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The Curious Case of Courtroom Liars' Credibility

Bethany Lassetter,¹ Elizabeth R. Tenney,² Barbara A. Spellman,³ and Sara D. Hodges⁴

¹ University of Toronto, Department of Psychology
100 St. George Street, Sidney Smith Hall, Toronto, ON, M5S 3G3, Canada

² University of Utah, Department of Management, David Eccles School of Business
Spencer Fox Eccles Business Building
1655 East Campus Center Drive, Salt Lake City, UT 84112, USA

³ University of Virginia, School of Law
580 Massie Road, Charlottesville, VA 22903, USA

⁴ University of Oregon, Department of Psychology
1227 University of Oregon, Eugene, OR 97403, USA

Corresponding author: Bethany Lassetter, bethany.lassetter@mail.utoronto.ca

Open Practices Statement

Data were collected during the following time periods: September to December 2012 (Study 1), March to December 2020 (Study 2), January to March 2017 (Study 3), January to June 2008 (Pilot Study 1), and January to March 2014 (Pilot Study 2). Although hypotheses are discussed throughout the manuscript, we note that no predictions or analyses were preregistered for Studies 1 and 3.

The planned design and analyses for Study 2 were preregistered on the Open Science Framework (OSF; <https://osf.io/d8jcb/>). All materials, scripts, and de-identified data for the three reported studies and two pilot studies are publicly available on the OSF (<https://osf.io/d8jcb/>).

Abstract

How do we evaluate people who provide false information? The current studies uncover a context in which people who intentionally lie are perceived as more credible than those who unintentionally mix up information. Across three studies (total $N=1196$), participants read about an incident witnessed by targets who, when queried, either lied about or mixed up information. Participants then evaluated those targets. In Study 1, we demonstrate that in a courtroom, targets who lie (versus mix up information) are judged as more credible. We next test two boundary conditions, showing that the effect may be constrained by particular contextual characteristics of a courtroom (Study 2) and that the misinformation needs to be unrelated to the information on which the target's advice or testimony is sought (Study 3). The current research suggests that under specific circumstances, perceivers may evaluate targets who lie as more credible than those who mix up information.

Keywords: credibility, person perception, misinformation, deception, psychology and law

Evaluating the Credibility of Liars

False information is common in everyday life (e.g., DePaulo et al., 1996; Lewandowsky et al., 2012). For example, a person might give a stranger the wrong directions to the nearest subway stop. A woman may tell her coworker that she did not hang out with their mutual friends even though she did. A witness may provide incorrect testimony during a trial. How do we evaluate these providers of misinformation? How credible do we think they are? Intuition tells us that our assessments would be influenced in part by whether these people provided false information *intentionally* or *unintentionally*. For example, perhaps we would be less trusting of the information provided by a person who we know *knowingly* spread false information (i.e., they lied). However, the three current studies provide counterintuitive findings demonstrating that intentionally lying in certain contexts actually may lead to *greater* perceived credibility than unintentionally mixing up information.

Demerits for Lying

The belief that someone intentionally provided misinformation—i.e., lied—weighs heavily in impressions of the misinformation provider (Brambilla et al., 2012). For example, when people rated 555 personality characteristics on likeability, the characteristics “phony” and “liar” earned the very lowest ratings, and other dishonesty-related characteristics were well-represented at the bottom of the list (Anderson, 1968; see also Tyler et al., 2006). People tend to view lying as a deal-breaker in close relationships: Breach of trust is one of the most common reasons for wanting to end a romantic relationship (Joel et al., 2018; cf. Boon & McLeod, 2001). Evolutionary psychology points to humans’ “cheater detection” mechanisms, suggesting that survival depended in part on being able to identify liars to avoid transactions with them (Cosmides et al., 2010). Indeed, the mere suggestion that another person *might* be lying changes

how we read their behavior (Lawless DesJardins & Hodges, 2015). Even politicians want to appear honest, although current events along with empirical investigations (e.g., Swire et al., 2017) may point to the fading importance of politicians telling the truth in the current era.

In contexts with formal channels of communication, it can be difficult to avoid or dodge responding to questions, even when the answers may reflect poorly on the respondent. One such context is a courtroom setting, where witnesses are compelled to show up and answer direct questions. Here, people cannot merely change the topic, sidestep the question, or refuse to respond altogether. In the courtroom, witnesses' words are also considered critical in deciding a case, and witnesses are admonished, often under penalty of the law, to tell the truth. However, this combination of characteristics—a formal communication channel that compels people to respond truthfully—may create a particular set of circumstances that not only tempt witnesses to lie in some cases, but also results in these lying witnesses to be viewed as more credible than other purveyors of misinformation. Despite the many demerits of lying, we propose—and test with the current research—that a courtroom setting might provide conditions under which a witness who *intentionally* provides misinformation is judged as more credible than a witness who *unintentionally* provides misinformation.

A Perfect Storm: In the Courtroom

The credibility of a courtroom witness who is known to have lied in any capacity would seem on the surface to be no match against the credibility of a witness who showed no evidence of dissembling. Lawyers, knowing this, may undermine the testimony of a potentially damaging witness by demonstrating that the witness has said something untrue and hoping that jurors will infer that the witness is altogether untrustworthy (Berman & Cutler, 1996; Tenney et al., 2007; Wellman, 1997). In the United States, *perjury* or “the act or an instance of a person’s deliberately

making material false or misleading statements while under oath” (Black et al., 1999, p. 1160; see also 18 U.S.C. § 1621) is a criminal offense. Lies of omission *and* commission are both forbidden by courtroom oaths to tell the truth. It should be noted, though, that deliberately providing false information that is immaterial to the trial—i.e., *unrelated* information—is not necessarily perjury, nor a criminal offense.

However, making the stakes against lying in the courtroom so high may ironically *increase* evaluations of a liar’s credibility when compared to people who provide misinformation for other reasons. Why? Lying in any context is cognitively demanding and difficult because it requires the liar to keep their made-up story straight—they must provide misinformation competently (e.g., Suchotzki et al., 2017). Lying witnesses must take care to retain as many veridical elements as possible in their stories to match what other witnesses say or what other evidence suggests and amend only those elements that are critical to conveying the liar’s preferred falsehood. That is, lying witnesses may retain some degree of apparent competence given that lying—and particularly lying well—takes careful planning and mental effort. In contrast, when witnesses are unreliable for reasons other than lying (e.g., a poor memory, confusion about what happened), there may be less assurance that the misinformation from these “mixed-up” witnesses reflects such careful consideration. Indeed, observers may begin to doubt *any* information from such witnesses: When observers know that someone has provided unreliable misinformation, observers evaluate them as less reliable overall (Lavis & Brewer, 2017). When compared to the testimony of pre-meditated liars, the errors in a mixed-up witness’s testimony are not so neatly systematic or predictable, which may severely undermine their credibility. Liars’ credibility may thus fare comparatively better.

Relatedly, courtroom observers may infer that, given the proscriptions and penalties of lying, a witness would resort to intentionally providing false information sparingly, and only with forethought and a very good reason for doing so. For example, if a witness had a romantic tryst on the morning of the day in question, self-serving motives could easily explain why they would lie about their earlier whereabouts, leaving the rest of their testimony potentially worthy of belief. Indeed, a good justification for a lie can make the lie seem less odious (e.g., Levine & Schweitzer, 2014; Sakamoto et al., 2013), further supporting the idea that witnesses who have clear or strategic reasons for lying may be evaluated as more credible than witnesses who mix up information.

There are likely limits to what a witness can lie about and still be seen as credible: Their dishonest testimony should not be about information that might affect how the jury would decide the case (i.e., it should be nonprobative; see Lavis & Brewer, 2017). On the one hand, it may seem obvious that lies about tangential facts are less damaging than lies about facts directly relevant to a case. On the other hand, if honesty in one domain does not affect perceptions of honesty in other domains, then one might question why people care so much about whether politicians tell the truth about their extramarital romantic affairs or tax returns (i.e., behaviors that plausibly are unrelated to their ability to govern). Indeed, witnesses who confidently provide misinformation, even on topics that are non-central to the trial, are judged as less credible after discovery of the misinformation (Tenney et al., 2007). However, whether people would distinguish the credibility of two different witnesses—one who lies about, and one who mixes up, information that is *unrelated* to the trial—remains an open question.

In sum, we propose that under a particular set of circumstances, people who lie may be judged as more credible than their mixed-up counterparts. More specifically, within a courtroom

context—with formalized channels of communication compelling someone to answer and an emphasis on integrity—a person who lies strategically about information unrelated to what they are originally asked about may be deemed more credible than a person in the same situation who provides information that is found to be unreliable because they are mixed up.

Research Overview

Study 1 tests the initial effect: Are witnesses who lie in the courtroom judged as more credible than witnesses who mix up the same information? We then test two proposed boundary conditions of the effect, first examining whether the effect occurs outside of a courtroom context (Study 2), and then testing whether the effect is influenced by how related the witness's lie is to the information on which their testimony is sought (Study 3). Across these three studies, we begin to examine when and how lying versus being mixed-up affects judgments of a target's credibility. All materials and data for Studies 1 through 3 are available on the OSF (<https://osf.io/d8jcb/>). All measures, manipulations, and exclusions across studies are disclosed.

