
CURRENT RESEARCH IN SOCIAL PSYCHOLOGY

<http://www.uiowa.edu/~grpproc/crisp/crisp.html>

Volume 14, No. 9

Submitted: March 2, 2009

First Revision: April 21, 2009

Accepted: May 20, 2009

Published: June 10, 2009

INDIRECT DETECTION OF DECEPTION: LOOKING FOR CHANGE

Christian L. Hart

Texas Woman's University

Derek G. Fillmore

East Central University

James D. Griffith

Shippensburg University

ABSTRACT

In this study, we examined the effectiveness of using indirect methods to detect liars. College students viewed a video in which half of the people told some lies and half of the people were entirely truthful. Participants were either asked to detect the liars in the video or they were asked to identify people in the video whose behavior, mannerisms, or speech changed. Participants using the indirect lie detection method of looking for behavioral change were more accurate in their categorizations of liars and non-liars than were participants who were directly and explicitly looking for liars.

INTRODUCTION

In his analysis of the historical definitions of lying in the scientific literature, Vrij (2000) used the terms lie and deception interchangeably and defined them as “a successful or unsuccessful deliberate attempt, without forewarning, to create in another a belief which the communicator believes to be untrue.” Telling lies and other forms of deception is a consistent feature of human social behavior. Research on the self-reported frequency of lying indicates that in the course of their normal daily activities people lie in about 25% of their interactions with others (DePaulo & Bell, 1996; DePaulo & Kashy, 1998; Kashy & DePaulo, 1996). While it is obviously advantageous to detect lies, most of the empirical research on the detection of deception indicates that people lack any special skills or abilities to detect when others are lying (see Vrij, 2004 for a review). In fact, it seems that humans perform only slightly better than chance when attempting to detect who is lying and who is telling the truth. In a recent meta-analysis, Bond and DePaulo (2006) examined the accuracy rates of lie detectors in 206 studies. They found that, on average, people were accurate in only 54% of their lie-truth judgments, whereas one would expect 50% accuracy by chance alone. Understanding the subtle indications of lying would certainly benefit anyone wishing to detect lying and deception in others.

Despite the rather unimpressive success most people have at lie detection, scientific investigations have uncovered a few noteworthy approaches to detecting deception. There is a rather long history of using physiological measures such as the polygraph to detect evidence of deception (Larson, 1927; Marston, 1917). More recently, researchers have attempted to use measures of brain activity to identify liars (see Langleben, 2008 for a review). It should be noted that physiological measures are only indirect measures of lying and therefore questions about the validity of using them to detect deception remain (Honts, 1994; National Research Council, 2002; Spence, 2008).

Researchers have examined verbal communication cues of deception. Speech cues such as pauses, voice pitch, interruptions, hesitations, latency to respond, and response length have been used to detect deception (Vrij, 1995; Vrij, Edward, & Bull, 2001; Vrij, Edward, Roberts, & Bull, 2000). The contents of speech such as descriptions of feelings, reproductions of speech, amount of detail, logical inconsistencies, and spontaneous corrections have also been found to vary with the veracity of statements (DePaulo, Lindsay, Malone, Muhlenbruck, Charlton, and Cooper, 2003; Vrij, Edward, Roberts, & Bull, 2000). The validity concerns previously noted with physiological measures also exist with the measures of speech cues. While certain variables of speech may change when one lies, those changes can and do occur for other reasons not tied to deception.

Historically, humans have looked to non-verbal behavior for indications of another’s honesty or mendacity. Three major themes currently exist to explain the presence of non-verbal indicators of deception, each with its own unique contribution (Vrij, 2000). First, the emotional arousal hypothesis suggests that deception produces various emotional states which may influence non-verbal signals. For example, liars may experience fear, which may contribute to nervous movements or fidgeting. Second, the cognitive hypothesis focuses on the mental work load of deception and proposes that lying requires more cognitive effort which detracts from the liar’s ability to behave normally. Thirdly, the behavioral control hypothesis suggests that liars may attempt to counteract any potential signs of their deception, but in the process come off as unnatural. Thus, if a liar is trying to manage several possible verbal and non-verbal cues to their deception simultaneously, their behavior may actually appear less natural and spontaneous due to their own heightened behavioral awareness and control.

Although stereotypes about the non-verbal behavior of liars are numerous, researchers have failed to identify many reliable cues (DePaulo, Lindsay, Malone, Muhlenbruck, Charlton, & Cooper, 2003; Vrij, 2004). Some researchers have reported changes in posture, eye contact, and eye blinks when people lie, yet others have failed to find these changes. Behavioral cues such as hand, arm, foot, and leg movements have been consistently linked to deception, but as with the physiological and verbal cues, these non-verbal behavioral cues are not entirely reliable and valid indicators of lying.

