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Certainty Posing: The Motives and Morality of
Exaggerating One's Degree of Certainty

By

Alexander Bryant Van Zant

A dissertation submitted in partial satisfaction of the
requirements for the degree of

Doctor of Philosophy

in

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in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

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Certainty Posing: The Motives and Morality of Exaggerating One's Degree of Certainty

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Alexander Bryant Van Zant

Abstract

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Doctor of Philosophy in Business Administration

University of California, Berkeley

Professor Laura Kray, Chair

In this dissertation I examine a form of deception that I refer to as *certainty posing*, or exaggerating one's degree of certainty. People are often expected to convey certainty in their ability to know the truth or forecast the future. As I argue, this expectation can motivate them to deliberately exaggerate their degree of certainty. In the first chapter of this dissertation, I find support for this assertion across a series of six experiments. Specifically, I find evidence that certainty posing is motivated by impression management concerns to appear knowledgeable and credible—particularly in situations where people can attribute uncertainty to inadequate knowledge. Additionally, I document that this behavior has the potential to bias consumers of advice. In the second chapter of this dissertation, I consider the moral acceptability of certainty posing and argue that people should perceive it as more morally acceptable than other forms of deception documented in the literature. I find limited evidence for this proposition: While certainty posing is perceived as more morally acceptable than blatant deception (telling the polar opposite of the truth), it is not perceived as any more acceptable than feigning uncertainty. Overall, this research makes two primary contributions to the literature. First, it documents that impression management motives can cause people to engage in strategic displays of overconfidence. Second, it establishes that individuals' motivation to engage in these displays is largely determined by the source to which they can attribute their uncertainty.

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PREFACE

As a third-year undergraduate student at UC Berkeley, I was desperately trying to secure a summer internship. I had yet to consider graduate school as a possibility and the economy was in a terrible recession; the prospect of failing to get ahead of my fellow students by securing a high-quality internship felt like something that would doom me to post-graduation unemployment and set me hopelessly behind my peers. After initially failing to draw interest from many of the companies with the most coveted internships, I was surprised to see one of them invite me to an interview. Though I had been interviewed many times before, the stakes never felt higher than they did for this particular interview. At the time, it felt like the only opportunity I would have to get an internship. I absolutely *had* to nail the interview.

On the day of the interview, I arrived with a soaking-wet suit after I had the unfortunate experience of having my umbrella break during a heavy rainfall. Upon failing to elicit any kind of reaction from my stone-faced interviewer when I cracked a joke about my appearance, I felt as if I had already lost my chance at the internship; clearly, the interviewer already thought I was incompetent. I would have to do everything in my power to overcome the bad start to the interview and create a positive impression. The interview began just fine with softball questions that I would have expected. However, the interviewer quickly hit me with an unusual question that I did not see coming: “Tell me about the most complicated thing you have ever completed and explain the process you used to complete the project.”

As an avid sports fan who had spent an inordinate amount of my spare time doing statistical analyses about my favorite players and teams, I immediately thought of an extensive analysis I conducted of baseball players’ ability to contribute wins to their teams through their base running ability (these types of analyses are now readily accessible, but they were uncommon at the time I did them). I briefly explained the analysis to the interviewer and started getting into details about the assumptions I made in developing a model to convert players’ statistical contributions into win values. My choice to go down this road was clearly a mistake. I am not sure whether it was the nerves or being put on the spot and asked to explain something complicated I did more than a year ago, but I quickly realized that I could not remember important details about the statistical model I developed or the process I used to arrive at the assumptions that went into it. Nonetheless, I had already started to answer the question, so I felt like admitting to being uncertain about my assumptions would doom my interview; I would either look like a liar who was fabricating a story or like an incompetent analyst who was discussing an unproductive day making a bunch of nonsensical calculations. As such, I proceeded to fashion a story about my trials and tribulations in identifying a reasonable set of assumptions to use for the model. At the moment, I could not for the life of me remember whether any of these trials and tribulations actually occurred, but I felt it was imperative to sound as if I was absolutely certain about them. I am not sure whether my confidence seemed sincere at the moment, but there is no question that I tried to appear confident about something I was completely uncertain about.

On the one hand, I was clearly engaging in a misleading display of confidence to appear competent and credible. On the other hand, I felt completely justified in doing so. I had actually completed the project I described, so it was entirely possible that the very details I was unsure about could have actually been a part of the process I went through to conduct the analysis. Simply because of the fact that I was uncertain, I felt like it was okay to make claims as if they were indisputable facts. After all, those claims very well could have been true. I could have

instead fabricated a project out of thin air and tried to act certain about facts that I knew had no possibility of being true. That would have felt like a less justifiable lie of a much greater magnitude.

Overview

With this personal anecdote, I have attempted to convey the tension that people face when they want to create a favorable impression, yet are uncertain about something others expect them to know. While it may be difficult for people to justify the act of completely fabricating a story, they may feel it necessary and justifiable to convey certainty in the accuracy of facts that they are uncertain about in reality. In this dissertation, I consider the motivational and cognitive underpinnings that may cause people to engage in *certainty posing*, or deliberate exaggerations of their degree of certainty. Chapter 1 considers the social motives that may cause people to engage in certainty posing and provides empirical tests of whether people engage in the behavior while identifying situations in which they are particularly likely to do so. I not only find that individuals' attribution of uncertainty to internal or situational factors is a critical driver of their likelihood of engaging in certainty posing, but also that the behavior can bias consumers of advice. Chapter 2 uses insights from cognitive and moral psychology to derive propositions about how morally acceptable people perceive certainty posing relative to other forms of deception. This chapter represents a first step in understanding individuals' attitudes about the behavior from a descriptive standpoint while providing suggestive evidence that the behavior may be quite common in practice relative to other forms of deception.

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I also owe a huge debt of gratitude to Laura and Don for their role in developing me as a scholar. Laura has been everything I could ask for from an advisor. I have learned most of what I know about research and publishing from working with her. Her impressive work ethic and perseverance has also set a great example for what qualities I need to exhibit in order to be a successful academic. She has always been available to me to talk about research ideas, to provide feedback on my work, and even to help with last-minute edits on my slides before job talks. I would not be in the position I am today without having had the good fortune of benefiting from Laura's mentorship. Don has also been instrumental to my development, as he has been an encouraging and patient collaborator despite our persistent failure to find support for a number of research hypotheses. I also am thankful to Don for pushing me to be as honest and transparent as possible about the process of conducting research. This guidance will surely benefit me as norms change around research practices in the social sciences. On a related note, I would like to thank Leif Nelson for encouraging me to be a skeptical consumer of research who values research that is true and replicable above all else.

I never would have pursued graduate school if not for Aiwa Shirako selecting me to be an undergraduate research assistant for her. Though I was initially motivated to pursue the position by a desire to fill some units on my class schedule, I became fascinated by her research and within a year decided that I wanted to do what she did for a living. I thank Aiwa for giving me a chance as a research assistant and setting me down the path I am on today.

I would also like to thank my colleagues and friends. I am lucky to have had a great group of fellow students to share my experiences with. In particular, I would like to thank Angus Hildreth, Brian Reschke, and Eliot Sherman for being great cohort mates who are both brilliant and down-to-earth. I have also benefited from being in close proximity to my fraternity brothers Ami Patel, Joe Mazzella, Alex Fang, Kabir Seth, and Ryan Rudnitsky. Their social support has helped keep me sane throughout the process of completing graduate school. I am sure they would join me in thanking our departed friend Chris Wootton for being a great example of how to be a wildly successful individual without taking oneself too seriously. I would also be remiss if I did not thank my long-time friends Cory Cavanah, John Zhang, and Andrew Udkovich for taking an interest in my career pursuits and providing words of encouragement.

Finally, I want to thank my parents for always putting me first in their lives and setting a great example for me growing up. Things were not always easy for them when I was young, but they always made sure that I have the means available to me to pursue my aspirations. Watching them progress in their careers as I grew up also taught me the value of hard work and a refusal to settle for anything less than my best. I have gotten to this point by making the most of a number of opportunities, but none of them would have been available to me if not for my parents' support.

CHAPTER 1

Certainty Posing: A Deceptive Impression Management Tactic

Describing demands Barack Obama faces as President of the United States, journalist Michael Lewis (2012) wrote, “after you have made your decision, you need to feign total certainty about it. People being led do not want to think probabilistically” (p. 5). As suggested by Lewis, people often expect others to express certainty. Indeed, conveying certainty brings myriad rewards. Whether in the form of social status (Anderson, Brion, Moore, & Kennedy, 2012) or the ability to influence others (Hinsz, 1990; Petty, Briñol, & Tormala, 2002; Radzevick & Moore, 2011; Sniezek & Van Swol, 2001; Van Swol & Sniezek, 2005; Zarnoth & Sniezek, 1997), people are routinely rewarded for conveying certainty. For example, Tetlock (2005) observed that the most prominent political pundits are not necessarily more accurate than their more unappreciated peers, but do express greater certainty in the accuracy of their judgment than those who are less prominent. Even in situations where an individual has already attained all the status and visibility he or she desires, there may be an implicit expectation that his or her position demands a public appearance of certainty. As suggested by the evidence, though people may privately be aware that some information they are about to disclose is highly uncertain, they are often incentivized and expected to convey the sense that they know this information to be true with a high degree of certainty.

Consistent with this notion, there is a prevalence of research documenting a robust form of overconfidence known as overprecision where people display excessive certainty in the accuracy of their own judgment and ability to forecast the future (Haran, Moore, & Morewedge, 2010; McKenzie, Liersch, & Yaniv, 2008; Moore & Healy, 2008; Soll & Klayman, 2004). Though many have characterized it as a cognitive bias (e.g., Frederick, Loewenstein, & O’Donoghue, 2002; Juslin, Winman, & Hansson, 2007; Kahneman & Lovallo, 1993; Tversky & Kahneman, 1974), scholars such as Yaniv and Foster (1995, 1997) have gone as far as to suggest that overprecision in judgment may be explained by social motives to convey information in a manner that others find informative. That is, if people intuit that others perceive predictions reflecting substantial uncertainty as being uninformative, then they may deliberately convey certainty in their predictions as a means of increasing the extent to which others find their predictions useful. Despite this perfectly sensible hypothesis, no research to date has produced evidence that social motives can cause people to strategically display overprecision in judgment (Moore, Tenney, & Haran, in press). Whereas overprecision in judgment has been repeatedly demonstrated in contexts where estimates of certainty are elicited in private (e.g., Haran et al., 2010; McKenzie et al., 2008; Moore & Healy, 2008; Yaniv & Foster, 1997), very little evidence can speak to whether social motives can exacerbate overprecision in judgment when one’s degree of certainty is made public. Furthermore, the limited evidence that does speak to this phenomenon renders it difficult to differentiate between individuals’ genuine private beliefs and their public claims (e.g., Radzevick & Moore, 2011). In this chapter, I directly examine whether social motives can exacerbate overprecision in judgment and cause a discrepancy between individuals’ genuine degree of certainty as reflected by their private judgment and the amount of certainty that they convey publicly. I refer to these socially motivated displays of certainty as *certainty posing*, or exaggerating the degree to which one is certain of the truth.

Certainty Posing as an Impression Management Tactic

Ultimately, I argue that certainty posing is an impression management tactic used to appear credible and influence others' judgment. However, it primarily has the potential to be successful in situations where an individual has relative domain expertise. Though people fail to adequately consider others' information and forecasts when making their own decisions (Yaniv, 2004; Yaniv & Kleinberger, 2000), they are much more likely to incorporate information derived from expert judgment when it relates to a domain in which they lack expertise (Harvey & Fischer, 1997; Snizek, Schrah, & Dalal, 2004). As such, individuals who are perceived as possessing domain expertise have the most influence over those who lack domain expertise. Furthermore, because domain expertise increases individuals' confidence in the accuracy of their own judgment (Mahajan, 1992; Önkal, Yates, Singa-Mugan, & Öztin, 2003; McKenzie et al., 2008), it makes them less likely to incorporate others' judgment into their own decisions (Bonaccio & Dalal, 2006).

Asymmetries in domain expertise are common in advice-giving contexts where expert advisors provide information and make recommendations to novice advisees. Advisors are often genuinely concerned about making the most accurate recommendations possible (Jonas & Frey, 2003; Kray, 2000), yet they also frequently provide advice that deviates from the decisions they make in private (Jonas & Frey, 2003; Jonas, Schulz-Hardt, & Frey, 2005; Kray, 2000; Kray & Gonzalez, 1999; Sah & Loewenstein, 2015). While research has focused on biases in advisors' presentation of factual information (e.g., Jonas & Frey, 2003; Jonas et al., 2005) or weighting of decision attributes (e.g., Kray, 2000), it has yet to consider biases in the confidence that advisors project to advisees regarding the accuracy of their own judgment. Because advisors are motivated to present information in a manner that generates favorable impressions of themselves (Jonas & Frey, 2005) and influences others' judgment (Jonas & Frey, 2003; Schlenker, 1980; Tedeschi, 1981), then to the extent that they perceive displays of certainty as a means to accomplishing these goals, they should be particularly likely to engage in certainty posing.

Indeed, advisors who display certainty are perceived as more credible (Price & Stone, 2004; Sah, Moore, & MacCoun, 2013; Tenney, MacCoun, Spellman, & Hastie, 2007; Tenney, Spellman, & MacCoun, 2008) and influence others' decisions to a greater extent (Radzevick & Moore, 2011; Phillips, 1999; Sah et al., 2013; Snizek & Buckley, 1995; Snizek & Van Swol, 2001; Petty et al., 2002; Van Swol & Snizek, 2005; Yaniv, 1997) than advisors who display uncertainty. Consequently, those who successfully engage in strategic displays of certainty stand to benefit. Though no direct evidence can speak to whether advisors engage in strategic displays of certainty—let alone whether they intuit its potential benefits—indirect evidence suggests they might. In one study using a simulated market for expert advice, Radzevick and Moore (2011) found qualitative evidence that advisors who self-reported selection concerns (i.e., a motive to be hired as advisors) tended to prefer expressing high levels of confidence more than those who do not. However, given that individuals who have a dispositional inclination to pursue positions of status and influence tend to display genuine overconfidence in the accuracy of their judgment (Anderson, Brion, Moore, & Kennedy, 2012), it is unclear whether individuals with a desire to be hired as advisors engage in deliberate exaggerations of their degree of certainty in order to increase their likelihood of being hired or whether they simply tend to exhibit more genuine overprecision than others. Furthermore, because Radzevick and Moore (2011) also find evidence that advisors increase their degree of certainty over successive rounds of advice and subsequent advisee hiring decisions, it may be possible that advisors do not necessarily intuit the general benefits to certainty displays until they receive feedback suggesting that particular advisees have a preference for advisors who display certainty.

Despite the lack of direct evidence speaking to whether people engage in deliberate public displays of certainty in order to reap economic or social benefits, the evidence does suggest that individuals who are motivated to be perceived as possessing expertise ascribe a greater importance to conveying certainty than those who are not. While advisors' degree of certainty does not necessarily correlate with their decision accuracy (Phillips, 1999), advisees use it as proxy for their level of domain expertise (Price & Stone, 1994; Sniezek & Buckley, 1995; Sniezek & Van Swol, 2001). Consequently, people who convey the most certainty in the accuracy of their judgment are the most likely to be hired as advisors (Radzevick & Moore, 2013) and the least likely to have their expertise challenged (Sah et al., 2013). Because the same advisors who express concerns about being selected as advisors are the same ones who tend to value expressions of confidence (Radzevick & Moore, 2011), this suggests that to the extent individuals are motivated to be perceived as possessing expertise, they should be particularly likely to engage in certainty posing.

Hypothesis 1: People engage in certainty posing when motivated to signal expertise.

Certainty Posing Under Knowledge-Based and Situational Uncertainty

The possession of task-relevant expertise gives people expert power (Birnbaum & Stenger, 1979; Bonaccio & Dalal, 2006; French & Raven, 1959) that allows them to influence others (Goldsmith & Fitch, 1997). Therefore, it naturally follows that to the extent people perceive certainty posing as a means of signaling expertise, then they should also perceive it is a route to appearing credible and wielding influence over others. However, certainty posing may not always be perceived as a necessary means of establishing credibility—particularly when an advisor's relative expertise (or lack thereof) is completely irrelevant to making a judgment. For example, it would seem ludicrous for an expert black jack player to convey a high degree of certainty that either a club or spade will be drawn from a full standard deck of cards that has been shuffled at random. Though the black jack player may possess expertise at quickly computing the odds of having a winning hand given the cards that have been dealt and the dealer's face card, anybody with basic knowledge of a standard card deck would know that there is a 50% probability of a club or spade being drawn from a full deck. Therefore, the black jack player's expertise is irrelevant to gaining an advantage at predicting the first card drawn from a deck; conveying certainty in this judgment may even undermine the player's credibility.