Study 1: Credibility Judgments of Lying versus Mixed-Up Witnesses

To test whether courtroom witnesses who lie are judged as *more credible* than courtroom witnesses who mix up information, participants read a scenario that described five witnesses testifying at a preliminary hearing about a car accident. They then evaluated each witness on several attributes including, most importantly, their credibility.

Method

Participants

A total of 280 undergraduates from the University of Oregon's Psychology and Linguistics human subjects pool participated in exchange for partial fulfillment of a class requirement. Study 1 data were collected as part of a departmental multi-lab online "General

Survey” of several unrelated self-report studies that students could complete at any point during the academic term. Due to the collaborative nature of this collection method, we had little control over the amount of data we received each term. Demographic data were not collected for Study 1 participants because of a coding error, but based on prior studies using this participant pool, we are confident that the sample was roughly two-thirds women and largely traditionally college-aged (18-22 years old; based on data collected from over 4000 participants across multiple terms). A sensitivity analysis revealed that Study 1’s sample ($N = 280$) provided 80% power to detect an effect size of $f = 0.13$ in a two-cell between-subjects design with five repeated measures.

Design

Study 1 had a 2 (misinformation type: lie vs. mix-up; between) $\times$ 5 (witnesses; within) mixed design.¹ After reading about each witness, participants rated witnesses on several attributes including their credibility, likeability, and memory.

Materials and Measures

Participants read a scenario (modified from previous research; Borckardt et al., 2003; Tenney et al., 2007) that described five eyewitnesses testifying in court about a car accident. All participants first read:

Imagine that you are a juror at a trial involving a multi-car accident. Several witnesses testified at a preliminary inquiry about what they remember about the day of the accident and about the accident itself (e.g., how the accident happened and which vehicle was at fault, etc.). Then an investigator went out and discovered that some information from many of the witnesses was incorrect.

¹ When running Study 1, we included another condition designed to test the generalizability of the fundamental effect we were studying. In this condition, instead of the witnesses being called upon to provide eyewitness testimony about what they saw at the accident, they were instead asked to provide subjective evaluations of other people outside the courtroom. We report the results for this “subjective” context separately in the Supplement.

Participants then learned more about the misinformation provided by each of the five witnesses.

As the key manipulation, we varied whether witnesses *mixed up* or *lied* about the misinformation (this factor is hereafter referred to as “misinformation type”). For example, participants in both conditions would read the following about a single witness:

In addition to testifying about the accident, [the witness] said that on the day of the accident he had gone to a meeting at work about remodeling. Further evidence revealed that he had not gone to the meeting that day.

Participants assigned to the *mixed-up* condition then read:

He had actually been seeing a movie with an ex-girlfriend but had mixed up the dates.

Participants assigned to the *lie* condition instead read:

He had knowingly lied about the date of the meeting in order to hide the fact that he had actually been seeing a movie with an ex-girlfriend and hadn’t wanted his current girlfriend to know. Since the girlfriend was present at the deposition, the lie protected his secret.

Note that in the *lie* condition, the lie was always described as intentional and done to “protect” the witness’s self-interest; that is, the lie was strategic. Misinformation type was a fully between-subjects variable; that is, participants read about either five lying witnesses or five mixed-up witnesses. The full text for each of Study 1’s five witness scenarios can be found in Table 1. All participants first read the initial blurb above that situated the scenario, followed by, per witness, the “Background Information,” (second column of Table 1) and then the information under either the “Mixed-Up” or “Lie” conditions (third and fourth columns of Table 1, respectively).

Table 1. Study 1 scenarios.

Witness	Background Information (precedes both conditions)	Mixed-Up Condition	Lie Condition
	In addition to testifying about the accident...		
A	<p>Witness A said that on the day of the accident he had gone to a meeting at work about remodeling.</p> <p>Further evidence revealed that he had not gone to the meeting that day.</p>	<p>He had actually been seeing a movie with an ex-girlfriend but had mixed up the dates.</p>	<p>He had knowingly lied about the date of the meeting in order to hide the fact that he had actually been seeing a movie with an ex-girlfriend and hadn't wanted his current girlfriend to know. Since the girlfriend was present at the deposition, the lie protected his secret.</p>
B	<p>Witness B said that he had gone to the Post Office to mail a package that day.</p> <p>Further evidence revealed that he had...</p>	<p>...actually been out hunting with his friends. Witness B had mixed up the dates.</p>	<p>...intentionally lied about the date of going to the Post Office in order to hide the fact that he had actually been hunting with his friends out of season. Witness B had known hunting out of season was illegal, so he lied to protect himself and his friends.</p>
C	<p>Witness C said that he had an appointment with a veterinarian for his dog, Zeek, that day.</p> <p>However, further evidence showed that Witness C had...</p>	<p>...actually been having money troubles and had lost a large sum of money trying to win money by gambling. Witness C had mixed up the dates.</p>	<p>...had knowingly lied about the appointment. He had actually been having money troubles and had lost a large sum of money that day gambling. Witness C did not want his wife to find out, and since she was present at the deposition, the lie protected his secret.</p>
D	<p>Witness D said that he had gone to lunch with a friend that day.</p> <p>However, further evidence showed that Witness D had...</p>	<p>...actually gone to a fast food restaurant that day and eaten a hamburger (even though he is a vegetarian). He had mixed up the dates.</p>	<p>...knowingly lied about the lunch. He had actually gone to a fast food restaurant that day by himself and had eaten a hamburger, but Witness D is a vegetarian and he was ashamed to admit his transgression. The lie protected his secret.</p>
E	<p>Witness E said that he had gone to the camera shop to get some photographs printed.</p> <p>However, further evidence showed that Witness E had...</p>	<p>...actually been out getting a cosmetic medical procedure done to improve his skin. He had mixed up the dates.</p>	<p>...intentionally lied about going to the camera shop. He had actually been out getting a cosmetic medical procedure done to improve his skin. Witness E sells all-natural skin care products, and people knowing about the medical procedure would damage his company's reputation. The lie protected the company.</p>

Note. For each of the five witnesses, all participants received the Background Information (second column) followed by *either* the Mixed-Up *or* the Lie Condition text (third and fourth columns, respectively). Test is bolded in Table 1 for emphasis only.

After reading about each witness, participants rated the witness's credibility (*How credible is [the witness] as a witness to the car accident?*), likeability (*How likeable is [the witness]?*), and memory (*How good is [the witness]'s memory in general?*) on 1 (*not credible/not likeable/not good*) to 6 (*credible/likeable/good*) scales.²

Results

Analytical Strategy

All analyses across Studies 1 through 3 were conducted in R Version 4.0.2 using the lme4 (Bates et al., 2015) and emmeans (Lenth, 2020) packages.

We ran separate linear mixed-effects models testing the fixed effect of misinformation type (effects-coded; lie = 1, mix-up = -1) on each outcome variable. We included multiple witnesses to increase generalizability but were not interested in (and did not examine) within-subjects differences among witnesses. However, to account for variance explained by differences across witnesses, the maximal random effects (RE) structure included a random slope of misinformation type and a random intercept for witness. For each outcome variable we compared a model with a simplified RE structure (including just a random intercept for witness) to a model with the maximal RE structure. The maximal RE structure was retained only if that model described the data significantly better than the simplified model. Across all reported studies we retained the simplified RE structure unless otherwise specified.

Credibility

Participants evaluated witnesses who lied as *more credible* ($M = 3.3$, $SD = 1.6$) than witnesses who mixed up their testimony ($M = 2.8$, $SD = 1.3$), $B = 0.26$, 95% CI [0.19, 0.34], $t = 6.81$, $p < .001$ (Figure 1).

² We also asked participants to rate each witness's goodness and trustworthiness. Analyses of these secondary outcome variables can be found in the Supplement.

Figure 1. Study 1 mean credibility, likeability, and memory ratings of witnesses who lied and mixed-up information.

Note. Error bars represent standard errors from the mixed-effects models. The dashed line at 3.5 is the midpoint of the (1-6) rating scale.

Notably, credibility ratings of both lying and mixed-up witnesses were significantly below the scale midpoint of 3.5 (Lie: $M = 3.3$; $t(699) = -3.52$, $p < .001$; Mix-Up: $M = 2.8$; $t(699) = -15.21$, $p < .001$). Thus, although participants' credibility ratings were not near the floor of the scale, participants likely did not evaluate the witnesses as particularly "credible."

Likeability and Memory

Likeability ratings did not significantly differ between conditions (Lie: $M = 2.8$, $SD = 1.3$; Mix-Up: $M = 2.8$, $SD = 1.1$; Figure 1), $B = -0.02$, $p = .826$.³ In contrast, participants believed that witnesses who lied had substantially better memories ($M = 4.2$, $SD = 1.4$) than witnesses

³ The random effects structure for likeability included a random intercept and misinformation type slope for witness.

who were mixed-up ($M = 2.4$, $SD = 1.1$), $B = 0.87$, 95% CI [0.80, 0.94], $t = 25.63$, $p < .001$ (Figure 1).

Discussion

Participants evaluated witnesses who lied as comparatively *more credible* than witnesses who were mixed-up. However, lying witnesses were not liked more, suggesting that in Study 1, credibility evaluations did not contribute to a general positivity halo (Forgas & Laham, 2009). Furthermore, the data patterns of Study 1 replicate those of a pilot study with an identical design conducted at a different university with a smaller sample (Pilot Study 1; $N=93$ University of Virginia undergraduate students; more information about Pilot Study 1 can be found in the Supplement). Having found (and replicated an initial instance of) liars being evaluated as more credible than mixed-up witnesses within a courtroom, we next examined a boundary condition: whether the finding depends on contextual characteristics found in a courtroom setting.

