Is Lying Bound to Commitment? Empirically Investigating Deceptive Presuppositions, Implicatures, and Actions

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Abstract
Lying is an important moral phenomenon that most people are affected by on a daily basis—be it in personal relationships, in political debates, or in the form of fake news. Nevertheless, surprisingly little is known about what actually constitutes a lie. According to the traditional definition of lying, a person lies if they explicitly express something they believe to be false. Consequently, it is often assumed that people cannot lie by more indirectly communicating believed-false claims, for instance by merely conversationally implicating them. In this paper, we subject this claim to an empirical test. In a preregistered study of 300 participants, we investigate how people judge cases of implicit deceptions that would usually be excluded by the traditional definition of lying (i.e., conversational implicatures, presuppositions, and nonverbal actions). Our results show that people do in fact consider it possible to lie by indirect means, suggesting that people have a broader concept of lying than is usually assumed. Moreover, our findings indicate that lie judgments are closely tied to the extent to which agents are perceived as having committed themselves to the believed-false claims they have communicated. We discuss the implications of our results for the traditional definition of lying and propose a new commitment-based definition of lying that can account for the findings of our experiment.

Keywords: Lying; Concept of lying; Misleading; Conversational implicatures; Commitment
1. Introduction

“We’ve got to keep our country safe. You look at what’s happening in Germany, you look at what’s happening last night in Sweden. Sweden, who would believe this? Sweden. They took in large numbers. They’re having problems like they never thought possible,” U.S. President Donald Trump told his supporters during a rally in Florida in February 2017 (Chan, 2017; cf. Wiegmann, Rutschmann, & Willemsen, 2017). While an Islamist terror attack had previously been conducted by a failed asylum seeker in Germany, nothing similar had happened in Sweden on the night Trump referred to.

If we assume that Trump made his statement while very well knowing this, would we consider him to have lied? After all, what he said was not false in any strict sense—he could have been referring to any event that did actually happen in Sweden that night. However, by claiming that something had happened in Sweden, while discussing a country that had recently suffered a terror attack by a failed asylum seeker, and while pointing to the fact that Sweden had also taken in large numbers of asylum seekers, he clearly conveyed the false message that something similar had happened in Sweden. In this paper, we investigate whether people judge cases such as Trump’s statement to be instances of lying, and we explore the factors that people take into account when making such judgments.

Undoubtedly, lying is a familiar and important moral phenomenon that virtually all of us are affected by on a regular basis—be it in personal relationships, election battles, lawsuits, or media reports. Accordingly, a lot of empirical research has been conducted on lying, for instance on how to detect lies (e.g., Newman, Pennebaker, Berry, & Richards, 2003; see Vrij, 2008, for an overview), how often people lie in everyday life (e.g., DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996), and the age at which children start telling lies (e.g., Stouthamer-Loeber, 1986). In order to investigate such matters, researchers naturally have to assume some particular concept of lying; however, to date only a few empirical studies have investigated how people actually use and understand the term “lying.”

The goal of the present paper is to start to fill this gap in the research on the folk concept of lying. In a preregistered study of 300 participants, we investigate whether people consider it possible to lie by means of believed-false claims that are indirectly communicated, rather than explicitly expressed by the semantic content of an utterance—as in the case of Trump’s statement about what happened in Sweden. Such cases provide an interesting topic of investigation, as they would not fall into the category of lies according to the most prominent definitions of lying that have recently been put forward in the philosophical literature. In particular, these definitions assume that lying requires the speaker to explicitly express a believed-false claim. In addition to subjecting this widespread assumption to an empirical test, we investigate a further factor that people might alternatively take into account when deciding whether an act of deception counts as an instance of lying. That is, we test the hypothesis that speakers can be committed to the truth of claims that they did not explicitly express, and that lie attributions are closely tied to the strength of this perceived commitment. By shedding more light on the folk concept of
lying, we hope to advance the theoretical debate in philosophy, to provide a more informed basis for nonconceptual research on lying, and to improve our understanding of public discussions of lying in everyday life.

2. Theoretical and empirical background

2.1. Conversational implicatures

Drawing on Grice’s (1989) seminal distinction between what is said and what is implicated, Trump’s statement about what happened in Sweden can be described as a case of conversational implicature: His utterance gives rise to a message that goes beyond the content that he explicitly expressed. Whereas what is said is limited to the semantic content of an utterance (plus reference assignment and disambiguation), the “total signification of an utterance,” that is, the complete meaning that a speaker conveys and a hearer computes, additionally includes what is implicated, which is the content that can be derived from what is said and the context in which an utterance is made (Grice, 1989, pp. 41ff.).

More specifically, Trump’s utterance can be classified as a particularized conversational implicature (PCI), since the additional meaning arises mainly due to the particular conversational context. In contrast, the meaning of generalized conversational implicatures (GCIs) is relatively context-independent. For instance, uttering the sentence “John ate some of the cookies” (GCI) carries the conversational implicature that John did not eat all of the cookies, with the inference from “some” to “not all” arising in a wide range of contexts (cf. Levinson, 2000). However, as described above, the additional message that can be derived from Trump’s statement “You look at what’s happening last night in Sweden” (PCI)—namely that a terror attack had happened there—strongly depends on the utterance’s context. Importantly, conversational implicatures (both GCIs and PCIs) can be used to implicate things that the speaker believes to be false, while the explicit content of the utterance is true, thereby allowing speakers to trick others into a false belief without saying anything false. Among theorists, it is widely held that such cases—which we will refer to as deceptive implicatures—do not count as instances of lying, as it is commonly assumed that lying requires believed-false claims to be explicitly expressed.

2.2. Philosophical definitions of lying

Defining lying is a classic topic in philosophy. The most widely accepted definition of lying in the philosophical literature (henceforth referred to as the traditional definition of lying) states:

A lies to B if and only if there is a proposition p such that
1. A asserts that p to B, and
2. A believes that p is false.

Whether a certain case is included or excluded by this definition depends on how assertion is spelled out. In recent years, the predominant approaches have characterized
assertion in such a way that the resulting definitions of lying are based on a (narrow) notion of what is said (e.g., Carson, 2006, 2010; Saul, 2012; Stokke, 2013a, 2013b, 2016, 2017, 2018). Probably the most influential definition of lying in recent times has been put forward by Stokke (see Stokke, 2018, for a synthesis of his work). Stokke accepts the traditional definition of lying and combines it with a view of assertion that defines “asserting that $p$” as “saying that $p$ and proposing to making it common ground that $p$” (Stokke, 2018, p. 31; see Stalnaker, 1999, for an analysis of common ground). The result is the following definition of lying (Stokke, 2018, p. 31):

$$A$$ lies to $$B$$ if and only if there is a proposition $p$ such that
1. $A$ says that $p$ to $B$, and
2. $A$ proposes to make it common ground that $p$, and
3. $A$ believes that $p$ is false.

Stokke holds a quite narrow view of what is said that is “strictly constrained by a minimal kind of compositional meaning” (Stokke, 2018, p. 81). According to this view, the context of an utterance generally plays a minimal role in what is said (see Stokke, 2016, for an example of when the context influences what is said).

The result of basing the definition of lying on a narrow notion of what is said, which is closely tied to the semantic content of an utterance, is that deceptive implicatures—particularized and generalized—do not amount to lying. Accordingly, most authors in the literature argue that deceptive implicatures are not to be treated as instances of lying (e.g., Adler, 1997; Dynel, 2011; Fallis, 2009; Horn, 2017; Mahon, 2016; Saul, 2012; Sorensen, 2017; Stokke, 2013a, 2013b; Viebahn, 2019), and instead describe them as mere cases of misleading (e.g., Horn, 2017; Mahon, 2016; Saul, 2012; Stokke, 2013b; Viebahn, 2019). To illustrate, let us again consider the case of John, who utters “I ate some of the cookies” (GCI). Imagine that John in fact ate all of the cookies and utters this sentence in response to his sister asking where all of her cookies have gone. According to the traditional definition of lying, John would not have lied in this case, as he merely implicated the false claim that he did not eat all of the cookies, while his utterance was true at the level of what is said (after all, it is true that one eats some cookies if one eats them all).

