videotapes used in this study were not of sufficient quality to enable such subtle changes in facial emotional expression to be observed. Hence, when we discuss nervousness hereon we do not refer to such facial microexpressions.

Research has convincingly demonstrated that no single pattern of behavior is uniquely related to deception, in other words, an obvious sign such as Pinocchio's growing nose does not exist (DePaulo et al., 2001; Vrij, 2000). Thus, although we anticipate some systematic differences between liars and truth tellers, we expect substantial consistencies within individuals and do not expect a predictor of deception to emerge that will swamp all individual differences in deceptive behavior.

METHOD

Participants

Sixteen police suspects (13 males and 3 females) were involved in this study. Four participants were juveniles (where three were aged 13 and the other aged 15) and the remainder were adult (all under 65 years). Fifteen were Caucasian (where English was their first language) and 1 participant was of Asian ethnicity (a male whose first language was Punjabi but who was fluent in English). All interviews were conducted in English. Crimes for which participants were being interviewed were theft ($N = 9$), arson ($N = 2$), attempted rape ($N = 1$), and murder ($N = 4$). The majority of participants (at least 10 of 16) were well known to the police and had been interviewed on several occasions previously, relating to previously committed offenses.

Procedure

In the first instance, police detectives at Kent County Constabulary (United Kingdom) were asked if they could recollect videotaped interviews in which they were involved where the suspect had lied at one point and told the truth at another. (Only serious cases tend to be videotaped and the suspect has the right to decline being videotaped if they so choose.) Once cases meeting this criterion had been identified, the case files were sought out. The experimenter then scoured the files looking for forensic evidence or substantial reliable independent witness statements to corroborate instances of truth or lie as implicated by the investigating officer. An example of such an appropriate case would be where the suspect initially denies any involvement in the crime, and then confesses after being presented with substantial forensic/witness evidence. Cases without such evidence were eliminated. Of the remaining appropriate cases, only those video clips where truth or lie had been strongly supported by other convincing evidence were taped onto another videotape. The end result was an hour-long videotape consisting of clips from 16 suspects. In addition, the truths that were selected were chosen so as to be as comparable as possible in nature to the lies (e.g., a truthful response to an easy question such as giving a name and address is not comparable to a deceitful response regarding whether or not the suspect has committed a murder. Video-footage about names and addresses were therefore not included as truths in this study). Detailed information about the evidence for inferences about the ground truth of five suspects (suspects 8–12), including whether or not they were convicted, can be found in Appendix.⁴

⁴A complete set of summaries of ground truths of all suspects is available from Aldert Vrij.

The number of clips from each participant varied depending on how many examples of truths and lies there were during the interviews. There were a total of 65 clips, of which 27 were truths and 38 were lies. For each participant there was a minimum of two clips (one truth and one lie) and a maximum of eight clips, of which no less than three clips were truths and no more than five clips were lies. Length of clips varied from 5.2 to 145.7 s. The total length of clips per participant (the relevant length as data were analyzed on participant level and not on clip level) ranged from 41.4 to 368.4 s. The variation in the length of clips, and the number of truth and lie clips was in accordance with number of times we could be absolutely certain the participant was lying/truth telling, and for how long. Hence, the variations were unavoidable. Studies by Vrij and Winkel (1991) and Höfer, Köhnken, Hanewinkel, and Bruhn (1993) suggest that differences between lying and truth-telling behavior within participants is consistent regardless of the length of material that is examined. In light of this, a small clip of behavior from a participant may well produce results that are representative of a longer clip. Hence, the variation in the length of the clips should not have too detrimental an effect. In order to examine the effect of the length of response, length of response was included as a covariate in the data analyses (see footnote 5).

Dependent Variables

Two observers independently coded the eight behaviors as listed below, and Pearson's correlations were conducted between the two sets of data from the two coders to assess similarities in judgement. Coding of most of the behaviors took place with a coding system utilized by us in previous studies (Vrij, 1995; Vrij et al., 1996, 2001a; Vrij, Edward, & Bull, 2001b; Vrij, Edward, Roberts, & Bull, 2000; Vrij & Winkel, 1991). The coders were blind to the veracity (truth or lie) of the clips they scored.

