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# 차 례

## 커뮤니케이션 과학

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- Examining Individual Differences in Deception: 07  
Reported Lie Prevalence, Truth-bias, Deception Detection  
Accuracy, Believability, and Transparency  
  
Timothy R. Levine (University of Alabama at Birmingham)

# Examining Individual Differences in Deception: Reported Lie Prevalence, Truth-bias, Deception Detection Accuracy, Believability, and Transparency\*

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## Abstract

Distinct programs of research have investigated deception detection accuracy and the prevalence of lying. Further, prior deception detection experiments typically confound sender and receiver effects. The current experiment (N = 100) sought both to disentangle sender and receiver effects examining anticipated associations between reported lie prevalence and sender and receiver effects: sender transparency, sender demeanor, receiver ability, and receiver truth-bias. Three hypotheses were tested. It was expected that poor liars would report lying less frequently. The second hypothesis predicted that senders with honest demeanors would report lying with greater frequency. Third, it was anticipated that participants who reported lying more frequently would be less truth-biased. All participants self-reported how often they lied and how often they believed they were lied to. Participants then took part in a round robin deception detection task where each participant was both a sender and a receiver. Scores were created for how often each participant was believed (honest demeanor), correctly

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detected (transparency), believed others (truth-bias), and correctly detected others (receiver ability / accuracy). The data were not consistent with the associations predicted by three hypotheses, but the deception false consensus effect was replicated. Participants who reported lying more frequently reported being lied to more often. The results are compared with prior findings. Future research should investigate why the deception false consensus effect does not lead to greater truth-bias. Additional research is needed to explain across-study differences in variability in sender transparency, sender demeanor, receiver ability, and receiver truth-bias.

Keywords: lying, deception, deception detection, lie frequency, false consensus

## Introduction

Given that variance may well be the most important concept in social science, it is odd that social scientists pay so much attention to means and averages. In the literature on deception, for example, statements such as the accuracy of deception detection is 54% (Bond & DePaulo, 2006) or people lie once or twice per day (DePaulo et al., 1996) are ubiquitous and often accepted at face value (Levine, 2020). Both of these pervasive empirical claims are well justified in the sense that they are average results that have been replicated many times (Levine, 2020).

One thing that makes claims such as these potentially misleading, however, is that the average is an abstraction, and it could well be that few people are average on any given dimension, attribute, ability, or proclivity. Simply put, not everyone is the same. The ways in which people differ from one another are called individual differences. How much people differ from the average is variance. Researchers who ignore individual differences and variance and focus on means do so at their own peril. When variability is large or distributions are skewed, averages can be misleading.

The current experiment examines five important individual differences in deception behavior: self-reported prevalence of lying, truth-bias, accuracy in a deception detection task, the tendency to be believed by others (honest demeanor), and sender detectability or transparency. The extent to which these five individual differences are intercorrelated is assessed and three hypotheses are advanced.

The prevalence of lying refers to how often people lie. Following DePaulo et al. (1996), the prevalence of lying is often reported as the number of lies and individual tells per day. Truth-bias is the tenden-

cy for a receiver to believe others. Following McCornack and Parks (1986), truth-bias is scored as a percentage in which the number of messages believed is divided by the total number of messages assessed. Accuracy is the raw percent correct in a deception detection task. Honest demeanor is a sender analog to truth-bias. It is the percent of messages by a sender that are believed across receivers. Finally, sender detectability is the accuracy for individual senders averaged across receivers. Lie prevalence, honest demeanor, and sender detectability are individual differences among senders while truth-bias and accuracy are receiver scores.

## Deception Detection Research

Most deception research has focused on two interrelated issues: are there specific behavioral cues that distinguish honest communication from lies, and how accurately can people distinguish lies from honest truths (Levine, 2020). Prior research on deception cues leads to three broad conclusions. First, people believe that deception cues exist. For example, Bond and The Global Deception Research Team (2006) found that people everywhere believe that liars avert their gaze. Second, constellations of inter-correlated cues have a strong impact on truth and lie judgments (Levine et al., 2011). Finally, individual cues have little actual diagnostic value (Levine, 2020; Luke, 2019). That is, cues affect perceptions of honesty and deception, but they do not usefully signal actual honesty and deception.