By definition, a critical assumption of certainty posing is that it can only occur in situations where uncertainty is present in the first place. That is, communicators cannot exaggerate their degree of certainty when they are already certain. As suggested by the above example of the black jack player, uncertainty can come in many different forms. Scholars have attempted to categorize uncertainty in a variety of ways, such as whether it refers to an individual event or repeated events (e.g., Gigerenzer, 1994; Peterson & Pitz, 1988) and even whether it is controllable or uncontrollable (e.g., Howell & Burnett, 1978). One distinction that seems particularly useful for understanding when certainty posing is perceived as an effective tactic lies in whether uncertainty is attributable to one's degree of knowledge (or lack thereof) as compared to statistical randomness and stochastic processes (e.g., Fox & Ülkümen, 2011; Kahneman & Tversky, 1982). Kahneman and Tversky (1982) refer to these forms of uncertainty as internal and external uncertainty, respectively.

Uncertainty attributable to inadequate knowledge, or internal uncertainty, is likely to activate a *credibility threat* where advisors experience a challenge to the notion that others will perceive their advice as valid. Because advisors are motivated to convey the impression that they possess expertise in order to increase their credibility, evidence that they may not possess relevant knowledge within a domain challenges the notion that others will perceive their advice as credible. Though others may not necessarily be aware of an advisor's missing knowledge, advisors aware that they have inadequate domain knowledge are likely to assume that the revelation of uncertainty will generate presumptions that they lack important information. People tend to egocentrically assume others are aware of their internal states (Gilovich, Savitsky, & Medvec, 1998; Gilovich, Medvec, & Savitsky, 2000; Savitsky & Gilovich, 2003; Vorauer & Ross, 1999), so when advisors face uncertainty attributable to the absence of relevant domain knowledge, the prospect of disclosing their uncertainty may be perceived as an act that telegraphs the inadequacy of their knowledge and publicly undermines their credibility.

In contrast to internal uncertainty, which can be resolved by obtaining more knowledge relevant to solving a problem at hand, external uncertainty is an unavoidable characteristic of judgments about events that are determined probabilistically. Though many decision contexts involve a combination of internal and external uncertainty, there comes a point where even the most accomplished of experts in a domain cannot predict outcomes within the domain with a high degree of certainty. Because experts' uncertainty is beyond their control in these circumstances and not diagnostic of their degree of domain knowledge, they are unlikely to consider the possibility that they possess inadequate domain expertise (cf. Croizet & Claire, 1998; Davies, Spencer, Quinn, & Gerhardstein, 2002; Kang, Galinsky, Kray, & Shirako, 2015; Kray, Thompson, & Galinsky, 2001; Steele & Aronson, 1995) and therefore unlikely to consider the possibility that others may attribute any uncertainty they express to inadequate expertise. For example, a financial advisor known for having expertise about investing in a particular industry might evaluate whether a client should invest in one of two companies that he or she is quite familiar with. However, if the advisor perceives the companies as being identical on every meaningful indicator of future financial performance, then random future events that cannot possibly be forecasted will likely determine which company ultimately performs the best. Despite the advisor's extensive knowledge about the two companies, he or she is highly uncertain about which company to recommend investing in because processes that are stochastic in nature will ultimately determine which company performs best. Much like a black jack player attempting to predict the first card drawn from a fair deck, the advisor cannot reasonably be expected to forecast which of the two companies will perform best in spite of his or her expertise. After all, the advisor's expertise has made it possible to reduce the problem to a coin-flip between two investments. Assuming others will understand this, the advisor is unlikely to associate the expression of uncertainty with a public credibility threat. Accordingly, the advisor is less likely to perceive a credibility threat under internal uncertainty than under external uncertainty.

Hypothesis 2: Advisors perceive a greater threat to their credibility under internal uncertainty than under external uncertainty.

People respond to public threats by engaging in compensatory behaviors that improve their image (Apsler, 1975; Baumeister & Jones, 1978; Cialdini & Richardson, 1980; Frey, 1978; Leary & Kowalski, 1990; Schneider, 1969) and the mere anticipation of a threat is sufficient to

preemptively engage in such behaviors (Greenberg, Pyszczynski, & Paisley, 1984; Leary, Barnes, & Griebel, 1986). Furthermore, power holders often feel a need to engage in assertive behaviors when their competence is threatened (Fast & Chen, 2009; Georgesen & Harris, 2006), so certainty displays may be a way for advisors to assert their expert power when uncertainty threatens their self-perceived competence. Consistent with this argument, people in positions where they are expected to possess expert power exhibit more overprecision than those in low-power positions (Fast, Sivanathan, Mayer, & Galinsky, 2012). Because internal uncertainty is more likely to threaten advisors' identity as credible experts—or their expert power—than external uncertainty, it stands to reason that advisors should be more likely to engage in certainty posing under internal uncertainty as a means of influencing others' decisions.

Hypothesis 3: Advisors are more likely to engage in certainty posing under internal uncertainty than under external uncertainty.

Consequences of Certainty Posing

Having laid out a series of hypotheses about antecedents that motivate certainty posing, I now want to consider the consequences of certainty posing on both advisors and advisees. In particular, I want to consider what effects certainty posing might have on advisors' and advisees' genuine degree of certainty.

Advisor Certainty

Given the strategic nature of certainty posing, it seems sensible to presume that advisors should be capable of engaging in the behavior without compromising the accuracy of their own judgment. However, a key aspect of certainty posing is that an individual deliberately expresses a belief about some outcome's probability that is discrepant with his or her private beliefs about the same outcome's likelihood. People have a tendency to align their current judgments with past judgments (Arad, 2013; Bem, 1965; Brehm, 1956; Egan, Santos, & Bloom, 2007; Hoshino-Browne et al., 2005; Lieberman, Ochsner, Gilbert, & Schacter, 2001), so advisors may alter their private beliefs to be consistent with their public displays of certainty. Furthermore, because certainty posing involves a deceptive act, this tendency should be particularly dramatic. When people engage in post-hoc rationalizations for their actions, they often identify factors that were irrelevant to their actions while ignoring the true causes of their behavior (Nisbett & Wilson, 1977) and this pattern is often driven by motivated reasoning processes that magnify when the behavior under consideration has ethical implications (Kuhn, 1989; Lord, Ross, & Lepper, 1979; Haidt, 2001). Because certainty posing is deceptive in the sense that an individual publicly expresses a degree of certainty that conflicts with his or her private beliefs, advisors may be uncomfortable with the notion that opportunistic motives caused their public displays of certainty. Accordingly, they may seek to align their private beliefs with their public displays of certainty. To accomplish this, they may either forget their prior beliefs in a motivated fashion (e.g., Shu, Gino, & Bazerman, 2011) or engage in self-deception (Chance, Norton, Gino, & Ariely, 2011) where they believe their private beliefs were congruent with their public displays of certainty.

Taken together, this account suggests that after the act of engaging in certainty posing, advisors may convince themselves that their *a priori* degree of certainty was aligned with their public claims. Such motivated forgetting can help rationalize deceptive behavior by adjusting

private beliefs to be consistent with publicly expressed beliefs. Effectively, this can allow advisors to convince themselves that their publicly expressed certainty was sincere—or at least less insincere (in cases where they do not fully adjust their post-hoc private beliefs to match with their publicly expressed beliefs)—than it was in reality. In the process of publicly elevating their degree of certainty to mislead others, advisors may inadvertently bias their own judgment by becoming more overprecise than they otherwise would have been. Therefore, situations that present opportunities to engage in certainty posing have the potential to bias advisors' judgment.

Hypothesis 4: Advisors convey more genuine certainty when motivated to engage in certainty posing than they do when not motivated to engage in certainty posing.

Advisee Certainty

Though people frequently discount advice more than they should (Yaniv, 2004; Yaniv & Kleinberger, 2000), they are particularly likely to attune to advice when they lack important knowledge (Harvey & Fischer, 1997; Snizek, Schrah, & Dalal, 2004) and have access to expert advisors (Goldsmith & Fitch, 1997; Jungermann & Fischer, 2005). However, if advisors readily intuit that displays of certainty are a route to credibility, then advisees should presumably be wary of situations that provide advisors with an incentive to engage in certainty posing. As such, it should stand to reason that when they are aware of situations that present advisors with a conflict of interest where confidence is rewarded at the expense of accuracy, they should completely discount advisors' advice in favor of their own.

Advisors do consider the process by which advice was generated (Jonas & Frey, 2003; Yates, Price, Lee, & Ramirez, 1996) and are generally aware that they should discount advisors who have a conflict of interest (Sah, Loewenstein, & Cain, 2013), yet they tend to anchor to biased advice and fail to discount it as much as they should (Cain, Loewenstein, & Moore, 2005). Discounting is particularly hindered when advisors convey a high degree of certainty, as advisees often fail to punish inaccurate advisors (Radzevick & Moore, 2011) and are less likely to expend effort verifying the accuracy of confident advisors than advisors who convey uncertainty (Sah, Moore, & MacCoun, 2013). Consequently, even when they are aware of a situation that encourages certainty posing, advisees are unlikely to sufficiently discount biased advice, which should lead to them displaying more overprecision in their judgment than they otherwise would have.

Hypothesis 5: Advisees paired with advisors who are motivated to engage in certainty posing will display more certainty in their judgment than those who are not paired with advisors who are motivated to engage in certainty posing.

Overview of Studies

Across a series of six experiments, I test the validity of these hypotheses. In Experiment 1, I provide initial evidence that certainty posing is driven by a motive to convey expertise (Hypothesis 1). Experiments 2-4 provide evidence that people experience a credibility threat under internal uncertainty but not under external uncertainty (Hypothesis 2), while Experiment 5 finds a behavioral effect consistent with the notion that people more readily engage in certainty posing when conveying internal uncertainty as opposed to external uncertainty (Hypothesis 3). Finally, Experiment 6 manipulates impression management motives via a hiring incentive and

examines the consequences of certainty posing on advisors' and advisees' degree of certainty posing in the context of a simulated market for expert advice (Hypotheses 4 and 5).

Experiment 1

I conducted Experiment 1 with two goals in mind. First, I wanted to establish certainty posing as a phenomenon by documenting its occurrence among experts in a domain. Second, I wanted to understand whether motives to convey expertise cause people to engage in certainty posing. To do this, I had research participants predict the outcomes of a series of upcoming events while experimentally manipulating whether they were incentivized to appear knowledgeable or to accurately convey their degree of certainty in their predictions.

Participants

With the goal of collecting data from 100 self-identified college basketball fans, I recruited 362 Amazon Mechanical Turk workers (mTurkers) to take a prescreening survey for a study requiring them to “predict future events.” Though the study was ultimately about predicting the outcomes of upcoming college basketball games, mTurkers were not aware of this information during the prescreening process. As the college basketball games were about to be played as a part of the Round of 32¹ in the 2015 NCAA Men’s College Basketball Tournament, I took steps to recruit 100 participants with a vested interest in the outcomes of the upcoming games. To narrow down to this number of participants, those who volunteered to take the prescreening survey were required to self-identify as college basketball fans that had already filled out an NCAA Tournament Bracket. To conceal the intent of the study and minimize the potential for participants to provide deceptive responses during prescreening, the questions assessing these criteria were hidden among other questions about television viewing preferences. 100 college basketball fans with completed NCAA brackets (27.6% of those who completed the prescreen survey) were allowed to continue to the actual study in exchange for \$1.25. Their mean age was 33.08 years ($SD = 10.21$) and 23% of them were female.

Procedure

After meeting the prescreening criteria, participants were informed that they would be evaluating a series of upcoming games in the NCAA Tournament. For each game, they would predict the team that was most likely to win before indicating their “confidence in each prediction” (i.e., the likelihood of their prediction being accurate). Participants made predictions for six upcoming games presented in a randomized order (Kentucky vs. Cincinnati, Wisconsin vs. Oregon, Villanova vs. North Carolina State, Maryland vs. West Virginia, Louisville vs. Northern Iowa, and Kansas vs. Wichita State).

To help them understand the study procedure, participants evaluated the outcomes of two hypothetical games before evaluating six actual upcoming games. For each game, they first indicated which team they felt would be most likely to win. The following screen reminded them of their prediction (“you predict that _____ will win the matchup against _____.”) and asked to indicate their degree of certainty in the prediction (“How likely do you think your prediction is to be accurate?”). Participants indicated their degree of certainty by selecting a number on a scale

¹ This is the round of the tournament where the number of teams has been reduced to 32 remaining teams (from 64). It is played on the first weekend of the tournament.

ranging from 50 to 100; the number was meant to fill in the blank on the following statement: “There is a ___% chance that my prediction is accurate.”

Incentive manipulation. Participants were randomly assigned to one of two experimental conditions. In one condition, their goal was “to be as accurate as possible in making predictions about a series of upcoming match-ups and conveying an appropriate level of confidence in those predictions” (accuracy condition). Participants earned p points if their prediction about which team would win the game was accurate and $1-p$ points if their prediction was incorrect, where p equals the percentage assigned to the likelihood of their prediction being accurate.² To illustrate the scoring rule, suppose that a participant believed that the team he or she selected to win a game had a 75% chance of winning the game. If the team selected by the participant ended up winning the game, the participant earned 0.75 points. However, if the team selected by the participant did *not* win the game, the participant only earned 0.25 points. Participants’ accuracy score was directly related to their likelihood of winning a raffle for a \$25 bonus payment, as I ranked them in ascending order of their score and assigned them a number of raffle tickets equivalent to their ranking. Participants read about this raffle process in detail at the beginning of the study. To summarize the accuracy incentive in a simple way, I told them “What this means for you is very simple: the more accurate your predictions (and confidence in those predictions), the more likely you are to earn a \$25 bonus.” To reinforce this goal throughout the study, participants assigned to this condition were reminded that “the more accurate your predictions and level of confidence, the better your chances of earning a \$25 bonus” as they evaluated upcoming games.

In the other experimental condition, I incentivized participants to “be perceived as a knowledgeable college basketball fan” (expertise condition). Participants assigned to this condition were rewarded for conveying expertise to a group of research volunteers. Prior to the start of the first game played among the six that participants evaluated, a group of three research assistants ranked participants according to how knowledgeable they perceived them to be. While evaluating the participants, the research assistants had access to participants’ predictions and certainty in the predictions for each of the six games. To avoid biasing research assistants’ judgment, I left them to make their own subjective assessments of each participant’s relative knowledge. After the research assistants ranked participants, I sorted participants in ascending order of the extent to which they were perceived as knowledgeable by the research assistants and gave them a number of tickets for a \$25 bonus prize raffle that was equivalent to their expertise rank (i.e., the participant considered most knowledgeable earned 51 raffle tickets while the one considered least knowledgeable earned 1 raffle ticket). Participants read about this ranking process in detail at the beginning of the study. To summarize the expertise incentive in a simple way, I told them “What this means for you is very simple: the more knowledgeable you are perceived to be (based on your predictions and confidence in those predictions), the more likely

² This scoring rule was selected for its simplicity and the ease with which it can be explained to research participants. However, it is noteworthy that it is not incentive compatible because it has the potential to induce excessive certainty, as perfectly rational participants should claim that the outcome they perceive to be most likely has a 100% chance of occurrence (Selten, 1998). Despite this potential limitation, research examining binary outcomes like the ones evaluated in this experiment have failed to find evidence that participants’ calibration varies between this scoring rule and an incentive-compatible quadratic scoring rule (Andersen, Fountain, Harrison, & Ruström, 2014).

you are to earn a \$25 bonus.” To reinforce this goal throughout the study, participants assigned to this condition were reminded that “the more knowledgeable you are perceived to be (based on your prediction and confidence) by a group of people, the better your chances of earning a \$25 bonus” as they evaluated upcoming games.

Results

Overall, participants predicted that the higher-seeded team (i.e., the favorite) would win 83% of the time. Given that this percentage deviated from chance, $t(99) = 17.25, p < .001$, it appears that participants were relatively knowledgeable about the college basketball tournament and not making selections at random. Critically, participants’ likelihood of selecting a favorite did not vary by experimental condition, $t(98) = 0.01, p = .99$, which indicates that expertise-signaling incentives (as opposed to accuracy incentives) did not influence their predictions about the winner of upcoming games.