2.3. The importance of empirically investigating the folk concept of lying

To date, only a few studies have empirically investigated whether lay people’s intuitions on lying correspond to the definition of lying outlined above, and in particular whether people really deem it impossible to lie by means of deceptive implicatures (for an overview, see Wiegmann & Meibauer, 2019). This is rather surprising, since it is widely agreed that an adequate definition of lying should reflect lay people’s use and understanding of the concept (e.g., Arico & Fallis, 2013; Carson, 2006, 2010; Saul, 2012). To provide only one example, Carson (2010, p. 33) writes:
Lying is a concept used in everyday language, and moral questions about lying arise in people’s everyday experience. There are no compelling reasons to revise or reject the ordinary language concept of lying—at least the burden of proof rests with those who would revise or reject it. Therefore, consistency with ordinary language and people’s linguistic intuitions about what does and does not count as a lie is a desideratum of any definition of lying.

In light of such considerations, it is hard to deny that empirical studies on people’s concept of lying have the potential to substantially advance philosophical discussions on this topic.

However, the importance of investigating which kinds of deceptions people believe to be instances of lying is not limited to its potential for advancing theoretical debates. Gaining a better understanding of people’s concept of lying may also help to provide a more informed basis for much of the more “practical” research on lying (e.g., DePaulo et al., 1996; Newman et al., 2003; Stouthamer-Loeber, 1986), which naturally has to be based on a particular concept of lying. Perhaps most importantly—especially in times of fake news and presidents taking liberties with the truth—gaining a better understanding of the folk concept of lying, and what kind of definition it would be properly represented by, may also help us to better understand the many public discussions about lying and deceiving in contexts relating to law, politics, and the media.

2.4. Empirical findings on lying with deceptive implicatures

Up to now, the results of the few empirical studies that have investigated lying with deceptive implicatures have been rather inconclusive. Weissman and Terkourafi (2019), for instance, investigated 15 deceptive GCIs and PCIs, and found only a minority of these cases (four out of 15) to be judged as lies by participants. On the basis of these findings, they largely argue against the possibility of lying with implicatures. In line with these findings, Viebahn et al. (in press) investigated four deceptive PCIs and found none of these to be classified as lies by participants. However, Antomo, Müller, Paul, Paluch, and Thalmann (2018), Or, Ariel, and Peleg (2017), Wiegmann and Willemsen (2017), and Wiegmann and Meibauer (ms) all found participants to judge the majority of deceptive implicatures investigated in their respective studies to be lies (including GCIs and PCIs), indicating that it might be possible to lie with deceptive implicatures after all.

In summary, these findings seem to indicate that people do consider it possible to lie with deceptive implicatures in some cases, but that no conclusion can be drawn for deceptive implicatures in general. Hence it might be misguided to attribute the difference between lying and misleading to whether a believed-false claim was part of what is said or merely implicated, and the question arises whether there are other features with respect to which deceptive implicatures differ that might explain why some of them are seen as lies, while others are not. In what follows, we will discuss commitment to the truth of a believed-false claim as a potential candidate for providing such a moderating factor. In
particular, we will argue in favor of the hypothesis that deceptive implicatures differ in the extent to which speakers are perceived as having committed themselves to the truth of the believed-false claims thereby implicated, and that this difference might be relevant for people’s lie judgments.

2.5. The role of commitment in lie judgments

2.5.1. Commitment in conversational implicatures

One line of argument for explaining why it is adequate for definitions of lying to exclude deceptive implicatures from being lies is that conversational implicatures, in contrast to what is said, allow the speaker to ward off the accusation of having lied by showing that they never really said or claimed what they believe to be false. While a person cannot plausibly deny having said or meant a believed-false claim that was part of what is said, the argument goes, a person who merely implicates a believed-false claim can always argue that they said or meant only the explicit content of their utterance. Therefore, it is argued, speakers do not commit themselves to the truth of believed-false claims that are merely implicated by their utterances, and thus should not be seen as having lied about these claims (Stokke, 2016; Viebahn, 2019).5 To illustrate, let us consider the following PCI, as prominently featured in the literature (cf. Viebahn, 2019).

“Paul’s Party”: Dennis is going to Paul’s party tonight. He has a long day of work ahead of him before that, but he is very excited and can’t wait to get there. Dennis’s annoying friend Rebecca comes up to him and starts talking about the party. Dennis is fairly sure that Rebecca won’t go unless she thinks he’s going, too. Rebecca asks Dennis: “Are you going to Paul’s party?” Dennis replies: “I have to work.”

By giving this answer, Dennis implicates that he will not attend the party (because of the work he has to do). However, if Dennis were to later show up at that party and be accused of having lied about this, he could easily deny the accusation by claiming that he never said or meant that he would not attend the party, but merely that he had to work. If Dennis had replied, “I am not coming to the party,” however, there would have been no way for him to claim that this is not what he actually said or meant.

While we agree that deceptive implicatures allow speakers to defend themselves from having lied by appealing to the bare semantic content of their utterances, we are not convinced that people always perceive such defenses to be plausible. Although denying a conversationally implicated (believed-false) claim \( p \) might not lead to a logical contradiction (as would be the case with claims that are part of what is said), people might still feel that some implicatures were communicated clearly enough for the speaker to be held to have claimed that \( p \), and accordingly, people might not always perceive it as plausible or convincing if the speaker denies having said or meant that \( p \). Therefore, given an ordinary notion of commitment that is tied to plausible deniability (as compared to a rather technical notion that is associated with logical contradictions), speakers might well be perceived as being committed to the contents of certain conversational implicatures (see
also Meibauer, 2014b). To illustrate, let us consider Dennis’s case again. His utterance (“I have to work”) only provides a meaningful answer to the Rebecca’s question (“Are you going to Paul’s party?”) when the implicature that he will not attend the party is derived. In addition, it is not at all clear why he should give such an answer (instead of simply replying “Yes” or “No”) unless he meant to convey that he was not going to attend the party. Therefore, in our view, it is clearly conceivable that Dennis’s defense (“I only meant to say that I had to work”) would not be perceived as plausible or convincing, and that he would instead be taken as having committed himself to the claim that he was not going to attend the party.

Importantly, however, we do not mean to say that people are committed (to the same degree) to every conversational implicature. Instead, our idea is that commitment is a graded notion (cf. Moeschler, 2013), with some conversational implicatures involving degrees of commitment that might come close to what is said (as in Dennis’s case), while speakers in other cases might not at all, or only to a lesser extent, be seen as committed to the truth of their conversational implicatures. As an example of a deceptive implicature that possibly involves less commitment, let us consider another prominent PCI from the literature (cf. Saul, 2012).

“Dying Woman”: A dying woman asks a doctor whether her son is well. The doctor saw the son yesterday, when he was fine, but knows that he was killed shortly afterwards. The doctor utters: “I saw him yesterday and he was fine.”

In this case, the doctor’s response would constitute a relevant and meaningful response to the woman’s question even if one did not infer the additional implicature that the woman’s son was still fine today. Therefore, it is clearly conceivable that, in this case, people might accept a defense along the lines of: “I never said anything about your son’s condition today, I was only talking about how he was doing yesterday.” Accordingly, the doctor might not at all, or only to a lesser extent, be seen as committed to the implicated believed-false claim that the woman’s son was still doing fine that following day.

Turning back to the starting point of our discussion, how might this analysis of commitment in conversational implicatures help us to understand the empirical finding that people sometimes find it possible to lie with deceptive implicatures? Whereas definitions of lying based on a narrow notion of what is said cannot account for the finding that people consider some deceptive implicatures to be lies, an alternative explanation for this finding might lie in the differences in commitment proposed by our analyses: People might judge to be lies only those deceptive implicatures that involve the agent being perceived as committed to the truth of the implicated claim.

2.5.2. Empirical findings on commitment in conversational implicatures

Some initial empirical evidence for our claim that conversational implicatures sometimes involve commitment comparable to what is said can be found in Mazzarella, Reinecke, Noveck, and Mercier (2018), whose participants judged agents who explicitly stated a believed-false claim to deserve punishment to the same extent as agents who
conveyed the same claim by means of a PCI (although they were less likely to trust agents who explicitly stated a believed-false claim). In addition, Bonalumi, Scott-Phillips, Tacha, and Heintz (2020) found that, at least in some cases, people rely on agents who did not keep a promise that was explicitly stated to the same extent that they rely on agents who did not keep the same promise after conveying it by means of a GCI or PCI, and equally judge such agents to have broken their promise and owe an apology. These findings can be taken as initial evidence for commitment in certain conversational implicatures, since the social consequences of communicating a believed-false claim or breaking a promise should have differed between conversational implicatures and what is said, if the former did indeed involve less commitment.