Although researchers have identified potentially useful cues to indicate deception, many people erroneously rely on an entirely different set of cues to identify liars. For instance, researchers have found that many people believe that liars make less eye contact, increase their fidgeting, and shift their posture (Akehurst, Kohnken, Vrij, and Bull, 1996; Hart, Hudson, Fillmore, & Griffith, 2006). Furthermore, research also suggests that many of these inaccurate perceptions are held by both lay persons and more highly trained lie detectors, such as law enforcement officers (Vrij & Semin, 1996; Akehurst, et al., 1996). The confidence that people have in their ability to detect deception, has been examined in a number of studies and further supports the notion that people are poor lie detectors. In a meta-analysis of this literature, DePaulo, Charlton, Cooper, Lindsay, and Muhlenbruck (1997) examined the relationship between confidence and accuracy and found that the overall correlation between confidence and accuracy of detection was very small, suggesting that confidence is largely independent of accuracy. Clearly, people hold incorrect beliefs about the behavior of liars yet confidently make social judgments based on these beliefs.

The source of the many misconceptions people have about liars' behaviors is unclear. Stromwall, Granhag, and Hartwig (2004) suggested that for laypersons, the likely factors resulting in these wrongful beliefs include several psychological factors. First, the representativeness heuristic, or our tendency to assume that a sample or incident is an exemplar of the overall population, could lead people to generalize from a small set of experiences in which liars are exposed. Second, confirmation bias, the tendency to look for confirming instead of disconfirming evidence, could explain how certain misconceptions are propagated by people not looking for evidence that their beliefs are wrong. Thirdly, it is also possible that feedback plays a crucial role in our many misconceptions. For feedback to be corrective of misconceptions, it should take place often, be consistent, and happen promptly (Allwood & Granhag, 1999; Ekman, 2001). By contrast, many judgments about deception never receive any feedback whatsoever. Lastly, in the past, professionals responsible for detecting deception have been trained with incorrect and inaccurate procedures that continue to circulate within the unique cultures of these professions (Stromwall, Granhag, and Hartwig, 2004). For example, police interrogation manuals have historically included unsubstantiated claims which, nonetheless, are passed on from one generation of law enforcement to the next. Ultimately, these and other factors may explain the pervasiveness or firmness of peoples' many false beliefs about deception.

Because people may be searching for invalid behavioral or verbal cues when attempting to determine if someone is lying, it is perhaps not surprising that direct attempts to detect deception lead to such low accuracy rates. One novel approach to detecting deception is to avoid the biases held by most people by having them engage in indirect lie detection tasks. Indirect approaches to lie detection involve having people search for particular verbal and non-verbal behavioral patterns, rather than explicitly directing them to look for evidence that another person is lying. This indirect method has been referred

to as indirect or implicit lie detection and the body of research supporting it is growing and diverse (see Granhag, 2006 for a review).

A number of researchers have, in the context of their research, identified clear evidence that people are, at times, more accurate when using indirect rather than direct methods of detecting deception. For instance, researchers found that the indirect technique of having participants identify speakers who looked like they were “thinking hard” yielded more accurate lie/truth categorizations than explicit attempts at lie detection (Vrij, Edwards, and Bull, 2001). In another study, Anderson, DePaulo, and Ansfield (2002) found that when simply asked to indicate whether speakers appeared to feel comfortable or not, participants were more accurate at categorizing liars and truth tellers than other participants who were explicitly attempting to distinguish liars from truth tellers.

Others have investigated indirect detection methods that relied on implicit cognitive processes. Hurd and Noller (1988) asked participants to explicitly identify whether a statement was a lie or the truth, but participants thought aloud during the decision making process. Interestingly, when deliberating about a statement that was a lie, subjects were more likely to speculate that the scenario indeed might be deceptive, despite what their final explicit decision may have been. Still other interesting research by Anderson (1999) investigated direct and indirect detection in heterosexual romantic partnerships. Of note, compared to strangers, romantic partners performed more poorly using direct detection, but were better than strangers when using indirect methods. These studies seem to provide evidence that indirect approaches to lie-detection help participants bypass the many biases and stereotypes that have historically led to such abysmal accuracy rates in lie detection studies.

