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The truth about lying

Angelo Turri, John Turri *

Philosophy Department and Cognitive Science Program, University of Waterloo, 200 University Avenue West, Waterloo, Ontario N2L3G1, Canada

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ABSTRACT

The standard view in social science and philosophy is that lying does not require the liar's assertion to be false, only that the liar believes it to be false. We conducted three experiments to test whether lying requires falsity. Overall, the results suggest that it does. We discuss some implications for social scientists working on social judgments, research on lie detection, and public moral discourse.

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> He may say a true thing and yet lie, if he thinks it to be false and utters it for true, although in reality it be so as he utters it. For from the sense of his own mind, not from the verity or falsity of the things themselves, is he to be judged to lie or not to lie.
>
> [Augustine, *On Lying*]

1. Introduction

Lying is an important social category. We tend to react negatively to "lies and the lying liars who tell them" (Franken, 2003). We expend considerable effort and resources developing techniques to detect lies and liars, both as a practical matter when, say, developing technologies to screen for terrorists at airports (Wild, 2005), and as a moral matter when assigning blame and evaluating character. These efforts all assume a conception of lying. A defective conception will lead to inappropriate moral evaluation of assertions and confound the effort to systematically detect lies. So there are moral and practical benefits to a complete and accurate conception of lying. And improving our understanding of the concept of lying improves our understanding of important social and moral judgments implicated by lying.

What is it to lie? The standard view in social science and philosophy is that a lie is a dishonest assertion. You lie if you say something which you think is false in order to deceive your audience into believing it. Lying does not require your assertion to be objectively false, only that you believe it is false. This has long been the standard view in philosophy (e.g. Augustine 395; Aquinas, 1273, II.II, Question 110, Article 1; Bok, 1978; Chisholm & Feehan, 1977; Fallis, 2009; Frege, 1948, p. 219; Grotius, 1625: p. 258, n. 8; Williams, 2002). Social scientists adopt the same basic definition. For example, a widely cited textbook on lying says that it is "defined solely from the perspective of the deceiver and not from the factuality of the statement. A statement is a lie if the deceiver believes what he or she says is untrue, regardless of whether the statement is in fact true or false" (Vrij, 2008, p. 14; see also Battigalli, Charness, & Dufwenberg, 2013; Bucciol & Piovesan, 2011; DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996; Erat & Gneezy, 2012; Kraut, 1980; Zuckerman, DePaulo, & Rosenthal, 1981).

Several studies have shown that lying requires deceptive intent. Both children and adults view deceptive intent as necessary for lying (Lee & Ross, 1997; Lindskold & Han,

* Corresponding author. Tel.: +1 519 888 4567x32449; fax: +1 519 746 3097.

E-mail addresses: angelo.turri@gmail.com (A. Turri), john.turri@gmail.com (J. Turri).

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1986; Peterson, 1995; Taylor, Lussier, & Maring, 2003). But no empirical studies have shown that lying does not require objective falsehood. Instead, philosophers and social scientists reject a falsehood requirement by appealing to their intuitions about thought experiments (Mahon, 2008; Vrij, 2008; for a similar appeal to the opposite conclusion, see Carson, 2006, p. 301). The one empirical study of the issue found some evidence that falsity is one of several features associated with a prototypical lie (Coleman & Kay, 1981). But falsity was judged to be the least important element of the prototypical lie, most participants attributed lying even when the assertion was true, and the study had several methodological flaws. In particular, the conditions were not minimally matched, so we cannot be confident that a difference in truth-value is responsible for observed differences in people's judgments; participants knew the purpose of the study, which raises the possibility of socially desirable responding; and no steps were taken to avoid agreement bias or order effects. The studies reported below avoid all these problems.

We conducted three experiments to test the standard view of lying. Our investigation was motivated by the lack of empirical support for one essential aspect of the standard view and by an intrinsic interest to better understanding the important social category of lying. In line with previous empirical work on attributions of lying and truth-telling, we adopted a vignette-based paradigm. We asked people to read short stories and evaluate whether the protagonist lied. We used simple stories based on thought experiments proposed by advocates of the standard view (Vrij, 2008, p. 14; see also Sartre, 1937; Siegler, 1966). The results from Experiment 1 seem to support the standard view, but an alternative interpretation is available. According to the alternative, the results are an artifact of the mode of questioning and should not be taken at face value. The alternative predicts that if people are given sufficient flexibility options for responding, then the response pattern will indicate that lying does require objective falsity. More specifically, the key is to allow people to acknowledge *intent* to lie while separating that judgment from an attribution of lying. Experiments 2 and 3 provide evidence that the alternative interpretation is correct and, moreover, that lying does require objective falsity. Our main conclusion is that, contrary to the standard view, falsity is a necessary component of lying and, thus, that lying has an important non-psychological element. We discuss the implications for psychological work on social judgments, the conceptual foundations of research on "lie" detection, and public moral discourse.