More direct evidence for the claim that conversational implicatures can involve commitment, as well as the claim that lie ratings for deceptive implicatures are modulated by attributions of commitment, was recently provided by Wiegmann and Meibauer (ms). In their study, participants were asked to give lie and commitment ratings for a set of deceptive conversational implicatures (both GCIs and PCIs), while being asked about commitment directly (i.e., participants had to indicate their degree of agreement with statements of the form “[Name of agent] committed himself/herself to the claim that [content of implicature]”). Wiegmann and Meibauer (ms) found not only that participants judged most of the deceptive implicatures investigated to be lies, but also that participants’ lie ratings were highly correlated with their judgments of whether each agent had committed themselves to the believed-false claim they had implicated ($r = 0.89$).

2.5.3. A commitment-based notion of lying

To sum up, there is empirical evidence to support our idea that speakers are sometimes perceived to be committed to the truth of their conversational implicatures, and that people’s lie judgments for deceptive implicatures are modulated by such attributions of commitment. Interestingly, these findings raise the possibility that people might take speaker commitment into account not only when deciding whether a deceptive implicature counts as an instance of lying, but also when deciding whether any kind of deception constitutes a lie. After all, the idea that a speaker is seen as having lied when they are perceived to be committed to the truth of a believed-false claim $p$ can be applied not only to conversational implicatures, but also to any form of verbal or even nonverbal deceptive communication. Such a commitment-based notion of lying, just like definitions based on what is said, would predict believed-false claims that are explicitly expressed to be seen as lies, as there is a clear consensus that what is said involves commitment (Searle, 1979; see also Fricker, 2012; Mazzarella et al., 2018; Meibauer, 2014b; Moeschler, 2013; Morency, Oswald, & de Saussure, 2008; Reboul, 2017). In regard to believed-false claims that are communicated without being explicitly expressed, however, the commitment-based notion of lying would make predictions that contrast with accounts of lying based on a narrow notion of what is said. In particular, the commitment-based notion of lying would also allow for lying by means beyond what is said, provided that a certain degree of commitment is involved. Therefore, the commitment-based notion can account for the empirical finding that people sometimes find it possible to lie with deceptive implicatures.
Furthermore, it allows for the interesting possibility that people might judge other kinds of deceptions that are not explicitly expressed to be lies as well. After all, the finding that certain conversational implicatures sometimes involve commitment, even though they are not part of what it said, opens up the possibility that other ways of indirectly communicating a believed-false claim might be seen as involving commitment, and thus be seen as instances of lying, too.

3. The present research

In the present experiment, our main goal was to test the commitment-based notion of lying, and its implications more broadly. While Wiegmann and Meibauer (ms) have provided the first empirical evidence in support of the idea that lie ratings depend on perceived commitment, it remains open to investigation whether the proposed relationship between lying and commitment can also be found in communicative acts other than conversational implicatures. In order to test the commitment-based account’s main prediction that commitment adequately tracks lie ratings for any kind of deception, in our study, we investigate the relationship between commitment and lie ratings for a broad range of different deceptions. In particular, we investigate deceptions that do not involve the believed-false claim being part of what is said, but might possibly involve commitment. As such cases would be excluded by definitions of lying based on what is said, it would be a particularly strong point for the commitment-based notion of lying if we did indeed find that people sometimes find it possible to lie by such means, and if commitment—in contrast with definitions of lying based on what is said—could explain these rather surprising findings.

In order to investigate these questions, in a preregistered experiment, we presented participants with different scenarios in which agents deceived by means of GCIs, PCIs, presuppositions (i.e., information that is taken for granted in certain expressions, rather than being part of the main propositional content of a speech act), and nonverbal actions. Just like conversational implicatures, presuppositions and nonverbal actions can be used to deceive others without the believed-false claim being part of what is said. To illustrate how presuppositions can be used in this way, let us consider the following example. The sentence “John’s brother is very nice” carries the presupposition that John actually has a brother. Now, if this in fact was not the case, by using such a presupposition, one could deceive someone about this matter without explicitly stating the false claim “John has a brother.” Nonverbal actions, on the other hand, do not involve any verbal statements at all. Actions that are performed ostensively, and without the involvement of behaviors that have a conventionally established meaning, closely resemble PCIs, in that the meaning conveyed by such actions strongly depends on the specific situational context, rather than being tied to the action in isolation. Thus, such actions could also be conceived of as nonverbal PCIs. Importantly, although none of the communicative acts investigated in our study involve a believed-false claim being explicitly expressed, all of them have been discussed as possibly involving commitment (on presuppositions, see Viebahn, 2019; on implicatures, see Meibauer, 2014b; on nonverbal actions, see Bonalumi et al., 2020). Thus, while falling outside
the range of the traditional definition of lying, these communicative acts might be classified as lies on the basis of the commitment-based notion of lying.

After reading each of the scenarios, participants were asked to indicate how they would morally evaluate each agent’s behavior, and the extent to which they thought each agent had misled and/or lied. Furthermore, participants were asked to indicate their degree of agreement with the claim that each agent had committed themselves to their deceptive claim, and—since we aimed to investigate commitment more broadly—with five more claims targeting further commitment-related factors.

3.1. Predictions

On the basis of our theoretical considerations about the role of commitment and the empirical findings of Wiegmann and Meibauer (ms), our hypothesis was that a commitment-based notion of lying would adequately reflect lay people’s intuitions about lying. Therefore, we expected commitment and the commitment-related factors we investigated to highly correlate with participants’ lie ratings, not only for deceptive implicatures, but for all the types of deception investigated in our study; and accordingly, that commitment would be a better predictor of participants’ lie ratings than the type of deception involved. As mentioned before, the commitment-based notion of lying predicts that any kind of deception can constitute a case of lying, as long as agents are thought to be committed to their deceptive claims (provided that all the other conditions that are usually assumed to be necessary for lying are met). Since we selected cases for our study that (intuitively) meet this criterion, we also expected that all the types of deception we investigated (i.e., deceptive presuppositions, conversational implicatures, and nonverbal actions) would on average be judged to be cases of lying.

3.2. Disclosures

All of our hypotheses (as well as the study design, materials, and planned analyses) were preregistered on the Open Science Framework (OSF). The registration can be found at https://osf.io/k78t4. Furthermore, all the study materials, raw data, and analysis code have been made publicly available on the OSF and can be found at https://osf.io/vpfqh.

4. Method

4.1. Participants

A total of 300 participants (age: $M = 34.21$, $SD = 12.38$; gender: 174 female, 125 male, 1 undisclosed) were recruited on Prolific Academic (Palan & Schitter, 2018) and completed an online survey implemented in Unipark. As specified in our preregistration, only participants who answered all of the attention check questions correctly and who completed the whole survey were included in this count. Participants were required to be at least 18 years old and native English speakers. They received £2 in exchange for their participation, amounting to an estimated reward of £6.5/h.
4.2. Design

The experiment followed a 4 (type of deception: presupposition vs. GCI vs. PCI vs. action) × 4 (content of scenarios: lottery vs. police vs. marriage vs. texting) mixed design, where the type of deception was manipulated within subjects and the content was manipulated partly within and partly between subjects. Fully crossing these two factors, we ended up with 16 vignettes, which will be discussed in the main text here. For two of the content domains (i.e., lottery and marriage), we additionally created vignettes where the question under discussion (QUD) —that is, the question that the deceptive statements or actions were performed in response to—was changed from a rather specific QUD (as in the main vignettes) to a more unspecific QUD. This manipulation resulted in eight additional vignettes; however, as examining the question under discussion was not the main focus of our study, these additional vignettes and how they compare to the main vignettes will be discussed in the Supplementary Material. Each participant was randomly assigned to be presented with 12 of the 24 vignettes\(^\text{10}\) that resulted in total, and to always give either their lie-related ratings or their commitment-related ratings first, after reading each of the vignettes. See Fig. 1 for a visualization of the study design, including the vignette and subject allocation structures.