Much prior research has examined people's ability to accurately distinguished truths from lies (i.e., accuracy). Meta-analysis reports that people are significantly better than chance with a mean of 54% cor-

rect and a standard deviation of 6% (Bond & DePaulo, 2006). These findings are remarkably robust and hold across a variety of moderators such as media affordance (e.g., audio only or audio-visual media), mediated or face-to-face communication, student or expert samples, sender motivation, and planned or spontaneous communication (Bond & DePaulo, 2006). Research also finds that people are significantly truth-biased meaning that people are more likely to think that a communication is honest than deceptive (Bond & DePaulo, 2006).

Levine (2016; 2020; also see Bond & DePaulo, 2008) notes that deception detection results typically confound sender and receiver-based explanations. For example, when a receiver correctly identifies when a sender is lying, this might be because the receiver is skilled at deception detection (accuracy) or alternatively it might be that the sender is a bad liar (sender detectability). Similarly, if the receiver believes a sender, it might be the receiver is especially gullible (truth-biased) or it might be that the receiver comes off as especially credible (exhibits an honest demeanor). Levine (2016; 2020) uses the labels ability, transparency, truth-bias, and demeanor for these alternative types of explanations. Ability refers to a receiver's capability to correctly distinguish truths from lies and corresponds to accuracy scores. Transparency involves a sender's inability to disguise their actual honesty and aligns with sender detectability. Truth-bias is a sender's tendency to believe others. Finally, honest demeanor is a sender's tendency to be believed across receivers. Bond and DePaulo (2008) report that senders typically vary more than judges (also see, Levine, 2020). Assessing all four individual differences in the same person can be accomplished with a round robin experimental design (Levine, 2016). A round robin design involves participants serving as both senders and receivers to all other participants in a given session. For example, if



there were four participants during a session, each of the four would take turns being a sender who lies and tells the truth while the other three attempt to ascertain which statements are truthful and which are lies. By the end of the session, everyone has been a sender and everyone has been receiver in all possible combinations.

## Lie Prevalence

People often overestimate the prevalence of lying (Levine, 2020). In a now classic finding, DePaulo et al. (1996) found that people tell, on average, just one to two lies per day. The average, however, is potentially misleading because the distribution of lying is highly skewed. Serota et al. (2010), for example, found that nearly 75% of the American adult population reported lying less frequently than the average American adult, and that most lies are told by a relatively few prolific liars. Similar skewed results have been reported in samples of adults living in Korea (Park et al., 2021) and the UK (Serota & Levine, 2015). Serota et al. (2022) who also replicated the skewed distribution further report that nearly 60% of the variance in lie prevalence over time was attributable to a stable individual differences. Most people are honest but some people lie much more often than others.

## Hypotheses

To summarize, past research has investigated individual differences in deception detection ability, truth-bias, sender transparency, sender demeanor, and lie prevalence. To the current author's knowledge, no

study has sought to test the association among all five. Wright et al. (2012) designed an experiment to examine the first four and claimed support for a lie-general ability where people who were less transparent were higher ability lie detectors. Levine (2016) and Masip et al. (2020), however, failed to replicate the inverse correlation between transparency and ability. Levine et al. (2016) argued that the lie-general ability was implausible because the Bond and DePaulo (2008) meta-analysis found little variance in receiver lie detection ability in an absolute sense, and the lack of any systematic variation to explain should mathematically preclude covariance with any variable, sender transparency or otherwise.

According to the logic of the veracity effect (Levine et al., 1999), when truths and lies are equally probable, truth-bias and accuracy are uncorrelated. Wright et al.'s (2012) finding of a general deception ability has not been replicated. Thus, no association among these variables is hypothesized here. Given some mixed prior findings, however, a research question will be offered.