2. Experiment 1

2.1. Method

2.2.1. Participants

One hundred seventy U.S. residents were tested (aged 18–72 years, mean age = 31 years; 96% reporting English as a native language; 56 female). Participants were recruited and tested (using Amazon Mechanical Turk and Qualtrics) and compensated $0.30 for approximately 2 min of their time. Repeat participation was prevented. We excluded data from eleven recruits who failed comprehension questions, but including them does not affect the results reported below.

2.2.2. Materials and procedure

Participants were randomly assigned to one of four conditions in a 2 (Intent: Honest/Dishonest) × 2 (Probe: Lie/Tell) between-subjects design. Participants in each condition read a single story modeled after thought experiments which have motivated the standard view of lying in psychology and philosophy. The stories all featured Jacob, whose friend Mary is being sought by the authorities. Federal agents visit Jacob and ask where Mary is. Mary is at the grocery store but Jacob thinks that Mary is at her brother's house. In Honest conditions, Jacob tells the agents that Mary is at her brother's house, so that what he says is false despite his intention. In Dishonest conditions, Jacob tells them that Mary is at the grocery store, so that what he says is true despite his intention. After reading the story, participants were asked the key test question. In order to avoid agreement bias contaminating results (Gilbert, Krull, & Malone, 1990; Krosnick, 1999), we probed for lying attributions in two different ways. It is widely assumed, often implicitly, in the literature that *lying* and *truth-telling* are opposite categories (e.g. Feeley & Young, 1998; Kraut, 1980; Vrij & Mann, 2003; Xu, Bao, Fu, Talwar, & Lee, 2010). This implies that *lying* and *not telling the truth* might be viewed as equivalent, which in turn could provide a basis for counteracting agreement bias. So we asked some participants whether the agent *lied*, and we asked others whether the agent *told the truth*: in Lie conditions the key test question was, "Did Jacob lie about Mary's location?" and in Tell conditions it was, "Did Jacob tell the truth about Mary's location?" (Yes/No). Participants were then taken to a separate screen and asked three dichotomous comprehension questions. As a manipulation check, participants were then taken to another screen and asked, "Did Jacob intend to deceive the agents?" (Yes/No). Questions were always asked in the same order and response options were rotated randomly. The supplemental material contains the full text for all stimuli used in this experiment. After testing, participants filled out a brief demographic questionnaire.

2.2. Results

The Intent manipulation was effective: 98% of participants in Honest conditions (85 of 87) said that Jacob did not intend to deceive the agents, and 98% of participants in Dishonest conditions (81 of 83) said that he did intend to deceive the agents.

For purposes of analysis, we reverse-coded responses to the test question in Honest conditions so that, on the one hand, answering that Jacob told the truth receives the same score as answering that Jacob did not lie (=0) and, on the other, answering that Jacob did not tell the truth receives the same score as answering that Jacob did lie (=1). We did not expect an effect of (reverse-coded) Probe and included it as a robustness check against agreement bias.

Binary logistic regression revealed that response to the test question ("Did Jacob lie/tell the truth?") was not significantly predicted by participant gender, participant age, or Probe (see Table 1). By contrast, Intent was very strongly predictive. By changing Jacob's intent from honest to dishonest, the odds of judging him a liar increased by over 4200% (or a factor of 42). We also conducted a planned pairwise comparison (collapsing across Probe because it had no effect on participant response). Participants accused Jacob of lying (not telling the truth) significantly more when he said something objectively true (78.3%) than when he said something objectively false (8%), $\chi^2(1, N = 170) = 83.05$, $p < 0.001$, all reported tests two-tailed (see Fig. 1). The magnitude of the difference in frequencies was very large, $\phi = -.711$. (We follow Ellis, 2010 in interpreting effect sizes.).