4.3. Materials and procedure

4.3.1. Vignettes

After reading a brief introduction and explanation of the task, participants were successively presented with the different vignettes, describing situations in which agents deceive other people without explicitly stating anything that they believe to be false. The four vignettes of the content domain lottery (with a specific QUD) read:

[All versions] Last year, Emma’s mother passed away, leaving her a large amount of money behind. With that money, Emma bought herself a nice big house. Surprisingly, shortly after, Emma also won the lottery, receiving another large amount of money. Today Emma is working in her new house’s front yard when her acquaintance Clara, who Emma had not talked to in a while, incidentally walks by on the footway. Emma does not want Clara to know that she bought her house with money she inherited from her mother. That is why, when Clara starts a conversation and asks, ‘How did you afford a place like this?’ . . .

[Presupposition version] Emma answers: ‘I admit that I bought the house with money I won in the lottery!’

[GCI version] Emma answers: ‘Well, last year I won the lottery and bought this place!’

[PCI version] Emma answers: ‘Well, winning the lottery allows people to buy the houses they’ve always dreamt of!’
[Action version] Emma takes out her smartphone and shows Clara a photograph of herself posing with a giant lottery check in front of her newly purchased house.

[All versions] Clara comes to believe that Emma won the lottery and that she used the money from the lottery win to buy her new house.

The vignettes in the other content domains were structurally equivalent (see Table A1 in the Appendix for an overview of the vignettes tested in our study). In the police vignettes, a police officer in training deceives a colleague about whether or not he and his friends failed their final examinations; in the marriage vignettes, a man deceives an old friend about whether or not he is married to a specific woman; and in the texting vignettes, a boy deceives his girlfriend about how many times he recently texted his ex-girlfriend.

4.3.2. Assessed variables

After reading each of the vignettes, participants were presented with two sets of questions. In Set A, participants were first asked how they would morally evaluate the agent’s behavior (*morality*), with the answer options ranging from *very bad* (1) to *very good* (7). Next, participants had to indicate whether the agents in each story misled (*misleading*), lied (*lie*), and/or committed a criminal offence (*culpability*). The latter three variables were presented to participants in random order, and in the form of statements, to which participants had to indicate their agreement on a scale from *completely disagree* (1) to *completely agree* (7).

In Set B, we directly assessed whether participants thought that each agent had committed themselves to their deceptive claim (*commitment*). However, we did not want to rest our conclusions about commitment on a single item and its specific phrasing. Therefore, we included five additional items to measure our notion of commitment more...
broadly. That is, we also assessed whether participants thought that the agents could convincingly claim not to have said (or, for nonverbal actions, not to have communicated) the deceptive claims \((\text{deniability})\), and whether participants thought that the agents intended their respective believed-false claims to become shared information accepted by both speaker and addressee \((\text{common ground})\). Furthermore, we assessed whether participants thought that the deceptive claim was calculable from the agent’s statement or action \((\text{calculability})\), whether it would be contradictory to explicitly and verbally cancel the deceptive claim conveyed by the statement or action \((\text{non-cancelability})\), and whether it would be redundant to explicitly and verbally reinforce that same claim \((\text{non-reinforceability})\).\(^{13}\) Since most previous studies have investigated commitment only in terms of its social consequences (e.g., Bonalumi et al., 2020; Mazzarella et al., 2018), the five additional measures were newly developed for our study on the basis of the theoretical literature on commitment, as well as our own reasoning. In particular, the items were chosen to reflect properties that relate to our notion of commitment, and thus might additionally contribute to explaining participant’s lie judgments. For example—as explained in more detail in Section 2.5—an agent who is seen as committed to a believed-false claim \(p\), should also be seen as unable to convincingly claim not to have said or communicated \(p\) \((\text{deniability})\), and accordingly, they should be seen as having lied about \(p\).

Again, the six variables from Set B were presented to participants in random order and in the form of statements, to which participants had to indicate their degree of agreement on a scale from \textit{completely disagree} (1) to \textit{completely agree} (7). The two sets of questions were shown to participants on two separate slides for each vignette, always accompanied by the respective situational description, and the order in which the question sets were shown to participants was balanced between subjects. For illustrative purposes, the exact wording of the assessed variables in the content domain lottery is depicted in Table 1. The wording of these items in the other content domains can be found in detail on the OSF website alongside the project’s preregistration.

5. Results

5.1. Lie ratings

As specified in our preregistration, the following analyses only concern vignettes with specific questions under discussion (the remaining vignettes will be discussed in the Supplementary Material). The lie ratings for these 16 vignettes are summarized in Fig. 2. Descriptively, the lie ratings lay above the midpoint of the scale (4) for 15 of the 16 vignettes, with the exception being the PCI in the content domain police.

To test our hypotheses that all four types of deception investigated (i.e., presuppositions, GCIs, PCIs, and nonverbal actions) would on average be considered lies, we conducted four separate one-sample \(t\) tests (one-tailed) in order to determine whether the mean lie ratings for each type of deception were significantly greater than the mean scale point.\(^{14}\) The lie ratings for each type of deception, averaged over contents, are
summarized in Fig. 3. Confirming our hypotheses, the mean lie ratings were significantly greater than the midpoint of the scale \((M = 6.13, 95\% \text{ CI} = [6.02, \text{inf}]; t(299) = 31.07, p < .001)\), GCIs \((M = 5.58, 95\% \text{ CI} = [5.44, \text{inf}]; t(299) = 18.49, p < .001)\), PCIs \((M = 4.25, 95\% \text{ CI} = [4.09, \text{inf}]; t(299) = 2.56, p = .006)\) and actions \((M = 5.70, 95\% \text{ CI} = [5.59, \text{inf}]; t(299) = 25.07, p < .001)\). The effect size (Cohen’s \(d\)) of these differences was large for presuppositions \((d = 1.79, 95\% \text{ CI} = [1.61, 1.98])\), GCIs \((d = 1.07, 95\% \text{ CI} = [0.93, 1.21])\), and actions \((d = 1.45, 95\% \text{ CI} = [1.29, 1.61])\), while it was small for PCIs \((d = 0.15, 95\% \text{ CI} = [0.03, 0.26])\).

### 5.2. Commitment and commitment-related variables

To test our hypothesis that the perceived commitment of the agents to their believed-false claims and the commitment-related variables we assessed (i.e., deniability, common ground, calculability, non-cancelability, and non-reinforceability) would correspond to participants’ lie ratings, we separately tested for correlations between each of these variables and participants’ lie ratings. As specified in our preregistration, we tested this (a) at the participant level (by correlating each participants’ lie ratings with their respective ratings of commitment and the commitment-related variables for each of the vignettes), as well as (b) at a between-participants mean level (by, for each of the vignettes, correlating the mean lie ratings from the participants who gave their lie-related ratings first with the mean ratings of commitment and the commitment-related variables from the participants.
who gave their commitment-related ratings first). As specified in our preregistration, all of the vignettes (including those with nonspecific questions under discussion) were included in these analyses.

The results of the correlation analyses are depicted in Table 2. Confirming our hypothesis, commitment and all of the commitment-related variables we investigated were significantly correlated with participants’ lie ratings. Particularly strong correlations were obtained for the variables deniability (whether the agent could convincingly claim not to have said or communicated the believed-false claim; mean level $r = -0.92$, participant level $r = -0.64$) and commitment (whether the agent committed themselves to the believed-false claim; mean level $r = 0.90$, participant level $r = 0.63$).

At the participant level, these correlations were significantly stronger than the correlations of the other variables with the lie ratings (as indicated by nonoverlapping confidence intervals). In addition to our preregistered analyses, to assess the robustness of the rankings obtained for the correlation coefficients at the mean level, we used a bootstrapping procedure (one
million re-samples, with replacement) on our data \((n = 150\) for lie ratings and \(n = 150\) for the commitment-related ratings). Confirming our results, deniability (reversed) obtained the highest correlation in 66.3% of cases, followed by commitment with 32.5% of cases. See Figs. 4 and 5 for a visualization of the two highest mean-level correlations, as obtained for the variables commitment and deniability (reversed).

5.3. Commitment versus type of deception

To test our hypothesis that perceived commitment would constitute a better predictor of lie ratings than the deception type, we computed three separate multilevel models in which we predicted participants’ lie ratings from their commitment ratings, the type of deception, and a combination of both. In order to account for the repeated-measures structure of our design, participants were included as a random factor.