Variance in lie prevalence, in contrast, suggests three anticipated correlations. First, Levine et al. (2010) argued that especially transparent liars are less likely to lie. This seems reasonable. Highly transparent individuals likely have a keen self-awareness of their inability to lie. Being caught lying is social disapproved and may be punished. Further, lies that fool no one make lying ineffectual at achieving the goals that motivate the lie. Thus, highly transparent liars should avoid lying because they have learned through experience that they cannot achieve their communicative goals through lying and there are social costs associated with detected lies.

H1: Sender transparency and lie prevalence are negatively correlated.

Second, as a general principle, practice improves performance. People who lie more, by definition, have more experience lying and consequently should be better at deceiving others. Whereas poor liars are transparent, skilled liars not only lack transparency, they need to be believed. Thus, more frequent lying should enhance sender honest demeanor as a matter of practice and learning through experience.

H2: Lie prevalence is positively correlated with sender honest demeanor.

Third, people who lie more often are likely to think that others lie more. Since people are only slightly better than chance at detecting lies, they will not have accurate perceptions of other's lying. However, they do have a better understanding of how often they lie themselves, and they may either use their own behavior as point of references in thinking about others or they may simply presume that their behavior is typical. Consistent with this argument, Markowitz and Hancock (2018) observed a false consensus effect for deception in which people who reported more lies in mobile dating conversations thought others told more lies to them. Consequently, in lie detection tasks, more frequent liars should be more skeptical of others and have a lower truth-bias.

H3: Lie prevalence and truth-bias are negatively correlated.

Beyond these three hypotheses, this research also explored any unanticipated associations among the five individual differences of focus.

RQ1: Are there additional correlations among deception detection receiver ability, receiver truth-bias, sender transparency, sender demeanor, and lie prevalence?

## Method

### Participants

The data were collected from  $N = 100$  undergraduate students enrolled in media and communication courses at a Korean University located Seoul, South Korea. The participants ranged in age for 18 to 28 ( $M = 22.72$ ,  $SD = 1.90$ ) and were predominantly (69%) female. Power analysis were calculated for various effect sizes using GPower 3.1 software. This sample was notably underpowered (.168) to detect a small effect of  $r = .10$ . The power to detect  $r = .20$  was .518. For  $r = .3$ , the power was a substantial .865. With  $r = .4$ , power increased to .987. Finally, for a large effect of  $r = .5$ , power was greater than .999. Thus, the sample size was not sufficient to detect small correlations, but population correlations of moderate size to large sizes were likely to yield statistically significant results.

### Experimental Design

The deception detection task involved a within-group round robin set-up in which all participants for a given session were both senders and receivers-judges with every participant judging and being judged by every other participant during the session. Messages veracity (truth or lie) was a randomly assigned repeated (within groups) experimental (manipulated) variable. Each participant lied or told the truth about the various autobiographical information that they previously provided with the randomization different for each participant. Each participant was exposed to other participant's truthful and deceptive statements with the task of correctly distinguishing truths from lies.

Sender transparency, sender honest demeanor, receiver accuracy, receiver truth-bias, lie prevalence, and perceptions of being lied to were measured variables.

## Procedure and Measurement

Although the data were collected in Korea, the consent, instructions and measurement were provided in English. Native Korean speaking research assistants were available to answer questions.

The participants were recruited to come to the lab in groups of 4 to 6. Once at the lab, written consent was obtained. Participants next completed a short survey developed by Serota et al. (2010) to measure how many times they had lied in the past 24 hours. Participants were also asked how many times they thought they had been lied to during the same period of time, and basic demographic questions. Upon completion of the first survey, participants then completed 10 open-ended autobiographical questions. Examples of the autobiographical questions including asking about a favorite vacation, parent's occupation, biggest fear, favorite holiday, movie and music preference.

