The Impact of *Lie to Me* on Viewers’ Actual Ability to Detect Deception

Timothy R. Levine, Kim B. Serota, and Hillary C. Shulman

Abstract
The new television series *Lie to Me* portrays a social scientist solving crimes through his ability to read nonverbal communication. Promotional materials claim the content is based on actual science. Participants (*N* = 108) watched an episode of *Lie to Me*, a different drama, or no program and then judged a series of honest and deceptive interviews. *Lie to Me* viewers were no better at distinguishing truths from lies but were more likely than control participants to misidentify honest interviewees as deceptive. Watching *Lie to Me* decreases truth bias thereby increasing suspicion of others while at the same time reducing deception detection ability.

Keywords
lying, lie detection, media effects, truth bias, outcome expectations

From writer Samuel Baum (“The Evidence”) and the executive producers of 24 and “Arrested Development” comes LIE TO ME, a compelling new drama series inspired by the scientific discoveries of Dr. Paul Ekman, a real-life specialist who can read clues embedded in the human face, body and voice to expose both the truth and lies in criminal investigations.

Fox Broadcasting Company, 2009

As described in the promotional material above, a new television crime drama on the Fox network is based on the premise that lies can be detected though the expert observations of nonverbal behavior. While the show claims to be based on actual social science, even Ekman and the show’s writers recognize that the storylines may rely on limited clinical observation and unreplicated studies (Conkle, 2009). In fact, a case can be made that the

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preponderance of the existing deception literature actually documents that the premise of the show is scientifically doubtful. As a consequence, the fictionalized success of expert deception detectors may increase the cynicism of viewers without substantially enhancing their ability to distinguish truth from lie.

Consider the findings of the most recent meta-analyses on the topic of deception and deception detection. Bond and DePaulo (2006) find that people are only slightly better than chance at detecting deception. Bond and DePaulo also find that people tend to be truth biased. Truth bias is the tendency to judge messages as honest independent of actual message veracity (Levine, Park, & McCormack, 1999). Because participants in deception detection experiments typically see an equal number of truths and lies and because they tend to believe more often than disbelieve, people judge honest messages correctly more often than lies, and people correctly identify lies at rates lower than 50% (Levine et al., 1999). Bond and DePaulo (2008) document a lack of meaningful individual differences in the ability to detection deception. For example, Aamodt and Custer (2006) report that people with professional experience, such as police, are no better at distinguishing truths from lies than are college students. Three separate meta-analyses of deception cues fail to find any substantial nonverbal differences that distinguish truths from lies (DePaulo et al., 2003; Sporer & Schwandt, 2006, 2007), and Frank and Feeley (2003) report only small gains, about 4% in raw accuracy, from nonverbal training.

Lie to Me is based on the premise that highly accurate deception detection is possible based on real-time observation of specific behaviors indicative of lying. The preponderance of research demonstrates that the exact opposite is true. Lie to Me also suggests that certain people are naturally gifted lie detectors. This is also inconsistent with the preponderance of research (Bond & Uysal, 2007). Thus, when looking at the evidence generated across several hundred individual studies, the idea of Lie to Me is highly implausible and almost certainly misleading.

The tendency to retain fiction as fact has been well documented as has the associated risk of being misinformed. Studies show limited success when seeking to reduce the suggestibility of fictionalized accounts (Marsh & Fazio, 2006; Marsh, Meade, & Roedinger, 2003). The effect of fictional inaccuracies may be moderated by giving readers or viewers warnings (Butler, Zaromb, Lyle, & Roedinger, 2009; Greene, Flynn, & Loftus, 1982; Meade & Roedinger, 2002), but this same research validates the power of fiction to create misinformed memories. Fiction as a source of false beliefs also takes many forms. The tendency to believe distorted or wholly false information as fact can be found with literature (Marsh & Fazio, 2006), doctored photographs (Sacchi, Agnoli, & Loftus, 2007), and motion pictures (Butler et al., 2009).