Study 2: Moving Eyewitnesses Outside the Courtroom

Courtrooms, with their ritualized patterns of communication, can leave witnesses who wish to keep some information private with few options other than lying. Knowing that a witness feels compelled to lie despite the possible risk and costs of being caught (signaling that the expected value of the lie is high) may justify the lie and, accordingly, result in comparatively less damage to the liar's credibility relative to mixing up information. Might the courtroom's strict norms for truth-telling—or other environmental cues embedded within that context—account for the effect found in Study 1? If the contextual characteristics of a courtroom are central to finding the initial effect, then liars (compared to mixed-up targets) may obtain greater credibility in a courtroom. However, outside the courtroom, where targets can evade answering questions

related to an event in ways other than being dishonest, lying may discredit the target in a manner more consistent with lying's usual bad reputation.

In Study 2 we manipulated the context in which targets delivered misinformation. Like Study 1, Study 2 participants read scenarios in which people lied about or mixed up information. However, rather than reading about an investigation into a car accident (as in Study 1), participants read about an investigation into why a set of bleachers collapsed during a high school football game. This allowed us to manipulate, between subjects, the context of the scenario: In the “courtroom” context participants imagined that they were jurors at a trial investigating the bleacher collapse. In the “non-courtroom” context participants imagined that they were part of a group of school officials investigating the same incident.⁴ In both conditions, participants read accounts from targets (i.e., “witnesses” in the courtroom, “spectators” outside of the courtroom) collected by investigators.

If the effect found in Study 1—witnesses who lie about (versus mix up) information are evaluated as more credible—is attributable to contextual characteristics of a courtroom, then targets who lie will be evaluated as more credible than those who are mixed-up *but only* within the courtroom; this effect should disappear outside of the courtroom. Study 2's design and analyses were preregistered on the OSF (<https://osf.io/d8jcb/>).

Method

Participants

⁴ Study 2 was preceded by a pilot study (Pilot Study 2; $N = 73$) that manipulated misinformation type (i.e., lie vs. mix-up) within a non-courtroom context that was very similar to the non-courtroom context used in Study 2. Here, the credibility of spectators who lied versus were mixed up did not differ, $B = 0.01$, $p = .959$, lending initial support to the idea that characteristics of the courtroom may shape the initial credibility effect found in Study 1. See Supplement for further detail.

A total of 627 undergraduates ($M_{AGE} = 20$ years, $SD_{AGE} = 2$ years; 1 agender, 415 female, 194 male, 11 non-binary, 6 provided no response; 3 American Indian or Alaska Native, 71 Asian, 24 Black or African American, 61 Hispanic, Latinx, and/or Spanish, 5 Middle Eastern or North African, 5 Native Hawaiian or other Pacific Islander, 411 White, 32 specified a different race and/or ethnicity, 15 provided no response) participated in Study 2 in exchange for partial fulfillment of a class requirement, via the General Survey method detailed in Study 1. A sensitivity analysis revealed that Study 2's sample of 627 participants provided 80% power to detect an effect size of $f = 0.11$ in a four-cell between-subjects design with three repeated measures.

Design

Study 2 had a 2 (misinformation type: lie vs. mix-up; between) $\times$ 2 (context: courtroom vs. non-courtroom; between) $\times$ 3 (three targets; within)⁵ mixed design. After reading the scenario, participants evaluated targets on a variety of attributes including credibility, likeability, and memory.

Materials and Measures

Scenario. Participants read a scenario about the collapse of a set of bleachers during a high school football game. The key “context” manipulation was delivered at the beginning of each scenario and was fully between-subjects. Participants assigned to the courtroom context read:

Imagine that you are a juror at a trial involving the collapse of a section of bleachers at a high school football game. Several witnesses testified at a preliminary inquiry about what they remember about the day of the incident and about the incident itself (e.g., how the collapse occurred). Then an investigator went out and discovered that some information

⁵ We included three witness scenarios (rather than five as in Study 1) due to our confidence in the robustness of the effect (and therefore lower need for additional within-subjects power) as well as a desire to shorten the study, which drew from a shared resource.

from many of the witnesses was incorrect. We want to know how you would evaluate these witnesses based on the information they provided.

Participants in the non-courtroom context read a similar blurb, removing the situation from the courtroom:

Imagine that you are part of a group of school officials who are trying to find out why a section of bleachers collapsed at a high school football game. Several spectators who were present at the game recounted what they remember about the day of the incident and about the incident itself (e.g., how the collapse occurred). Following the collection of these accounts, your investigating group discovered that some information from many of the spectators was incorrect. We want to know how you would evaluate these spectators based on the information they provided.

Participants then read additional information about each of the targets (see Table 2 for full text of Study 2's scenarios). In the scenarios, targets were asked about where they had been prior to the football game. Like Study 1, targets thus provided misinformation *unrelated* to their observations of the event being investigated, and did so either inside or outside of a courtroom.

Once again, the key misinformation manipulation was whether targets *lied* about or *mixed up* the provided misinformation. This manipulation again was fully between-subjects. All participants first read one of the initial blurbs above, situating the scenario and manipulating context. Participants then read the "Background Information" (second column in Table 2) and then the information under either the "Mixed-Up" or "Lie" conditions (third and fourth columns, respectively, in Table 2).

Table 2. Study 2 scenarios.

Target	Background Information (precedes both conditions)	Mixed-Up Condition	Lie Condition
	In addition to [testifying/describing] about happened when the bleachers collapsed...		
A	[Witness/Spectator] A said that earlier on the day of the incident he had gone to a meeting at work about remodeling.	He had actually been seeing a movie with an ex-girlfriend but had gotten mixed up about the dates.	He had knowingly lied about the date of the meeting in order to hide the fact that he had actually been seeing a movie with an ex-girlfriend and hadn't wanted his current girlfriend to know. Since the current girlfriend was [present at the deposition/with him when he was describing the event] , the lie protected his secret.
	Further [evidence/information] revealed that he had not gone to the meeting that day.		
B	[Witness/Spectator] B said that he had gone to the Post Office to mail a package earlier that day.	[Witness/Spectator] B had actually been hunting with his friends out of season, but had gotten mixed up.	[Witness/Spectator] B had intentionally lied about the date of going to the Post Office in order to hide the fact that he had actually been hunting with his friends out of season. [Witness/Spectator] B had known hunting out of season was illegal, so he lied to protect the reputations of himself and his friends.
	Further [evidence/information] revealed that he had not been at the Post Office that day.		
C	[Witness/Spectator] C said that he had earlier gone to the camera shop to get some photographs printed.	He had actually been out getting a cosmetic medical procedure done to improve his skin. He had mixed up the dates.	He intentionally lied about going to the camera shop to hide the fact that he had actually been out getting a cosmetic medical procedure done to improve his skin. He lied because he sells all-natural skin care products, and people knowing about the medical procedure would damage his company's reputation.
	However, further [evidence/information] showed that [Witness/Spectator] C had not gone to the camera shop that day.		

Note. For each of the three targets, all participants received the background information (second column) followed by either the Mixed-Up or the Lie Condition text (third and fourth columns, respectively). Exact wording of scenarios varied slightly depending on whether participants were assigned the Courtroom or Non-courtroom context. These differences are denoted by the bolded words in brackets: Words listed first represent the Courtroom condition phrasing; words listed second represent the Non-courtroom condition phrasing.

Outcome variables. After reading about each target, participants rated the target's credibility (*How credible is the [witness/spectator] as a witness to the incident?*), likeability (*How likeable is the [witness/spectator]?*), and memory (*How good is the [witness/spectator]'s memory?*) on a 1 (*not credible/not likeable/not good*) to 6 (*credible/likeable/good*) scale.⁶

Demographics. Participants reported their age (in years), gender identity, and ethnicity.

Results

Analytical Strategy

Similar to Study 1, we ran separate linear mixed-effects models on each outcome variable testing the fixed effects of misinformation type (effects-coded; lie = 1, mix-up = -1), context (effects-coded; courtroom = 1, non-courtroom = -1), and their interaction. When we found significant interactions, we computed simple slopes by creating dummy codes for the context variable. The maximal random effects (RE) structure included a random slope of misinformation type and a random intercept, for witness. We retained the simplified RE structure unless otherwise specified.

Credibility

Neither misinformation type nor context predicted credibility ratings, $Bs < |0.02|$, $ps > .511$. However, as predicted, there was a significant Misinformation Type $\times$ Context interaction, $B = 0.08$, 95% CI [0.02, 0.14], $t = 2.74$, $p = .006$. Replicating Study 1, within the courtroom, lying witnesses were evaluated as more credible than mixed-up witnesses (Lie: $M = 2.6$, $SD = 1.3$; Mix-Up: $M = 2.4$, $SD = 1.1$), $B = 0.09$, 95% CI [0.01, 0.18], $t = 2.26$, $p = .024$. Outside of the courtroom however, credibility ratings of lying and mixed-up spectators did not significantly

⁶ Participants also rated each target's goodness, trustworthiness, intelligence, and competence. Further information about and analyses of these secondary outcome variables can be found in the Supplement.

differ (Lie: $M = 2.4$, $SD = 1.4$; Mix-Up: $M = 2.6$, $SD = 1.2$), $B = -0.07$, $p = .105$ (Panel A of Figure 2).