As predicted, participants in the expertise condition conveyed more certainty in their predictions ($M = 85.56, SD = 8.55$) than those in the accuracy condition ($M = 81.68, SD = 9.99$), $t(98) = 2.09, p = .039, d = 0.42, 95\%$ Confidence Interval (CI) = [0.02, 0.82]. To assess participants’ level of overprecision, I compared their level of confidence to those computed prior to the start of each game by FiveThirtyEight.com, a website that uses a sophisticated algorithm predict the outcome of games.³ Overall, participants conveyed more certainty in their ability to forecast the outcomes of games ($M = 83.66, SD = 9.44$) than the 73% mean certainty that FiveThirtyEight’s algorithm had in the accuracy of its predictions of the same games, $t(99) = 11.82, p < .001$, an effect that held in each condition (both $ps < .001$).⁴ Though this evidence is consistent with the notion that participants were generally overprecise in their judgment, it also

³ Rather than rely on a small sample of arbitrary outcomes to use as a normative reference point for conveying an appropriate level of certainty, I instead elected to use an algorithmic approach based on a large sample of past games to determine an appropriate level of *a priori* certainty that participants should have expressed for each game. FiveThirtyEight’s projections were selected as a normative reference point because in comparison to other algorithm-based forecasting systems, it produced the most accurate predictions for this particular round of the tournament (<http://web.archive.org/web/20150614101657/http://fivethirtyeight.com/features/how-fivethirtyeights-ncaa-tournament-forecasts-did/>).

⁴ Though prior research has failed to find evidence of a linear scoring rule like the one used in this experiment inducing excessive certainty relative to an incentive-compatible quadratic scoring rule in the case of binary outcomes (Andersen, Fountain, Harrison, & Ruström, 2014), the claim that participants exhibited overprecision in judgment in the accuracy condition could be problematic in the presence of perfectly rational participants who correctly intuit that they can earn a higher expected payoff by conveying absolute certainty in the most likely outcome (cf. Selten, 1998). To explore this possibility, I conducted an analysis that omitted all responses of 100%. As expected, participants’ mean level of certainty fell in the accuracy condition when omitting these responses exhibiting evidence of rationality ($M = 77.45, SD = 9.32$), but it was still overprecise relative to the normative reference point of 73%, $t(47) = 3.31, p = .002$. Thus, it does not appear that there were enough perfectly rational responses in the sample to eliminate overprecision in judgment despite the presence of a scoring rule with the potential to promote absolute certainty.

suggests they became even more overprecise when their degree of certainty was broadcasted to people who would be assessing their expertise.

Discussion

Relative to participants incentivized to make accurate forecasts, participants who were incentivized to appear knowledgeable conveyed more certainty in their ability to forecast future events. This not only supports Hypothesis 1, but also provides preliminary evidence of certainty posing as a valid phenomenon: Though participants were generally overprecise in their judgment, they became even more overprecise when motivated to convey expertise.

Experiment 2

Having documented evidence in Experiment 1 that people exaggerate their degree of certainty to create the impression that they are knowledgeable, Experiment 2 begins a series of studies seeking to better understand the motives that underlie certainty posing and when it is particularly likely to occur. Specifically, Experiment 2 examines whether people experience greater concerns about their credibility being undermined when they are under internal uncertainty rather than external uncertainty. If internal uncertainty represents an expertise threat that activates credibility concerns, participants should experience greater credibility concerns when uncertainty can be directly attributed to inadequate knowledge as opposed to external circumstances beyond their control.

Participants

With the goal of obtaining a large enough sample to detect an effect size of $d = 0.4$ with at least 80% power, I collected data from 102 mTurkers who completed a decision making survey in exchange for \$1. Their mean age was 32.53 years ($SD = 10.60$) and 39% of them were female. I did not exclude any participants from the analyses.

Procedure

Participants read three scenarios asking them to take the perspective of an advisor interacting with a client. Specifically, participants took the perspective of a financial advisor recommending which of two investment opportunities to pursue, a consultant advising a company about how to launch a new marketing campaign, and a lawyer advising an artist about whether to pursue a lawsuit for copyright infringement. In all scenarios, participants were uncertain about the optimal strategy to pursue. They were presented in a randomized order.

Uncertainty source manipulation. I manipulated participants' source of uncertainty in between-subjects fashion by randomly assigning them to read three scenarios where they were could either attribute uncertainty to their state of knowledge (internal uncertainty) or unpredictable external circumstances (external uncertainty). In all three scenarios, participants were first presented with an advice task at hand in which they were uncertain about the optimal strategy to pursue. They were then informed about the reason for their uncertainty before coming to the conclusion that they only believed there to be a 50% chance of one particular recommendation they could make being the best option for their client. See Appendix A for the full scenarios. As an example, consider the case of providing advice to a client about which of two investment opportunities to pursue. In the internal uncertainty condition, participants read the following:

After evaluating your client's investment options, you realize that they both belong to the same industry. The industry is stable and investments belonging to it earn predictable returns. However, you are very uninformed about recent happenings in the industry. Because of uncertainty stemming from your insufficient knowledge of the industry, you conclude that there is a 50% chance that Investment B will earn a better return than Investment A.

In the external uncertainty condition, they read the following:

After evaluating your client's investment options, you realize that they both belong to the same industry. The industry is unstable and investments belonging to it earn unpredictable returns. However, you are very informed about recent happenings in the industry. Because of uncertainty stemming from the unpredictability of the industry, you conclude that there is a 50% chance that Investment B will earn a better return than Investment A.

Manipulation checks. To ensure that the uncertainty source manipulation was interpreted in the manner intended, I included two manipulation checks asking participants to indicate whether they felt their uncertainty was attributable to their internal state of knowledge or to external circumstances. After reading each scenario, participants indicated their agreement with the statements "I am uncertain because I do not possess enough expertise about this particular situation" and "I am uncertain because of unpredictable events beyond my control" on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Credibility threat. After reading each scenario, participants indicated the extent to which they were concerned that their credibility as advisors may be undermined by revealing their conclusion. They were first prompted with the conclusion they arrived at (e.g., "If I reveal my belief that there is a 50% chance of Investment B earning a better return than Investment A, my client will think I am, my client will...") before indicating the extent to which their client would "think I am incompetent" and "wonder whether my advice is credible." They indicated their agreement with the two statements on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) with a neutral midpoint of 4 (*neither agree nor disagree*). The two items were reliable ($\alpha = .87$) and thus averaged to form a single measure of credibility threat.

Results

Before analyzing the credibility threat variable, I first conducted a check to ensure that the manipulation checks yielded effects. First, I found that participants felt their uncertainty was more attributable to insufficient expertise in the internal uncertainty condition ($M = 5.53$, $SD = 1.13$) than in the external uncertainty condition ($M = 2.86$, $SD = 1.44$), $t(100) = 10.51$, $p < .001$, $d = 2.11$, 95% CI = [1.62, 2.59]. Second, they agreed that external circumstances beyond their control accounted for their uncertainty to a greater extent in the external uncertainty condition ($M = 5.51$, $SD = 1.02$) than in the internal uncertainty condition ($M = 4.06$, $SD = 1.43$), $t(100) = 5.82$, $d = 1.17$, 95% CI = [0.74, 1.59]. These findings suggest that participants interpreted the uncertainty source manipulation in the intended manner.

As expected, participants perceived a greater credibility threat when they were under internal uncertainty ($M = 4.44$, $SD = 1.27$) than when they were under external uncertainty ($M =$

3.55, $SD = 1.50$), $t(100) = 3.26$, $p = .002$, $d = 0.65$, 95% CI = [0.25, 1.05].⁵ Furthermore, whereas participants' perceived credibility threat exceeded the neutral midpoint of the scale in the internal uncertainty condition, $t(53) = 2.57$, $p = .013$, it was lower than the midpoint in the high knowledge condition, $t(47) = 2.08$, $p = .043$. This suggests that when could attribute uncertainty to their internal state of knowledge, they felt that others were more likely to question their credibility than not. Conversely, when they could attribute uncertainty to external circumstances, they disagreed with the notion that others would question their credibility.

Discussion

Experiment 2 finds evidence consistent with the notion that people perceive a greater credibility threat under internal uncertainty than under external uncertainty. Furthermore, because they perceived others as likely to question their credibility in an absolute sense when uncertainty could be attributed to their internal state of knowledge, it appears that they experienced a legitimate credibility threat under internal uncertainty (as opposed to a minor concern). However, when uncertainty could be attributed to external circumstances, they did not seem to give much credence to the possibility that people would question their credibility should they reveal their uncertainty.

Experiment 3

Experiment 3 builds on Experiment 2 in three ways. First, it addresses a potential demand effect of Experiment 2 by manipulating participants' source of uncertainty in a different manner. While Experiment 2 directly manipulated whether participants could attribute uncertainty to inadequate knowledge or unpredictable external circumstances, the directness of the manipulation may have caused them to respond in a manner that they felt was consistent with their state of knowledge (i.e., that they were incompetent and incapable of providing credible advice) without actually considering how others might perceive their displays of uncertainty. To address this issue, Experiment 3 manipulates participants' source of uncertainty more indirectly by varying the manner in which uncertainty is linguistically represented. Linguistic differences in how uncertainty is represented causes people to differentially attribute it to internal or external causes (Fox & Ülkümen, 2011; Ülkümen, Fox, & Malle, 2015). Specifically, people tend to infer that when individuals make self-focused statements about their confidence in the accuracy of their own judgment (internal mode statements; i.e., "I am 50% sure of X"), the degree of certainty they convey is attributable to their internal state of knowledge. However, people tend to infer that probability statements referring to an outcome under consideration (external mode statements; i.e., "there is a 50% chance of X") reflect a degree of certainty that is attributable to external events beyond the speaker's control. Using this insight, I vary whether participants are presented with information about their degree of certainty that is linguistically presented in a manner consistent with internal or external causes in Experiment 3.

A second goal of Experiment 3 is to compare the credibility threat experienced by participants under uncertainty to that which they experience under certainty. While Experiment 2 found evidence that participants perceive a threat under internal uncertainty in absolute terms, it

⁵ To assess whether the effect varied across scenarios, I conducted a preliminary analysis using a 3 (Scenario) X 2 (Domain Knowledge) mixed ANOVA. The interaction term was not significant, $F(1, 100) = 0.10$, $p = .919$, suggesting that the effect size is similar across scenarios.

does not address whether participants actually perceive a lower credibility threat when their degree of certainty is high. If people engage in certainty posing as a means of compensating for a credibility threat under uncertainty, then they should not perceive a credibility threat when they are highly certain of the truth.

The third goal of Experiment 3 is to include a measure of perceived instrumental outcomes associated with conveying uncertainty. While participants may associate internal uncertainty with a credibility threat, it does not necessarily mean that they believe it will prevent them from achieving desirable economic outcomes. If participants perceive internal uncertainty as being detrimental to their economic prospects, then this would suggest that they not only have social motives to engage in certainty posing, but that the inability to create a favorable impression on others may hinder their economic success. Thus, Experiment 3 considers an outcome of particular economic consequence to advisors: their ability to attract and retain clients.

Participants

With the goal of obtaining a similar sample size to Experiment 2, I recruited 100 mTurkers to complete a decision-making survey in exchange for \$0.75. Their mean age was 32.43 years ($SD = 10.31$) and 32% of them were female. I did not exclude any participants from the analyses.

Procedure

Participants read an adapted version of the financial advice scenario from Experiment 2. The first screen they read was identical to the first screen of the scenario in Experiment 2 (see Appendix A). However, the second screen was adapted to contain a manipulation of both their degree of certainty and the manner in which their degree of certainty was linguistically presented. Participants' degree of certainty was manipulated in within-subjects fashion while the linguistic representation of their degree of certainty varied between subjects. To accomplish this, each participant read two scenarios that were linguistically framed in a similar fashion. However, in one version of the scenario, they were completely uncertain, while in the other version, they were completely certain. The scenarios were presented to each participant in a randomized order.

To manipulate the manner in which participants' degree of certainty was linguistically presented, I created two phrases that differed linguistically, but normatively conveyed the same unambiguous information. Though people often use terms like "sure" and "confident" when conveying internal uncertainty (Fox & Ülkümen, 2011; Ülkümen, Fox, & Malle, 2015), these can have an ambiguous meaning when accompanied by a precise probability. For example, it is difficult to know whether the statement "I am 50% confident" implies that the speaker is completely uncertain (i.e., no way to know whether he or she is capable of making an accurate prediction) or moderately certain. To avoid this issue, participants were given probability-framed statements in both conditions, but I varied whether the probabilities were linguistically framed with respect to the accuracy of their own judgment (personal focus) or to the likelihood of one particular outcome (situation focus). For example, in the personal focus linguistic frame condition, participants read the following [uncertainty condition / certainty condition]:

Suppose that after evaluating your client's options, you conclude that there is a [50% / 100%] chance that you can accurately tell your client which investment will earn the best return.

You believe that Investment B is the best option.

In contrast, the situation focus linguistic frame condition read as follows:

Suppose that after evaluating your client's options, you conclude that there is a [50% / 100%] chance that Investment B will earn your client a better return than Investment A.

Note that while the statements linguistically differ across conditions, they both imply that participants believe there is either a 50% or 100% chance of Investment B earning the best return. In the personal focus condition, participants are first told about their confidence in the likelihood of their prediction being accurate before making a prediction that Investment B will earn a better return than Investment A. For example, in the uncertainty condition, participants believe there is a 50% chance that they can accurately identify the investment that will earn the best return. They are then told that they believe Investment B is the better option. From a normative standpoint, this means they believe "there is a 50% chance that Investment B will earn the better return," which is exactly how participants are prompted about their degree of certainty in the situation focus condition.

Credibility threat. I assessed the extent to which participants perceived a credibility threat using the same measure as Experiment 2 ($\alpha = .70$). Participants were prompted in a manner specific to their experimental condition. In the personal focus condition, participants were prompted with the following: "If I reveal my belief that there is a ___% chance that I can accurately identify the best investment, my client will..." In the situation focus condition, participants were prompted exactly as they were in Experiment 2 ("If I reveal my belief that there is a ___% chance of Investment B earning a better return than Investment A, my client will..."). Under certainty, the blank was filled with "100%"; under uncertainty, it was filled with "50%."

Hiring likelihood. In addition to measuring credibility threat, I also asked participants about their likelihood of being hired again by the client in the future—an outcome with meaningful economic consequences to advisors. Participants were prompted to consider their client's response to them revealing their belief in an identical fashion to the credibility threat measure. They indicated their agreement with the statements "my client will not hire me again in the future" and "my client will seek the advice of my competitors in the future" ($\alpha = .82$). The items were reverse-scored so that higher numbers reflect a greater hiring likelihood and averaged to reflect a measure of participants' likelihood of being hired again in the future.

Results

I analyzed the credibility threat and hiring likelihood variables using a 2 (linguistic frame: personal focus or situation focus) X 2 (certainty: uncertain or certain) mixed ANOVA with linguistic frame treated as a between-subjects variable and certainty treated as a within-subjects variable (see Figure 1 for conditional means). Following these analyses, I conducted an exploratory mediation analysis. Overall, I predicted that participants would perceive the expression of uncertainty (as opposed to certainty) to be detrimental to their ability to be hired again in the future in the personal focus linguistic frame condition, but not in the situational focus linguistic frame condition. I also predicted that this effect would be mediated by conditional differences in credibility threat.

Credibility threat. I identified two main effects on the credibility threat measure. First, participants perceived a greater credibility threat in the personal focus condition than in the situation focus condition, $F(1, 98) = 5.89, p = .017, d = 0.49, 95\% \text{ CI} = [0.09, 0.89]$. Second,

consistent with the notion that people associate a greater credibility threat with uncertainty than certainty, participants perceived a greater threat to revealing their belief when under uncertainty than when under certainty, $F(1, 98) = 23.49, p < .001, d = 0.98, 95\% \text{ CI} = [0.57, 1.39]$. However, this effect was qualified by a linguistic frame X certainty interaction, $F(1, 98) = 16.28, \eta_p^2 = .14$. In the personal focus condition, participants perceived a greater credibility threat under uncertainty than under certainty, $F(1, 49) = 29.48, p < .001, d = 0.61, 95\% \text{ CI} = [0.05, 1.18]$. However, they were indifferent as to whether certainty or uncertainty posed a greater threat to their credibility in the situation focus condition, $F(1, 49) = 0.50, p = .484$. This finding suggests that relative to circumstances where they were certain, participants perceived a greater credibility threat when information was linguistically framed in a manner suggesting that they could attribute their uncertainty to their internal state of knowledge (the personal focus condition) as opposed to circumstances beyond their control (the situation focus condition). In other words, they believed that they would seem more credible to others when conveying certainty as compared to uncertainty that could be attributed to internal uncertainty; they did not believe that conveying certainty would make them seem more credible than conveying uncertainty that could be attributed to external factors.