A review of the lie detection literature reveals that the behavior of liars does not change in some predictable and customary manner (see Vrij, 2000 for a review); however, it is conceivable that the behavior of each individual liar does vary in some unique and minor ways when he or she lies. Given this possibility, it may be that looking for a typical set of cues to lying in people will not be as productive as simply looking for changes in individual behavioral patterns. When asked how they spot liars, people often describe seeking out behavioral evidence based on inaccurate and stereotyped ideas about the behavior of liars (Akehurst, Köhnken, Vrij, & Bull, 1996; Hart, Hudson, Fillmore & Griffith, 2006). These stereotypes likely draw attention away from valid and individualized indications of a person’s deception.

The aim of the present study was to further investigate the effectiveness of indirect compared to direct methods of detecting deception. Specifically, this study evaluated the relative effectiveness of a novel indirect method of lie detection involving the detection of change in behavioral patterns. As mentioned previously, there are theoretical themes underlying the behavioral variation thought to correspond with lying. Specifically, it is thought that liars may experience emotional arousal and increased cognitive work load and may attempt to control their behavior. If this is accurate, then one might assume that behavior would change when a person lies. However, the precise nature of the behavioral change is not specified by these theoretical approaches. Thus, simply looking for changes in behavior might be more productive as a lie detection strategy than looking for any specific set of behaviors thought to be associated with lying. The hypothesis was that indirect lie detection methods would result in greater accuracy than direct attempts to detect deception.

METHOD

Participants

Participants were 104 (53 males, 51 females) undergraduate students at a small coeducational university in the southern United States. We recruited participants from psychology classes. All participants were given extra credit in their courses in exchange for their participation.

Stimulus Materials

The stimulus for this investigation was a video consisting of brief interviews of twenty (10 male and 10 female) people. The video was recorded prior to the study using male and female volunteers ranging in age from 19 to 61. Before being interviewed, each volunteer completed a fifteen question autobiographical survey. The volunteers sat for the interview, and their entire head to toe image was captured on the recording. While the voices of both the interviewer and volunteers were recorded, the interviewer was located off screen. In the videotaped interview, each of the interviewees answered the same four biographical questions: 1) *Can you tell me about any pets you have?* 2) *Tell me about where you grew up.* 3) *Would you tell me a little about where you work?* 4) *Let's talk about your family. Do you have any brothers or sisters?* None of the interviewees were aware of the specific interview questions prior to appearing on the video. Immediately before the interview began, half of the interviewees were instructed to lie in response to any questions about their family (the fourth interview question), and the other half were asked to answer honestly. While there was no way of ascertaining whether the interviewees' responses were actually truthful or lies, the researchers did address this issue. After the interview concluded, the researchers examined the biographical information provided in the interviewees' surveys in order to verify that the information provided in the supposed truthful interviewee statements corresponded with the information provided in their survey responses. The researchers also verified that the supposed deceptive responses did not correspond with information provided on the surveys. The presentation order of the ten liars and ten non-liars in the video was randomized. The same video recording was presented to all participants.

Procedure

The researchers collected data from groups of ten to twenty participants at a time. Each group was assigned to one of the experimental conditions (direct lie detection vs. indirect lie detection). Each group of participants was given one of two sets of instructions prior to viewing the videos. The direct lie detection instruction asked participants to determine whether each individual in the video was lying or telling the truth when answering the fourth interview question. The indirect lie detection instruction asked participants to determine whether each individual in the video exhibited a "change in behavior, body language, or speech changes" when answering the fourth question. These two sets of instructions comprised the two levels of the independent variable. To avoid contamination, all students in a group were given the same set of instructions.

Participants viewed the 20 video clips of people answering interview questions. After viewing each interviewee, the video was briefly paused and participants were asked to make their determinations about the interviewee's response to the fourth question (lie vs. truth, or change vs. no change). Participants indicated their responses on a form. Furthermore, each participant provided a rating of their confidence for each of their judgments on a seven point Likert type rating scale where 1 indicated

very low confidence and 7 indicated very high confidence. After participants finished viewing the video and completing their ratings of each clip, they were debriefed by the researcher.

RESULTS

A t-test was used to determine if the two groups differed significantly in their ability to accurately distinguish between liars and non-liars in the video. We found that participants in the indirect detection group were significantly more accurate in classifying liars ($M = 55.2\%$, $SD = 20.2$) than those in the direct detection group ($M = 49.4\%$, $SD = 14.2$) were ($t(1,102) = 1.688$, $p < .05$). An accuracy rate of 50% would have been expected by chance alone. A one sample t-test revealed that those in the indirect detection category performed significantly better than chance levels ($t(1,51) = 1.859$, $p < .05$), while those in the direct detection group did not ($t(1,51) = 0.293$, $p = .39$). Furthermore, the results of a t-test showed that those in the indirect detection group had more confidence in their decisions ($M = 5.23$, $SD = .73$) than those in the direct detection group ($M = 4.90$, $SD = .77$) when judging liars ($t(1,102) = 2.194$, $p < .05$).