Figure 2. Study 2 mean credibility (Panel A), likeability (Panel B), and memory ratings (Panel C) of targets who lied and mixed-up information within and outside of a courtroom context.

Note. Error bars represent standard errors from the mixed-effects models. The dashed line at 3.5 is the midpoint of the 1 to 6 rating scale. See Table S5 in the Supplement for means and standard deviations across conditions and outcome variables.

Likeability

The linear mixed-effects model for likeability ratings including both a random intercept and a random slope of misinformation type for witness described the data better than a model with only a random intercept for witness. Context did not predict likeability ratings, $B < 0.01$, $p = .937$, and neither did misinformation type, $B = -0.25$, $p = .119$. However, there was a significant Misinformation Type $\times$ Context interaction, $B = 0.08$, 95% CI [0.03, 0.12], $t = 3.02$, $p = .003$ (Panel B of Figure 2). In both contexts, mixed-up targets were rated as descriptively higher in likeability (Courtroom: $M = 2.7$, $SD = 1.0$; Non-courtroom: $M = 2.9$, $SD = 1.1$) compared to lying targets (Courtroom: $M = 2.4$, $SD = 1.1$; Non-courtroom: $M = 2.2$, $SD = 1.0$), although this

effect was not significant in the courtroom ($B = -0.18, p = .199$) and was larger but still not significant outside of the courtroom ($B = -0.33, p = .067$).

Memory

Replicating patterns of Study 1, lying targets were rated as having better memories ($M = 3.8, SD = 1.3$) than mixed-up targets ($M = 2.3, SD = 1.1$) across contexts, $B = 0.70$, 95% CI $[0.65, 0.76]$, $t = 24.67, p < .001$ (Panel C of Figure 2). Context did not independently predict memory ratings ($B = -0.04, p = .209$) and neither did the interaction between misinformation type and context ($B = 0.03, p = .282$).

Discussion

Replicating Study 1's results, we found in Study 2 that courtroom witnesses were rated as more credible when they lied (versus were mixed-up) about information tangentially relevant to the trial (in this case, equipment failure rather than a car accident). In line with predictions (and consistent with Pilot Study 2 described in the Supplement), Study 2 participants who read about an investigation occurring outside of a courtroom did *not* evaluate lying witnesses to the event as more credible than their mixed-up counterparts. Helpfully, we can exclude some potential artifacts of the courtroom experience as drivers of the effect, such as thinking witnesses in court (versus outside of the courtroom) had a quieter environment to remember the facts or more time to consider the facts. These characteristics can be excluded because participants rated the memory of the targets as equally high within and outside of court, and as equally better than targets who were mixed-up. Overall, these patterns suggest that other characteristics of the courtroom—such as the rigid rules of communication and high stakes for lying—may be crucial to finding the initial effect.

With Study 3 we tested a second potential boundary condition of the initial effect: Specifically, that to be evaluated as more credible than their mixed-up counterparts, lying witnesses must lie only about things that are clearly unrelated to the germane information for which their testimony is sought.

Study 3: Directly Related Lies

How separable a witness's lie is from their core testimony may affect perceptions of their credibility, shaping the initial effect found in Studies 1 and 2. Study 3 tested whether the effect will disappear if witnesses' lies are in any way related to information that might help decide the case. Specifically, we anticipated that courtroom witnesses who tell strategic lies related to events about which their testimony is sought will be judged as less credible than or equally credible to courtroom witnesses who mix up information.

Method

Participants

A total of 289 undergraduates ($M_{AGE} = 20$ years, $SD_{AGE} = 2$ years; 94 men, 195 women; 1 American Indian or Alaska Native, 45 Asian, 12 African American, 188 Caucasian, 43 specified a different race and/or ethnicity) participated in exchange for partial fulfillment of a class requirement. Study 3 data were collected using the same General Survey procedure detailed in Study 1. A sensitivity analysis revealed that Study 3's sample ($N = 289$) provided 80% power to detect an effect size of $f = 0.16$ in a four-cell between-subjects design with three repeated measures.

Design

Study 3 tested four between-subjects conditions using Study 1's car accident context. In all conditions, participants read about three witnesses, creating a 4 (condition: mixed-up,

strategic unrelated lie, related lie, unexplained lie; between) $\times$ 3 (witness; within) mixed design.

After reading the scenario, participants evaluated each witness on a variety of attributes including their credibility, likeability, and memory.

Materials and Measures

Study 3 participants read a courtroom scenario similar to that of Studies 1 and 2. All participants first read the following:

Imagine that you are a juror at a trial involving a multi-car accident. Several witnesses testified at a preliminary inquiry about what they remember about the day of the accident and about the accident itself (e.g., how the accident happened and which vehicle was at fault, etc.). Then an investigator went out and discovered that some information from many of the witnesses was incorrect. We want to know how you would evaluate these witnesses.

This shared background information was then followed by details specific to the different conditions (Table 3). The first two conditions—the *Mixed-Up* and *Strategic Unrelated Lie* conditions—were identical to Study 1’s original misinformation conditions, describing witnesses who mixed up and strategically lied about, respectively, information that was unrelated to the accident (i.e., what the witnesses had been doing earlier on the day of the car accident).

Study 3 introduces two novel conditions: the *Related Lie* and the *Unexplained Lie*. In the *Related Lie* condition, witnesses lied about what happened earlier on the day of the accident, but the lie involved someone who was implicated in the car accident; that is, it was related to the information about which the witness’ testimony was sought. For example, after reading the blurb above, participants in the *Related Lie* condition read:

Witness A said he saw the accident on his way back from a meeting at work about remodeling. Further evidence revealed that he had not gone to the meeting that day. He had knowingly lied; he saw the accident on his way back after seeing a movie with an ex-girlfriend, who was one of the people involved in the accident.

Witness A's misinformation was thus not simply something that occurred earlier in the day, prior to the accident (as was the case in Studies 1 and 2). Instead, the information was proximal and now potentially relevant to testimony about who was at fault (see Table 3 for full text of Study 3's scenarios).

Study 3 also included an *Unexplained Lie* condition that differed from the *Strategic Unrelated Lie* condition (and thus the lie conditions in our first two studies) in that it did not include any explicit justification for why the witness lied. For example, participants would read:

Witness A said he saw the accident on his way back from a meeting at work about remodeling. Further evidence revealed that he had not gone to the meeting that day. He had knowingly lied; he actually saw the accident on his way back from seeing a movie with an ex-girlfriend.

The *Unexplained Lie* condition allows us to test a possible alternative explanation of courtroom liars' credibility advantage compared to mixed-up witnesses in our first two studies. The scenarios in Studies 1 and 2 provided an explicit rationale for why the liar lied. The *Strategic Unrelated Lie* condition was thus more elaborate and longer in length than the descriptions of the mixed-up witnesses. The *Unexplained Lie* condition not only more closely matches the length and level of elaboration of the *Mixed-Up* condition, but also provides a test of whether lies must be extensively justified for the witness to be seen as more credible.

Table 3. Study 3 scenarios.

Witness	Background Information (precedes all conditions)	Mixed-Up Condition	Strategic Unrelated Lie Condition	Related Lie Condition	Unexplained Lie Condition
A	<p>Witness A said he saw the accident on his way back from a meeting at work about remodeling.</p> <p>Further evidence revealed that he had not gone to the meeting that day.</p>	<p>He had actually been seeing a movie with an ex-girlfriend but had mixed up the dates.</p>	<p>He had knowingly lied about the date of the meeting in order to hide the fact that he had actually been seeing a movie with an ex-girlfriend and hadn't wanted his current girlfriend to know. Since the girlfriend was present at the deposition, the lie protected his secret.</p>	<p>He had knowingly lied; he saw the accident on his way back after seeing a movie with an ex-girlfriend, who was one of the people involved in the accident.</p>	<p>He had knowingly lied; he actually saw the accident on his way back from seeing a movie with an ex-girlfriend.</p>
B	<p>Witness B said he saw the accident on his way to the Post Office to mail a package that day.</p> <p>Further evidence revealed that he had...</p>	<p>...actually been out hunting with his friends. He had mixed up the dates.</p>	<p>...intentionally lied about the date of going to the Post Office in order to hide the fact that he had actually been hunting with his friends out of season. Witness B had known hunting out of season was illegal, so he lied to protect himself and his friends.</p>	<p>...intentionally lied about the date of going to the Post Office. He had instead been on his way to go hunting out of season with his friends, one of whom was driving one of the cars involved in the accident.</p>	<p>...intentionally lied about the date of going to the Post Office and had instead seen the accident on his way to go hunting out of season with his friends.</p>
C	<p>Witness C said that he had come upon the accident when he went to the camera shop to get some photographs printed.</p> <p>However, further evidence showed that Witness C had...</p>	<p>...actually been out getting a cosmetic medical procedure done to improve his skin. He had mixed up the dates.</p>	<p>...intentionally lied about going to the camera shop. He had actually been out getting a cosmetic medical procedure done to improve his skin. Witness C lied because he sells all-natural skin care products, and people knowing about the medical procedure would damage his company's reputation.</p>	<p>...intentionally lied about going to the camera shop. He had actually been out getting a cosmetic medical procedure done to improve his skin. One of the medical technicians who had helped with the procedure was driving one of the cars in the accident.</p>	<p>...intentionally lied about going to the camera shop. He had actually been out getting a cosmetic medical procedure done to improve his skin.</p>

Note. For all three witnesses, all participants received the background information (second column) followed by text from one of the four conditions (third through sixth columns). Text is bolded in Table 3 for emphasis only.