2.3. Replication

Some researchers have attributed apparently inconsistent prior findings on lying to the use of dichotomous as opposed to graded measures (Xu, Luo, Fu, & Lee, 2009, p. 318). So we replicated this same basic pattern of results using the same 2 (Intent: Honest/Dishonest) × 2 (Probe: Lie/Tell) between-subjects design, same stories, and same comprehension questions, but with a different dependent measure. Participants ($N = 149$) were asked to rate their agreement one of two statements on a standard Likert scale, 1 ("Strongly disagree") – 7 ("Strongly agree). The statements were "Jacob lied about Mary's location" and "Jacob told the truth about Mary's location." We reverse-coded responses to the test statement in Honest conditions (i.e. "Jacob told the truth") so that strongly disagreeing that Jacob told the truth received the same score as strongly agreeing that Jacob lied (=7), and strongly agreeing that Jacob told the truth received the same score as strongly disagreeing that Jacob lied (=1). Thus higher scores indicate that participants agreed that Jacob lied (did not tell the truth), and lower scores indicate that participants agreed that Jacob told the truth (did not lie). Again there was no effect of participant age, participant gender, or Probe on response to the test statement. But there was a very large main effect of Intent, with participants agreeing that Jacob lied (did not tell the truth) much more in Dishonest conditions ($M = 5.59$, $SD = 1.70$) than in Honest conditions ($M = 2.53$, $SD = 1.64$), independent-samples t-test, $t(147) = 11.173$, $p < .001$ (see Fig. 1). The magnitude of the difference of means was very large, MD = 3.06, 95% CI [2.52, 3.60], $\eta^2 = .459$. The mode response was 7 in Dishonest conditions and 2 in Honest conditions (see Fig. 1).

2.4. Discussion

The results from this experiment support the standard view that a dishonest assertion is a lie even if it turns out to be objectively true. When an agent made a dishonest assertion that turned out to be true, participants overwhelmingly agreed that the agent lied (did not tell the truth). And when the agent made an honest assertion that turned out to be false, participants overwhelmingly agreed that he told the truth (did not lie). This is exactly what the standard view would predict. Moreover, we replicated the same basic pattern using Likert scales instead of dichotomous measures.

There are at least two alternative explanations of the findings. On the one hand, participants might have simply answered in accordance with how things seem to the agent in the story. Regardless of what is objectively true or false, if the agent makes a dishonest assertion, then he thinks that he is lying; and if he makes an honest assertion, then he thinks that he is telling the truth. So perspective-taking could produce the observed results. Empathy primes perspective taking (Bengtsson & Johnson, 1992; Galper, 1976; Jones & Nisbett, 1971; Storms, 1973) and the details of the story provide some basis for empathizing with the protagonist. On the other hand, participants might have used the test question as an opportunity to express their approval or disapproval of the protagonist's conduct. Of the available options, the best way to register disapproval is to say that the protagonist lied. Intuitive responses can result from pragmatic considerations that are unrelated to the strict truth of the matter (Noveck & Reboul, 2008; Sperber & Noveck, 2004; see also Chomsky, 1977). Moreover, lying and deception implicate moral judgments (Lindskold & Walters, 1983; Lundquist, Ellingsen, Gribbe, & Johannesson, 2009; McLeod & Genereux, 2008; see also Grotius, 1625; Kant, 1797), and normative judgments can affect performance on categorization tasks (Alicke, 1992; Alicke & Rose, 2010; Beebe & Buckwalter, 2010; Knobe, 2010; Knobe, Prasada, & Newman, 2013; Knobe & Samuels, 2013).

To address these concerns, we conducted a second study that eliminated some of the textual basis for empathizing and allowed participants greater flexibility in responding.

Table 1
Logistic regression predicting liar judgments. Reference class for probe: honest. Reference class for statement: false. Reference class for gender: female. Reference class for age: over 28 years. the full model was statistically significant, $\chi^2(4, N = 170) = 96.83$, $p < 0.001$, explained between 43.4% and 58.4% of the variance in response to the test question, and correctly classified 85.3% of cases.

Predictor	B	S.E.	Wald	df	p	Odds ratio	95% CI for odds ratio	
							LLCI	ULCI
Probe	−0.06	0.45	.015	1	.903	0.95	0.40	2.27
Intent	3.74	0.48	60.13	1	<.001	42.03	16.34	108.12
Gender	0.09	0.49	0.03	1	.854	1.09	0.42	2.83
Age	0.34	0.46	0.55	1	.459	1.40	0.57	3.43
Constant	−2.66	0.57	21.46	1	<.001	0.07		

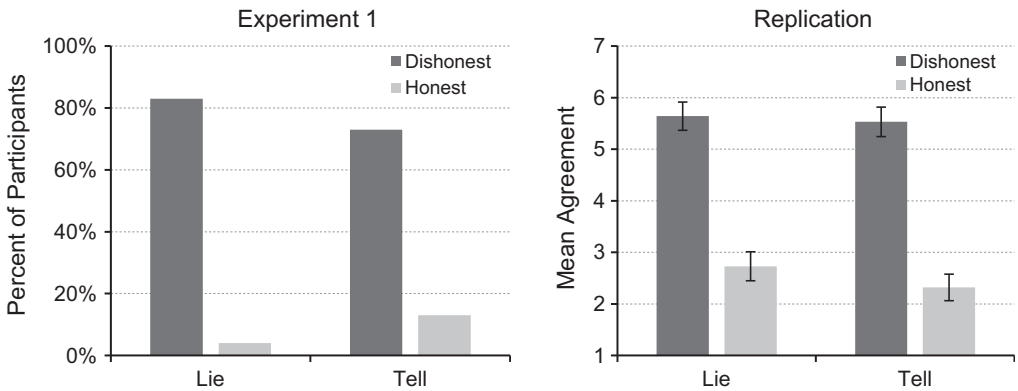

Fig. 1. Left panel: Experiment 1: percent of participants accusing the protagonist of lying using two different probes and when the protagonist's intent was honest or dishonest. Right panel: Replication: Mean agreement that the protagonist was lying across the same four conditions. Scales ran from 1 to 7. Error bars +/− one standard error of the mean.