Replicating the pattern in Experiment 2, participants perceived a greater credibility threat when they could attribute uncertainty to their internal state of knowledge (personal focus linguistic frame) than when they could attribute uncertainty to external factors (situation focus linguistic frame), $t(98) = 4.48, p < .001, d = 0.90, 95\% \text{ CI} = [0.49, 1.32]$. As in Experiment 2, participants also experienced a credibility threat when uncertainty could be attributed to their internal state of knowledge; they generally agreed with the notion that others would question their credibility (relative to the neutral scale midpoint) when they were uncertain and presented with a personal focus linguistic frame, $t(49) = 4.33, p < .001$. However, when presented with a situation focus linguistic frame under uncertainty, they felt that others were unlikely to question their credibility relative to the neutral scale midpoint, $t(49) = 2.03, p = .048$. In both conditions in which they were certain, participants' perceived credibility threat fell below the scale midpoint (both $ps < .01$). These findings not only suggest that participants perceived a credibility threat in an absolute sense when information was framed in a manner suggesting that they could attribute uncertainty to their internal state of knowledge, but also that they were relatively unconcerned about people questioning their credibility when information was framed in manner suggesting that external factors were likely responsible for their uncertainty. Taken into consideration with the finding that participants were ambivalent about whether uncertainty or certainty would be more likely to undermine their credibility in the situation focus condition, it appears that participants only had qualms about conveying uncertainty when they were likely to attribute their uncertainty to inadequate knowledge.

Hiring likelihood. I found a similar pattern of results for the hiring likelihood variable as for the credibility threat variable. First, participants perceived their likelihood of being hired again as lower in the personal focus linguistic frame condition than in the situation focus linguistic frame condition, $F(1, 98) = 18.79, p < .001, d = 0.88, 95\% \text{ CI} = [0.47, 1.29]$. They also perceived it as less likely they would be hired again under uncertainty than under certainty, $F(1, 98) = 39.72, p < .001, d = 1.27, 95\% \text{ CI} = [0.84, 1.70]$. However, this effect was qualified by a statement type X certainty interaction, $F(1, 98) = 17.27, p < .001, \eta_p^2 = .15$. Whereas participants felt they would be less likely to be hired when conveying uncertainty relative to certainty in the personal focus condition, $F(1, 49) = 42.53, p < .001, d = 1.31, 95\% \text{ CI} = [0.88, 1.74]$, they did not see much of a difference between conveying uncertainty versus certainty in the situation

focus condition, $F(1, 49) = 3.12, p = .083$. Consistent with the findings of the credibility threat variable, when participants viewed information that was framed in a manner suggesting that their uncertainty was attributable to inadequate knowledge, they perceived themselves as less likely to achieve a desirable economic outcome (being hired) than when they could convey certainty in their judgment. However, when the information they were presented with was framed in a manner consistent with the notion that external circumstances were responsible for their uncertainty, participants did not perceive themselves as less likely to achieve a desirable economic outcome relative to when they could convey certainty in their judgment. Thus, participants generally felt that conveying certainty would be beneficial for their economic success, but only in comparison to the alternative of conveying internal uncertainty.

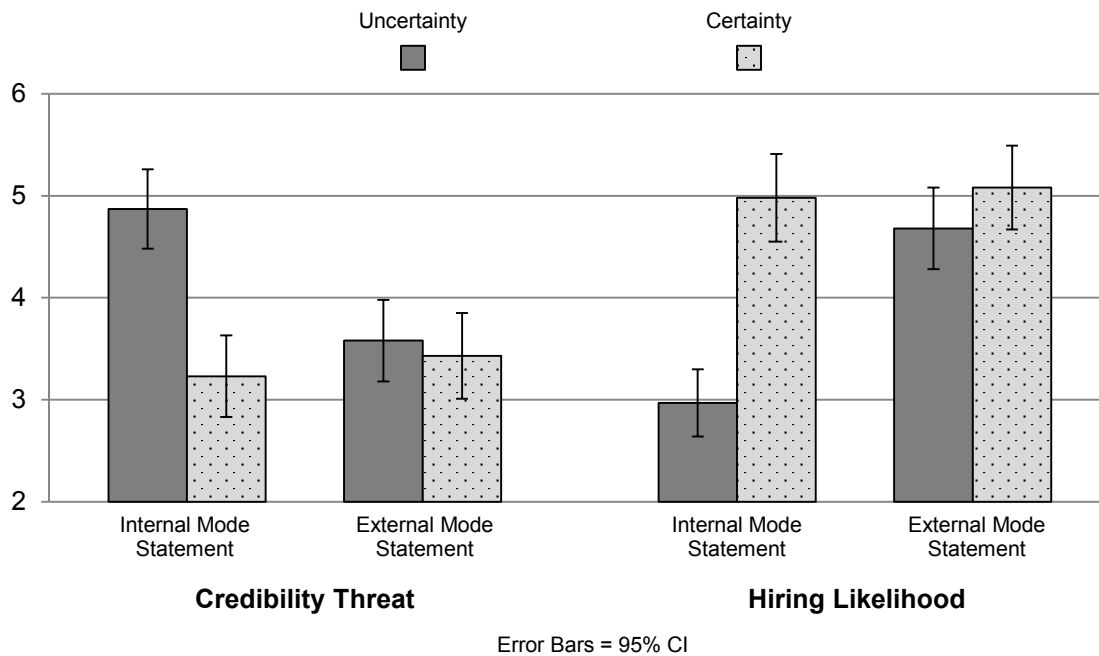


Figure 1. Experiment 3: Credibility threat and hiring likelihood by experimental condition.

Mediation analysis. I conducted a mediation analysis to determine whether the perception of a credibility threat could account for participants' assessment that conveying uncertainty would make them less likely to be hired again than conveying certainty in the internal mode statement condition, but not in the external mode statement condition. To conduct this analysis, I used the multilevel mediation procedure outlined by Krull and MacKinnon (2001). First, I replicated the statement type X certainty interaction on the hiring likelihood ($B = 1.61$) and credibility threat ($B = 1.49$) variables. Finally, I found that the effect of the linguistic frame X certainty interaction on hiring likelihood was reduced in magnitude when controlling for credibility threat ($B = 0.58, p = .029$), while the credibility threat variable was a strong predictor of hiring likelihood ($B = -0.69, p < .001$). Consistent with these analyses, a bootstrap procedure with 10,000 replications revealed a significant indirect effect of credibility threat on the relationship between the linguistic frame X certainty interaction and hiring likelihood, $z = 4.97, p < .001$, indirect effect = 1.03, 95% CI = [0.77, 1.42]. In a follow-up analysis, I confirmed that while there was an indirect effect of credibility threat on the relationship between participants'

degree of certainty and their perceived hiring likelihood in the internal mode statement condition, $z = 5.95$, $p < .001$, indirect effect = 1.04, 95% CI = [0.82, 1.47], there was no such indirect effect in the external mode statement condition, $z = 0.87$, $p = .384$, indirect effect = 0.11, 95% CI = [-0.15, 0.34]. This analysis suggests that participants' perception of a credibility threat could account for their tendency to perceive a lower likelihood of being hired under uncertainty relative to certainty in the internal mode statement condition, but not in the external mode statement condition.

Discussion

In support of the findings from Experiment 2, this study provides evidence that people perceive a credibility threat when information is presented to them in a manner that suggests they can attribute uncertainty to internal factors. In contrast, they do not perceive a credibility threat when information is presented to them in a manner that suggests they can attribute uncertainty to external factors. This experiment not only improves on Experiment 2 by replicating the findings using a manipulation less prone to demand effects, but it also allows for a comparison to counterfactuals where participants can convey certainty. Critically, I found that participants only perceived the expression of certainty as likely to enhance their credibility when they were under internal uncertainty.

Experiment 3 also builds on Experiment 2 by documenting that people not only associate credibility with their degree of certainty, but also with their ability to achieve desirable economic outcomes. When evaluating a meaningful economic outcome to advisors (the ability to be hired by and retain clients), participants perceived certainty displays as a means to improving their economic success—but primarily in comparison to internal uncertainty. This finding supports the notion that participants perceived certainty posing as a valid route to not only increasing their credibility, but also to increasing their chances of obtaining economic success when under internal uncertainty.

Experiment 4

Experiments 2 and 3 provide evidence that internal uncertainty activates a credibility threat that can create a motive to engage in certainty posing, but the mechanism by which this occurs is unclear. While participants were aware of the underlying cause of their uncertainty, it is unclear why they would assume that this would influence the judgment of others who may not necessarily be aware of the reasoning behind participants' uncertainty. In Experiment 4, I examine whether an egocentric social projection process can explain the effect. Specifically, I consider whether advisors' assumptions about the source of their uncertainty contaminates their judgment such that they assume it will be transparent to others when there is ambiguity surrounding how others will interpret the revelation of uncertainty. For example, Savitsky and Gilovich (2003) found that while people are prone to an illusion of transparency where they assume that others will detect any anxiety they experience in response to a threat. However, they found that this tendency is attenuated when people are provided with direct information about how others are likely to perceive their behavior. If participants' experience of a greater credibility threat under internal uncertainty than under external uncertainty can be explained by their assuming a credibility threat will be transparent to others, then the removal of ambiguity surrounding how others will interpret uncertainty should eliminate the effect of one's source of certainty (as manipulated by the linguistic frame) on credibility threat.

To test this, I replicate and extend on Experiment 2 by not only manipulating how participants' uncertainty is linguistically framed (personal focus vs. situation focus), but also manipulating whether participants explain the source of their uncertainty to their client in a manner that is either ambiguous, clearly reveals inadequate knowledge as the cause, or suggests that external uncertainty is the cause. While I expect to replicate the effect in Experiments 2 and 3 where personal focus linguistic frames generate a greater credibility threat than situation focus linguistic frames under uncertainty, I also predict that the effect will be eliminated when ambiguity is removed. Specifically, I predict that when participants explicitly reveal internal causes as the source of their uncertainty, they will perceive a greater credibility threat than when they explicitly reveal external causes as the source of their uncertainty. If participants' exposure to personal and situation focus statements differentially activates credibility concerns due to their assumptions about the source to which others will attribute their uncertainty, then the two types of statements should no longer activate credibility concerns when participants clearly explain the source of their uncertainty to others. Furthermore, I predict that under ambiguity about how others will perceive one's uncertainty, personal focus linguistic frames will generate a similar credibility threat to the explicit revelation of internal uncertainty, while situation focus linguistic frames will be perceived as similarly credible to the explicit revelation of external uncertainty. This pattern would support the assumption that personal focus linguistic frames caused participants to believe others would attribute their uncertainty to internal causes while situation focus linguistic frames would cause them to believe others would attribute their uncertainty to external factors beyond their control.

Participants

To obtain a similar per-cell size sample ($n = 50$) as Experiment 4 in order to replicate the main effect of linguistic frame on credibility threat in the uncertainty condition, I recruited 300 mTurkers completed a decision making survey in exchange for \$0.50. Their mean age was 32.34 years ($SD = 11.39$) and 35% of them were female. I did not exclude any participants from the analyses.

Procedure

Participants read an adapted version of the financial advisor scenario from Experiments 2 and 3. They were randomly assigned to experimental conditions in a 3 (client attribution: internal uncertainty, ambiguous uncertainty, or external uncertainty) X 2 (linguistic frame: personal frame or situation frame) between-subjects design. The ambiguous client attribution condition was a direct replication of the two statement type conditions under uncertainty in Experiments 2 and 3. However, in the internal and external uncertainty client attribution conditions, participants were explicitly informed precisely why they were uncertain about which investment would earn the better return and discussed their reasoning with the client. Participants in the internal uncertainty client attribution read the following [personal focus linguistic frame / situation focus linguistic frame]:

After evaluating the two investments, you realize that you are unknowledgeable about them and inexperienced at advising people about investing in the industry to which they belong. Because you are unknowledgeable and inexperienced, you have trouble recommending one investment over the other. You explain all of this to your client and conclude that there is a [50% chance that you can accurately determine

whether / 50% chance that] Investment B will earn a better return than Investment A. Due to the uncertainty stemming from your lack of knowledge about the investments and your inexperience at advising others about the industry to which they belong, you recommend Investment B based on your client's preferences.

Participants in the external uncertainty condition read the following:

After evaluating the two investments, you realize that you are quite knowledgeable about them and experienced at advising people about investing in the industry to which they belong. Despite being knowledgeable and experienced, you have trouble recommending one investment over the other because they are quite similar on a number of indicators of future success. You explain all of this to your client and conclude that there is a [50% chance that you can accurately determine whether / 50% chance that] Investment B will earn a better return than Investment A. Due to the uncertainty stemming from your knowledge about the investments and your experience at advising others about the industry to which they belong, you recommend Investment B based on your client's preferences.

Credibility threat. I measured credibility threat using the same measure and prompt as Experiment 3 ($\alpha = .82$).

Results

A 3 (client attribution) X 2 (linguistic frame) ANOVA revealed two main effects. First, there was a main effect of the client's attribution of the uncertainty source, $F(2, 294) = 8.83, p < .001, \eta_p^2 = .06$. As predicted, participants experienced a greater credibility threat when the client could easily attribute their uncertainty to internal uncertainty ($M = 4.64, SD = 1.40$) than when the client could easily attribute it external uncertainty ($M = 3.81, SD = 1.39$), $t(198) = 4.20, p < .001, d = 0.60, 95\% CI = [0.31, 0.88]$. While the credibility threat they perceived in the ambiguous uncertainty source condition did not differ from the internal uncertainty source condition, $t(198) = 0.87, p = .388$, they experienced a greater credibility threat in the ambiguous uncertainty source condition than in the external uncertainty source condition, $t(198) = 2.93, p = .004, d = 0.42, 95\% CI = [0.10, 0.79]$.

The second main effect was one where participants perceived a greater credibility threat in the personal focus linguistic frame condition ($M = 4.54, SD = 1.54$) than in the situation focus linguistic frame ($M = 4.05, SD = 1.50$), $F(1, 294) = 8.22, p = .004, d = 0.33, 95\% CI = [0.10, 0.56]$. As predicted, this effect was qualified by a client attribution X linguistic frame interaction, $F(2, 294) = 8.95, p < .001, \eta_p^2 = .06$ (see Figure 2). In a direct replication of Experiment 3, participants perceived a greater credibility threat when the client's attribution of their uncertainty was ambiguous and they were presented with personal focus linguistic frame as opposed to a situation focus linguistic frame, $t(98) = 4.80, p < .001, d = 0.971, 95\% CI = [0.56, 1.39]$. There was no difference in the credibility threat associated with personal and situation focus linguistic frames when the client could unambiguously attribute participants' uncertainty to their internal state of knowledge, $t(98) = 0.39, p = .700$, or external circumstances, $t(98) = 0.50, p = .617$.