Social cognitive theory as well as competing theories in the media effects domain are consistent with the view that people learn behaviors and form judgments from watching movies and television. Some of this learning comes from factual accounts of news, documentaries, and live reportage. However, the use of fiction for learning ranges from the positive efforts to engage high school students (Metzger, 2007) to state-sponsored propaganda intended to manipulate the views of an entire society (Rauxloh, 2005). Research on fictionalized portrayals of real events shows that motion pictures and television are
powerful influencers of memory and information retention, even if the portrayals are false or inconsistent with historical or empirical facts (Butler et al., 2009). Butler et al. (2009) observed when participants are presented with factually correct information in text form and misinformation on the same topic in a film dramatization, significantly more misinformation is recalled than when participants are only exposed to factual text.

In film and television, the genre of crime and law dramas is of particular note for its subsequent impact on public reaction to and within the criminal justice system. Often due to the storytelling value derived from the portrayal of good versus evil or from a desire to follow commercially successful formulas (Greenfield & Osborn, 1995), crime and legal dramas tend to be unbalanced and exaggerated. Crime solvers and lawyers are idealized, and the legal system “is invariably shown as a dynamic force and in a positive light” (Greenfield & Osborn, p. 120). Thus, the combination of producers’ tendencies toward biased presentation and viewers’ susceptibility to retaining misinformation creates conditions in which viewers are likely to learn and accept a false premise. In terms more relevant to deception research, the crime fiction genre weakens or reduces normative trust in communication.

The question addressed by the current study is, does watching *Lie to Me* impact viewers’ ability to detect deception and, if so, how? A variety of predictions are possible, but one prediction can be rejected outright. Because the premise of the show is scientifically implausible, it is unlikely that viewing the show will lead to substantial gains in deception detection accuracy. The apparent detection success portrayed in the *Lie to Me* dramatizations may lead to outcome expectations (Bandura, 1986; Baranowski, Perry, & Parcel, 1997) that are unlikely to be met. Consistent with social cognitive theory, the program may create high expectancy values, but the results from decades of deception detection research indicate that attempting to apply the rules demonstrated in the program will not substantially increase most viewers’ detection accuracy. Simply put, viewers who attempt to model the deception detection techniques depicted in the show will not show large (more than 5%) gains in truth-lie discrimination over those who have not seen the show.

While large gains in accuracy are not anticipated, research documenting the bogus training effect leads to the hypothesis of potential modest gains in accuracy as a result of viewing the show. A prominent feature of the *Lie to Me* script is the presentation of episode characters’ nonverbal cues in juxtaposition with pictures of prominent people lying; the director and writers appear to be teaching viewers to associate these cues with famous lies. Levine, Feeley, McCormack, Harms, and Hughes (2005) showed that training participants in bogus nonverbal cues can, under certain conditions, improve detection accuracy slightly (i.e., an improvement of 3% to 5% in accuracy; e.g., from 55% to 58% correct). Training people to look for behavioral cues that had no real diagnostic utility reduced truth bias and led to small gains in detection accuracy. Presumably, people receiving the bogus training simply paid closer attention than those receiving no deception detection training. Bogus training, however, lowered accuracy when judges were trained to look for wrong-direction behavioral cues (i.e., when cues allegedly associated with deceit are actually associated with honesty). Thus, predicting small improvements in detection accuracy from viewing
*Lie to Me* due to an increase in mere surveillance or vigilance is only prudent if the show does not actively provide disinformation that would lead to systematic errors.

An alternative prediction is based on the veracity effect (Levine et al., 1999). The veracity effect holds that because people are usually truth biased, that is, people are more likely to judge messages as honest than deceptive independent of actual veracity, people in deception detection experiments usually get truths right and lies wrong. This makes conclusions about slightly-better-than-chance accuracy misleading because that finding refers to an average across truths and lies. Applied to the current study, watching *Lie to Me* is likely to make people more cynical and, like the characters portrayed in the drama, less truth biased. The show, for example, claims that the average person tells three lies in 10 minutes of conversation, the lead character in the show is on the constant lookout for lies, and lying is generally portrayed as pervasive. Therefore, exposure to *Lie to Me* is likely to reduce normal truth bias. Because viewers will likely guess lie more often than nonviewers, this will reduce accuracy for truths but raise accuracy for lies, with the relative gains and declines canceling out. Thus, it is plausible that watching *Lie to Me* will decrease truth bias, decrease truth accuracy, increase lie accuracy, and have little or no net effect on the overall ability to distinguish truths from lies.