3. Experiment 2

3.1. Method

3.1.1. Participants

One hundred sixty-seven new people participated (aged 19–66 years, mean age = 30 years; 95% reporting English as a native language; 75 female). We excluded data from thirteen recruits who failed comprehension questions, but including them does not affect the results reported below.

3.1.2. Materials and procedure

Participants were randomly assigned to one of four conditions in a between-subjects design: Honest True, Honest False, Dishonest True, Dishonest False. (The study was conceived as a 2×2 and we planned to analyze the results using multinomial logistic regression. However, in two of the cells one of the four options went unselected by all participants, and logistic models are not recommended when this happens (Garson, 2012). Hence, we report it as a 1×4. Given the distributions reported below, nothing substantial hinges on this decision.) Each participant read a single story about Jacob and Mary, very similar to the story used in Experiment 1. In Honest True Jacob intends to inform and says something true; in Honest False he intends to inform but says something false; in Dishonest True he intends to deceive but says something true; in Dishonest False he intends to deceive and says something false. The stories are all included in the supplemental material. After reading the story, participants were then asked to choose the option that best described Jacob when he spoke to the agents about Mary's location: (1) he tried to tell the truth and succeeded in telling the truth; (2) he tried to tell the truth but failed to tell the truth; (3) he tried to tell a lie but failed to tell a lie; (4) he tried to tell a lie and succeeded in telling a lie. The four options were rotated randomly and were not numbered on the participant's screen. Participants then answered the same three comprehension questions as in Experiment 1 and rated their agreement, on a 7-point Likert scale, with the statement that Jacob intended to deceive the agents, 1 ("Strongly disagree") – 7 ("Strongly agree").

The slate of four options allows us to address the alternative interpretations of Experiment 1's results. On the one hand, from the agent's perspective, he is trying to tell a lie, so participants are afforded enough flexibility to both perspective-take and, potentially, indicate that the deceptive effort failed. On the other hand, participants interested in registering their disapproval have enough flexibility to both identify the agent's disreputable intent and, potentially, indicate that the intent was foiled. So if participants continue to classify dishonest but true assertions as lies, then it will strongly support the standard view of lying. By contrast, if participants no longer classify such assertions as lies, then it will discredit the earlier interpretation of Experiment 1's results and cast doubt on the standard view. Of particular interest is whether participants classify such assertions as failed attempts at lying, rather than successful attempts.

3.2. Results

The manipulation was extremely effective. Participants strongly disagreed that Jacob intended to deceive the agents in Honest True ($M = 1.40$, $SD = 0.69$) and Honest False ($M = 1.45$, $SD = 0.97$) conditions, whereas they strongly agreed that he intended to deceive them in Dishonest True ($M = 6.63$, $SD = 0.58$) and Dishonest False ($M = 6.51$, $SD = 0.79$). Neither participant age nor gender affected which option participants selected as best, ps $\geqslant .270$. Assignment to condition affected which option participants selected as best, $\chi^2(9, N = 167) = 395.70$, $p < .001$ (see Fig. 2). The magnitude of the difference in frequencies was extremely large, Cramer's $V = .889$. A different option was selected most frequently in each condition, and within each condition there was strong agreement on which option was best. In Honest True, 95% of participants said that Jacob tried to tell the truth and succeeded. In Honest False, 88% of participants said that Jacob tried to tell the truth but failed. In Dishonest True, 88% of participants said that Jacob tried to tell a lie but failed in Dishonest False, 95% of participants said that Jacob tried to lie and succeeded. In each case, the percentage of participants selecting the relevant option far

Fig. 2. Experiment 2. The number of participants choosing each option as best describing the protagonist.

exceeded what could be expected by chance, binomial tests, all *ps* < .001.

3.3. Discussion

If the standard view of lying is correct, then participants should have said that Jacob lied whenever he made a dishonest assertion. But this did not happen. Instead, participants overwhelmingly said he lied when his dishonest assertion was false, but not when his dishonest assertion was true. Indeed, only 5% of participants (2 of 41) classified a dishonest but true assertion as a lie. Initially we interpreted the results from Experiment 2 as supporting the standard view. But in light of the present findings a better explanation is that those earlier results were an artifact of the mode of questioning.