Consistent with the assumption that participants believed their client would attribute their uncertainty to internal causes in the personal focus linguistic frame condition, participants perceived a similar credibility threat when presented a personal focus linguistic frame under

ambiguity as they did when presented with a personal focus linguistic frame that would unambiguously be interpreted by the client as attributable to internal uncertainty, $t(102) = 1.68, p = .096$. In these two conditions, participants also perceived their client as more likely to question their credibility than not relative to the neutral scale midpoint (both $ps < .01$), suggesting that they experienced a credibility threat in absolute terms when their client could unambiguously attribute their uncertainty to their internal state of knowledge. However, in comparison to when the personal focus linguistic frame could unambiguously be interpreted by the client as being attributable to external uncertainty, participants experienced a greater credibility threat under ambiguity, $t(100) = 5.06, p < .001, d = 1.01, 95\% CI = [0.60, 1.42]$; the magnitude of their credibility threat was also indistinguishable from the neutral scale midpoint in this condition, $t(49) = 1.23, p = .226$. In contrast, when participants were presented with a situation focus linguistic frame and their client's attribution was ambiguous, they experienced a similar credibility threat to the situation focus condition where the client could unambiguously attribute their uncertainty to external causes, $t(96) = 0.63, p = .530$; in comparison to the situation focus linguistic frame condition where the client could unambiguously attribute uncertainty to participants' state of knowledge, the situation focus linguistic frame statement generated less of a credibility threat when the client's attribution was ambiguous, $t(94) = 2.85, p = .005, d = 0.59, 95\% CI = [0.18, 1.00]$. Participants did not experience a credibility threat in absolute terms relative to the neutral scale midpoint in the situation focus linguistic frame condition when their client's attribution for their uncertainty was ambiguous or could clearly be blamed on external causes (both $ps > .213$), but they did experience one when their client could clearly attribute their uncertainty to their internal state of knowledge, $t(51) = 3.38, p = .004$. This pattern of findings suggests that the personal focus linguistic frame caused participants to believe their client would attribute their uncertainty to their internal state of knowledge while the situation focus linguistic frame statement caused participants to believe their client would attribute their uncertainty to external causes. Taking this finding into account with the prior analyses demonstrating that the effect of linguistic frame on perceived credibility threat was eliminated when participants' source of uncertainty could be unambiguously interpreted by their client, it appears that participants assumed that their client would form the same inferences they did themselves about the cause of their uncertainty. Thus, unless they were presented with an opportunity to unambiguously explain the source of their uncertainty to the client as being driven by internal or external causes, they tended to project any assumptions about their source of uncertainty (as activated by the linguistic frame manipulation) onto their client, which influenced the extent to which they perceived a credibility threat to revealing uncertainty.

Discussion

Experiment 4 replicated the findings of Experiment 3 where personal focus linguistic frames generated a greater credibility threat under uncertainty than situation focused linguistic frames made statements under uncertainty. This experiment also provides evidence consistent with Experiment 2 that people perceive the greatest threat to conveying uncertainty when they can attribute their uncertainty to internal causes such as inadequate knowledge. However, it finds that this effect is limited to circumstances where there is ambiguity surrounding the source to which others will attribute one's uncertainty. When participants' source of uncertainty was clearly revealed to a perceiver, they no longer distinguished between personal and situation focus linguistic frames with respect to the degree to which their credibility would be undermined. Overall, this suggests that participants projected their attributions for what caused their own

uncertainty and assumed it would spill over into perceivers' assessment of their credibility. When there was ambiguity surrounding what a perceiver would infer about participants' source of uncertainty, exposure to personal focus frames that tend to be attributed to one's state of knowledge activated a credibility threat while situation focus frames that tend to be attributed to external circumstances did not. However, when there was no longer any ambiguity surrounding what source a perceiver would attribute participants' uncertainty to, participants no longer projected their own attributions onto the perceiver's assessment of their credibility.

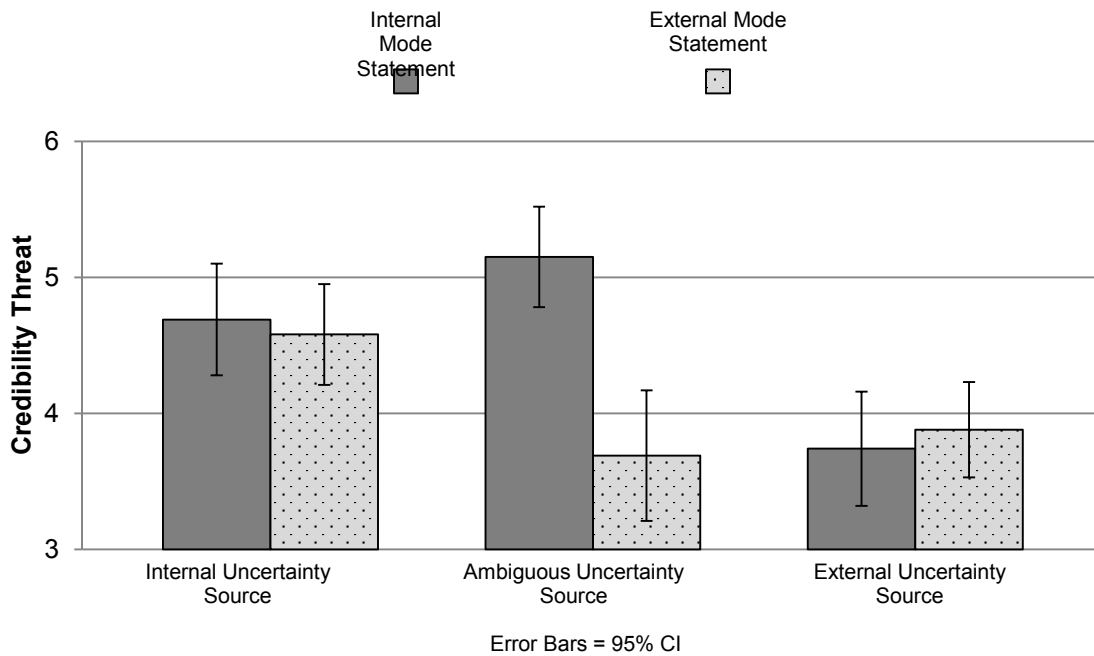


Figure 2. Experiment 4: Credibility threat by experimental condition.

Discussion

Experiment 4 replicated the findings of Experiment 3 where personal focus linguistic frames generated a greater credibility threat under uncertainty than situation focused linguistic frames mode statements under uncertainty. This experiment also provides evidence consistent with Experiment 2 that people perceive the greatest threat to conveying uncertainty when they can attribute their uncertainty to internal causes such as inadequate knowledge. However, it finds that this effect is limited to circumstances where there is ambiguity surrounding the source to which others will attribute one's uncertainty. When participants' source of uncertainty was clearly revealed to a perceiver, they no longer distinguished between personal and situation focus linguistic frames with respect to the degree to which their credibility would be undermined. Overall, this suggests that participants projected their attributions for what caused their own uncertainty and assumed it would spill over into perceivers' assessment of their credibility. When there was ambiguity surrounding what a perceiver would infer about participants' source of uncertainty, exposure to personal focus frames that tend to be attributed to one's state of knowledge activated a credibility threat while situation focus frames that tend to be attributed to external circumstances did not. However, when there was no longer any ambiguity surrounding

what source a perceiver would attribute participants' uncertainty to, participants no longer projected their own attributions onto the perceiver's assessment of their credibility.

Experiment 5

Experiments 2-4 demonstrate that when people can attribute uncertainty to their internal state of knowledge, they experience a credibility threat. As documented by Experiment 4, this credibility threat is largely the product of a process where people assume that their source of uncertainty is transparent to others when there is ambiguity about others' attributions. This could potentially provide people with a motive to engage in certainty posing when they believe others will attribute their uncertainty to internal causes. However, because these studies do not actually measure participants' likelihood of engaging in certainty posing, it is unclear whether people act on the perception of a credibility threat and actually engage in certainty posing. Experiment 5 directly tests whether people are more likely to engage in certainty posing as a means of influencing others' decisions when conveying internal uncertainty than when conveying external uncertainty. To do this, I manipulate whether participants must convey their degree of certainty using a personal focus linguistic frame or a situation focus linguistic frame. As suggested by Experiments 3 and 4, these two frames are associated with internal and external uncertainty, respectively.

Participants

254 mTurkers played a strategic choice game in exchange for a minimum payment of \$1.00. This sample size was chosen because it could allow me to detect an effect size of $d = 0.5$ with at least 95% power. Their mean age was 33.36 years ($SD = 10.32$) and 41% of them were female. Though participants were required to complete a series of reading comprehension questions before they could proceed, they were given as many opportunities as needed to comprehend the experimental procedures. As such, there are no data exclusions.

Procedure

Participants played an adapted version of the Cheap Talk Game (Gneezy, 2005), which is a paradigm involving a message sender and a message receiver. In the game, message senders are told the precise payoffs associated with two payment options that determine both parties' payoffs in the game. However, there is an information asymmetry such that message receivers are not told about these payoffs. Instead, receivers must rely on a message from the sender that recommends one of the payoff options. Because receivers make the choice about which payoff option is enacted and senders are aware of the information asymmetry, senders have an opportunity to send a deceptive message to receivers so that they can influence them to select the payoff option that is in their own economic self-interest.

To adapt the paradigm for the study of certainty posing, I made two key adaptations. First, I altered the messages typically sent by receivers so that rather than restricting participants towards conveying factual recommendations (i.e., "Option B will pay you more money than Option A"), they could incorporate information about the probability of one option being best (i.e., "there is a ___% chance that Option B will pay you more money than Option A). Second, I imposed uncertainty surrounding the optimal payoff option for the receiver. Typically, the game provides participants with payoffs that are known with certainty; to induce uncertainty and present participants with an opportunity to engage in certainty posing, I created a payoff option

that had a 50% probability of being worse for the receiver and a 50% probability of being the better option. Participants received the following information about the two payoff options:

Option A

\$1.00 to you and \$2.00 to the other player

Option B

A 50% chance of one of the following:

\$1.25 to you and \$2.50 to the other player

\$1.25 to you and \$0.50 to the other player

In the interest of cutting costs while avoiding deception, I collected data from a separate sample of receivers ($N = 40$) and simulated senders' payoffs on the basis of these responses. As senders' payoffs were derived from such a small sample, I do not analyze receivers' decisions, instead focusing on senders' choice of message.

Statement type manipulation. Senders were randomly assigned to personal and situation focus linguistic frame conditions. I manipulated linguistic frame by varying the linguistic structure of the message senders would have to send receivers, thus manipulating their perception of what source receivers would attribute the content of their message. The personal focus condition was meant to generate a presumption that receivers would attribute uncertainty to senders' internal knowledge about the game. In this condition, participants sent a message that read as follows: "There is a ___% chance that I can accurately tell you which option will pay you the most money." Participants filled in the blank by selection a percentage on a sliding scale ranging from 50 to 100 that was anchored at 50 (the truth). They then proceeded to recommend a payoff option to accompany their message.

In the situation focus condition, participants sent a message that read as follows: "There is a ___% chance that Option B will pay you more money than Option A." This statement was constructed such that senders were likely to presume that receivers would attribute uncertainty to external sources like statistical randomness. Participants used the same scale to fill in the blank as the one used in the internal mode statement condition.

Results

I first conducted an analysis to assess whether participants' likelihood of engaging in deception varied by experimental condition. To do this, I examined whether their likelihood of claiming a probability other than what they knew to be true varied by experimental condition. As expected, senders were more likely to engage in deception when sending a message with a personal focus (83%) than they were when sending one with a situation focus (56%), $\chi^2(1, N = 254) = 21.05, p < .001, d = 0.60, 95\% \text{ CI} = [0.35, 0.85]$. This suggests that participants were more likely to engage in some degree of certainty posing in the personal focus condition than they were in the situation focus condition.

In a secondary analysis, I examined the degree to which participants engaged in certainty posing by comparing the percentages they conveyed in their messages across conditions. Participants conveyed more certainty in the personal focus condition ($M = 82.64, SD = 18.55$) than they did in the situation focus condition ($M = 67.55, SD = 18.47$), $t(252) = 6.50, p < .001, d = 0.82, 95\% \text{ CI} = [0.56, 1.08]$. To further investigate whether this effect was completely accounted for by the higher rates of deception in the personal focus condition, I conducted a follow-up analysis that eliminated those participants who did not engage in any deception

whatsoever (i.e., they conveyed 50% certainty in their message). Even when limiting the scope of analysis to participants who engaged in deception, those in the personal focus condition ($M = 99.42$, $SD = 12.12$) conveyed more certainty than those in the situation focus condition ($M = 81.14$, $SD = 13.41$), $t(175) = 4.27$, $p < .001$, $d = 0.66$, 95% CI = [0.35, 0.97]. Thus, participants not only were more likely to engage in certainty posing when sending a message framed with a personal focus than they did when sending a message framed with a situation focus, but they also did so to a larger magnitude when they chose to do so.

Discussion

Experiment 5 directly builds on Experiments 2-4 by documenting a behavioral effect where people are more likely to engage in certainty posing when conveying uncertainty that they believe others will attribute to their internal state of knowledge rather than external factors. Relative to when they conveyed uncertainty that they believed others would attribute to external causes, participants not only were more likely to engage in certainty posing in order to influence others' judgment, but they did so to a larger magnitude when conveying uncertainty in a manner that they believed others would attribute to their internal state of knowledge. This finding helps validate the notion that the credibility threat activated by internal uncertainty motivates people to engage in certainty posing as a means of convincing others that their advice is worthy of being followed because they are knowledgeable about the situation at hand.

Experiment 6

Experiment 6 uses a simulated market for expert advice to examine whether an incentive scheme that motivates advisors to be hired by as many clients as possible can cause them to engage in certainty posing. Consumers of advice tend to value advisors who they perceive as possessing expertise (Goldsmith & Fitch, 1997; Harvey & Fischer, 1997) and credibility (Yaniv & Kleinberger, 2000; Yaniv & Milyavsky, 2007); given that Experiments 1 and 5 provide evidence that people intuit this and act on the intuition, then advisors should engage in certainty posing as a means of increasing their likelihood of being hired by others to provide advice.

Another goal of Experiment 6 is to examine the consequences of certainty posing on advisors and consumers of their advice. On the one hand, I consider the possibility that advisors who are motivated by an incentive scheme to be hired as often as possible will bias the accuracy of their own private beliefs by engaging in certainty posing. This would be consistent with a pattern of self-deception (e.g., Chance et al., 2011) where advisors bring their private beliefs in line with their public displays of certainty to avoid facing the reality that they have engaged in an ethically questionable behavior. On the other hand, I examine whether consumers of advice are adversely impacted by displays of certainty from advisors who are motivated by hiring incentives even when they are informed about these hiring incentives. Despite the evidence provided earlier in this paper documenting that certainty posing is a phenomenon that people readily engage in when motivated to manage impressions, I suspect that advisees will fail to adequately discount advisors' displays of certainty despite their knowledge of an incentive scheme that is likely to encourage certainty posing, in part because they are likely to anchor to the information they receive from advisees (e.g., Cain, Loewenstein, & Moore, 2005).

Participants

178 research participants were recruited to participate in an online study of stock market predictions. Though I had hoped to recruit a minimum of 100 advisors, I only managed to recruit 89 advisors over the course of two weeks from an on-campus research participant pool to complete the study in exchange for a minimum payment of \$4. To match the number of advisors, I then recruited 89 advisees from an undergraduate business course to complete the study in exchange for course credit. Advisors' mean age was 20.67 years ($SD = 2.84$) and 64% of them were female. Advisees' mean age was 21.38 years ($SD = 2.92$) and 41% of them were female. To ensure participants' comprehension of the experimental procedures, advisors and advisees alike were not allowed to continue onto the study until they correctly answered a series of reading comprehension questions. As all participants eventually passed the reading comprehension questions, I did not exclude any participants from the analyses.

Procedure

I created an experimental market for expert advice similar to the paradigm used by Radzevick and Moore (2011). There was a clear information asymmetry between advisors and advisees that could presumably help advisors make more accurate predictions than advisees. Advisors had an opportunity to signal their confidence in a prediction without revealing the actual prediction to advisees. On the basis of advisors' confidence, advisees then chose whether to pay a small fee to access advisors' predictions as a means of improving their own prediction accuracy. As the experimental procedure differed between advisors and advisees, I will review them separately.

Advisors. Advisors were informed that they would receive information about the value of various stocks at the beginning of each of the past twelve months and then would be asked to provide advice about the likely value of each stock at the beginning of the next month (Month 13) before indicating their confidence in the prediction. The stocks were five stocks selected from the S&P 500 at random, but to obscure their identity from participants, they were labeled Stocks A-E. While advisors had access to twelve months' worth of data for each stock, they were also informed that advisees only had access to the first three months' of data. In other words, advisors knew they had nine months' worth of more recent data than advisees. Advisors were then informed that advisees would have to pay a small fee in order to access each prediction, but that their confidence in a given prediction would be available to advisees before they make a decision about whether to access that particular prediction.

For each stock, advisors were prompted with twelve months' worth of data and asked to predict whether the stock's price would fall above or below a given reference value at the beginning of the upcoming month. The reference value selected for each stock was equal to the mean of the stock's price in the first three months that advisors had data for, which is the only information available to advisees. This reference value was selected to reinforce the information asymmetry to advisors, as it would be difficult for advisees to make an accurate prediction when the reference value they were given was in close proximity to the only data they could use in making their own predictions.