After reading about each witness, participants rated the witness's credibility (*How credible are [the witness's] answers to the questions he was asked?*), likeability (*How likeable is [the witness]?*), and memory (*How good is [the witness]'s memory?*) on a 1 (*not credible/not likeable/not good*) to 6 (*credible/likeable/good*) scale.⁷

Results

Analytical Strategy

We again tested our questions with linear mixed-effects modeling. The maximal random effects (RE) structure included a random slope of misinformation type and a random intercept for witness. We retained the simplified RE structure unless otherwise specified. In addition to testing for a main effect of condition, we computed three orthogonal contrasts that compared (1) all three of the “lie” conditions (i.e., the *Strategic Unrelated Lie*, *Related Lie*, and *Unexplained Lie*) against the *Mixed-Up* condition, (2) the *Strategic Unrelated Lie* and *Unexplained Lie* against the *Related Lie*, and finally (3) the *Strategic Unrelated Lie* against the *Unexplained Lie*. These contrasts allowed us to test several questions covered in turn below.

The first contrast compared the three “lie” conditions against the *Mixed-Up* condition. Here, we sought to replicate the initial effect found in Study 1: Liars will be judged as more credible than mixed-up witnesses.

The second contrast tested whether participants differently rated witnesses in the *Strategic Unrelated Lie* and *Unexplained Lie* conditions versus those in the *Related Lie* condition. This contrast tests Study 3's key boundary condition of the initial effect: Does telling a lie about information related to the testimony attenuate the effect? If lying about information *related* to the testimony represents a boundary condition of the initial effect, then witnesses who

⁷ We also asked participants to rate each witness's goodness, trustworthiness, intelligence, and competence. Analyses of these secondary outcome variables can be found in the Supplement.

tell a related lie will be evaluated as less credible than witnesses who tell an unrelated or unexplained lie.

The final contrast (*Strategic Unrelated Lie* versus *Unexplained Lie*) allows us to explore an alternative explanation of why courtroom liars in our first two studies were more credible than mixed-up witnesses. In the *Unexplained Lie* condition, participants had less information about the witness: They knew the witness had lied, but were not told explicitly why. The *Strategic Unrelated Lie* condition provided a longer, more elaborate justification for the witness's lie. If the *Unexplained Lie* condition differs from the *Strategic Unrelated Lie* condition, it may indicate that the comparatively increased elaboration of the lie (versus mix-up) explanation contributes to the credibility of liars in our first two studies, perhaps due to differences in availability of information in participants' memory (i.e., the more vivid, elaborated nature of the lie versus mix-up explanation may have prompted better recall of the lying witnesses' scenarios, shaping credibility evaluations; Reyes et al., 1980). However, if these two conditions do not produce different credibility ratings, it is suggestive that lying itself (provided it's not related to critical testimony) may make liars appear more credible.

Credibility

Overall, there was a main effect of condition on credibility, $F(3, 858) = 13.48, p < .001$. We next examined each of the orthogonal contrasts outlined above. First, replicating the main effect in the previous two studies, courtroom witnesses across the three lie conditions (those who told the *Strategic Unrelated Lie*, *Strategic Unexplained Lie*, and *Related Lie*; Figure 3, white, gray, and black bars, respectively) were evaluated as more credible than mixed-up witnesses (Figure 3, dotted bar), $B = -0.16$, 95% CI $[-0.26, -0.06]$, $t = -3.13, p = .002$. Though not pre-registered, we explored the difference between the *Strategic Unrelated Lie* and *Mixed-Up*

conditions, which replicate the two misinformation conditions of Studies 1 and 2. Here we replicated previous patterns: Witnesses who lied were evaluated as more credible ($M = 2.5$, $SD = 1.5$) than witnesses who mixed up information ($M = 2.0$, $SD = 1.0$), $B = -0.30$, 95% CI $[-0.45, -0.16]$, $t = -4.03$, $p < .001$ (Figure 3, white and dotted bars, respectively).

Figure 3. Study 3 mean credibility, likeability, and memory ratings of witnesses who told strategic unrelated lies, unexplained lies, related lies, and were mixed-up. See Table S6 in the Supplement for means and standard deviations across conditions and outcome variables.

Note. Error bars represent standard errors from mixed-effects models. The dashed line at 3.5 is the midpoint of the rating scale.

Second, and the key finding of Study 3, witnesses who told a related lie (Figure 3, black bar) were judged as less credible than witnesses in the other two lie conditions (*Strategic Unrelated Lie* and *Unexplained Lie*; Figure 3, white and gray bars, respectively), $B = -0.27$, 95% CI $[-0.37, -0.16]$, $t = -5.06$, $p < .001$. This suggests that although liars sometimes may be evaluated as more credible than mixed-up witnesses, this advantage goes away if the information they lie about is related to the information on which their testimony is sought, providing some evidence for a key boundary condition of the initial effect.

Finally, witnesses who told a strategic unrelated lie (Figure 3, white bar) did not differ in credibility from witnesses who told an unexplained lie (Figure 3, gray bar), $B = -0.04$, $p = .502$, suggesting that, upon evaluating the witnesses within Study 3's scenarios, the increased credibility of a liar does not appear to depend on having more information about the liar or an explicit justification for telling the lie.

Likeability

Overall, the effect of condition on likeability ratings was not statistically significant, $F(3, 858) = 2.58$, $p = .052$. Further, witnesses who told the *Strategic Unrelated Lie* were rated as *less* likeable than witnesses who told the *Unexplained Lie*, $B = -0.12$, 95% CI $[-0.23, -0.02]$, $t = -2.36$, $p = .018$ (Figure 3). The remaining two contrasts were not statistically significant, $Bs < |0.06|$, $ps > .211$.

Memory

There was an overall effect of condition on memory, $F(3, 858) = 105.64$, $p < .001$ (Figure 3). Replicating previous data patterns, lying witnesses (i.e., those who told a *Strategic Unrelated Lie*, *Unexplained Lie*, and *Related Lie*) were evaluated as having better memories than mixed-up witnesses, $B = -0.79$, 95% CI $[-0.90, -0.69]$, $t = -15.10$, $p < .001$. When contrasted against witnesses who told a strategic unrelated lie and those who told an unexplained lie, witnesses who told a related lie were judged as having worse memories, $B = -0.20$, 95% CI $[-0.30, -0.09]$, $t = -3.62$, $p < .001$. Finally, even though their credibility ratings did not differ, witnesses who told a *Strategic Unrelated Lie* were judged to have better memories than those who told an *Unexplained Lie*, $B = 0.45$, 95% CI $[0.32, 0.57]$, $t = 6.74$, $p < .001$.

Discussion

In Study 3, we replicated the now familiar effect of lying witnesses being evaluated as more credible than mixed-up witnesses. However, liars were evaluated as more credible than their mixed-up counterparts only if their lies were separable from the relevant testimony about probative evidence that they were asked to provide. In the car accident scenario we used, if a witness's lie involved someone who was involved in the car accident (as was the case in the *Related Lie* condition), liars' credibility advantage over mixed-up witnesses (seen in the first two studies) disappeared. Interestingly, providing an elaborated reason for why the witness was motivated to lie (i.e., explaining explicitly how and why the witness would be damaged if the truth had come out) did *not* appear to be a necessary ingredient in elevating liars' credibility compared to that of mixed-up witnesses (but it did make the unrelated liars' memories seem even better).

General Discussion

Contrary to intuitions and warnings about how people who lie cannot be trusted, we find that in at least one situation—a courtroom—people who lie are judged as more credible than people who mix up information (Study 1). We also found evidence for two boundary conditions of this effect: First, liars can't lie just anywhere and be seen as more credible than other purveyors of misinformation. In fact, so far, we have *only* found the effect in a courtroom setting—a context in which a person could not otherwise avoid answering direct questions. Indeed, Study 2 explicitly demonstrates that liars are judged as more credible than mixed-up witnesses in a courtroom setting, but not in a parallel setting outside of a courtroom. One might intuitively think that lying in a courtroom would be *particularly* damaging to a target's credibility given the legal system's focus on integrity. However, unlike less formal settings (such

as the non-courtroom setting condition of Study 2), courtroom witnesses are compelled to answer questions. Further, by making the stakes for lying so high, people may infer that witnesses will not “lie lightly,” and will do so only when they have good reason, a condition satisfied in the current set of studies by having witnesses tell strategic lies that served to protect their reputations.

Study 3 examined a second boundary condition that appears to limit the type of lies targets can tell and still be perceived as more credible than their mixed-up counterparts: Specifically, the lie must be clearly separable from the target’s delivery of information that is relevant to the matter about which they are consulted. In line with previous intuitions about how lying makes targets distrusted, if perceivers are given reason to suspect that targets might be lying to obscure information about a potentially culpable party (even if targets themselves are not culpable), their lies likely will not increase their perceived credibility relative to mixed-up targets. In other words, if the witness can’t be trusted to provide the truth about key information in their testimony, they lose credibility.