While the participants were completing the two surveys, the experimenter used a pre-randomized schedule to prepare individualized instructions for each participant's role as a sender in the deception detection task. Receiver-judge detection surveys were also prepared by recording tracking numbers for each sender, receiver, and group.

After all participants in the group had completed the lie prevalence and autobiographical surveys, the surveys were collected, and the deception detection task was initiated. Each participant took turns as sender with the remaining participants as receiver-judges. When a participant was a sender, the experimenter asked them, one at a time,

each of the ten biographic questions that they previously answered honestly. Based on a randomization protocol different for each participant in the group, each sender was instructed to answer five of the questions honestly and to spontaneously lie for five. Senders were instructed to be as believable as possible, and that their goal was to have the rest of the group believe them on each of their answers. When in the receiver-judge role, each participant made a dichotomous truth-lie assessment for each answer by each receiver. Participants took turns being senders and judges until all participants had been a sender, and until all participants had judged each of their fellow session mates. Participants were then debriefed and dismissed.

Ability (accuracy) was scored for each participant as the number of truth-lie judgments correct across all questions and all senders divided by the total number of judgments made by the participant. Truth-bias was scored as the number of truth-judgments each participant made divided by the total number of judgments. Demeanor scores were the percent of times the sender was believed by all the judges. Transparency scores were the average accuracy of the judges scored for each sender. When there were four person groups, each participant judged three others making 10 statements each. Thus, scores for accuracy, truth-bias, demeanor, and transparency-detectability were averaged across 30 judgments.

## Results

Lie prevalence had a mean of 3.06 (range, 0 to 11, 7% reported 0 lies, median = 3, mode = 2) lies per day, and SD of 2.26. The expected negative skew was present but less pronounced than in other data (cf. Park

et al., 2021). Across senders and receivers, accuracy as the average raw percentage of correct truth-lie judgments was 54.95% and questions were believed 62.66% of the time. Means and standard deviations were as follows: receiver ability,  $M = 54.95$ ,  $SD = 9.82$ , receiver truth-bias,  $M = 62.66$ ,  $SD = 8.56$ , sender transparency  $M = 54.95\%$ ,  $SD = 7.82$ , and sender demeanor  $M = 62.66$ ,  $SD = 9.41$ .

Each of the three hypotheses were tested with correlations with 98 degrees of freedom. The data were not consistent with any of the three hypotheses. The anticipated negative correlations between sender transparency and lie prevalence was  $r = +.07$ , *ns*. The second hypothesis predicted that lie prevalence and sender honest demeanor are positively correlated. The results were  $r = -.045$ , *ns*. Finally, the predicted negative correlation between lie prevalence and truth-bias in the third hypothesis was  $r = +.013$ , *ns*.

The research question inquired about others associations. No significant correlations were observed among any of the five main variables (prevalence, ability, truth-bias, transparency, demeanor). The largest correlation was  $r = .16$ , *ns*. However, the deception consensus effect was replicated,  $r = .518$ ,  $p < .001$ . Variable descriptions, descriptive statistics, and correlations are summarized in Table 1~3.

Table 1 Variable Explanations

Variables	Summary
Accuracy / Ability	Scored for participants in the role of receivers as the raw percent of truth-lie judgments that were correct (i.e., the extent to which they correct about if senders were lying or not).
Truth-Bias	Scored for participants in the role of receivers as the raw percent of truth-lie judgments that were truths (i.e., did the participant tend to believe others?).
Detectability / Transparency	Scored for participants in the role of senders as the raw percent of truth-lie judgments that were correct (i.e., were others right about if the participant was lying or not?).
Sender Honest Demeanor	Scored for participants in the role of senders as the raw percent of truth-lie judgments that were truths (i.e., how often did others judge them to be honest?).
Prevalence	Participants self-report of how many lies they had told in the past 24 hours.
Lied To	Participants self-report of how many times they had been lied to in the past 24 hours.