The two coders were merely instructed "to code the video footage" and were not informed about the hypotheses and nature of the video clips. Hence, they were not informed that the persons on the videotape were either lying or telling the truth. Coder 1 coded all clips and Coder 2 coded a random sample of 36 clips (including clips of each of the 16 suspects) for interrater agreement checking (i.e., 55% of the total number of clips). Ideally, both coders would have coded all clips. However, given the sensitivity of the video footage it was desirable that as few people outside the police as possible would be shown the tapes. We, therefore, decided to let the second coder code a sample of the clips first and perform coder reliability checks on this sample. Given the high interrater agreement rates obtained (presented below) and because we obtained similar satisfactory interrater agreement rates in other recent studies utilizing similar coding schemes (Vrij et al., 2000, 2001a, 2000b) we decided not to pursue coding all the clips by two coders.

The behaviors observed and the interrater correlations (measured with Pearson's correlations; Porter & Yuille, 1996; Vrij et al., 2001b) were *Gaze aversion*: number of seconds in which the participant looked away from the interviewer (2 coders, $r = .86$); *Blinking*: frequency of eye blinks ($r = .99$); *Head movements*: frequency of head nods (upward and downward movement was counted as a separate

nod), head shakes (similar to head nods, each sideways movement was counted as a separate shake), and other head movements that were not included as head shakes or head nods (e.g., tilting the head to the side, turning the face etc.; $r = .95$); *Self-manipulations*: frequency of scratching the head, wrists etc. (touching the hands was counted as hand/finger movements rather than self-manipulations; $r = .99$); *Illustrators*: frequency of arm and hand movements which were designed to modify and/or supplement what was being said verbally ($r = .99$); *Hand/finger movements*: any other movements of the hands or fingers without moving the arms ($r = .99$); *Speech disturbances*: (they were scored on the basis of a typed verbatim text) frequency of saying “ah” or “mmm,” etc. between words, frequency of word and/or sentence repetition, sentence change, sentence incompleteness, stutters etc. ($r = .97$). Deviations from the official English language (e.g., local dialects such as saying “it weren’t me” rather than “it wasn’t me”) were not included as speech errors; *Pauses*: number of seconds where there is a noticeable pause in the monologue of the participant, when the suspect actually stops between words for a period of approximately 0.5 s or more, stopping the free flow of conversation for a period of time whilst the suspect thinks of the next word ($r = .55$).

The Pearson’s correlations show evidence of a strong consistency between the two coders. Furthermore, as used by other researchers (Porter & Yuille, 1996; Vrij et al., 2001b), *t* tests were used to test for average differences between the two coders to ensure that the average scores for the two coders did not differ. None of these *t* tests were significant.

Given the small number of participants and relative large number of behaviors, we opted for a reduction in behavioral indices by clustering the three types of hand and arm movements (illustrators, self manipulations, and hand/finger movements) into one category “hand and arm movements.” This clustering had no effect on the results, as will be discussed below.

Each of the coded behaviors was transformed into a format in order that truths and lies may be directly compared. The total lengths of time that gaze aversion and pauses in speech occurred for each participant during truth telling was divided by the total length of truthful clips for each participant, and multiplied by 60 to give a total length per minute of footage. The scores for lie-telling clips were calculated in the same way. The total frequency of blinks, head movements, and arm/hand movements whilst truth telling/lying for each participant was divided by the total length of truthful/lying clips for each participant, and multiplied by 60 to give a “per minute” of footage frequency. The total number of speech disturbances for each participant during truth telling/lying was divided by the total number of words for each participant during truth telling/lying, and multiplied by 100 to give a “per 100 words” frequency. In summary, the end result was one truth-telling score, and one lie-telling score, for each behavior, for each participant.

RESULTS

Data were analyzed utilizing a MANOVA with Veracity (truth/lie) as the only (within-subjects) factor and the six behaviors listed in Table 1 as dependent

Table 1. Behaviors as a Function of Veracity

Behavior	Truthful		Deceptive	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gaze aversion	27.82	9.25	27.78	11.76
Blinks ^a	23.56	10.28	18.50	8.44
Head movements	26.57	12.34	27.53	20.93
Hand/arm movements	15.31	14.35	10.80	9.99
Pauses ^a	3.73	5.14	5.31	4.94
Speech disturbances	5.22	3.79	5.34	4.93

^aSignificance difference ($p < .05$) between lying and truth telling.

variables.⁵ At a multivariate level, the analysis was significant, $F(6, 10) = 3.42$, $p < .05$.