Importantly, we note that across studies, participants’ ratings of target credibility were consistently below the midpoint of the 1 to 6 credibility scale. Thus, witnesses who lied on the stand were judged as more credible than the witnesses who mixed up information, but the witnesses who lied were by no means judged as “highly credible” in an absolute sense. In all of our studies, and in all conditions, participants were asked to evaluate targets who provided *misinformation*. Thus, we wish to be clear that the current studies suggest that certain situations may increase the perceived credibility of targets who lie over those who mix up information; *not* that lying is the best—or a suitable—route toward earning high marks for credibility.

Anyone considering the strategic use of lies should be aware that although lying may increase credibility relative to mixing up information, lying can be quite damaging to one's likeability. Targets who lied in Studies 2 and 3 were typically judged as less likeable than those who mixed up information, suggesting that credibility and likeability, though both positively valenced, are affected differently by the lies told by the targets. Using a more fine-grained approach, we note that within the linear mixed-effects modeling used in the current studies, the random effects (RE) structures for credibility and likeability ratings often differed. A simplified structure typically described the credibility data best, whereas a maximal RE structure described Study 1 and 2's likeability data best. Thus, differences in the details of the scenarios (i.e., what exactly the target provided misinformation about, and details of their story) interacted (in a conceptual sense) with whether a target lied about or mixed up information to predict likeability. In contrast, credibility ratings were more simply determined, independent of story details. Credibility and likeability ratings may be drawing on the two different dimensions of social perception identified in the Stereotype Content Model (Fiske et al., 2002), with evaluations of a target's credibility likely overlapping with competence and evaluations of a target's likeability overlapping with warmth. Future research could more thoroughly examine when and how witness credibility relates to ratings of their warmth and competence.

Implications

The current research bridges several literatures in the fields of social psychology and of psychology and law. The general ability to *detect* deception has been examined across a range of different domains, often within legal contexts (e.g., DePaulo et al., 1997; Gunderson & ten Brinke, 2019; Hartwig & Bond Jr., 2011; Hartwig et al., 2006; Kassin & Fong, 1999; Meissner & Kassin, 2002; ten Brinke et al., 2016; Vrij et al., 2019). The present studies pursue a different

direction: Rather than ending the story when deception is detected, these studies address what happens afterward. That is, how do people integrate the fact that someone is lying with their other existing knowledge?

Social psychological theories of person perception are frequently applied to and tested within courtroom settings (e.g., how implicit and explicit biases affect judgments; how characteristics and behaviors of witnesses, defendants, and victims affect verdicts; e.g., Brodsky et al., 2009; Neal et al., 2012; see Spellman & Tenney, 2010 for a review). The current studies establish a new but related avenue of research by examining a specific person-by-situation interaction context (e.g., Furr & Funder, 2018).

Although the present conclusions are limited to specific settings, they may have relevance for the relatively nascent, yet fast-growing area of research within social psychology that examines misinformation and “fake news” (e.g., Lazer et al., 2018; Pennycook & Rand, 2019). Knowing the circumstances under which people who lie are seen as credible may inform future research examining how other purveyors of misinformation may gain credibility. This is particularly relevant given the current political climate in the United States and in other parts of the world. If a politician strategically lies in an official capacity—perhaps to cover-up self-serving motives that are incompatible with government policy—the voting public may still trust their position on unrelated matters. Some politicians spend much of their careers in a context that in some ways resembles a courtroom: As high-profile public servants, they are also compelled to answer questions they might rather avoid. As shown in the current research, at least in a courtroom, even an explicitly self-serving lie may do less damage to overall credibility than unintentionally getting information wrong, which can cast a broader shadow across judgments of overall credibility (and also damage ratings of the witness’s memory).

Limitations and Future Directions

The current research used a similar design across all studies, with distinctive scenarios that may not be representative of what decision-makers in a courtroom typically hear (although we note that versions of these scenarios have been used in previous research testing related questions; Borckardt et al., 2003; Tenney et al., 2007). The scenarios are engaging and vivid, but the versions that were used across all three of the present studies also contained an unambiguous self-serving motive for lying about something tangential to primary trial-related evidence (although Study 3's *Unexplained Lie* condition suggests explicitly stating this motive is not necessary). Using the same scenarios repeatedly had the advantage of allowing us to test boundary conditions, but at the same time limits the known generalizability of the results. Although the current research focused on legal witnesses given the particular characteristics of a courtroom setting, future research can and should examine whether the characteristics identified as constraining the initial effect (i.e., being compelled to answer direct questions, strict norms about truth-telling) might be present in other contexts as well (e.g., in high-stakes business meetings with differential power dynamics; in interviews).

Additionally, all studies were conducted on a traditionally college-aged, primarily female, and primarily White participant sample. Whether the current results would extend to a broader slice of the public represents an interesting avenue for future research. University students—many of whom have never served on a jury—may have seen these studies as an “academic” exercise. Actual jurors, especially ones outside of a higher education context known for encouraging critical thinking, may demonstrate more generally negative responses to people who lie.

Finally, we focused the current investigation on how specific witnesses were perceived, rather than looking at those witnesses embedded in a full case or those witnesses' influence over a final verdict. Because this program of research was carried out in the United States, actual American legal practices, as well as cultural attitudes and beliefs about the legal system, likely shaped participant responses. Future research could profitably extend this line of questioning to non-WEIRD samples (see Henrich et al., 2010) and legal systems outside of the United States.

Conclusion

We opened this paper by asking how evaluations of people who provide misinformation may change depending on whether the misinformation is the result of a lie or a mix-up. We empirically tested and found the initial effect of a lying witness being evaluated as more credible than a witness who mixes up information, and then probed for boundaries of this effect. We demonstrate that the effect depends on several key contextual factors: The “dubious” misinformation likely needs to occur in a setting where proscriptions against lying are powerful and yet the liar has few other options (e.g., a courtroom). The lies also need to be unrelated to the witness's probative testimony. The current research provides a view into what happens *after* deception is detected. How do people integrate learning that someone is lying with their existing knowledge? We hope that this program of studies will motivate future research on perceptions of targets who provide misinformation, the reasons behind that misinformation, and how different types of misinformation might uniquely shape evaluations of their providers.

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The Curious Case of Courtroom Liars' Credibility

Bethany Lassetter, Elizabeth R. Tenney, Barbara A. Spellman, and Sara D. Hodges

SUPPLEMENT

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Pilot Study 1: Credibility Judgments of Lying versus Mixed-Up Witnesses

Like Study 1 (reported in the main text), Pilot Study 1 tests whether witnesses who lie in a courtroom are judged as more credible than witnesses who mix up information in that same context. Study 1 is a direct replication of Pilot Study 1's misinformation conditions. Pilot Study 1 was conducted during the first half of 2008.

Method

Participants

Pilot Study 1's sample size was determined using the heuristic of obtaining about 50 participants per cell. Ninety-three University of Virginia undergraduates participated in exchange for partial course credit (25 men, 55 women, 13 not recorded; $M_{\text{age}} = 20$ years, $SD_{\text{age}} = 1$ year). A sensitivity analysis revealed that Pilot Study 1's sample ($N = 93$) provided 80% power to detect an effect size of $f = 0.22$.

Design and Procedure

Pilot Study 1's design, procedure, and measures were identical to Study 1 (see main text). The study had a 2 (misinformation type: lie vs. mix-up; between) $\times$ 5 (witnesses; within) mixed design.

Results

Analytical Strategy

See Study 1.

Credibility

Participants evaluated witnesses who lied as *more credible* ($M = 3.6$, $SD = 1.5$) than witnesses who mixed up their testimony ($M = 2.9$, $SD = 1.2$), $B = 0.33$, 95% CI [0.21, 0.46], $t = 5.26$, $p < .001$.

Like Study 1, the average Pilot Study 1 credibility rating (across all five witnesses) collapsing across misinformation type was significantly below the scale midpoint of 3.5 ($M = 3.2$; $t(460) = -4.38$, $p < .001$), suggesting that participants did not think these witnesses were particularly credible. Credibility evaluations of just the witnesses who lied did not significantly differ from the midpoint of the scale ($M = 3.6$; $t = 0.54$, $p = .592$) whereas witnesses who mixed up information were rated as significantly *below* the midpoint of the credibility scale ($M = 2.9$; $t(234) = -7.97$, $p < .001$).

Likeability and Memory

The random effects structure for likeability included a random intercept and misinformation type slope for witness. The difference in ratings of witnesses' likeability was not significant, although directionally, mixed-up witnesses were rated as more likeable ($M = 3.3$, $SD = 1.1$) than lying witnesses ($M = 2.7$, $SD = 1.1$), $B = -0.25$, $p = .180$. In contrast, participants believed that witnesses who lied (versus were mixed-up) had better memories (Lie: $M = 4.4$, $SD = 1.1$; Mix-Up: $M = 2.9$, $SD = 1.0$), $B = 0.75$, 95% CI [0.65, 0.84], $t = 15.36$, $p < .001$.

Secondary Outcome Variables

We also evaluated whether misinformation type influenced participant ratings of witness' goodness (*How good a person is Witness [X]?*), as well as the likelihood that someone would mix-up or lie about the information they had read about in the scenario (*How likely is it that someone would accidentally mix up the date of [X]?*; *How likely is it that someone would lie about [X]?*). All three of these items were reported on 1 (*not good/likely*) to 6 (*good/likely*) scales.

Misinformation type did not significantly influence any of the secondary outcome variables (see below and **Table S1**).