A similar set of analyses was used to determine whether or not the two groups differed in their ability to classify truthful responses. While there were small differences in accuracy between the indirect detection group ($M = 57.5\%$, $SD = 20.2$) and the direct detection group ($M = 59.8\%$, $SD = 17.2$), these differences were not statistically significant ($t(1,102) = .627$, $p = .27$). However, both the indirect and direct groups performed significantly better than chance levels ($t(1,51) = 2.680$, $p < .005$ and $t(1,51) = 4.110$, $p < .001$). There was no significant difference in the confidence expressed by the indirect detection group ($M = 5.12$, $SD = .87$) and the direct detection group ($M = 4.94$, $SD = .95$) ($t(1,102) = .995$, $p = .16$).

DISCUSSION

The results of this study are consistent with previous studies indicating that those trying to directly or explicitly detect liars typically perform at near chance levels (Bond & DePaulo, 2006). In this study, the attempted direct detection of lying resulted in very poor accuracy. However, we did find that the use of an indirect method resulted in more accurate categorization of liars and truth-tellers. The indirect detection method that was utilized in this study involved having participants simply look for changes in behavior. Previous researchers have failed to identify a consistent pattern of behaviors associated with lying (Vrij, 2000). While it may be the case that liars do not universally exhibit or inhibit any specific behavior or set of behaviors, it is conceivable that the behavior of most liars does change when they lie. It might be that, when lying, each liar's behavior changes in some subtle and rather unique ways. Therefore, searching for some elusive, universal set of cues to deception may not be as fruitful as identifying the changes that particular individuals evince when deceiving as compared to their baseline behaviors exhibited when not lying.

In this study, the participants indirectly detected liars by looking for changes in behavior without knowing that lying was a central aspect of the study. When primed to search for liars, many people report engaging in search and detection strategies based on stereotyped or faulty schemas of lying behaviors (Akehurst, Köhnken, Vrij, & Bull, 1996; Hart, Hudson, Fillmore & Griffith, 2006). Thus, relying on stereotypes about liars engaging in less eye contact and more fidgeting may pull attention away from accurate, subtle, and varied behavioral indications of lying. It may be that ignorance about

the aim of this study prevented our subjects from focusing on the irrelevant and stereotypical behavioral cues that seem to sidetrack many people engaged in lie detection.

One of the significant limitations of this study is that it utilized a very low-stakes deception scenario. The individuals in the video were asked to lie about biographical information, but there were no serious consequences associated with failure to produce a believable lie. In many real-world contexts, the consequences associated with failed lies can be quite severe, thus anxiety and fear may lead to more exaggerated behavioral and verbal changes in those contexts. Also, the external validity of this study is limited by the fact that participants evaluated people in a video rather than in a face-to-face format. It seems likely that the social dynamics of interacting with a live person differ considerably from those associated with viewing people in a video. Finally, participants only viewed the truthful baseline behavior of people for several seconds before deceptive behavior was presented. It might be that longer exposure to the baseline behavior would have increased the participants' abilities to spot changes in behaviors among liars.

The present study adds to a growing body of evidence that indirect lie detection strategies may offer some advantages in accuracy over more direct behavioral detection of deception (Anderson, 1999; Anderson, DePaulo, & Ansfield, 2002; Granhag, 2006; Hurd & Noller, 1988; Vrij, Edwards, & Bull, 2001). This growing body of evidence suggests that if people can be disengaged from their stereotype-driven deception detection strategies, they might detect important and meaningful behavioral cues that would have otherwise gone unnoticed. For future research, it will be vital to explore the variety of indirect approaches that might yield better detection of liars. It will also be important to examine these strategies in more realistic and high stakes scenarios.