After being presented with a reference value and making a binary prediction about whether the stock's value would fall above ("the stock's value will be above \$ ___ at the start of Month 13") or below ("the stock's value will be below \$ ___ at the start of Month 13") the reference value at the start of the upcoming month, participants were then prompted to "tell your advisee how confident you are in your prediction." Before sending a message, they were reminded of their prediction and that the advisee would not be able to access their actual

prediction without paying a small fee to access it. Participants then sent the following message to advisees: “There is a ___% chance that I can accurately tell you whether the stock’s value will be above or below \$___ at the start of Month 13.” They filled in the blank by selecting a number on a sliding scale ranging from 50 (completely uncertain) to 100 (completely certain). Advisors completed this procedure for each of the five stocks (presented in a randomized order). Prior to providing advice on actual stocks used in the experiment, they completed a practice round on a hypothetical stock to acclimate them with the procedure.

Advisors provided advice for a total of five stocks. For each stock, they provided advice to a single advisor that was randomly paired with them on that particular stock; there were not any competing advisors. After providing advice on all five stocks, advisors were then told that they would evaluate each stock again, but this time they were encouraged to be as accurate as possible and that neither their predictions nor their confidence would be visible to advisees. To incentivize accuracy, they earned raffle tickets for a \$50 Amazon gift card. I awarded participants tickets in an identical fashion to the accuracy incentive condition of Experiment 1. However, rather than being ranked relative to other advisors according to their accuracy, they simply earned a number of raffle tickets that directly corresponded to their accuracy score as determined by the scoring rule. To reinforce the goal of promoting accuracy, participants read the following: “You earn more raffle tickets when you provide accurate estimates of a stock’s future value.” Advisors then completed the same procedure for each stock as when they provided advice, but rather than sending a message to advisees indicating their confidence, they were simply reminded of their prediction and told to “indicate how confident you are in this prediction.” They made a prediction by filling in the blank of the statement “there is a ___% chance that the stock’s value will be [above / below] \$___ at the start of Month 13” with a number ranging from 50 (completely uncertain) to 100 (completely certain).

Hiring incentive manipulation. Advisors were randomly assigned to incentive conditions where they were either incentivized to be hired as often as possible (hiring incentive condition) or not (no hiring incentive condition). In the hiring incentive condition, I entered participants into a raffle for a \$50 Amazon gift card with other advisors assigned to the same condition. They earned one raffle ticket for each instance an advisee elected to access their prediction for a particular stock. In the no hiring incentive condition, I also entered participants into a raffle for a \$50 Amazon gift card with other advisors assigned to the same condition. However, in this condition they earned one raffle ticket “in exchange for helping advisees by completing this study” and the number of times an advisee elected to access their predictions had no bearing on their likelihood of winning the raffle. In both hiring incentive conditions, advisors still completed a round of estimates in private where I incentivized them to be as accurate as possible.

Advisor certainty. I measured advisors’ confidence in the accuracy of their predictions when providing advice (advice certainty) and when making their own predictions in private while incentivized to be as accurate as possible (private certainty).

Advisees. Advisees were informed that they would receive information about the value of various stocks over a period of three months and that they would be paired with an advisor for each stock with twelve months’ worth of data. Advisees evaluated the same five stocks presented to advisors (in a randomized order). For each stock, advisees were prompted with three months’ worth of data and asked to predict whether the stock’s price would fall above or below a given reference value ten months after the last of the three months they had data for (Month 13). They were presented with the same reference value as advisors, which was equivalent to the mean of the stock’s price in the three months for which they had data.

However, accompanying advisees' data for each stock was a message from an advisor indicating the advisor's confidence in his or her prediction about the stock's value at the start of Month 13. The message read as follows: "There is a ___% chance that I can accurately tell you whether the stock's value will be above or below \$ ___ at the start of Month 13." Participants then chose whether to "pay a small fee (10%) to access the advisor's prediction." As advisees were incentivized to be as accurate as possible via raffle tickets for \$50 Amazon gift card, they lost 10% of any tickets they earned for a given stock if they elected to access the advisor's prediction. I selected a percentage of earnings as the cost of advice rather than a fixed fee to avoid the possibility of participants earning negative tickets. Advisees who elected to access the advisor's prediction saw the prediction before making their own prediction about the stock's value and indicating their confidence in their own prediction. Advisees who did not elect to access the advisor's prediction simply proceeded to make their own prediction and indicate their confidence.

In an identical fashion to advisors making their own private estimates, advisees indicated their confidence by filling in the blank of the statement "there is a ___% chance that the stock's value will be [above / below] \$ ___ at the start of Month 13" with a number ranging from 50 (completely uncertain) to 100 (completely certain). I incentivized them to be as accurate as possible in an identical fashion to advisors while they made their private estimates.

Hiring incentive manipulation. Advisees were randomly assigned to receive advice from advisors that either had hiring incentives or not in between-subjects fashion. They were also informed of their advisors' incentives immediately before beginning to evaluate stocks. Advisees in the hiring incentive condition were told: "Your predictions and confidence will have no bearing on advisors' outcomes. However, advisors' economic outcomes are directly tied to your choice of whether to access their predictions." In the no hiring incentive condition, they were told: "Your predictions, confidence, and choice of whether to access advisors' predictions will have no bearing on their economic outcomes."

Advisee certainty. To measure advisee certainty, I recorded advisees' certainty in the accuracy of their own predictions.

Advisee hiring decisions. I also measured whether advisees elected to receive an advisor's prediction for a particular stock.

Results

In addition to conducting separate analyses of advisors' and advisees' certainty, I also analyzed advisors' hiring decisions and conducted a mediation analysis to examine whether any conditional differences in certainty displayed by advisees could be accounted for by advisors' certainty. Summary statistics for each dependent variable are available in Table 1.

Advisor certainty. I analyzed advisors' certainty using a 2 (hiring incentive: yes or no) X 2 (forecast type: advice or private) mixed ANOVA where advisors' certainty type was treated as a within-subjects variable. While there were no main effects of either hiring incentive, $F(1, 87) = 0.75, p = .390$, or forecast type, $F(1, 87) = 2.44, p = .122$, the analysis revealed a hiring incentive X forecast type interaction, $F(1, 87) = 13.32, p < .001, \eta_p^2 = .13$. As documented in Table 2, advisors conveyed more certainty when providing advice in the hiring incentive condition than they did in the no hiring incentive condition, $t(87) = 2.79, p = .006, d = 0.60, 95\% CI = [0.17, 1.02]$. However, their private degree of certainty did not differ by condition, $t(87) = 1.06, p = .291$. While this suggests that the hiring incentive caused participants to engage in certainty posing, it also suggests that participants' private estimates were not influenced by their

hiring incentive. Given that participants conveyed more certainty in their advice than they did in private in the hiring incentive condition, $F(1, 45) = 11.41, p < .002, d = 1.01, 95\% \text{ CI} = [0.39, 1.62]$, but not in the no hiring incentive condition, $F(1, 42) = 2.80, p = .101$, it appears that despite participants' exaggerated certainty when motivated to be hired, they were aware of the need to adjust their degree of certainty downward when making their own private estimates. This suggests that participants knowingly engaged in certainty posing in an effort to increase their chances of being hired. Given that advisors' predictions about whether the price of stocks would fall above or below the reference value did not differ by condition when providing advice or when making private estimates (both $ps > .288$), conditional changes in their predictions cannot account for this pattern of results.

Table 1

Experiment 6: Means, Standard Deviations, and Correlations Between Dependent Measures

Variable	Mean	SD	1	2	3	4
1. Advisor certainty (advice)	81.33	12.92	--	--	--	--
2. Advisor certainty (private)	79.49	14.34	.33***	--	--	--
3. Advisee certainty	80.20	15.30	.50***	.18***	--	--
4. Advisee hiring decision	0.63	0.48	.40***	.16***	.59***	--

Note. Advisee hiring decision = 0 if not hired, 1 if hired.

*** $p < .001$.

Table 2

Experiment 6: Advisor Certainty by Hiring Incentive Condition and Forecast Type

	No Hiring Incentive	Hiring Incentive
Advice Certainty	78.44 ^a (8.12)	84.04 ^b (10.54)
Private Certainty	80.73 ^{ab} (8.44)	78.32 ^a (12.49)

Note. Numbers represent conditional means (standard deviation in parentheses). Means with different superscripts differ at $p < .05$.

Advisee certainty. As expected, advisees who were assigned to advisors with hiring incentives conveyed more certainty than those assigned to advisors without hiring incentives, $t(87) = 2.15, p = .035, d = 0.46, 95\% \text{ CI} = [0.04, 0.88]$. Advisees' predictions about whether stocks' future price would fall above or below the reference value did not differ by condition, $t(87) = 0.36, p = .721$.

To assess whether advisees discounted the advice they received in the hiring incentive condition, I conducted a follow-up regression analysis. I regressed advisees' certainty on hiring incentive, advisor certainty, and the hiring incentive X advisor certainty interaction (see Model 2 of Table 3). The analysis revealed a significant interaction effect, $t(85) = 2.18, p = .032, \beta = 1.61$. While advisors' certainty influenced advisees' certainty in both hiring incentive conditions, the effect was more pronounced in the no hiring incentive condition, $t(41) = 7.07, p < .001, \beta =$

0.74, than in the hiring incentive condition, $t(44) = 5.10, p < .001, \beta = 0.61$. Thus, participants correctly intuited that they should discount advisors' certainty in the hiring incentive condition, but they failed to do so to enough of an extent to overcome advisors' biased advice.

Advisee hiring decisions. Advisees elected to hire advisees slightly more frequently in the hiring incentive condition ($M = 3.39, SD = 1.27$) than in the no hiring incentive condition ($M = 2.86, SD = 1.28$), $t(87) = 1.96, p = .053$. While advisees' frequency of hiring advisors increased with advisors' certainty, $t(87) = 7.86, p < .001, \beta = 0.65$ (see Model 3 of Table 3), they appeared to discount advisors' certainty in the hiring incentive condition to a small degree relative to the no hiring incentive condition, $t(85) = 1.94, p = .056$ (see Model 4 of Table 3).

Interestingly, advisees' certainty was correlated with advisors' certainty even on stocks where advisees elected not to access their advisor's prediction, $r(164) = .63, p < .001$. This relationship was similar to advisees' certainty when they elected to access their advisor's prediction, $r(277) = .63, p < .001, z = 0.10, p = .920$. Thus, even though advisees used advisors' certainty to guide their hiring decisions, advisees were similarly confident in their own predictions irrespective of whether they actually paid a fee to access an advisor's prediction. Advisors' certainty spilled over onto advisees' certainty even when advisees did not value their advice enough to pay a fee to access it. This suggests that advisors' confidence was contagious and that mere exposure to confident advisors was sufficient to increase advisees' confidence in their own predictions. However, even though advisees' decisions about whether to hire an advisor had no influence on their certainty, it did impact their actual predictions by decreasing their likelihood of predicting that a given stock's price would be above the reference value at the start of Month 13 (60% when not hired vs. 82% when hired), $\chi^2(1, N = 445) = 26.76, p < .001$. While electing to access an advisor's prediction influenced advisees' predictions, it had no effect on advisees' confidence.

Table 3

Experiment 6: Regressions predicting advisee certainty and hiring frequency

Variable	Advisee Certainty		Hiring Frequency	
	(1)	(2)	(3)	(4)
Hiring incentive	0.54 (1.39)	26.03* (11.75)	0.06 (0.22)	3.70 (1.89)
Advisor certainty	0.58*** (0.07)	0.78*** (0.12)	(0.08)*** (0.01)	0.11*** (0.02)
Hiring incentive X advisor certainty		-0.32* (0.15)		-0.05 (0.02)

Note. Numbers represent OLS coefficient estimates (standard error in parentheses). Hiring incentive = 0 if in the no hiring incentive condition, 1 if in the hiring incentive condition. Hiring frequency = the number of times an advisee elected to access advisors' predictions.

* $p < .05$. *** $p < .001$.

Mediation analysis. Given that the advisor hiring incentive increased both the advice conveyed by advisors ($\beta = 0.29$) and advisees' certainty in their own predictions ($\beta = 0.22$), I conducted a mediation analysis to determine whether advisees' higher certainty in the hiring incentive condition relative to the no hiring incentive condition could be explained by the

certainty conveyed in advisors' advice. As detailed in Model 1 of Table 3, the effect of advisor hiring incentive on advisee certainty was reduced when accounting for the influence of advisor certainty ($\beta = 0.03$, $p = .698$). Taking this into consideration with the fact that advisor certainty strongly predicted advisee certainty when controlling for advisor hiring incentive ($\beta = 0.67$, $p < .001$), advisor certainty seems to mediate advisees' higher certainty in the hiring incentive condition. A bootstrap test with 10,000 replications supported this conclusion, $z = 2.64$, $p = .008$, indirect effect = 3.23, 95% CI = [0.92, 5.74].

Discussion

Consistent with the notion that people engage in certainty posing when motivated to manage impressions by projecting an image of expertise and credibility, advisors conveyed more certainty in their advice when motivated to be hired as often as possible than they did when not motivated by such a hiring incentive. Given that the incentive scheme manipulation used in this study closely resembles the difference between advisors who are compensated according to the number of clients they attract (hiring incentive condition) versus those who are paid a fixed salary by a firm irrespective of the number of clients they service (no hiring incentive condition), it raises the possibility that incentive schemes which reward advisors for attracting large numbers of clients may have the perverse consequence of motivating advisors to engage in misleading displays of confidence as a means of attracting clients. Because the experiment also documents that advisors' certainty can be contagious, this is clearly problematic to consumers of advice seeking to appropriately weigh decision risk. While forcing advisors to disclose their compensation scheme may seem like a reasonable way to alert consumers to situations where they are likely to be targets of certainty posing, the evidence in this experiment also documents that they are unlikely to sufficiently discount the certainty expressed by advisors with hiring incentives—despite their awareness of the need to do so.

Somewhat surprisingly, this experiment also documented that advisors were aware of the need to adjust their degree of certainty downward when making their own private estimates. This does not lend support to Hypothesis 4, which predicted that advisors' exaggerated certainty when motivated to engage in certainty posing (i.e., the hiring incentive condition) would bias their own judgment. Chance and colleagues (2011) documented evidence of self-deception where research participants deluded themselves about their ability on an IQ test after being advantaged by the presence of an opportunity to cheat; they found this even when it was in participants' economic self-interest to accurately forecast their performance on a future test. From a conceptual standpoint, the Chance et al. experiment was quite similar to the current one in that participants conducted a task (forecasting stock values), were differentially motivated to cheat on the task (hiring incentive manipulation), and were subsequently incentivized to accurately assess their ability on the task (the private certainty measure). Despite the similarities, one possible explanation for the different pattern of results may be the self-perceived importance of the task at hand to research participants. While both studies use participants at respected universities who likely identify as intellectuals to some degree, the Chance et al. experiment employs tasks that have strong potential to either uphold or threaten participants' identity (IQ and general knowledge tests), while the current one does not (predictions about the future value of unidentifiable stocks with very limited information). This raises the possibility that the perceived self-importance of a task may be a moderator of whether certainty posing can lead to self-deception that exacerbates overprecision in judgment.

General Discussion

Across a series of six experiments, this chapter documents certainty posing as a phenomenon while uncovering its underlying motives. In Experiment 1, participants motivated to convey expertise engaged in exaggerated displays of certainty relative to those motivated to be as accurate as possible (Hypothesis 1). Experiments 2-3 provide support for the account that uncertainty can activate a credibility threat that activates a motive to engage in certainty posing under internal uncertainty, but not under external uncertainty (Hypothesis 2). Furthermore, Experiment 4 builds on these studies by providing evidence that this pattern occurs due to a process where people assume the source of their uncertainty will be transparent to others. Experiment 5 provides behavioral evidence consistent with the notion that people engage in certainty posing as a compensatory behavior in response to a credibility threat activated under internal uncertainty (Hypothesis 3). Finally, Experiment 6 manipulated expertise-signaling motives via a hiring incentive in a simulated market for expert advice and examined the consequences of this hiring incentive on advisors and consumers of advice. Whereas advisors were able to engage in public displays of certainty without biasing the accuracy of their private judgment (a finding that does not lend support to Hypothesis 4), advisees they were paired with did not adequately discount their advice even when their hiring incentives were transparent (Hypothesis 5).