Table S1. Pilot Study 1 condition means and standard deviations of witness credibility, likeability, and memory (primary outcome variables), and goodness, likelihood of mix-up, and likelihood of lie (secondary outcome variables).

Attribute	Condition	
	Lie	Mix-Up
Credibility	3.6 (1.5)	2.9 (1.2)
Likeability	2.7 (1.1)	3.3 (1.1)
Memory	4.4 (1.1)	2.9 (1.0)
Goodness	2.9 (1.1)	3.5 (1.0)
Likelihood of Mix-Up	2.0 (1.2)	2.7 (1.4)
Likelihood of Lie	5.0 (1.2)	4.3 (1.5)

Note. Standard deviations are in parentheses. All attributes were rated on a 1 to 6 scale. Bolded means denote significant differences, $p < .001$.

Effect of misinformation type of secondary outcome variables. The random effects structures for each secondary outcome variable included a random intercept and misinformation type slope for witness.

- **Goodness:** $B = -0.27$, 95% CI [-0.58, 0.03], $t = -1.96$, $p = .122$
- **Likelihood of Mix-Up:** $B = -0.33$, 95% CI [-0.65, -0.01], $t = -2.20$, $p = .092$
- **Likelihood of Lie:** $B = 0.34$, 95% CI [-0.10, 0.78], $t = 1.66$, $p = .172$

Pilot Study 2: Moving Eyewitnesses Outside the Courtroom

Study 2's "non-courtroom" conditions (reported in main text) are close replications of Pilot Study 2's two misinformation type conditions. Full text of Pilot Study 2's scenarios can be found on the OSF (<https://osf.io/d8jcb/>).

Method

Participants

A total of 100 participants completed Pilot Study 2, but due to an ambiguity in the online consent process, 27 participants did not provide clear consent. In an abundance of caution, we chose not to analyze the data from these 27 participants, leaving a final sample size of 73 University of Oregon undergraduates who participated in exchange for partial course credit. Demographic data were not collected because of a coding error but given our knowledge of this subject pool (the same used for Studies 1-3 reported in the main text), we are confident that the sample was about two-thirds women and largely traditionally college-aged (18-22 years old; based on data collected from over 4000 participants across multiple terms). A sensitivity analysis revealed that Pilot Study 2's sample ($N = 73$) provided 80% power to detect an effect size of $f = 0.27$.

Design and Procedure

Pilot Study 2's design, procedure, and measures were very similar to half of Study 2 (see main text)—Pilot 2 had only the "non-courtroom" condition (i.e., Pilot Study 2 did *not* include the parallel "courtroom" condition). The wording of Pilot Study 2's scenarios differed slightly from Study 2 (see OSF page for full materials; <https://osf.io/d8jcb/>). Pilot Study 2 was also conducted as a stand-alone online study rather than as part of the General Survey procedure

outlined in the main text. The study had a 2 (misinformation type: lie vs. mix-up; between) $\times$ 5 (spectators; within) mixed design.

Results

Analytical Strategy

See Study 2.

Credibility, Likeability and Memory

See **Table S2**. Credibility ratings of lying and mixed-up spectators did not significantly differ, $B = 0.01$, $p = .959$. Further, liars were liked less than those who were mixed-up, $B = -0.33$, 95% CI $[-0.49, -0.18]$, $t = -4.18$, $p < .001$. Liars were also evaluated as having significantly better memories than people who were mixed-up, $B = 0.97$, 95% CI $[0.79, 1.15]$, $t = 10.71$, $p < .001$.

Secondary Outcome Variables

We also evaluated whether misinformation type influenced participant ratings of spectators' competence (*How competent is Spectator [X]?*), goodness (*How good a person is Spectator [X]?*), trustworthiness (*In general, how trustworthy a person is Spectator [X]?*), and intelligence (*How intelligent is Spectator [X]?*). All four of these items were reported on 1 (*not competent/not good/not trustworthy/not intelligent*) to 6 (*competent/good/trustworthy/intelligent*) scales. Misinformation type did not significantly influence ratings of spectator competence or intelligence but *did* influence ratings of spectator goodness and trustworthiness (see below and **Table S2**).

Table S2. Pilot Study 2 condition means and standard deviations of spectator credibility, likeability, and memory (primary outcome variables), and competence, goodness, trustworthiness, and intelligence (secondary outcome variables).

Attribute	Condition	
	Lie	Mix-Up
Credibility	2.6 (1.6)	2.6 (1.3)
Likeability	2.3 (1.3)	3.0 (1.1)
Memory	4.1 (1.4)	2.1 (1.2)
Competence	3.3 (1.5)	3.0 (1.1)
Goodness	2.5 (1.2)	3.3 (1.1)
Trustworthiness	1.9 (1.2)	2.5 (1.1)
Intelligence	3.2 (1.4)	3.0 (1.0)

Note. Standard deviations are in parentheses. All attributes were rated on a 1 to 6 scale. Bolded means denote significant differences, $p < .001$.

Effect of misinformation type of secondary outcome variables. The random effects structures for each secondary outcome variable included just a random intercept for spectator.

Mixed-up spectators were evaluated as better people and more trustworthy than lying spectators.

- **Goodness:** $B = -0.38$, 95% CI $[-0.53, -0.22]$, $t = -4.78$, $p < .001$
- **Trustworthiness:** $B = -0.29$, 95% CI $[-0.45, -0.14]$, $t = -3.76$, $p < .001$

Mixed-up and lying spectators were judged as no differently intelligent nor competent.

- **Intelligence:** $B = 0.08$, 95% CI $[-0.08, 0.26]$, $t = 0.99$, $p = .325$
- **Competence:** $B = 0.18$, 95% CI $[-0.0005, 0.36]$, $t = 1.95$, $p = .052$

Study 1**Secondary Outcome Variables****Table S3.** Study 1 condition means and standard deviations of witness goodness and trustworthiness (secondary outcome variables).

Attribute	Condition	
	Lie	Mix-Up
Goodness	3.1 (1.2)	3.2 (1.0)
Trustworthiness	2.7 (1.3)	2.7 (1.1)

Notes. Standard deviations are in parentheses. All attributes were rated on a 1 to 6 scale.

Effect of misinformation type of secondary outcome variables. The random effects structures for both outcomes included a random intercept and misinformation type slope for witness. Misinformation type did not significantly influence ratings of witness goodness or trustworthiness.

- **Goodness:** $B = -0.05$, 95% CI $[-0.28, 0.18]$, $t = -0.46$, $p = .670$
- **Trustworthiness:** $B = 0.02$, 95% CI $[-0.17, 0.22]$, $t = 0.28$, $p = .793$

“Subjective Conditions” of Study 1

When running Study 1 we included another two conditions designed to test the generalizability of the initial effect. Here, instead of the witnesses being called upon to provide eyewitness testimony about what they saw at the accident (see Study 1 in the main text), they were instead asked to provide subjective evaluations of other people outside the courtroom (something that we address more directly in Study 2 of the main text).

Method

Participants. A total of 279 participants completed the subjective conditions of Study 1 in exchange for partial course credit. Demographic data were not collected because of a coding error. A sensitivity analysis revealed that this sample ($N = 279$) provided 80% power to detect an effect size of $f = 0.13$.

Design and Procedure. The design, procedure, and measures were very similar to Study 1 (see main text). The main difference was the context of the scenarios (see OSF page for full materials; <https://osf.io/d8jcb/>). The study had a 2 (misinformation type: lie vs. mix-up; between) $\times$ 3 (witnesses; within) mixed design.

Results

The analytical strategy was identical to the strategy used in Study 1. See **Table S4** and below for summaries of the patterns for the primary and secondary outcome variables. Mixed-up and lying witnesses were judged as no differently credible, likeable, good, or trustworthy. Replicating previous patterns, the memories of lying witnesses were rated better than the memories of mixed-up witnesses.

Table S4. Study 1 “subjective conditions” means and standard deviations of outcome variables.

Attribute	Condition	
	Lie	Mix-Up
Credibility	2.5 (1.4)	2.4 (1.2)
Likeability	2.6 (1.2)	2.8 (1.1)
Memory	3.9 (1.3)	2.4 (1.1)
Goodness	2.9 (1.1)	3.1 (1.1)
Trustworthiness	2.4 (1.2)	2.5 (1.1)

Note. Standard deviations are in parentheses. All attributes were rated on a 1 to 6 scale. Bolded means denote significant differences, $p < .001$.

Effect of misinformation type of outcome variables. The random effects structure for memory included just a random intercept for witness. Lying witnesses were evaluated as having better memories than mixed-up witnesses.

- **Memory:** $B = 0.76$, 95% CI [0.69, 0.82], $t = 23.24$, $p < .001$

The random effects structures for **likeability** and **goodness** included a random intercept and misinformation type slope for witness, whereas the structures for **credibility** and **trustworthiness** included just a random intercept for witness. Mixed-up and lying witnesses were evaluated as no differently credible, likeable, good, or trustworthy.

- **Credibility:** $B = 0.03$, 95% CI [-0.04, 0.10], $t = 0.86$, $p = .389$
- **Likeability:** $B = -0.10$, 95% CI [-0.26, 0.06], $t = -1.37$, $p = .242$
- **Goodness:** $B = -0.13$, 95% CI [-0.35, 0.08], $t = -1.35$, $p = .248$
- **Trustworthiness:** $B = -0.03$, 95% CI [-0.16, 0.11], $t = -0.40$, $p = .707$

Study 2 Condition Means and Secondary Outcome Variables

Table S5. Study 2 condition means and standard deviations of target credibility, likeability, and memory (primary outcome variables), and competence, goodness, trustworthiness, and intelligence (secondary outcome variables).