However, it might be argued that the present findings are themselves an artifact of the mode of questioning, or that we have misinterpreted what people mean when they say that a dishonest but false assertion is a "failed lie." More specifically, it might be argued that a failed lie is still a lie, just as a failed attempt is still an attempt. To address this concern, we conducted a third study that featured different response options. Instead of asking people to distinguish between successful and failed lies, we asked them to distinguish between cases where someone *actually did lie* and *only thinks he lied*. This pair of options gives people flexibility to acknowledge the speaker's perspective while allowing them to indicate whether things actually are the way they appear to the speaker.

4. Experiment 3

4.1. Method

4.1.1. Participants

Eighty new people participated (aged 19–72 years, mean age = 36 years; 96% reporting English as a native language; 46 female).

4.1.2. Materials and procedure

Participants were randomly assigned to one of two conditions (False, True) in a between-subjects design. Each participant read a single story about Jacob and Mary. They were the same stories used for the Dishonest False and Dishonest True conditions in Experiment 2. After reading the story, participants responded to a prime to encourage them to think about the objective truth or falsity of Jacob's statement, "What Jacob said is objectively _____." The options were "true" and "false." Participants then responded to the critical test question, "Which better describes Jacob?" There were two options:

He tried to lie and actually did lie.
He tried to lie but only thinks he lied.

Response options were rotated randomly. The prime and test question appeared on the same screen while the story remained at the top.

4.2. Results

Assignment to condition affected how participants answered the test question, $\chi^2(1, N = 80) = 51.20$, $p < 0.001$. The magnitude of the difference in frequencies was extremely large, Cramer's $V = .800$ (see Fig. 3). Ninety percent of participants classified a dishonest and false assertion as a lie, which is far more than could be expected by chance, binomial test, $p < .001$. By contrast, only 10% of participants classified a dishonest but true assertion as a lie, which is far less than could be expected by chance, binomial test, $p < .001$.

4.3. Discussion

If the standard view of lying is correct, then participants should have said that Jacob lied in both conditions. But this did not happen. Instead, participants overwhelmingly said he lied when his dishonest assertion was false, but not when his dishonest assertion was true. Indeed, only 10% of participants (4 of 40) classified a dishonest but true

Fig. 3. Experiment 3. The percent of participants classifying the protagonist as a liar.

assertion as a lie, whereas 90% of participants (36 of 40) classified a dishonest and false assertion as a lie. This further supports the conclusion suggested by Experiment 2, namely, that the results from Experiment 1 were an artifact of the mode of questioning.

5. General discussion

Lying is an important social category that has been extensively studied in the social sciences and humanities. The standard view in social science and philosophy is that a dishonest assertion is a lie even if it turns out to be true. But we found evidence that only false assertions are lies. If someone makes a dishonest assertion that turns out to be true, then he does not lie. Instead, he *tried* to lie but failed to do so — he *only thinks* that he lied. In closely matched cases when what the agent says is in fact false, he does succeed in lying — he not only thinks that he lied, he actually did lie (Experiments 2 and 3). Just as succeeding in telling the truth requires saying something true, succeeding in lying requires saying something false. And in contrast to the most recent experimental work on lying whose findings were consistent with all false statements being classified as lies (Arico & Fallis, in press), we found that people reliably distinguish between trying to tell the truth but failing, on the one hand, and actually lying, on the other.

An alternative interpretation of our findings is that there are multiple senses of "lie," some of which require objective falsity and some of which do not. In favor of this alternative, we found evidence that on some ways of questioning people, they agree that dishonest but true assertions are lies (Experiment 1). However, we argued that these results are likely an artifact of the mode of questioning and, thus, should not be taken at face value. More specifically, we argued that people in this study agreed that such assertions are lies because disagreeing would misleadingly suggest that the speaker was not trying to lie, or that the speaker did not deserve blame for his dishonest intentions. When given more flexible response options, people judged that the speaker tried to lie but failed (Experiment 2), or that he only thought he was lying (Experiment 3). We submit, then, that one need not posit multiple senses of "lie" to explain our results. We prefer this more parsimonious explanation. However, we also acknowledge that our results do not rule out multiple senses of "lie." Our experiments were not designed to rule out polysemy. Nevertheless, even if it turns out that some senses of "lie" do not require objective falsity, our results still show that at least one familiar and readily adopted sense of "lie" does require objective falsity.