Table 2 Descriptive Statistics

	Mean	SD	Min	Max
Accuracy	54.95%	9.82	30.00%	77.50%
Truth-Bias	62.66%	8.56	44.00%	80.00%
Detectability	54.95%	7.82	37.50%	77.5%
Demeanor	62.77%	9.41	37.50%	80.00%
Prevalence	3.06	2.26	0.00	11.00
Lied To	2.20	2.06	0.00	10.00

Table 3 Correlations

	Accy	TB	Det	Dem	Prev
Accuracy					
Truth-Bias	-.13				
Detectability	+.16	-.04			
Demeanor	+.12	+.08	-.12		
Prevalence	+.05	+.01	+.07	-.05	
Lied To	.29*	-.15	+.11	-.12	+.52*

\*  $p < .01$



## Discussion

The current lie detection experiment was designed to disentangle sender and receiver effects and to examine if more or less frequent liars performed differently in a deception detection task. Although there are good reasons to anticipate that lie prevalence would be associated with sender transparency, sender demeanor, and receiver truth-bias, none of the predicted correlations were statistically significant.

In some ways the current data align with prior findings. Receiver accuracy scores of 55% closely approximated the meta-analysis average of 54% (Bond & DePaulo, 2006). Receivers were truth-biased, a finding consistent with both the prior literature and truth-default theory (Levine, 2020). Also consistent with truth-default theory (Levine, 2020) and prior findings (e.g., Serota et al., 2010; 2022), the positive skew in lie prevalence was evident.

While none of averages were surprising, some of the observed variances were unanticipated. While the distributions of accuracy and truth-bias were as expected given prior findings, there was less variance in transparency and demeanor than expected. There was also less variance in lie prevalence than expected. Only 7% of the sample reported telling no lies in the past 24 hours which is an unusually small percentage for college student data (cf. Serota et al., 2010; 2022). Similarly, the maximum value of 11 was quite low. The participants were unusually homogeneous providing the most likely explanation of the failure of the hypotheses. Variance is a prerequisite for covariance.

The most curious findings were that the deception consensus effect was replicated, yet the self-report of the times being lied to in the past 24 hours was not correlated with truth-bias,  $r = -.145$ ,  $p = .151$ . This suggests that perceptions of being lied to on a given day are indicative

of general suspicion, skepticism, or proclivity to think others are lying that does not translated into a lab-based deception detection task. Perhaps being in situations that motive lying lead to situations where one is lied to.

Two strengths of the current data merit comment. First, as mentioned previously, most deception detection experiments confound senders and receivers and only score receivers. The current research design unconfounded senders and receivers and allowed for sender demeanor and transparency scores. The second strength is that there were a good number of judgments (30 or more) comprising each score. As Levine et al., (2022) note, the number of judgments per judge is more important than sample size in yield stable deception detection results.

The biggest limitation of the current study is the use of instructed lies. As Levine (2017) notes, instructed lies may be quite different from lies outside the lab because the motives are different. The current use of a student sample, however, is not much a concern because students perform quite similarly to other adults in deception detection tasks (Bond & DePaulo, 2006). Similarly, null findings are informative and thus not a limitation (Levine, 2013).

Future research might proceed along at least three directions. First, researchers are encouraged to consider variance in addition to means and means differences. Doing so will surely lead to a richer understanding of social behavior. Second, researchers are encouraged to develop research designs that unconfound sender and receiver variance in deception detection. Doing so is challenging, but necessary for theoretical and methodological clarity. Third, future research is need to unpack how the deception consensus effect can exist but the prevalence and truth-bias association does not. Finding one but the not

the other seems paradoxical.

In summary, the current experiment examined if lie prevalence affected the ability to lie or to detect lies. Surprisingly, no evidence of associations between the number of lies told and the ability to appear honest, the ability to mask lying, or the tendency to believe others were observed. Instead, the data indicated a surprising lack of individual differences. Nevertheless, future research is encouraged with different populations where there may be more variance.

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