Table 1 shows that lying was accompanied by a decrease in blinking, $F(1, 15) = 7.04$, $p < .01$, $\eta^2 = .32$, and an increase in pauses, $F(1, 15) = 4.43$, $p < .05$, $\eta^2 = .23$.⁶ No other significant differences emerged.

The percentages of participants who showed an increase while lying, a decrease while lying, or no difference between lying and truth telling were calculated by subtracting the deception scores from the truth-telling scores. As expected, individual differences did occur and there was no behavior that all liars exhibited. Even splits were found for head movements and speech disturbances with 50% showing an increase and 50% a decrease of these behaviors while lying. Almost an even split occurred for gaze aversion, with 56% showing more gaze aversion and 44% showing less gaze aversion while lying. Supporting previous laboratory findings (Ekman, O'Sullivan, Friesen, & Scherer, 1991; Vrij et al., 2001a; Vrij, Winkel, & Akehurst, 1997), more participants (69%) showed a decrease than an increase (31%) in hand and arm movements during deception. The most reliable indicators of deception were blinking and pauses, where the majority of participants paused longer (81%) and blinked less (81%) while lying.

DISCUSSION

This study is one of the very few, and the most extensive to date, which has examined deceptive behavior in a real-life, high-stakes setting. In this study, the behavior of 16 suspects in their police interviews have been analyzed. Two significant differences occurred: suspects blinked less and paused longer while lying. Although all explanations for these findings are necessarily post hoc given the nature of the study, the findings give some support for the cognitive load process in explaining deceptive behavior, as both fewer blinking and longer pauses are possible indicators of cognitive load. The findings concerning blinking might be of particular importance

⁵Additional analyses of variance were conducted in which we controlled for length of interview. The covariate had no significant impact on the effect of the independent variables.

⁶When analyzing illustrators, self-manipulations and hand/finger movements separately, a similar pattern as the one presented in Table 1 emerged. Lower scores were obtained during lying than truth telling for each of these three behaviors, but none of the differences were significant (all $ps > .21$).

as it is perhaps our strongest indication that cognitive load, more than nervousness (which is the stereotypical view), has affected suspects' behavior. Research has shown that nervousness results in an increase in blinking (DePaulo et al., 2001; Harrigan & O'Connell, 1996; Tecce, 1992). Tecce (1992) calls this the "Nixon-effect," referring to Nixon, who blinked over 50 times per min during his resignation address when discussing his being forced from the presidency. Increased cognitive load, however, results in a decrease in eye blinking (Bagley & Manelis, 1979; Bauer et al., 1985; Wallbott & Scherer, 1991). However, because we did not measure nor manipulate cognitive load and nervousness in this study, all conclusions are necessarily speculative.

Importantly, the findings of this study demonstrated large individual differences in deceptive behavior and they challenge the simplistic view, even expressed by professional lie catchers (Ekman, 1992; Vrij, 2000), that a typical of deceptive behavior exists. This study highlights the importance of establishing a baseline in behavior before attempting to detect deception. The most reliable indicator of deception is likely to be a change from normal behavior within a particular individual. Due to the large differences in people's attitudes, the content and consequences of their lies, their experience, and their ability to lie, there is never likely to be a less vague indicator than this.

Clearly, there are limitations to this study, many are related to its applied nature. For example (a) different interviewers were used for different participants, (b) sometimes more than one interviewer was present, (c) the total number of people present varied depending on number of interviewers, presence of attorney, appropriate adult⁷ etc. Although all of these factors may potentially influence a person's behavior, we do not believe that these factors have affected the present results as we have utilized a within factor design that controls for these factors.