In line with previous research on lying, we relied on the judgments of competent speakers about lying in order to evaluate theories of lying (e.g. Arico & Fallis, in press; Carson, 2006; Coleman & Kay, 1981; Lee & Ross, 1997; Lindskold & Han, 1986; Mahon, 2008; Peterson, 1995; Taylor et al., 2003; Vrij, 2008). It is possible that virtually all of our participants were badly confused about the nature of lying. But this is highly unlikely, given even the most minimal charitable assumptions about people's competence in applying the concept of lying. In some areas of science, appealing to pretheoretical judgments is either useless or positively harmful. For example, people can be woefully bad intuitive physicists (McCloskey, 1983) and no scientific theory of motion should appeal to their naïve judgments. Similarly, people are often bad at identifying the cognitive processes that motivate their judgments (Nisbett & Wilson, 1977) and scientific psychology cannot be wholly or even primarily based on introspection. In physics and cognitive psychology, our concepts and pretheoretical judgments can and often do badly mischaracterize the nature of some underlying reality, which can be largely hidden from us. But it is unclear whether the social category of lying could have a hidden underlying essence in the way that physical motion and cognitive processing can (for similar remarks about the concept of free will, see Monroe & Malle, 2010, p. 213).

Our findings stand as a cautionary tale to social scientists working on lying and other important social categories. Philosophers have long been criticized for relying heavily on thought experiments and personal intuition when developing theories about the nature of belief, knowledge, consciousness, and other important categories (for overviews, see Alexander, 2012; Knobe & Nichols, 2008, and Nichols, 2004). Following in the philosopher's footsteps, many social scientists misidentified the nature of their subject matter by uncritically assuming that their own intuitions about it were accurate.

Our findings have implications for the conceptual foundations of "lie detection." If lying is a purely psychological act, then in principle lies can be detected by measuring physiological responses or through brain imaging (Vrij, 2008, p. 5). By contrast, if lying requires objective falsehood, then it complicates lie-detection. For by simply measuring someone's physiological response or scanning his brain, it is typically impossible to detect whether he has a *false* belief about, say, his associate's whereabouts. The day may come when brain imaging can inform us that the agent believes his associate is in Paris, but no brain image will reveal whether she actually is in Paris. Accordingly, we suggest that research and technology on "lie" detection is better thought of as focusing on the

purely psychological elements of lying, such as "deceptive intent." They are not *lie* detectors so much as *dishonesty* detectors.

Relatedly, our findings have implications for public moral discourse. For example, we are often very concerned to determine whether a politician has "lied" to us, and our subsequent treatment of him depends crucially on how we answer that question. But it seems that this question interests us mainly because of lying's psychological component. For if the answer is "no, he did not lie," but he nevertheless was being dishonest and fully intended to mislead us, he will still feel the brunt of our disapproval. For instance, consider that public outrage against Toronto Mayor Rob Ford persisted when it was learned that he did not lie when asked about using crack cocaine but instead merely made dishonest and misleading assertions. Similarly, it was hardly viewed as exculpatory when the public learned that U.S. President Bill Clinton did not lie about Monica Lewinsky but instead simply made dishonest and misleading assertions. The social function of lying attributions seems mainly tied to our disapproval of dishonesty or deceptive intent. Dishonesty and deceptive intent breach the trust just as much as successful lies do. Accordingly, we suggest that public moral discourse could be clarified and improved if we focused less on whether someone "lied" and more on whether they are deceptive and dishonest. The latter speak more directly to character and are appropriately insensitive to whether, as it happens, the person's assertion turned out to be literally true.

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Appendix

Experiment 1 and replication

Jacob's friend Mary recently posted information on the internet that will alert the public to serious corruption in the government. Soon some federal agents visit Jacob and ask where Mary is.[1] Jacob realizes that they want to detain her for what she did. Jacob thinks that Mary is at her brother's house. He is very concerned about Mary and does not want her to be detained. Jacob tells the agents, "She is at [the grocery store/her brother's house] on the corner." However, unbeknownst to Jacob, Mary is at the grocery store, where the agents find and arrest her.

1. Did Jacob [lie/tell the truth] about Mary's location? [Yes/No].
2. Jacob thinks that Mary is _____. (at her brother's house/at the grocery store).
3. Mary is _____. (at her brother's house/at the grocery store).
4. Jacob tells the agents that Mary is _____. (at her brother's house/at the grocery store).
5. Did Jacob intend to deceive the agents? [Yes/No].

In the replication, responses to questions 1 and 5 were collected on standard Likert scales, anchored with "Strongly disagree" (=1), "Disagree," "Somewhat disagree," "Neither agree nor disagree," "Somewhat agree," "Agree," "Strongly agree" (=7).

Story for Experiments 2 and 3

Jacob's friend Mary recently posted information on the internet that will alert the public to serious government corruption. Soon some federal agents visit Jacob and ask where Mary is, in order to detain her. Jacob thinks that Mary is at [the grocery store/her brother's house], so he tells the agents, "She is at [the grocery store/her brother's house]." In fact, Mary is at the grocery store.