Theoretical Implications

Taken together, these studies make three primary theoretical contributions. First, they provide causal evidence that people engage in *strategic overprecision* with social motives in mind. While scholars like Yaniv and Foster (1995, 1997) have speculated that this may be the case, prior to this research there has been a surprising lack of evidence to support this argument (Moore et al., in press). While some scholars like Radzevick and Moore (2011) have alluded to the possibility that situational factors like market competition and learning via feedback about consumer choices can exacerbate overprecision in judgment, no known work has actually captured the phenomenon of strategic overprecision by differentiating between individuals' genuine private beliefs and those they convey publicly. By accomplishing this, the current research provides support for the claims made by Yaniv and Foster (1995, 1997) while highlighting the importance of considering social context in studying overprecision in judgment. Though the phenomenon is often described as a cognitive bias residing within an individual (e.g., Moore, Haran, & Morewedge, 2010; Moore & Healy, 2008; Gigerenzer & Hoffrage, 1995; Juslin et al., 2007), this research suggests that the bias can be exacerbated by strategic social considerations (although people clearly differentiate between their private beliefs and public displays as evidenced by Experiment 6). In this vein, the current research builds on recent work by scholars who document the strategic social benefits to displaying other forms of overconfidence (e.g., Anderson et al., 2012; Charness, Rustichini, & van de Ven, 2011).

A second contribution of the current research is that people may not always perceive a motive to engage in certainty posing. As documented in Experiments 2-4, an individual's source of uncertainty plays a critical role in determining whether they believe their credibility will be undermined if they convey uncertainty. In particular, when people can attribute their uncertainty to internal causes (i.e., inadequate knowledge), they tend to experience a credibility threat that they do not experience when they can attribute their uncertainty to external causes (i.e., statistical randomness). As evidenced by Experiment 5, this can make people more likely to engage in

certainty posing when conveying information in a manner suggesting they are under internal uncertainty as opposed to external uncertainty.

While this evidence sheds important light onto when certainty posing is particularly likely to occur, it raises several unanswered questions. First, is unclear whether a credibility threat can only be experienced by individuals who self-identify as experts in a domain. In all of the current studies, participants were either selected on the basis of their self-identified expertise (Experiment 1), asked to imagine they possess expertise (Experiments 2-4), or in a position of relative expertise due to an information asymmetry (Experiments 5 and 6). People primarily experience identity threats in domains that they highly identify with (Schmader, 2002; Steele, 1997; Steele, Spencer, & Aronson, 2002), so one might only expect certainty posing to occur as a compensatory strategy when self-identified experts are faced with evidence that they may not possess as much expertise as they previously believed (i.e., internal uncertainty).

A second unanswered question is that although internal uncertainty appears to activate a credibility threat due to presumptions that others will attribute one's uncertainty to insufficient expertise, it is unclear what behaviors others can enact to reduce this presumption. This could be a worthwhile avenue for future research to explore. For example, because statements focused on an individual's confidence (personal focus linguistic frames) activate a greater credibility threat than statements focused on the likelihood of an event (situation-focused linguistic frames), consumers of advice may be well advised to frame their questions with respect to the likelihood of outcomes (i.e., "how likely is X?") as opposed to an advisor's confidence (i.e., "how confident are you in X?"). Whereas the former question frame may generate the impression that one is tolerant of uncertainty because he or she perceives the situation as involving substantial external uncertainty, the latter frame may generate the impression that one is intolerant of uncertainty because he or she perceives expertise as the primary solution to reducing uncertainty—an impression that may activate a credibility threat in would-be advisors. Another effective tactic may be explicitly acknowledging an advisor's expertise while soliciting advice. Self-affirmations tend to reduce identity threats (Steele, Spencer, & Lynch, 1993), so if advisors are reminded of their expertise, they may not experience a credibility threat when faced with uncertainty.

A final question of potential interest to future research is whether people engage in certainty posing when the source of their uncertainty is ambiguous. The current research finds that people do not experience a credibility threat when uncertainty can be unambiguously attributed to external factors. However, there may be circumstances where one's source of uncertainty cannot be clearly attributed to internal or external factors. For example, if a stockbroker observes a sudden shock to a company's share price that was unexpected, it may be difficult for the broker to know whether the sudden price swing is due to random market fluctuations or a pending acquisition by the company that the broker was not privy to. In these types of situations, the prospect of revealing that one cannot account for his or her uncertainty may be perceived as akin to revealing internal uncertainty. On the one hand, this could activate a credibility threat that motivates advisors to engage in certainty posing. On the other hand, it could motivate them to seek an explanation for their uncertainty in a compensatory fashion (cf. Kay, Gaucher, Napier, Callan, & Laurin, 2008; Kay, Moscovitch, & Laurin, 2010; Laurin, Kay, & Moscovitch, 2008; Whitson & Galinsky, 2008). This may lead advisors to conveniently reason that their uncertainty was attributable to external forces beyond their control, thus enabling them to rationalize their uncertainty in a manner that does not activate a credibility threat.

A final theoretical contribution of the current research is that certainty posing appears to be a behavior that biases the judgment of targets without biasing the judgment of those who

engage in the behavior. As evidenced by Experiment 6, advisors who engaged in certainty posing contaminated the judgment of advisees without a concomitant biasing of their own judgment when they were later incentivized to be accurate. This suggests that advisors did not engage in self-deception to avoid facing the reality that they had engaged in unethical behavior, but rather that they had already rationalized their questionable behavior and were comfortable with admitting it to themselves. People often balance the pursuit of self-interest with the need to conceive of themselves as ethically upstanding individuals by only engaging in minor degrees of dishonesty (Mazar, Amir, & Ariely, 2008), so people may construe certainty posing as a relatively benign form of deception that is easily rationalized.

Advisees' failure to adequately discount advice from advisors with hiring incentives—despite their apparent awareness of the need to do so—raises questions about when certainty posing is likely to be effective. One notable limitation to Experiment 6 is that advisees did not receive feedback about advisors' accuracy, which may have hindered their ability to recognize the extent to which hiring incentives encouraged certainty posing. While accuracy feedback is clearly helpful in allowing consumers to determine when they should discount advice (Radzevick & Moore, 2011; Sah et al., 2013; Tenney et al., 2007, 2008), it is often noisy and difficult to obtain. As such, people fail to adequately attune to information about an advisor's accuracy unless it stems directly from a prior interaction with the same advisor (Radzevick & Moore, 2011) and it is easily obtained free of charge (Sah et al., 2013). Furthermore, people readily forgive inaccuracies when they appear justifiable (Tenney, et al., 2008). Therefore, while an idealized market system with unambiguous and transparent feedback about advisor accuracy may seem like a useful way to curtail the potential for certainty posing to be an effective tactic, such a system may not completely render certainty posing ineffective if consumers experience information overload, are forced to incur information search costs, or advisors have opportunities to craft post-hoc justifications for inaccurate advice. Furthermore, while such a system would seem to promote healthy competition between advisors that should decrease the extent to which their advice is biased, competition can have the perverse consequence of increasing advisors' tendency to behave in a self-interested manner (Sah & Lowenstein, 2015) while allowing advisors to learn about the benefits of conveying certainty by observing the practices of the most successful advisors (Radzevick & Moore, 2011).

Conclusion

Though the search of a parsimonious explanation for overprecision in judgment remains elusive (Moore et al., in press), the current research suggests that social motives to appear credible and convey expertise exacerbate overprecision in judgment. Whether one is an expert advisor, a media pundit, or even the President of the United States, people are often expected to convey certainty and doing so has the potential to bring a plethora of rewards. However, when a particular behavior is expected and rewarded, people are encouraged to engage in it—even at the cost of engaging in morally questionable behavior. Disingenuous displays of certainty are no different. Unfortunately, incentive schemes that encourage advisors to have clients call on their advice as frequently as possible are prevalent in advice markets. For example, a 2011 survey found that 85% of the revenue earned by financial advisory firms came from an asset-based fee structure, which rewards advisors for convincing their clients to invest increasing sums of money into their portfolios (Maxey, 2011). While consumers of advice may recognize the need to account for advisors' compensation schemes when determining how much to discount their displays of certainty, they fail to adequately do so in spite of their best efforts. Though often not

conceptualized as a conflict of interest, the evidence suggests that compensation schemes rewarding advisors for building a large base of clients with frequent advice requests encourage them to engage in disingenuous displays of certainty in the accuracy of their own judgment—a conflict of interest in its own right.

CHAPTER 2

The Perceived Ethicality of Certainty Posing

One who is concerned to report or conceal the facts assumes that there are indeed facts that are in some way both determinate and knowable... Someone who ceases to believe in the possibility of identifying certain statements as true and others as false can give only two alternatives. The first is to desist both from efforts to tell the truth and from efforts to deceive. This would mean refraining from making any assertion whatsoever about the facts. The second alternative is to continue making assertions that purport to describe the way things are but cannot be anything except bullshit. (Frankfurt, 2005, p. 15)

This quote from philosopher Harry Frankfurt's essay *On Bullshit* highlights the dilemma that exists in any circumstance where an individual is required to disclose information, but does not know the truth with certainty. On one hand, he or she can avoid any appearance of knowing the truth by honestly reporting the degree of uncertainty surrounding the disclosed information. On the other hand, the individual can either claim to know the truth with certainty or fail to qualify his or her response by accurately acknowledging the degree of uncertainty surrounding the truth. As documented in the prior chapter of this dissertation, people are often motivated to exaggerate their degree of certainty in order to convey expertise and credibility.

In this section of my dissertation, I will examine such exaggerations of the degree to which one is certain about the truth, or *certainty posing*. First, I will expand on the prior chapter by providing a more formal definition of certainty posing and differentiating it from two other forms of deception, namely *uncertainty posing* (exaggerations of the degree to which one is uncertain about the truth) and blatant deception (claiming to know something with certainty that one knows to be false). I will then argue that certainty posing is likely more common and easily rationalized than uncertainty posing and blatant deception. Finally, I will present the results of several experiments I conducted to test these propositions.

Defining Certainty Posing

Researchers have defined deception in a number of ways (e.g., Buller & Burgoon, 1996; DePaulo et al., 2003; Ekman, 2009; Ekman & Friesen, 1969; Zuckerman, DePaulo, & Rosenthal, 1981), with some definitions of deception being more inclusive than others. Though many characterizations of deception exist, a common thread shared by nearly all definitions is that a deceiver must believe that his or her claims are false (Burgoon & Buller, 1994; Vrij, 2008; Zuckerman, DePaulo, & Rosenthal, 1981). In order for a deceiver to consider his or her attempt to engender a belief as false, he or she must have knowledge of the truth. As such, research paradigms seeking to operationalize deception typically emphasize the importance of establishing ground truth, or a would-be deceiver's knowledge of some fact. This, of course, requires the fact in question to be known with certainty at the time of deception (Toma, Hancock, & Ellison, 2008; Vrij, 2008). This emphasis on the ground truth has tended to characterize liars as certain about the truth at the time of deception. In such instances, there are two ways in which an individual may actively deceive when faced with an inconvenient truth. In one instance, the individual may claim to know something with certainty that he or she knows to be false with certainty. I refer to such deception as blatant deception. However, in another instance, the individual may claim to be uncertain or unaware of the truth despite being absolutely certain

about the truth. This is what I characterize as uncertainty posing, or exaggerating the degree to which one is uncertain about the truth.

In contrast to the above instances where an individual knows the ground truth with certainty, there are many instances where he or she may not know the ground truth. Given the benefits that accrue to those who express certainty (Radzevick & Moore, 2011; Phillips, 1999; Price & Stone, 2004; Sah, Moore, & MacCoun, 2013; Sniezek & Buckley, 1995; Sniezek & Van Swol, 2001; Tenney, MacCoun, Spellman, & Hastie, 2007; Tenney, Spellman, & MacCoun, 2008), such circumstances where the ground truth is not known with certainty can present opportunities to claim that one knows the truth with a high degree of certainty. This is what I refer to as certainty posing, or exaggerating the degree to which one is certain about the truth.

Certainty Posing

In the interest of formally defining the act of certainty posing, suppose that an individual believes statement s to be true with probability p_s and attempts to convey that he or she believes s to be true with probability p_c . Furthermore, for the sake of simplicity, suppose that only one other possible state of the world (represented by the opposite of statement s) can be true should statement s not be true. Because a p_s of 0 or 1 would imply knowledge of the ground truth (s is certainly true or certainly false), values such that $0 < p_s < 1$ represents at least some uncertainty about the veracity of s , with a $p_s = 0.5$ representing complete uncertainty about whether s is true or false. Likewise, a p_c of 0 or 1 would represent an attempt to claim knowing the truth with certainty (one purports to believe that s is certainly true or certainly false), values such that $0 < p_c < 1$ represent an attempt to convey at least some degree of uncertainty about the veracity of s , with a $p_c = 0.5$ representing an attempt to convey complete uncertainty about whether s is true or false. Therefore, the more p_s and p_c stray from 0.5, the more certain one is about the truth and the greater his or her public claims of certainty about the truth, respectively. Consequently, whenever p_c strays further from 0.5 than p_s , one has attempted to exaggerate the degree to which he or she knows the truth. Thus, when considering a situation with two possible states of the world (i.e., whether a given statement is true or false), certainty posing occurs when:

$$|p_s - 0.5| < |p_c - 0.5|$$

Note that this definition precludes the possibility that $p_s = 0$ or 1. Thus, by definition, one cannot pose certainty when the truth is already known with certainty. This represents a false claim of certainty and an attempt to shift another's perception of reality by quantity $p_c - p_s$. I also recognize that in many circumstances, people are not merely contemplating whether one of two statements is true or false, but whether one of several possible states of the world is or will turn out to be true. For example, an individual may know that three different outcomes may be possible and be completely uncertain about which of these outcomes is true. In this case, the individual would believe each of these potential outcomes to be equally probable. This would mean that the individual believes any single outcome to have a 1/3 probability of occurrence (p_s). Should the individual attempt to convey that one of the outcomes (p_c) has a probability of occurrence greater than 1/3, then he or she has engaged in certainty posing. Generalizing to a situation with n possible outcomes or states of the world, *certainty posing occurs when:*

$$|p_s - 1/n| < |p_c - 1/n|$$

Uncertainty Posing

In contrast to certainty posing, uncertainty posing involves claiming a statement to be true with $0 < p_c < 1$. Formally, in a situation where one is contemplating whether one of two statements is true or false, uncertainty posing occurs when:

$$|p_s - 0.5| > |p_c - 0.5|$$

This also represents a false claim of uncertainty and an attempt to shift another's perception of reality by a magnitude of $p_c - p_s$. Uncertainty posing precludes the possibility $p_c = 0$ or 1 . However, unlike certainty posing, uncertainty posing can occur when the ground truth is known as well as when it is not. Therefore, uncertainty posing can occur for all possible values of p_s . Generalizing to a situation with n possible outcomes, *uncertainty posing occurs when*:

$$|p_s - 1/n| > |p_c - 1/n|$$

Blatant Deception

Blatant deception involves claiming a statement to be true with $p_c = 1$ (or 0) when $p_s = 0$ (or 1). This latter form of deception represents an attempt to sway another's perception of reality to the fullest extent possible, or an absolute probability of one. Therefore, *blatant deception occurs when*:

$$|p_s - p_c| = 1$$

Note that this equation generalizes to any situation regardless of how many outcomes or states of the world are under consideration. Blatant deception can only occur when one knows a given state of the world to be true, but claims to be absolutely certain that it is not true. Though indirect, any claim that something one knows to be false is true with certainty is equivalent to denying the truth. Therefore, even in a situation where n possible outcomes or states of the world are under consideration, a claim to know one particular state to be true with certainty is an act of blatant deception if one privately knows this claim to be false.

Relationship With Other Forms of Deception

Conceptually, certainty posing, uncertainty posing, and blatant deception overlap with other conceptualizations of deception—most notably lies of commission and lies of omission. In contrast to lies of commission, which involve an explicit misrepresentation of information, lies of omission typically involve more subtle misrepresentations, typically in the form of omitting important information (Bok, 2011; O'Connor & Carnevale, 1997; Schweitzer & Croson, 1999; Spranca, Minsk, & Baron, 1991).