The truths that were selected were chosen so as to be comparable in nature to the lies (see Appendix). However, we acknowledge that we can never be sure that the clips we compared were comparable in ways other than veracity. Also, a particularly intriguing comparison was lacking: a comparison between high-stake liars (e.g., someone who lies when denying an offense) with persons who genuinely plead their innocence when falsely accused (hence a high stake truth teller). Although such examples of false accusations do clearly occur, videotapes of such footage are extremely hard to come by, and, despite our efforts, we did not succeed in obtaining such footage. This is unfortunate, as the behaviour of such high-stake truth tellers might well resemble the behavior of high-stake liars (Bond & Fahey, 1987), because under these circumstances both liars and truth tellers might experience, and perhaps even to the same extent, emotions and/or cognitive load and/or might attempt to control their behavior.

Moreover, the authors acknowledge that 16 participants is not a large sample, and to have gathered data from more participants would have been desirable.

⁷Legislation in England and Wales requires the presence of a third party (so-called appropriate adult) while interviewing "vulnerable suspects" (i.e., juveniles, suspects with mental disability, etc.). These appropriate adults might be a social worker, a family member of the suspect, etc. The objective of their presence is to avoid, or avoid accusations of, oppressive or inappropriate behaviour from police officers in order to gain a confession.

However, the limited availability of appropriate tapes allied to the time consuming nature of acquiring them (both to the researchers and to the police) prevented us from obtaining more material.

Finally, there is obviously a difference between this sample of participants and the population at large, limiting the generalizability of characteristics of liars to those in police custody only. For example, there is a chance that people who have been arrested are more likely to commit crimes, might experience less fear or guilt, might be more experienced liars, and might care less about consequences than noncriminals who are involved in high-stakes lies situations.

APPENDIX: GROUND TRUTH DETAILS CONCERNING FIVE CASES

Suspects 8 and 9 involved in same case. Suspects were questioned about a fire in the house that killed the inhabitant—a woman whom they had befriended and visited regularly. Witnesses had often previously seen the suspects enter her home through a window. Both suspects smoke, and the woman often complained to people of them smoking in her house. Over 30 independent witnesses saw suspects enter her house through window on day of fire. Suspects denied having been there that day but were truthful about arriving at scene of fire and details thereon. Other witnesses present corroborated this part of the story. Forensic evidence showed that the fire was quick and ignited by flame. The woman was an alcoholic as corroborated by many. Police could not establish if they lied to hide a deliberate arson or that they may have accidentally started the fire with cigarettes. Hence, suspects not charged with anything.

Suspect 8:

- Lies included denial of being in house that day.
- Truths included events that occurred when fire was discovered.

Suspect 9: As above (Suspect 8).

- Lies included date that suspects were last in house, denial of ever smoking in house, denial of ever entering by window.
- Truths included events that occurred when fire was discovered, and fire victim's alcohol problem.

Suspects 10, 11, and 12 involved in same case. A man was murdered. Victim was known to Suspects 10 and 12. Details of relationships and history were recorded with NHS psychiatric hospital. Suspect 12 had motive. When questioned Suspect 11 admitted that he assisted Suspect 12 to kill him and gave very detailed account, which was supported by forensic evidence. Suspect 11 also claimed that he and Suspect 12 told Suspect 10 about murder and that she helped to hide evidence. Suspects 10 and 12 gave elaborate story designed to indicate victim had committed suicide (story was negated by several witnesses). When confronted with forensic evidence Suspect 12 admitted to being involved but claimed he had only assisted Suspect 11. Suspect 10 admitted knowledge of murder, but supported Suspect 12's story, that Suspect 11 had been main perpetrator. Suspect 11 then changed his story and said he wasn't

at all involved. Forensic evidence very much supported Suspect 11's initial story, that he had assisted Suspect 12 to kill victim. Suspect 10 was convicted of perjury (and then confessed truth), Suspect 11 was convicted of manslaughter, and Suspect 12 was convicted of murder.

Suspect 10:

- Lies included initial story to intimate victim had committed suicide. Denial of knowledge of murder, and claim that Suspect 12 was not much involved and that Suspect 11 was instigator.
- Truths included details about victim and how they had met and boyfriend's suicide attempt.

Suspect 11:

- Lies included denial of any involvement and alternative story of events.
- Truths included details of how murder occurred.

Suspect 12:

- Lies included initial story to intimate victim had committed suicide. Denial of administering killing injuries and reversal of actual events between himself and Suspect 11.
- Truths included details of how he met victim and previous suicide attempt.

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