The results of these analyses are depicted in Table 3. Adding commitment as a predictor to a model where lie ratings are predicted by the type of deception, and adding the type of deception as a predictor to a model where lie ratings are predicted by commitment, both lead to significant improvements of the model fits. However, looking at the Akaike and Bayesian information criteria (AIC and BIC), we see that adding commitment leads to a much stronger improvement of the model fit than adding the type of deception (as indicated by a stronger decrease in AICs and BICs). In addition, when calculating Pseudo-\(R^2\)’s for the three models, we see that the model that includes only commitment as a predictor explains almost as much variance as the model that includes both predictors, while the model that includes only the type of deception as a predictor explains much less variance. Therefore, our findings support our hypothesis that commitment constitutes a better predictor of lie ratings than deception type.
In this paper, we have investigated whether lay people’s intuitions about lying really depend on believed-false claims being explicitly expressed—with people considering it impossible to lie by indirectly communicating believed-false claims—or whether lie judgments correspond more to perceiving agents as having committed themselves to their believed-false claims. In order to investigate this, in a preregistered experiment, we presented a total of 300 participants with descriptions of situations in which agents deceived by means of presuppositions, GCIs, PCIs, and nonverbal actions. Participants were asked to indicate whether they thought that each agent had lied and/or misled and how they would morally evaluate each agent’s behavior, and they had to indicate their degree of agreement with a set of items investigating commitment and commitment-related factors.

6.1. Discussion of results

In summary, we found that the participants in our study considered all of the deceptive presuppositions, deceptive GCIs, and deceptive nonverbal actions, as well as most of the deceptive PCIs we investigated, to be cases of lying (for a more detailed discussion of our findings with regard to PCIs, see Sections 6.2.3 and 6.3.3). Furthermore, for all of these deceptions, our results showed perceived commitment of the agents to their believed-false claims to highly correlate with lie judgments, while perceiving agents as being able to convincingly claim not to have said (or, for nonverbal actions, not to have communicated) the believed-false claim showed a strong negative correlation with participants’ lie ratings. In accordance with this, we also found that commitment constituted a better predictor of participants’ lie ratings than the type of deception (i.e., presupposition, GCI, PCI, or nonverbal action).

Therefore, our findings provide converging evidence for our hypothesis that, when deciding whether any kind of deceptive communication counts as a lie, people seem to take into account whether agents have committed themselves to their deceptive claims, and therefore would be unable to convincingly deny them. Accordingly, our hypothesis was confirmed that people do consider it possible to lie not only by explicitly expressing
a believed-false claim, but also by more indirect means such as presuppositions, deceptive implicatures, and even nonverbal actions—as long as the agents in question are thought to be committed to the believed-false claims they communicate. On this basis, we contend that a commitment-based definition of lying is the most promising way to capture people’s intuitions about lying.

6.2. Implications for definitions of lying

6.2.1. Traditional definitions of lying

Recent prominent definitions of lying in the philosophical literature are based on a narrow notion of what is said (e.g., Carson, 2006, 2010; Saul, 2012; Stokke, 2013a, 2013b, 2016, 2017, 2018). For the two types of deceptive implicatures investigated in our study (GCIIs and PCIs), as well as the nonverbal actions that we tested (and which could also be conceptualized as nonverbal PCIs), however, the deceptive claims were clearly not located at this level. After all, the agents in these cases never said anything they believed to be false. Hence, theories based on a narrow notion of what is said cannot account for
our finding that the clear majority of implicatures and nonverbal actions we investigated were considered to be instances of lying. Moreover, if presuppositions are excluded from the level of what is said, as, for example, suggested by Stokke (2017, 2018), then definitions of lying based on what is said also conflict with our result that all of the deceptive presuppositions we investigated were judged to be cases of lying. For a discussion of the

Table 3
Model comparison for goodness of fit of models predicting participants’ lie ratings

| Model | Fixed Effects | df | AIC   | BIC   | logLik | Pseudo-$R^2$ | Test      | LRatio | p value |
|-------|---------------|----|-------|-------|--------|-------------|-----------|--------|---------|
| 1     | Baseline + commitment | 4  | 13026.01 | 13050.77 | -6509.01 | 0.48       |           |        |         |
| 2     | Baseline + type of deception | 6  | 14319.70 | 14356.83 | -7153.85 | 0.26       |           |        |         |
| 3     | Baseline + commitment + type of deception | 7  | 12862.29 | 12905.61 | -6424.15 | 0.50       | 1 vs. 3  | 169.73 | <.001   |
|       |               |    |        |       |        |             | 2 vs. 3  | 1459.41 | <.001   |

Note: AIC, Akaike information criterion; BIC, Bayesian information criterion; df, degrees of freedom; L.Ratio, likelihood ratio; logLik, log-likelihood.

Fig. 5. Mean deniability and lie ratings (deniability ratings reversed) for all tested vignettes (with only part of the agreement scale, which originally ranged from 1 to 7, being depicted). QUD1 = specific question under discussion; QUD2 = nonspecific question under discussion.
challenges of locating presuppositional content at the level of what is said, see Viebahn (2019).

What about employing a broader notion of assertion in the traditional definition of lying? Let us start with deceptive presuppositions. While the standard view in the philosophical literature is that presuppositions are not asserted (see Viebahn, 2019, for an overview), and thus would not count as cases of lying, it has been argued that some presuppositions should be treated as assertions (see again Viebahn, 2019). By employing such a broader notion of assertion, the traditional definition of lying could classify certain cases of deceptive presuppositions as lies. When it comes to GCIs and PCIs, however, it is difficult to imagine how an assertion-based definition of lying could be squared with the finding that almost all of the implicatures tested in our study were considered to be instances of lying. For one thing, assertions are generally characterized as being explicit, direct, and open, while implicatures are usually considered to lack these features (e.g., Pagin, 2016; but see also García-Carpintero, 2016, on the possibility of indirect assertions). For another, it is usually considered to be one of the merits of basing a definition of lying on assertion, or some similar notion, that it treats deceptive implicatures as merely misleading, but not as cases of lying (see Mahon, 2016; Saul, 2012; Stokke, 2018; Viebahn, 2019). Similarly, there seems to be no straightforward way to conceptualize the deceptive actions that we tested as cases of assertions. Even if we assumed that people might be able to assert certain things by means of nonverbal responses, the nonverbal actions tested in our study would not translate as false assertions, but would merely carry believed-false claims as PCIs (but again, see García-Carpintero, 2016).

6.2. A relevance-theoretic approach to lying

Given that an adequate definition of lying must accord with how ordinary speakers employ the term “lying,” the problem with the definitions discussed so far is that they do not allow (certain) deceptive implicatures and nonverbal actions to count as instances of lying. By contrast, relevance theory (Carston, 2008; Sperber & Wilson, 1986, 2004), a linguistic theory that is not prominently featured in philosophical discussions on lying, provides a theoretical framework for including certain implicatures in a definition of lying. According to relevance theory (and in contrast to the Gricean picture), pragmatic considerations play an important role in determining the explicit content of an utterance, which relevance theorists call explicatures. Explicatures are the result of developing the linguistically encoded logical form of an utterance into a propositional form by means of a pragmatic process. This process is guided by relevance considerations and includes saturation and free enrichment (in addition to disambiguation and reference assignment, which are already included in the Gricean picture of what is said). We cannot provide a complete description of how the “skeleton” (the logical form) is developed into the corresponding explicature, but let us consider an example provided by Carston (2009) to get at least a rough picture (see also Sperber & Wilson, 1986, 2004):
Max: “How was the party? Did it go well?” Amy: “There wasn’t enough drink and everyone left early.”

The explicature, that is, the proposition that Amy has directly asserted (or explicitly communicated), looks as follows (with italics indicating the content that is not encoded in the linguistically encoded meaning):

There wasn’t enough alcoholic drink to satisfy the people at [the party]i and so everyone who came [to the party]i left [the party]i early.

This example includes cases of saturation as well as two kinds of free enrichment. For instance, saturation occurs in “left [the party]” by filling out the linguistically indicated slot of “left.” Moreover, free enrichment in the form of ad hoc concept construction narrows down the broad concept of drink to “alcoholic drink,” while the causal relationship between not having enough alcoholic drinks and people leaving the party, indicated by “so,” is a case of a linguistically unarticulated constituent of content.