**Method**

**Participants**

The participants in this experiment were *N* = 108 undergraduate students at a large midwestern university. Of these, 44 (41%) were male and 63 (58%) were female (with one person not disclosing their sex on the response form). The average age was 19.7 years (range = 18 to 26 years, *SD* = 1.7). All participants received research credit in a class in exchange for their participation, and the data collection was institutional review board approved.

**Design**

The research design was a 3 × 2 mixed experiment crossing viewing condition (watching *Lie to Me*, watching an alternative television program, or not watching television prior to making veracity judgments) with message veracity (truth or lie). Participants were randomly assigned to one of three viewing conditions; *n* = 33 watched *Lie to Me*, *n* = 40 watched a different crime drama, *Numb3rs*, in which crimes are solved by a genius math professor, and *n* = 35 were assigned to a “no television drama” control group. All participants watched and rated a series of 12 interviews, half of which were honest and half involved lies. Each interview was judged as honest or as a lie. Lie bias (operationalized as the percentage of interviewees judged as lying and equivalent to one minus truth bias), lie accuracy (the percentage of deceptive interviewees correctly identified as liars), truth accuracy (the percentage of honest interviewees correctly identified as honest), and overall accuracy (the overall percentage of interviewers judged correctly) were the dependent measures.
Stimulus Materials

The videotaped truths and lies were selected from a set of more than 100 tapes created by T. Levine at Michigan State University in 2007 with funding by the National Science Foundation. Briefly, undergraduate students played a trivia game for a cash prize with a partner as part of study supposedly on teamwork. All participants were provided with the opportunity to cheat. Cheating was encouraged by their partner who was really a research confederate. After the trivia game was completed, participants were interviewed, and the interview was videotaped in high definition. Each interview involved the same 10 questions. The first few questions asked about prior experience with teamwork and playing trivia games. These were followed by questions asking about interviewee’s performance in the game. The last three questions ask if cheating occurred, if the participant answered honestly, and about what the person’s partner would say when they were interviewed. Because all trivia game participants decided for themselves whether to cheat and, if they cheated, whether to lie, the lies were unsanctioned. Because the lies and the accusations of lying were about students cheating in federally funded research at a university, participants in the current study experienced the situation as both highly involving and one of high stakes.

Six lies were randomly selected from the database for inclusion in the current study. For each lie, a matching truthful interview was selected such that the deceptive and truthful interviewees were matched on sex, race/ethnicity, and approximate physical appearance attractiveness. The videos show the full body of the interviewees. The selected interviews from the tape archive were transferred to DVD for use in the experiment along with instructions and filler segments.

Procedures

After gaining informed consent, and depending on experimental condition, participants either watched an entire episode of a television drama or immediately proceeded to the deception detection task. For those watching the television drama, the show was watched in a classroom on a large screen projection system. For each drama, the series premier was used. Following the show, which was watched without commercial interruption, participants watched a series of 12 videotaped interviews on the same large screen projection system. Each taped interview was approximately 2 minutes long and involved a student denying cheating while playing a trivia game. Filler segments were interspersed between each interview and contained text telling the viewer to rate the previous interview. Participants made a forced choice lying-cheater or honest-noncheater judgment for each interview. Responses were scored for lie bias and accuracy.

Results

Across conditions, participants were significantly truth biased, judging 56% of the interviewees as honest (95% CI: 53% to 59%). Participants were better than chance
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at distinguishing truths from lies, achieving 62.2% accuracy (95% CI: 58.5% to 65.9%). Consistent with the veracity effect, accuracy for identifying truths (68.2%) was higher than accuracy for lies (56.1%), t(107) = 3.86, p < .001.