Attribute	Condition			
	Courtroom		Non-Courtroom	
	Lie	Mix-Up	Lie	Mix-Up
Credibility	2.6 (1.3)	2.4 (1.1)	2.4 (1.4)	2.6 (1.2)
Likeability	2.4 (1.1)	2.7 (1.0)	2.2 (1.0)	2.9 (1.1)
Memory	3.7 (1.2)	2.3 (1.1)	3.8 (1.3)	2.4 (1.1)
Competence	3.0 (1.3)	2.8 (1.1)	2.8 (1.2)	2.8 (1.0)
Goodness	2.5 (1.1)	3.1 (1.0)	2.2 (1.0)	3.2 (1.1)
Intelligence	3.1 (1.2)	2.9 (1.0)	2.9 (1.2)	2.9 (1.0)
Trustworthiness	2.2 (1.1)	2.5 (1.0)	2.0 (1.0)	2.6 (1.0)

Note. Standard deviations are in parentheses. All attributes were rated on a 1 to 6 scale.

Effect of misinformation type on secondary outcome variables.

Competence. The random effects structure for competence included just a random intercept for target. Targets who lied were evaluated as more competent than targets who were mixed-up ($p = .002$).

- **Misinfo Type:** $B = 0.08$, 95% CI [0.03, 0.14], $t = 3.04$, $p = .002$
- **Context:** $B = 0.05$, 95% CI [-0.01, 0.10], $t = 1.68$, $p = .094$
- **Misinfo*Context:** $B = 0.05$, 95% CI [-0.0004, 0.11], $t = 1.95$, $p = .052$

Goodness. The random effects structure for goodness included a random intercept and misinformation type slope for target. There was a significant interaction between misinformation type and context ($p < .001$): Within the courtroom, lying and mixed-up targets were rated as no different in person quality ($p = .113$); outside of the courtroom, mixed-up targets were evaluated as better quality people than lying targets ($p = .046$).

- **Misinfo Type:** $B = -0.37$, 95% CI [-0.62, -0.12], $t = -3.41$, $p = .076$
- **Context:** $B = 0.04$, 95% CI [-0.01, 0.08], $t = 1.43$, $p = .153$
- **Misinfo*Context:** $B = 0.09$, 95% CI [0.04, 0.13], $t = 3.45$, $p < .001$
 - **Courtroom:** $B = -0.29$, 95% CI [-0.54, -0.04], $t = -2.57$, $p = .113$

- **Non-Courtroom: $B = -0.46$, 95% CI $[-0.71, -0.21]$, $t = -4.08$, $p = .046$**

Intelligence. The random effects structure for intelligence included just a random intercept for target. Targets who lied were evaluated as more intelligent than targets who were mixed-up ($p = .046$).

- **Misinfo Type: $B = 0.05$, 95% CI $[0.001, 0.10]$, $t = 2.00$, $p = .046$**
- **Context: $B = 0.03$, 95% CI $[-0.02, 0.08]$, $t = 1.02$, $p = .307$**
- **Misinfo*Context: $B = 0.04$, 95% CI $[-0.01, 0.09]$, $t = 1.48$, $p = .138$**

Trustworthiness. The random effects structure for trustworthiness included a random intercept and misinformation type slope for target. There was a significant interaction between misinformation type and context ($p = .014$): Within the courtroom, lying and mixed-up targets were rated as no differently trustworthy ($p = .138$); outside of the courtroom, mixed-up targets were evaluated as more trustworthy than lying targets ($p = .045$).

- **Misinfo Type: $B = -0.23$, 95% CI $[-0.39, -0.06]$, $t = -3.13$, $p = .089$**
- **Context: $B = 0.02$, 95% CI $[-0.02, 0.07]$, $t = 0.95$, $p = .344$**
- **Misinfo*Context: $B = 0.06$, 95% CI $[0.01, 0.11]$, $t = 2.47$, $p = .014$**
 - **Courtroom: $B = -0.16$, 95% CI $[-0.33, 0.003]$, $t = -2.17$, $p = .138$**
 - **Non-Courtroom: $B = -0.29$, 95% CI $[-0.45, -0.12]$, $t = -3.75$, $p = .045$**

Study 3 Condition Means and Secondary Outcome Variables

Table S6. Study 3 condition means and standard deviations of witness credibility, likeability, and memory (primary outcome variables), and competence, goodness, trustworthiness, and intelligence (secondary outcome variables).

Attribute	Condition			
	Mixed-Up	Strategic Unrelated Lie	Related Lie	Unexplained Lie
Credibility	2.0 (1.0)	2.5 (1.5)	2.0 (1.2)	2.6 (1.4)
Likeability	2.4 (1.0)	2.2 (1.1)	2.3 (1.0)	2.5 (1.2)
Memory	1.8 (1.1)	4.1 (1.3)	3.2 (1.4)	3.2 (1.5)
Competence	2.4 (1.0)	3.1 (1.4)	2.6 (1.2)	2.7 (1.3)
Goodness	2.8 (1.0)	2.5 (1.2)	2.5 (1.0)	2.8 (1.2)
Trustworthiness	2.2 (1.0)	2.2 (1.2)	1.9 (1.1)	2.2 (1.2)
Intelligence	2.5 (1.0)	3.2 (1.3)	2.6 (1.1)	2.8 (1.2)

Note. Standard deviations are in parentheses. All attributes were rated on a 1 to 6 scale.

Effect of condition on Study 3 secondary outcome variables.

Study 3 had a single four-level between-subjects factor: Condition (strategic unrelated lie vs. unexplained lie vs. related lie vs. mixed-up). Below we list statistics for the omnibus effect of Condition, as well as the three orthogonal contrasts reported in the manuscript.

Orthogonal Contrasts			
Contrast 1	All Lie Conditions (<i>Strategic Unrelated Lie</i> + <i>Unexplained Lie</i> + <i>Related Lie</i>)	vs.	<i>Mixed-Up</i>
Contrast 2	<i>Strategic Unrelated Lie</i> + <i>Unexplained Lie</i>	vs.	<i>Related Lie</i>
Contrast 3	<i>Strategic Unrelated Lie</i>	vs.	<i>Unexplained Lie</i>

Competence. The random effects structure for competence included just a random intercept for witness. Liars, overall, were evaluated as more competent than mixed-up witnesses. Telling a strategic unrelated or unexplained lie resulted in higher competence ratings than telling a lie that was related to testimony. Finally, witnesses who told a strategic unrelated lie were evaluated as more competent than witnesses who told an unexplained lie.

- **Condition (omnibus):** $F(3, 857) = 14.30, p < .001$
- **Contrast 1:** $B = -0.17, 95\% \text{ CI } [-0.26, -0.07], t = -3.50, p < .001$
- **Contrast 2:** $B = -0.16, 95\% \text{ CI } [-0.26, -0.07], t = -3.38, p < .001$
- **Contrast 3:** $B = 0.22, 95\% \text{ CI } [0.10, 0.33], t = 3.62, p < .001$

Goodness. The random effects structure for goodness included just a random intercept for witness. Liars, overall, were evaluated as lower-quality people than mixed-up witnesses. Witnesses who told a strategic unrelated lie were evaluated as lower quality people than witnesses who told an unexplained lie.

- **Condition (omnibus):** $F(3, 855) = 4.17, p = .006$
- **Contrast 1:** $B = 0.11, 95\% \text{ CI } [0.02, 0.19], t = 2.53, p = .012$
- **Contrast 2:** $B = -0.06, 95\% \text{ CI } [-0.15, 0.02], t = -1.43, p = .154$
- **Contrast 3:** $B = -0.12, 95\% \text{ CI } [-0.23, -0.01], t = -2.21, p = .028$

Trustworthiness. The random effects structure for trustworthiness included just a random intercept for witness. Telling a strategic unrelated or unexplained lie resulted in higher trustworthiness ratings than telling a lie that was related to testimony.

- **Condition (omnibus):** $F(3, 855) = 3.78, p = .010$
- **Contrast 1:** $B = 0.06, 95\% \text{ CI } [-0.02, 0.15], t = 1.45, p = .148$
- **Contrast 2:** $B = -0.15, 95\% \text{ CI } [-0.24, -0.06], t = -3.20, p = .001$
- **Contrast 3:** $B = -0.02, 95\% \text{ CI } [-0.13, 0.09], t = -0.33, p = .741$

Intelligence. The random effects structure for intelligence included just a random intercept for witness. Liars, overall, were evaluated as more intelligent than mixed-up witnesses. Telling a strategic unrelated or unexplained lie resulted in higher intelligence ratings than telling a lie that was related to testimony. Finally, witnesses who told a strategic unrelated lie were evaluated as more intelligent than witnesses who told an unexplained lie.

- **Condition (omnibus):** $F(3, 857) = 13.26, p < .001$
- **Contrast 1:** $B = -0.15, 95\% \text{ CI } [-0.24, -0.06], t = -3.23, p = .001$
- **Contrast 2:** $B = -0.17, 95\% \text{ CI } [-0.26, -0.08], t = -3.67, p < .001$
- **Contrast 3:** $B = 0.18, 95\% \text{ CI } [0.07, 0.29], t = 3.15, p = .002$