[1] Indicates paragraph break on the participant's screen.

References

Alexander, J. (2012). *Experimental philosophy*. Cambridge: Polity.
Alicke, M. D. (1992). Culpable causation. *Journal of Personality and Social Psychology, 63*(3), 368–378.
Alicke, M., & Rose, D. (2010). Culpable control or moral concepts? *Behavioral and Brain Sciences, 33*(04), 330–331.
Aquinas, T. (1273). *Summa theologica*. (Fathers of the English Dominican Province, Trans.). Amazon Digital Services.
Arico, A. J., & Fallis, D. (in press). Lies, damned lies, and statistics: An empirical investigation of the concept of lying. *Philosophical Psychology*.
Augustine (395/1887). On lying. In P. Schaff, & K. Knight (Eds.), *Nicene and post-Nicene fathers, first series* (Vol. 3). Christian Literature Publishing. <http://www.newadvent.org/fathers/1312.htm>.
Battigalli, P., Charness, G., & Dufwenberg, M. (2013). Deception: The role of guilt. *Journal of Economic Behavior & Organization, 93*, 227–232.
Beebe, J. R., & Buckwalter, W. (2010). The epistemic side-effect effect. *Mind & Language, 25*(4), 1–25.
Bengtsson, H., & Johnson, L. (1992). Perspective taking, empathy, and prosocial behavior in late childhood. *Child Study Journal*.
Bok, S. (1978). *Lying: Moral choice in public and private life*. New York: Pantheon Books.
Bucciol, A., & Piovesan, M. (2011). Luck or cheating? A field experiment on honesty with children. *Journal of Economic Psychology, 32*(1), 73–78.
Carson, T. L. (2006). The definition of lying. *Nous, 40*(2), 284–306.
Chisholm, R. M., & Feehan, T. D. (1977). The intent to deceive. *The Journal of Philosophy, 74*(3), 143–159.
Chomsky, N. (1977). *Essays on form and interpretation*. Amsterdam: North Holland.
Coleman, L., & Kay, P. (1981). Prototype semantics: The English word lie. *Language, 57*(1), 26–44.
DePaulo, B. M., Kashy, D. A., Kirkendol, S. E., Wyer, M. M., & Epstein, J. A. (1996). Lying in everyday life. *Journal of Personality and Social Psychology, 70*(5), 979.
Ellis, P. D. (2010). *The essential guide to effect sizes: Statistical power, meta-analysis, and the interpretation of research results*. Cambridge: Cambridge University Press.
Erat, S., & Gneezy, U. (2012). White lies. *Management Science, 58*(4), 723–733.
Fallis, D. (2009). What is lying? *Journal of Philosophy, 106*(1), 29–56.
Feeley, T. H., & Young, M. J. (1998). Humans as lie detectors: Some more second thoughts. *Communication Quarterly, 46*(2), 109–126.
Franken, Al. (2003). *Lies and the lying liars who tell them: A fair and balanced look at the right*. New York: Penguin.
Frege, G. (1948). Sense and reference. *The Philosophical Review, 57*(3), 209–230.