Developed in this way, explicatures are broader than what is typically taken to be explicitly expressed (e.g., Grice’s notion of what is said), and only those propositions that are not communicated by means of an explicature are considered to be implicatures (e.g., that the party did not go well in the example above). As Sperber and Wilson (1986, p. 182) write:

On the analogy of ‘implicature’, we will call an explicitly communicated assumption an explicature. Any assumption communicated, but not explicitly so, is implicitly communicated: it is an implicature. By this definition, ostensive stimuli, which do not encode logical forms will, of course, only have implicatures.

It seems natural, from a relevance-theoretic point of view, to base the definition of lying on explicatures (see Kisielewska-Krysiuk, 2016, 2017). How would such an explicature-based definition of lying fare in light of our findings? Importantly, GCIIs are treated as explicatures in the relevance-theoretic framework. For instance, when Emma responds to the question of how she could afford the house with “Well, last year I won the lottery and bought this place,” the explicature would amount to: “Emma won the lottery and bought this house with the money she won in the lottery.” Since Emma believes it to be false that she bought the house with the money she won in the lottery, she would be lying at the level of what is explicitly expressed, according to relevance theory. Therefore, an explicature-based definition of lying would include deceptive GCIs, and would thus be consistent with our finding that all of the deceptive GCIs investigated in our study were considered to be cases of lying. Furthermore, given that GCIs are treated as explicatures, it seems intuitively plausible to assume that the content of the deceptive presuppositions we tested would also be considered as having been explicitly expressed (cf. Wilson & Sperber, 1981, p. 176; however, see Simons, 2005, for a relevance-theoretic account that characterizes presuppositions as relevance requirements). Accordingly, defining lying at the level of what is explicitly expressed
according to relevance theory could most likely also account for our finding that all of the deceptive presuppositions we tested were considered to be cases of lying.

What about the deceptive PCIs and nonverbal actions that participants judged to be cases of lying in our study? For instance, how would Emma’s reply “Well, winning the lottery allows people to buy the houses they’ve always dreamt of!” be analyzed within the relevance-theoretic framework? The explicated content would be close to: “Winning a sufficiently large amount of money in the lottery allows the winner to buy a house they had always wished to live in.” The claim that Emma bought the house from the money she won in the lottery, on the other hand, has to be inferred from the context of the conversation, and thus would be categorized as an implicature. Similarly, according to the characterization above, cases of nonverbal deceptions would also be conceptualized as implicatures, because they do not encode a logical form. Hence, if we take up Kisielewska-Krysiuk’s (2016, 2017) suggestion and locate lying at the level of the explicitly communicated content (according to relevance theory), it would follow that deceptive PCIs and nonverbal actions should not be classified as cases of lying.

To sum up, while a relevance-theoretic approach could capture our finding that all of the deceptive GCIs we tested were considered to be cases of lying and potentially also the finding that all of our deceptive presuppositions were considered to be cases of lying, it would misclassify deceptive nonverbal actions and those deceptive PCIs that were judged to be instances of lying in our study. In the next section, we will propose a definition of lying that follows quite naturally from our experiment. It takes up the relevance-theoretic concept of explicature, but also aims to account for our finding that (most) of the PCIs and nonverbal actions we investigated were considered to be cases of lying as well.

6.2.3. A commitment-based definition of lying

A straightforward way to account for our findings would be to propose a definition of lying based on commitment:

A lies to B if and only if there is a proposition p such that
1. A performs a communicative act C with content p, and
2. with C, A commits herself to p, and
3. A believes that p is false.16

The first clause requires that a communicative act be made. The notion of a communicative act is broader than the notions of saying and asserting, thereby potentially including forms of communication that those other notions would exclude. The third clause, on the other hand, is an established condition from the traditional definition of lying (e.g., Mahon, 2016; Stokke, 2018; see Wiegmann & Meibauer, 2019, for empirical evidence for this condition). Most important is obviously the second clause and how it is spelled out. On the basis of our results, we tentatively propose the following characterization:

In performing a communicative act C with content p, an agent commits herself to p if and only if
1. \( p \) is the explicated proposition of \( C \), or
2. without \( p \), \( C \) would not constitute a meaningful contribution to the conversation or discourse.

The first clause of this characterization employs the relevance-theoretic notion of an explication, which is characterized as the explicit content of an utterance that ordinary speakers would identify as having been said (Carston & Hall, 2012). From this characterization, it follows quite naturally that speakers are committed to the explicated content of their utterances.

The second clause of this characterization can be nicely illustrated by considering the “Paul’s Party” (cf. Viebahn, 2019) and “Dying Woman” (cf. Saul, 2012) cases, which we already discussed briefly in Section 2.5. As described earlier, in the case of “Paul’s Party,” Dennis has a long day of work ahead of him, but intends to go to his friend Paul’s party in the evening. Dennis believes that his annoying friend Rebecca will not attend the party unless she thinks that he is going, too. When Rebecca asks him, “Are you going to Paul’s party tonight?,” Dennis replies: “I have to work.” Is Dennis committed to the claim that he will not go to Paul’s party? The first clause does not apply because the explicated content is just that Dennis has to work [tonight]. What about the second clause, that is, would Dennis’s reply be irrelevant to Rebecca’s question without the implicature that he will not go to Paul’s party? This seems to be the case, because without the implicature Dennis would not address Rebecca’s question at all. To see this more clearly, imagine that a person (or a robot) were unable to derive implicatures. Such a person would probably react to Dennis’s reply by saying something along the lines of: “I did not ask you whether or not you have to work. I asked whether you are going to Paul’s party.” Thus, according to our characterization, Dennis should be seen as committed to the believed-false claim that he was not going to attend the party. Interestingly, however, this case is commonly analyzed as not involving commitment in the philosophical literature (Stokke, 2018; Viebahn, 2019; we will come back to this point below).

Now, let us turn to the “Dying Woman” case. As described earlier, in this case, a dying woman asks her doctor whether her son is well. The doctor saw the son yesterday, when he was fine, but knows that he was killed afterward. The doctor utters: “I saw him yesterday and he was fine.” Is the doctor committed to the claim that the son is fine? The first clause does not apply because the explicated content is just that the doctor saw the son yesterday and that the son was fine. What about the second clause, that is, would the doctor’s reply be irrelevant to the dying woman’s question without the implicature that the son is still fine? It does not seem so. Although the doctor’s reply does not include all of the available information, it would still be meaningful because it includes information about the son’s well-being, and the answer would thus seem to be relevant to the question even if one did not derive the implicature. To see this more clearly, we can imagine that the doctor did not actually know that the son was killed. In that case, his response would be perfectly fine. Thus, according to our characterization of commitment, the doctor in this case should not be seen as committed to the believed-false claim that the son was still doing fine that following day.
By characterizing commitment in this way, the results of our experiment can be neatly accounted for. The first clause captures our finding that speakers were considered to be committed to the contents of their deceptive GCIs and deceptive presuppositions, and thus as having lied with them (given that we locate presuppositional content at the level of what is explicated). The second clause assigns commitment to the deceptive PCIs and nonverbal actions that were judged to amount to lying in our study, as the communicative acts in all of these cases would not constitute a meaningful contribution to the conversation unless one inferred the deceptive propositions conveyed by them (in fact, this clause would apply to presuppositions, too, if one were to reject the idea that presuppositions can be counted as explicatures).

As mentioned before, the second clause would also ascribe commitment to the speaker in the party case discussed above, and our definition would thus classify this case as an instance of lying. This analysis stands in sharp contrast to how this case is analyzed in the philosophical literature (e.g., Davis, 2019; Stokke, 2018; Viebahn, 2019), where it seems to be taken for granted that neither commitment nor lying is involved. For this reason, we ran a quick study with 150 participants to test this case, and we did indeed find that a clear majority (more than 70%) held that Dennis lied to Rebecca (even though it was possible for the participants to indicate that Dennis misled Rebecca, but did not lie to her), thus confirming our analysis. At the same time, the second clause allows for the possibility that a person is not committed to the content of a PCI that lacks this feature, as illustrated by the “Dying Woman” case. In line with this analysis, it has been found that most people do not consider the doctor to be lying (Viebahn et al., in press).