Examining differences among conditions, the omnibus ANOVA for truth bias approached statistical significance, F(2, 105) = 2.71, p = .071. A planned contrast indicated that the combined means of the control and Numb3rs groups (M = 59.0% and 57.73%, respectively) were significantly greater than the mean in the Lie to Me group, M = 50.7%, t(105) = 2.32, p = .023. Further, a Dunnett test shows that truth bias in the Lie to Me group was significantly lower than the control, p = .032.

Neither the omnibus ANOVA for overall accuracy, F(2, 105) = 1.79, p = .17, η² = .03, nor for lie accuracy were statistically significant, F(2, 105) = 0.49, p = .61, η² = .00. There was, however, a significant difference for truth accuracy, F(2, 105) = 4.76, p = .01, η² = .08, r = .29. Tukey B and Dunnett’s post hoc tests showed lower truth accuracy in the Lie to Me group than in the no show control. The means and standard deviations for the dependent measures by experimental condition are presented in Table 1.

Discussion

This study investigated how exposure to the new Fox network show Lie to Me impacted viewers’ ability to detect real lies. While many television shows have the potential to teach real lessons, such as the probabilities involved in Deal or No Deal or the forensic techniques of CSI and NCIS, no warrants of authenticity are claimed, and the learning effects associated with such shows are inconclusive. Lie to Me, however, explicitly claims to be based on real social science and depicts a social scientist, who is an expert in reading nonverbal behaviors, detecting deception, and solving crimes through observations of nonverbal behavior. Yet the lie detection methods depicted on the show are an undifferentiated mix of empirically tested theory (most of which the preponderance of the literature fails to support) and pure fiction. This research posits that the program will create outcome expectations based on the dramatic presentation. However, raising expectations is unlikely to substantially improve accuracy.

Participants watched either an episode of Lie to Me, an episode of Numb3rs—a conceptually similar show involving math to solve crimes—or did not watch a crime drama. All participants participated in a lie detection task. Viewers of Lie to Me were found to be more skeptical than the other two groups. Although research shows that truth bias is a very reliable finding, that is, most people are truth biased most of the time, the current participants who viewed Lie to Me failed to demonstrate truth bias. The increased skepticism failed to improve lie detection or truth-lie discrimination. It did, however, significantly reduce the proportion of correctly identified honest interviews.

The results are somewhat surprising because research shows that exposure to innocuous bogus information about nonverbal cues (Levine et al., 2005) and suspicion inductions (Kim & Levine, 2008; McCornack & Levine, 1990) leads to slight but statistically significant improvements in overall accuracy. This was not the case in the current findings. Declines in truth bias led to an increase in false positive deception attributions without a
corresponding increase in the hit rate for lies. Reductions in truth bias usually lead only to lower accuracy when wrong-direction information is provided. Thus, *Lie to Me* appears to increase skepticism at the cost of accuracy.

One limitation in the current design is that participants were not asked whether they had previously seen the show. Thus, it is possible that some participants in the control conditions had exposure to the show. Because the experiment involved random assignment to conditions, to the extent that some participants had prior exposure, such exposure would not be expected to vary systemically across conditions, and therefore the potential impact of exposure would minimize differences between groups. It is unlikely that prior exposure was a problem. This is because the experiment was conducted early in the first season of *Lie to Me*, and an informal survey of students similar to those in the study suggested that viewership of either experimental series was low.

The implications of this research are threefold. First, and consistent with research on the retention of misinformation, the study suggests that fictional media portrayal of social science theory leads to confusion between fiction and fact. Presenting a theory as effective and accepted when the scientific community sees it competing with other viable theories can mislead viewers into accepting the theory as fact and create expectations for the viewers’ own abilities to perform in accordance with that theory. Second, the specific portrayal of nonverbal deception detection techniques as highly effective and the presentation of lying behavior as pervasive lead to viewer skepticism of others but without a concomitant increase in ability to confirm their suspicions. In fact, the results of this study indicate claims of accuracy by fictionalized characters and fictional demonstrations of accurate deception detection lead to reduced accuracy on the part of the viewer. Finally, increased skepticism and (unjustifiably) heightened expectations of detection accuracy may have a negative impact on real-life deception detection situations. Viewers may come away with the false sense that they can better detect lies. Viewers may also acquire a false sense that law enforcement officers are being effectively trained to detect deception and, therefore, may be less critical as jurors or witnesses. Further, this show could instill a false sense of confidence within the viewing public that security experts are capable of successfully detecting and handling terrorism on their own, while in the meantime law enforcement agencies are trying to encourage active vigilance from all members of society. This research suggests that the consequences of good drama based on bad science needs to be more fully considered.