REFERENCES

- Akehurst, L., Köhnken, G., Vrij, A., & Bull, R. (1996). Lay persons' and police officers' beliefs regarding deceptive behaviour. *Applied Cognitive Psychology, 10*(6), 461-471.
- Allwood, C. M., & Granhag, P. A. (1999). Feelings of confidence and the realism of confidence judgments in everyday life. In P. Juslin, & H. Montgomery (Eds.), *Judgment and decision making: Neo-brunswickian and process-tracing approaches*. (pp. 123-146). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
- Anderson, D. E., DePaulo, B. M., & Ansfield, M. E. (2002). The development of deception detection skill: A longitudinal study of same-sex friends. *Personality and Social Psychology Bulletin, 28*(4), 536-545.
- Anderson, D. E. (1999). *Cognitive and motivational processes underlying truth bias. (deception detection, romantic relationships)*. US: ProQuest Information & Learning.
- Bond, C. F. J., & DePaulo, B. M. (2006). Accuracy of deception judgments. *Personality and Social Psychology Review, 10*(3), 214-234.
- DePaulo, B. M., & Bell, K. L. (1996). Truth and investment: Lies are told to those who care. *Journal of Personality and Social Psychology, 71*(4), 703-716.

- 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(4), 346-357.
- DePaulo, B. M., & Kashy, D. A. (1998). Everyday lies in close and casual relationships. *Journal of Personality and Social Psychology*, 74(1), 63-79.
- DePaulo, B. M., Lindsay, J. J., Malone, B. E., Muhlenbruck, L., Charlton, K., & Cooper, H. (2003). Cues to deception. *Psychological Bulletin*, 129(1), 74-118.
- Ekman, P. (2001). *Telling lies: Clues to deceit in the marketplace, politics, and marriage*. New York: W W Norton & Co.
- Granhag, P. A. (2006). Rethinking implicit lie detection. *Journal of Credibility Assessment and Witness Psychology*, 7(3), 180-190.
- Hart, C. L., Hudson, L. P., Fillmore, D. G., & Griffith, J. D. (2006). Managerial beliefs about the behavioral cues of deception. *Individual Differences Research*, 4, 176-184.
- Honts, C. R. (1994). Psychophysiological detection of deception. *Current Directions in Psychological Science*, 3(3), 77-82.
- Hurd, K., & Noller, P. (1988). Decoding deception: A look at the process. *Journal of Nonverbal Behavior*, 12(3), 217-233.
- Kashy, D. A., & DePaulo, B. M. (1996). Who lies? *Journal of Personality and Social Psychology*, 70(5), 1037-1051.
- Langleben, D. D. (2008). Detection of deception with fMRI: Are we there yet? *Legal and Criminological Psychology*, 13, 1-9.
- Larson, J. A. (1927). The polygraph and deception. *Welfare Magazine*, 18, 646-669.
- Marston, W. M. (1917). Systolic blood pressure symptoms of deception. *Journal of Experimental Psychology*, 2(2), 117-163.
- National Research Council (2002). National Research Council, Committee to Review the Scientific Evidence of the Polygraph, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.
- Spence, S. A. (2008). Playing devil's advocate: The case against fMRI lie detection. *Legal and Criminological Psychology*, 13, 11-25.

Strömwall, L. A., Granhag, P. A., & Hartwig, M. (2004). Practitioners' beliefs about deception. In P. Granhag, & L. Strömwall (Eds.), *The detection of deception in forensic contexts*. (pp. 229-250). New York: Cambridge University Press.

Vrij, A. (1995). Behavioral correlates of deception in a simulated police interview. *Journal of Psychology: Interdisciplinary and Applied*, 129(1), 15-28.

Vrij, A. (2000). *Detecting lies and deceit: The psychology of lying and the implications for professional practice*. New York: John Wiley & Sons, Ltd.

Vrij, A. (2004). Why professionals fail to catch liars and how they can improve. *Legal and Criminological Psychology*, 9(2), 159-181.

Vrij, A., Edward, K., & Bull, R. (2001). People's insight into their own behaviour and speech content while lying. *British Journal of Psychology*, 92(2), 373-389.

Vrij, A., Edward, K., Roberts, K. P., & Bull, R. (2000). Detecting deceit via analysis of verbal and nonverbal behavior. *Journal of Nonverbal Behavior*, 24(4), 239-263.

Vrij, A., & Semin, G. R. (1996). Lie experts' beliefs about nonverbal indicators of deception. *Journal of Nonverbal Behavior*, 20(1), 65-80.

AUTHORS' NOTE

We wish to thank Laura Katherine Cowan, M.A. for her considerable help in editing this manuscript.

AUTHOR'S BIBLIOGRAPHIES

Christian L. Hart is an assistant professor of psychology at Texas Woman's University. His research focuses on deception and its detection. His email address is: chart2@twu.edu

Derek G. Fillmore is a graduate student at East Central University. He is completing his graduate work in rehabilitation counseling. His email address is: dergfil@email.ecok.edu

James D. Griffith is an associate professor of psychology at Shippensburg University. His research interests focus on risk taking behavior. His email address is: jdgrif@ship.edu