The alert reader might be wondering now how our findings for the PCI in the content domain police fit with our tentative characterization of commitment. In this vignette, three police officers in training have failed their final examinations and do not want their colleagues to know. That is why, when they are asked, “So, did all of you guys fail the test today?,” they reply: “People you dislike are not automatically losers” (see Table A1 in the Appendix for a more detailed description of the vignette). At first sight, the deceptive answer should be judged to involve commitment according to the second clause of our characterization, as this reply does not seem to constitute a meaningful response unless one derives the implicature that the three friends did not all fail the test. Nevertheless, participants judged this case neither to involve commitment nor to constitute a case of lying. How can this finding be explained? Our tentative explanation is the following: Participants could also have understood the question “So, did all of you guys fail the test today?” as an insult, rather than a sincere question about the test’s results. In this case, participants might have interpreted the answer “People you dislike are not automatically losers” as a defense against the insult, rather than as conveying any information about whether or not the three friends failed the test. Therefore, in a certain sense, the reply could be seen as sensible even without the additional implicature that not all three of the friends failed the test. In this case, our finding that participants judged this case neither to involve commitment nor to be an instance of lying would again be in line with our characterization of commitment.

To sum up, on the basis of our findings, and theoretical as well as intuitive considerations, we propose a commitment-based definition of lying with two stipulations
concerning the notion of commitment, namely that agents are committed to the explicated content of their communicative acts, as well as to those contents without which their communicative acts would not be meaningful contributions to a conversation.

6.3. Limitations and objections

6.3.1. Further investigations into commitment

While our study tested several instances of different deceptions and clearly suggests that people’s lie judgments are closely tied to attributions of commitment, it would be premature to claim that commitment closely tracks lie attributions in all kinds of deceptions. Hence future studies should investigate whether commitment does indeed correctly predict lie ratings for deception types beyond those investigated in our study. Moreover, since one aim of our study was to show that at least some cases of deception that are not usually treated as lying in the literature will actually be considered to be cases of lying by participants, we chose cases that we intuitively believed to involve a high degree of commitment, and hence to be likely to be judged to involve lying. While commitment was closely tied to lie attributions in those cases, we cannot exclude the possibility that commitment does not fare as well when it comes to cases that are considered to be merely misleading.

Furthermore, we proposed that commitment is a factor that underlies people’s lie judgments, thus assuming a causal relationship between commitment and lie judgments. To back up this claim, future studies should administer designs that allow for the identification of causal paths, for instance by manipulating commitment directly. On the basis of the results observed in our study, we have already derived two hypotheses about when people believe others to be committed to a claim, namely that agents are committed to the explicated content of their communicative acts, as well as to those contents without which their communicative acts would not be meaningful. While these two factors are hypothesized to establish commitment, hedges (i.e., words or phrases that signal uncertainty, such as “possibly,” “believe,” or “may”; e.g., Brown & Levinson, 1987) seem to be an intuitively plausible candidate of features that diminish commitment. Accordingly, subsequent research should directly manipulate these factors in otherwise matched pairs of vignettes, in order to observe their effects on lie attributions.

6.3.2. Strict versus loose notions of lying

One might worry that participants having expressed a rather loose notion of lying in our study does not exclude the possibility that people might still recognize a strict notion of lying based on what is said in other contexts. Saul (2012), for example, argues that the term “lying” both has a broad usage, according to which any kind of deceptive practice, or at least any kind of deceptive verbal utterance, is seen as a lie, as well as a more narrow usage, according to which the term is seen as contrasting with “misleading,” and bound to what is said. One concern with our study might be that it elicited the broader usage of the term “lying,” as we allowed participants to indicate degrees of agreement,
while studies forcing participants to choose between two options (e.g., *lie* vs. *no lie*) might tap more into the narrow usage of the term. While we cannot directly rule out this possibility on the basis of our findings, there are considerations that speak against this interpretation. First of all, Viebahn and colleagues (in press, Experiment 1) collected lie judgments for cases of deceptive questions using a binary response format, as well as the more fine-grained format used in the current study, and did not find increased lie attributions when the latter format was used.  In addition, and perhaps most importantly, unlike most previous studies, we provided participants with the option to alternatively classify the deceptions as merely misleading. If anything, including this additional option should have led participants to apply a rather narrow notion of lying, as they were prompted to differentiate directly between lying and misleading (see Viebahn et al., in press, Experiment 2, for evidence that this format actually decreases lie attributions). On these grounds, we are confident that our study did not elicit overly loose lie judgments, but rather encouraged participants to apply a strict notion.

**6.3.3. Stimulus limitations**

With regard to our stimuli, one might critically note that we only investigated a special type of nonverbal action, as all of the actions tested in our study were performed in response to a verbal question. In addition, some of the actions we investigated involved some form of written language (e.g., the photograph of the lottery check in the content domain lottery). Although the actions tested in our study would still be excluded by definitions of lying based on a narrow notion of what is said (as none of them involved the believed-false claim being explicitly said or written down), these two factors might have contributed to the high lie ratings that actions received in our study. Thus, future studies remain necessary in order to investigate whether people also find it possible to lie by means of actions that are produced in contexts that do not involve any verbal or written language at all.

For the PCIs investigated in our study, on the other hand, our study design might have led to decreased lie ratings, as compared to more naturalistic settings. After reading the description of each scenario, participants were again presented with each of the crucial statements, to make clear the target of the following questions. This design might have invited (some) participants to focus on the statements, and to neglect the context to a certain degree. While presuppositions and GCIs seem equally deceptive regardless of whether they are considered in isolation, the PCIs we tested are not deceptive when considered in isolation. For example, if we look at the sentences “I admit that I bought the house with money I won in the lottery” (presupposition) and “I won the lottery and bought this place” (GCI), the deceptive claim is closely tied to the ordinary meaning of these sentences. By contrast, if the sentence “Winning the lottery allows people to buy the houses they’ve always dreamt of” (PCI) is considered in isolation, the speaker does not seem to have committed themselves to a deceptive claim. Therefore, a speculative explanation of why commitment and lie attributions in PCI cases were lower than for the other kinds of deception would be that due to the experimental setup (some) participants might have neglected the context, which is needed for the deception to arise in cases of
PCIs. In future studies, we plan to test this explanation by employing designs that include the crucial utterance being embedded in the context in which it is made, and do not present it again in isolation.

6.3.4. The concept of lying in other languages and cultures

In the present study, we have investigated the concept of lying in an English-speaking and presumably WEIRD (Western, educated, industrialized, rich, and democratic) sample, as participants were recruited on a UK-based platform. It is clearly conceivable, however, that people with other languages and cultures exhibit different concepts of lying. Therefore, we do not claim that we have investigated a universal folk concept of lying, but merely the concept of lying in the sample described above. Cross-cultural similarities and differences remain to be investigated in future empirical studies; a replication of the current study in a Russian sample has already been started.

7. Conclusion

In summary, our findings indicate that people’s concept of lying is broader than commonly assumed. While it may be the case that in certain contexts—for instance, when making a statement in front of a court—in order to be held accountable for lying, one must explicitly express something that one believes to be false, our findings indicate that in everyday interactions, people also count the more indirect communication of believed-false claims as lying. Here, lie judgments seem to depend more on whether people are perceived as having committed themselves to their believed-false claims than on believed-false claims being explicitly asserted. Accordingly—and returning to our introductory example—our findings indicate that people might very well consider Trump’s statement about what happened in Sweden to be a case of lying, even though he merely implicated the false claim that a terror attack had happened in Sweden. By shedding more light on the kinds of deceptions that people consider to be cases of lying, and the role that commitment plays in lie judgments, we hope that our findings can be used to advance theoretical debates on how to define the term “lying,” as well as providing a more informed basis for nonconceptual research on lying, and helping to provide a better understanding of public discussions about lying and deceiving in contexts related to law, politics, and the media.

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Open Research badges

This article has earned Open Data and Open Materials badges. Data and materials are available at https://osf.io/vpfqh.

Notes

1. For instance, suppose Mary asks John whether he already bought a new car and John replies: “I did not manage to go the bank yet.” Reference fixing ties “I” to “John” and the meaning of “bank” is disambiguated to “financial institute” (in contrast to, for example, a river bank), determining the content of what is said to be: “I John did not manage to go to the bank financial institute yet.” However, in this context, John is communicating more than this fact, namely also the implicated content that he has not bought the car yet (because he did not find time to go to his bank).

2. In using the term “deceptive implicature,” we refer to deceptive conversational implicatures only. Conventional implicatures (Grice, 1989) will not be discussed in this paper.

3. This definition is endorsed by authors such as Adler (1997), Carson (2006, 2010), Chisholm and Feehan (1977), Fallis (2009), Saul (2012), Sorensen (2007), and Stokke (2018, p. 31).