Table 1. Means (and Standard Deviations) for Truth Bias and Accuracy by Experimental Condition

<table>
<thead>
<tr>
<th></th>
<th>Lie to Me</th>
<th>Numb3rs</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truth bias</td>
<td>50.7% (13.4)</td>
<td>57.9% (18.1)</td>
<td>59.0% (15.8)</td>
</tr>
<tr>
<td>Total accuracy</td>
<td>59.5% (12.1)</td>
<td>61.7% (13.8)</td>
<td>65.2% (11.7)</td>
</tr>
<tr>
<td>Truth accuracy</td>
<td>60.1% (19.1)</td>
<td>69.6% (21.6)</td>
<td>74.3% (16.3)</td>
</tr>
<tr>
<td>Lie accuracy</td>
<td>58.8% (17.0)</td>
<td>53.8% (24.0)</td>
<td>56.2% (22.5)</td>
</tr>
</tbody>
</table>
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Note
1. Until recently, the issue of lying pervasiveness was not well documented. Therefore, the Lie to Me Web site statement that “the average person tells three lies in ten minutes of conversation” (Fox Broadcasting Company, 2009) appears provocative. Research examining the frequency of lying reports the typical rate of lying in the range of one to two lies per day (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996; Hancock, Thom-Santelli, & Ritchie, 2004) or less (George & Robb, 2008). Serota, Levine, and Boster (2010) found, with a nationally representative sample of the U.S. adult population, the majority of lies are told by a few prolific liars, while the majority of people tell one or no lies on any given day. FOX provides no reference for the three-lies statement, and a request for assistance identifying the source submitted to the Ekman Group (to which the technical discussion on the FOX Web site is linked) received no response. However, based on a thorough review of the deception literature, the statement appears to be derived from a study reported by Feldman, Forrest, and Rapp (2002). In their research, participants who lied reported 2.92 lies during the 10 minute duration of a conversation used to obtain data on self-presentation. Closer inspection of the results suggests that the Lie to Me promoters either failed to understand the data (which are clearly reported in detail by Feldman et al., 2002) or have ignored the detail in order to maximize the promotional value of the statement. Several aspects of the statement are incorrect. First, the participants of the study were students; it has been well established (Sears, 1986) that the average student is not the average person. DePaulo et al. (1996) demonstrate that students tell more lies than typical adults. Second, the three-lies statistic is based on only those who reported lying; the mean for all students in the study, including those who told no lies, was 1.75 lies during the 10 minute conversation. Finally, the setting was an experiment with three conditions, two of which were designed to induce lying. The control group was the only subsample within the study that can be considered representative of an external population (in this case, students). The mean number of lies by all control-group participants during the 10 minute conversation was 0.88, significantly lower than the induction groups or the combined samples. A corrected statement by FOX should read, “The average student, who lies more than the average adult, tells less than one lie per 10 minute conversation in an experimental setting.”

References


**Bios**

**Timothy R. Levine** (PhD, Michigan State University, 1992) is professor of communication at Michigan State University. Levine’s research interests include deception detection, interpersonal communication, and social influence.

**Kim B. Serota** is a PhD candidate in the Department of Communication at Michigan State University and special lecturer in the Department of Management and Marketing at Oakland University. He has more than 30 years of managerial and research consulting experience in the automotive and travel industries. His current research interests include detecting deception in interpersonal and marketing communication; social influence as a factor in health, marketing, and political campaigns; and applications of network analysis to brand architecture and effective organizational strategy.

**Hillary C. Shulman** is a doctoral student in the Department of Communication at Michigan State University. Her research interests include political, interpersonal, and group communication, with a focus in promoting civic engagement through deliberation.