Galper, R. E. (1976). Turning observers into actors: Differential causal attributions as a function of "empathy". *Journal of Research in Personality, 10*(3), 328–335.
Garson, G. D. (2012). *Logistic regression: Binary and multinomial*. Asheboro, NC: Statistical Associates Publishers.
Gilbert, D. T., Krull, D. S., & Malone, P. S. (1990). Unbelieving the unbelievable: Some problems in the rejection of false information. *Journal of Personality and Social Psychology, 59*(4), 601. http://dx.doi.org/10.1037/0022-3514.59.4.601.
Grotius, H. (1625/2001). *On the laws of war and peace* (A. C. Campbell, Ed. & Trans.). Kitchener, Ontario: Batoche Books.
Jones, E. E., & Nisbett, R. E. (1971). The actor and the observer: Divergent perceptions of the causes of behavior.
Kant, I. (1797/1949). On a supposed right to lie from benevolent motives. In L. W. Beck (Ed.), *The critique of practical reason and other writings in moral philosophy* (pp. 346–350). Chicago: University of Chicago Press.
Knobe, J. (2010). Person as scientist, person as moralist. *Behavioral and Brain Sciences, 33*(04), 315–329. http://dx.doi.org/10.1017/S0140525X10000907.
Knobe, J., & Nichols, S. (Eds.). (2008). *Experimental philosophy*. New York: Oxford University Press.
Knobe, J., Prasada, S., & Newman, G. E. (2013). Dual character concepts and the normative dimension of conceptual representation. *Cognition, 127*(2), 242–257. http://dx.doi.org/10.1016/j.cognition.2013.01.005.
Knobe, J., & Samuels, R. (2013). Thinking like a scientist: Innateness as a case study. *Cognition, 126*(1), 72–86. http://dx.doi.org/10.1016/j.cognition.2012.09.003.
Kraut, R. (1980). Humans as lie detectors. *Journal of Communication, 30*(4), 209–218. http://dx.doi.org/10.1111/j.1460-2466.1980.tb02030.x.
Krosnick, J. A. (1999). Survey research. *Annual Review of Psychology, 50*, 537–567.
Lee, K., & Ross, H. J. (1997). The concept of lying in adolescents and young adults: Testing Sweetser's folkloristic model. *Merrill–Palmer Quarterly, 43*(2), 255–270.
Lindskold, S., & Han, G. (1986). Intent and the judgment of lies. *The Journal of Social Psychology, 126*(1), 129–130. http://dx.doi.org/10.1080/00224545.1986.9713581.
Lindskold, S., & Walters, P. S. (1983). Categories for acceptability of lies. *The Journal of Social Psychology, 120*(1), 129–136. http://dx.doi.org/10.1080/00224545.1983.9712018.
Lundquist, T., Ellingsen, T., Gribbe, E., & Johannesson, M. (2009). The aversion to lying. *Journal of Economic Behavior & Organization, 70*(1–2), 81–92.
Mahon, J. E. (2008). The definition of lying and deception. In E. N. Zalta (Ed.), *Stanford encyclopedia of philosophy, Fall 2008*.
McCloskey, M. (1983). Intuitive physics. *Scientific American, 284*(4), 122–130.
McLeod, B. A., & Genereux, R. L. (2008). Predicting the acceptability and likelihood of lying: The interaction of personality with type of lie. *Personality and Individual Differences*.
Monroe, A. E., & Malle, B. F. (2010). From uncaused will to conscious choice: The need to study, not speculate about, people's folk concept of free will. *Review of Philosophy and Psychology, 1*(2), 211–224. http://dx.doi.org/10.1007/s13164-009-0010-7.
Nichols, S. (2004). Folk concepts and intuitions: From philosophy to cognitive science. *Trends in Cognitive Sciences, 8*(11), 514–518. http://dx.doi.org/10.1016/j.tics.2004.09.001.
Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review, 84*(3), 231. http://dx.doi.org/10.1037/0033-295X.84.3.231.
Noveck, I. A., & Reboul, A. (2008). Experimental pragmatics: A Gricean turn in the study of language. *Trends in Cognitive Sciences, 12*(11), 425–431.
Peterson, C. C. (1995). The role of perceived intention to deceive in children's and adults' concepts of lying. *British Journal of Developmental Psychology, 13*, 237–260.
Sartre, J. P. (1937). Le Mur. *La nouvelle revue Francaise, 286*, 38–62.
Siegler, F. A. (1966). Lying. *American Philosophical Quarterly, 3*(2), 128–136.
Sperber, D., & Noveck, I. A. (2004). Introduction. In D. Sperber & I. A. Noveck (Eds.), *Experimental pragmatics* (pp. 1–22). New York: Palgrave Macmillan.
Storms, M. D. (1973). Videotape and the attribution process: Reversing actors" and observers" points of view. *Journal of Personality and Social Psychology, 27*(2), 165–175.
Taylor, M., Lussier, G. L., & Maring, B. L. (2003). The distinction between lying and pretending. *Journal of Cognition and Development, 4*(3), 299–323.
Vrij, A. (2008). *Detecting lies and deceit: Pitfalls and opportunities* (2nd ed.). Hoboken, NJ: John Wiley & Sons.
Vrij, A., & Mann, S. (2003). Deceptive responses and detecting deceit. In P. Halligan, C. Bass, & D. Oakley (Eds.), *Malingering and illness deception* (pp. 348–362). Oxford University Press.
Wild, J. (2005). Brain imaging ready to detect terrorists, say neuroscientists. *Nature, 437*(7058), 457. http://dx.doi.org/10.1038/437457a.
Williams, B. (2002). *Truth and truthfulness: An essay in genealogy*. Princeton: Princeton University Press.
Xu, F., Bao, X., Fu, G., Talwar, V., & Lee, K. (2010). Lying and truth-telling in children: from concept to action. *Child Development, 81*(2), 581–596.
Xu, F., Luo, Y. C., Fu, G., & Lee, K. (2009). Children's and adults' conceptualization and evaluation of lying and truth-telling. *Infant and Child Development, 18*(4), 307–322. http://dx.doi.org/10.1002/icd.631.
Zuckerman, M., DePaulo, B. M., & Rosenthal, R. (1981). Verbal and nonverbal communication of deception. In L. Berkowitz (Ed.). *Advances in experimental social psychology* (Vol. 14, pp. 1–59). New York: Academic Press.