4. Only a few authors in the literature disagree with this view and argue that it is possible to lie with deceptive implicatures (most prominently Meibauer 2005, 2011, 2014a, 2014b, 2015, 2018; see also Falkenberg 1982; Faulkner, 2007; Ortony & Gupta, 2019; and Vincent & Castelfranchi, 1981).

5. To be precise, while Viebahn (2017, 2019) does not allow for lying with GCIs and PCIs as discussed in this paper, he does hold that people can lie by means of certain other contents that might be considered to be implicated (namely, in the case of metaphors). In a recent manuscript, however, he seems to have broadened the scope of contents to which he believes speakers are committed—now including substitutive PCIs and some additive PCIs—thus allowing for the possibility of lying with them (Viebahn, in press).

6. For example, if a friend asked John whether he could lend him some money, and John had $50 in the pocket of his trousers, but nevertheless showed his friend an empty wallet in response, then this would seem highly comparable to John answering with a deceptive PCI along the lines of: “Unfortunately, I don’t have any money in my wallet.”

7. As mentioned above, in using the term “nonverbal actions” in this paper, we are specifically referring to nonverbal actions that are performed ostensively (i.e., actions that are performed in order to communicate some information to another person). For this special kind of action, commitment might be involved in the sense
that people might consider agents as having committed themselves to the claims they have communicated by performing such an ostensive action.

8. Note that most previous studies of lying with deceptive implicatures have failed to provide participants with the option to differentiate between lying and misleading, making it conceivable that participants only judged the implicatures to be lies because they wanted to express that they were misleading. To prevent our results from being explained in any such alternative way, participants in our study were provided with the option to classify the behaviors as both lying and misleading.

9. Each participant was presented with two attention check items, consisting of instructions to choose the response options “completely disagree” or “completely agree,” respectively. Participants who chose any other answer were coded as having failed the attention check.

10. To be precise, participants were randomly chosen to be presented either with the vignettes from the content domain police, or with those from the content domain texting, and with only the specific or the nonspecific question under discussion vignettes of each of the marriage and lottery content domains.

11. We did not include the variable culpability in any of our preregistered hypotheses or analyses (although it was preregistered in the materials), since it was only introduced for pragmatic reasons. In particular, we included this third statement in order to provide participants with an item to disagree with; otherwise, participants might have felt less inclined to agree with both the lying and misleading items.

12. One might wonder whether assessing lie ratings by means of a scalar measure appropriately reflects participants’ intuitions about lying or whether a binary measure (i.e., lie vs. no lie) would have been more suitable. However, previous findings by Viebahn et al. (in press) have shown that scalar and binary measures of lying are highly correlated, indicating that they capture participants’ intuitions about lying in a similar manner.

13. Note that the variables deniability, non-cancelability, and non-reinforceability are referred to in the preregistration as bluff-out, cancelability, and reinforceability, respectively. We adapted the former labels as more accurate descriptions of the variables.

14. To avoid problems due to dependency in the data (as introduced by the repeated-measures design), we averaged each participant’s lie ratings separately for each type of deception before conducting the analyses.

15. Note that we did expect to find a negative correlation between lie and deniability ratings (as specified in our preregistration), since we expected commitment and deniability to be inversely related. That is, the more an agent is seen as committed to a claim, the less plausible it is for them to deny having said or communicated that claim. For all other measures, however, we expected to find positive correlations with participants’ lie ratings.

16. Independently of our project, Viebahn (2019, in press) has developed a commitment-based definition of lying on theoretical grounds. The definition we propose is identical to the one developed by Viebahn, and we are happy to admit both that
he was first and that we were unable to come up with a better formulation. While his and our definitions are identically worded, his approach to spelling out commitment differs strongly from ours. In contrast to our approach (see the following paragraphs), Viebahn characterizes commitment as follows: In performing a communicative act $C$ with content $p$, a speaker $A$ commits herself to $p$ (in the sense relevant for the lying-misleading distinction) iff $A$ cannot consistently dismiss an audience challenge in response to $C$ to defend that she knows $p$.

17. We thank an anonymous reviewer for raising this point.

18. It should be noted that although the cases that were tested in this study are usually not considered to be cases of lying, the lie attributions were consistently very high. Hence it cannot be ruled out that the response format does affect participants’ lie attributions for more borderline cases.

19. Given this explanation, one might wonder why commitment and lie ratings for cases of nonverbal actions, which might also be conceptualized as cases of nonverbal implicatures, were not also lower than in cases of GCIs and presuppositions. Here, it seems to us that neglecting the context in which actions are performed is, in some sense, more difficult than in cases of PCIs. While sentences containing a PCI still have a clear meaning when considered in isolation, actions often lack this feature and do need context in order to be attributed with any meaning, which makes neglecting the context less likely.

20. Indeed, this was confirmed in an additional study where we presented participants with an anonymized version of Trump’s statement about Sweden, and where we only included participants who reported not knowing who gave the statement ($n = 112$). On average, participants’ lie ratings for the statement were significantly greater than the midpoint of the scale, which again ranged from 1 to 7 ($M = 4.71$, 95% CI = [4.43, inf]; $t(111) = 4.14$, $p < .001$), indicating that, overall, participants judged the statement to be a case of lying.

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**Supporting Information**

Additional supporting information may be found online in the Supporting Information section at the end of the article:

**Data S1.** Effects of Manipulating the Specificity of the Question Under Discussion.
## Appendix:

Table A1
Overview of all vignettes tested in the study

| Scenario | Context (abbreviated) | Presupposition | GCI | PCI | Action |
|----------|-----------------------|----------------|-----|-----|--------|
| Lottery  | Last year, Emma bought herself a nice and big house with money she inherited from her mother. Surprisingly, shortly after, Emma also won the lottery, receiving another large amount of money. Her acquaintance Clara asks Emma “How did you afford a place like this?” and Emma does not want Clara to know that she bought her house with money she inherited from her mother. | Emma answers, “I admit that I bought this house with money I won in the lottery last year!” | Emma answers, “Well, last year I won the lottery and bought this place!” | Emma answers, “Well, winning the lottery allows people to buy the houses they’ve always dreamt of!” | Emma takes out her smartphone and shows Clara a photograph of herself posing with a giant lottery check in front of her newly purchased house. |
| Police   | Peter, John, and Carl are students training to become police officers at a police academy. Today, all three of them failed their final examinations. Their colleague Sean asks “So, did all of you guys fail the test today?” and Peter does not want him to know that all three of the friends failed the examinations. | Peter answers, “Don’t be too disappointed that we didn’t all fail the test!” | Peter answers, “Well, some of us failed the test.” | Peter answers, “People you dislike are not automatically losers.” | Peter grabs into his pocket, pulls out a police badge, which he wrongfully did not return upon his failure in the examinations, and shows it to Sean. |
Table A1. (continued)

| Scenario | Context (abbreviated) | Presupposition | GCI | PCI | Action |
|----------|-----------------------|----------------|-----|-----|--------|
| **Marriage** | At an alumni reunion, Frank meets his old classmate Harry. Frank broke up with Jenny, who was his girlfriend in college, a few years after they graduated. Last year, he then got married to another woman named Josephine, and he knows that his ex-girlfriend Jenny got married to another man last year as well. Harry asks “So, how did things turn out with you and Jenny?” and Frank does not want him to know that it did not work out for him and Jenny. | Frank answers, “The wedding of Jenny and me was beautiful!” | Frank answers, “Jenny and I got married last year!” | Frank answers, “Sometimes lovers from college end up getting married to each other!” | Frank smiles brightly, raises his hand, and shows Harry his wedding ring engraved with the letter “J” on it. |
| **Texting** | Recently, Jane has been under the impression that her boyfriend William is texting his ex-girlfriend Sarah again. In fact, William texted Sarah for her birthday and since then they have been exchanging texts daily. Sarah asks “Have you recently been texting Sarah again?” and William does not want Jane to know that he has been texting Sarah on a regular basis again. | William answers, “When will you realize that I haven’t sent her any texts today except for a single message with a birthday greeting?” | William answers, “It’s Sarah’s birthday, so I sent her one text.” | William answers, “In my opinion, it’s not wrong to send your ex a single text for their birthday.” | William grabs his phone, quickly and secretly deletes all messages that he and Sarah exchanged during the day except for the first text he sent Sarah for her birthday, and shows the chat history to Jane. |