Though blatant deception undoubtedly falls in the domain of a lie of commission because it involves an attempt to completely distort another's perception of reality, it is less clear which camp certainty posing and uncertainty posing fall under. My definitions of certainty and uncertainty posing are centered on the notion of deliberately conveying a belief about the degree to which one is certain (or uncertain) that does not match with one's true degree of certainty (or uncertainty). Because the act of intentionally conveying a belief that mismatches with one's true beliefs represents an explicit misrepresentation, I consider certainty and uncertainty posing to be lies of commission. For example, if I privately believe a coin to be fair, but publicly claim that is

rigged such that tails will come up 75% of the time, this represents a deliberate mismatch with my own private belief that tails will come up 50% of the time. Although there is no way for me to truly know whether tails will show on the next flip, my misrepresentation of the probability with which I privately believe tails will show represents a distortion of my private knowledge akin to a lie of commission. Though I recognize that there may be instances where I fail to correct another's belief that tails will show 75% of the time (which I believe to be erroneous), I do not conceptualize this as an act of certainty posing because unless directly asked, I have not done anything to convey my beliefs about the coin. Without the explicit knowledge that my silence will be interpreted by another as an indication that I believe tails will show up 75% of the time, I cannot even be sure whether my silence will convey anything at all about my beliefs. Conversely, if the same individual directly asked for my beliefs about the coin and I were to reply that I had no idea whether heads or tails would show on the next flip, then this would be an accurate depiction of my beliefs about the coin because it indicates complete uncertainty.

Rationalizing Different Forms of Deception

Having defined three different forms of deception, I now turn to the question of how easily people may rationalize each of these forms of deception. Ultimately, I argue that because it is likely easier to rationalize, people should be more likely to engage in certainty posing than both blatant deception and uncertainty posing when presented with the opportunity. Because it involves a lesser distortion of reality than blatant deception and is easier to mentally simulate than uncertainty posing, I hypothesize that the act of certainty posing is relatively common.

The Magnitude of Probabilistic Distortion

By definition, certainty and uncertainty posing always lead to a lesser distortion of reality than blatant deception because blatant deception requires an individual to shift another's perception of reality to the fullest extent possible by claiming one state of the world to be true with certainty (a conveyed probability of one) despite holding the private belief that this state of the world is definitely false (a perceived probability of zero). In this sense, certainty posing and uncertainty posing are not quite equivalent to telling a lie with an established ground truth because they involve an attempt to shift another's perception of reality by a lesser amount (see Figure 1). Indeed, people seem averse to lying more than necessary. In many cases, people will display minor degrees of dishonesty when an opportunity presents itself, but they refrain from being so dishonest that it becomes difficult to rationalize (Mazar, Amir, & Ariely, 2008). People are motivated to view themselves as ethically upstanding individuals and the ability to rationalize unethical behavior allows them to pursue economic self-interest while upholding their positive self-perceptions (Mazar et al., 2008; Shalvi, Dana, Handgraaf, & De Dreu, 2011; Gino & Ariely, 2012). From this perspective, people should more easily rationalize certainty posing and uncertainty posing relative to lying with an established ground truth.

Hypothesis 1: Certainty posing is perceived as more ethical than blatant deception.

The Ease of Mental Simulation

Certainty and uncertainty posing both involve a lesser distortion of reality than blatant deception. Thus, if there is something unique about certainty posing that makes it more easily

rationalized than lies with an established ground truth aside from it merely representing a lesser distortion of reality, then it must be differentiated from uncertainty posing in some other way.

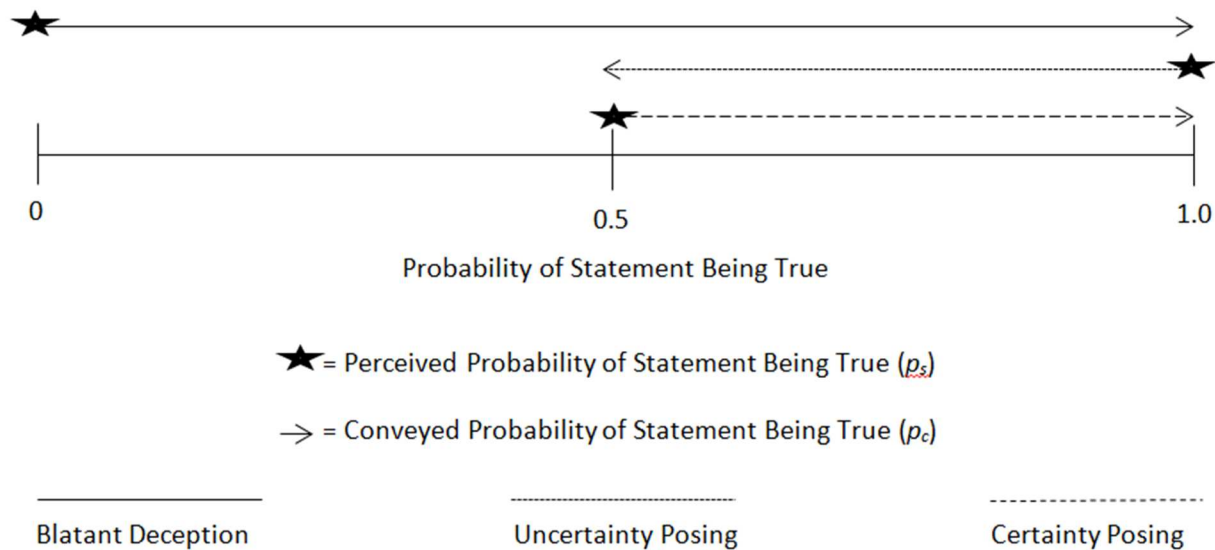


Figure 1. Visual comparison of certainty posing, uncertainty posing, and blatant deception.

Assuming that an individual intends on shifting another’s perception of reality by some fixed probability, the key factor distinguishing certainty posing from uncertainty posing is whether ground truth is known with a high degree of certainty. By definition, increasing degrees of uncertainty make it more likely that the individual will engage in certainty posing. Conversely, increasing degrees of certainty make it more likely that the same individual will engage in uncertainty posing. Formally, assuming a constant p_c , as p_s approaches 0.5, certainty posing becomes more likely. Conversely, as p_s approaches 0 or 1, uncertainty posing becomes more likely. To the extent that lacking certainty of the ground truth *per se* enables cognitive processes that are not enacted when one knows the ground truth, certainty posing can be truly distinguished from uncertainty posing. I will argue that when mentally simulating the decision to engage in deception, it is easier and more desirable to consider a state of the world where one engages in certainty posing than one in which one engages in uncertainty posing.

Mentally simulating the act of certainty posing. When faced with uncertainty—such as what may come of a decision to engage in certainty posing—people mentally simulate the future by considering how different actions may result in different outcomes and the amount of utility they expect to derive from each action-outcome combination (Kahneman & Miller, 1986; McConnell et al., 2000). In the case of contemplating whether to engage in certainty posing, an individual may consider three possible states of the world: One in which they engage in certainty posing and their claim turns out to be true (*true positive* action-outcome combination), one in which they engage in certainty posing and their claim turns out to be false (*false positive* action-outcome combination), and one in which they are honest about their private degree of uncertainty (*honest* action-outcome combination). As opposed to the situation where people are honest about their private degree of uncertainty, the true and false positive action-outcome combinations involve certainty posing. However, of these two action-outcome combinations that involve certainty posing, the former is most desirable because it allows an individual to

influence others' judgment in a particular direction while being able to justify it on the grounds that his or her claim turned out to be a reality. Effectively, in the true positive action-outcome combination, an individual has not technically told a lie because his or her claim turned out to be true. In contrast, the false-positive action-outcome is less desirable because while an individual can potentially derive economic utility from influencing another's judgment in a desired direction, he or she will ultimately be forced to face the unpleasant reality that his or her claim did not turn out to be true. Ultimately, the person would experience a conflict between the desire to hold positive self-perceptions and the realization that he or she attempted to mislead somebody.

The mere simulation of a given action-outcome combination makes it seem more salient and subjectively likely to occur (Campbell & Fairey, 1985; Gregory, Cialdini, & Carpenter, 1982; Koehler, 1991; Sherman, Skov, Hertz, & Stock, 1981). Given that people are motivated to visualize what they desire (Balcetis & Dunning, 2006; Kunda, 1990), they should prioritize the simulation of desired action-outcome combinations. In the case of considering what might come of certainty posing, this implies that people should be more likely to simulate the true positive action-outcome combination than the false positive action-outcome combination. Therefore, when weighing the economic rewards from certainty posing against the negative subjective utility that one derives from facing the possibility that he or she was dishonest, people should place a greater weight on the utility they derive from the true-positive action-outcome combination where their claims turn out to be true than the false-negative action-outcome combination where their claims turn out to be false. Consequently, when considering whether to engage in certainty posing, people should fail to adequately consider the disutility they may experience if their claims fail to become realty.

Consistent with this account of individuals differentially weighting the utility they expect to derive from different action-outcome combinations, research has demonstrated that people distort their subjective interpretation of uncertainty to support a desired action-outcome combination (Cohen & Wallsten, 1992; Olsen, 1997; Slovic, 1966). For example, people evaluate lotteries with a small, yet precise, probability of winning as being more subjectively favorable after they have read about the hefty prize associated with it rather than before being informed about the prize (Bond, Carlson, Meloy, Russo, & Tanner, 2006). Additionally, individuals' preexisting preference for a given course of action—assessed before they have even learned about the outcomes associated with the course of action and their precise probabilities of occurrence—influences the extent to which they evaluate outcomes consistent with their preference as being desirable after learning about relevant outcomes and probabilities (DeKay, Patiño-Echeverri, & Fischbeck, 2009). Taken together, the evidence suggests that the more motivated an individual is to engage in a desired action or to experience a desired outcome made more likely by the action, the more likely he or she is to perceive a given level of uncertainty as supporting a decision to engage in the action.

Consider a situation where an individual is motivated to convince somebody of a given claim's veracity, but he or she believes it to only have a 50% probability of being true. If the individual mentally simulates the experience of engaging in certainty posing to convince another of the claim's veracity, he or she is likely to overweight the positive utility garnered from the desirable win-win situation where the claim turns out to be true relative to the negative subjective utility experienced in a less desirable alternate state of the world where the claim turns out to be false. This biased processing of anticipatory utility should enhance the degree to which the 50% probability of occurrence for the win-win situation justifies the decision to engage in

certainty posing. Furthermore, the mere act of mentally visualizing the true positive action-outcome combination may make certainty posing feel more justifiable in its own right, as is the case with witnessing desired counterfactuals (Shalvi et al., 2011).

Mentally simulating an act of uncertainty posing. Though certainty can potentially be rationalized by envisioning a desired state of the world where one has behaved opportunistically while technically being truthful, this is more challenging in the case of uncertainty posing. Unlike certainty posing, uncertainty posing requires a high degree of certainty about the ground truth. When the ground truth is known with certainty, people should experience difficulty with mentally simulating an alternative scenario where the ground truth is uncertain. Whereas mentally simulating action-outcome combinations under uncertainty involves prefactual thinking because the ground truth is unknown, the act of putting oneself in a position to engage in such thinking when the ground truth is known requires counterfactual thinking. People are averse to deceiving others when the ground truth is known with certainty (Erat & Gneezy, 2012; Gneezy, 2005), so unless they can mentally “undo” their current situation such that they are blissfully unaware of the ground truth, they are unlikely to engage in the sort of mental simulations that help them feel justified in communicating probabilistic information that is inconsistent with their own private knowledge. The mere knowledge that some outcome is certain—the probability of a fixed coin landing on tails, for instance—makes it difficult to mentally place oneself in a position where the coin actually has a 50% probability of landing on tails.

Brain imaging studies suggest that people exhibit unique patterns of neural activity when making a false claim that they have not experienced an event that they did in fact experience (Abe et al., 2008; Priori et al., 2008). Notably, the act of pretending not to have experienced an event results in greater activation of the anterior cingulate cortex (ACC) than the act of falsely claiming to have experienced an event that did not occur (Abe et al., 2006). The ACC is associated with cognitive conflict (Badre & Wagner, 2004; Carter et al., 2000; Kerns, Cohen, & MacDonald, 2004; MacDonald, Cohen, Stenger, & Carter, 2000), so ACC activation when pretending not to have experienced an event is indicative of conflict between one’s experienced reality and one’s external claims. If viewing the act of learning the ground truth as an experienced event, then more conflict should arise from the act of pretending not to know the ground truth than the act of claiming to know it with certainty despite lacking knowledge of the ground truth. In this sense, it should be more cognitively challenging for individuals to justify uncertainty posing compared to certainty posing.

Even if people were quite capable of mentally placing themselves in a position to forget the ground truth as a means of justifying the act of uncertainty posing, a subtractive counterfactual would necessarily be involved in mental simulations of this state of the world. Subtractive counterfactuals remove known antecedents—knowledge of the ground truth, for instance—to generate a new reality (Roese, 1994), such as lacking knowledge of the ground truth. Because subtractive counterfactuals are limited to known premises where the facts are known with certainty, they typically leave little latitude to consider actions that go beyond known situational premises. Consequently, they tend to stunt creativity (Kray, Galinsky, & Markman, 2009; Markman, Lindberg, Kray, & Galinsky, 2007; Roese, 1994). Creativity promotes the process of preemptively concocting rationalizations that can justify dishonest behavior in ways that allow individuals to pursue self-interest while maintaining positive self-views (Gino & Ariely, 2012). Thus, even if one could legitimately place himself or herself in a state of uncertainty via the use of a subtractive counterfactual, he or she would not be in a state of mind conducive to generating convenient rationalizations. Additionally, simulations of the

future tend to be more extensive and vivid than simulations of the past (Van Boven & Ashworth, 2007), so counterfactual simulations undoing one's knowledge of the ground truth should be less likely to result in the biased processing of anticipatory utility that is likely to occur under uncertainty. In sum, even if people are capable of mentally undoing their knowledge of the ground truth, they should be less capable of generating effective justifications for the decision to engage in uncertainty posing than they should be when considering the decision to engage in certainty posing.

Hypothesis 2: Certainty posing is perceived as more ethical than uncertainty posing.

Overview of Studies

I conducted two experiments to test the hypotheses outlined above. While Experiment 1 directly tests them using a measure of moral acceptability, Experiment 2 indirectly tests them by examining the frequency with which certainty posing occurs. In both experiments, participants either evaluate situations involving certainty posing, uncertainty posing, and blatant deception, or they are presented with an opportunity to engage in one of these three forms of deception. Comparing these three forms of deception enables a test of two different mechanisms that may influence the moral acceptability of deception. First, comparing blatant deception (the fullest possible probabilistic distortion) to certainty posing and uncertainty posing (more moderate degrees of probabilistic distortion) allows me to assess the effect of the magnitude of probabilistic distortion on the moral acceptability of deception.

Second, comparing blatant deception (which occurs under uncertainty) to uncertainty posing (which occurs under certainty) allows me to assess the effect of simple risk *per se* on the moral acceptability of deception. Many scholars have differentiated between uncertain outcomes involving simple risk—outcomes with a known probability of occurrence—and those involving ambiguity—outcomes with an unknown probability of occurrence (cf. Einhorn & Hogarth, 1985; Ho, Keller, & Keltyka, 2001, 2002; Kuhn & Budescu, 1996). To illustrate this distinction, consider one situation involving the flip of a fair coin and another where a biased coin is flipped, but the magnitude and direction of the bias is unknown. The fair coin flip involves simple risk because the likelihood of the coin landing on heads or tails is known to be precisely 50%. However, the biased coin flip involves ambiguity because the precise probability of the coin landing on heads or tails is unknown, as the likelihood of either outcome may range from 0-100%. Scholars have found that, relative to simple risk, ambiguity increases individuals' tendency to interpret information in a self-serving manner, which increases their likelihood of engaging in self-interested behavior at the expense of others (Haisley & Weber, 2010; Schweitzer & Hsee, 2002). In light of these findings, I provided participants with precise outcome probabilities in the experiments that follow to rule out the possibility that certainty posing may be considered more acceptable than uncertainty posing because it involves ambiguity. As such, I directly test whether the introduction of simple risk into a situation makes deception easier to rationalize. Should simple risk promote deception—holding constant the magnitude of probabilistic distortion—then this would suggest that certainty posing might be easier to rationalize than uncertainty posing due to differences in the manner by which individuals mentally simulate the act.

Experiment 1

In Experiment 1, I directly compared the perceived ethicality of blatant deception, certainty posing, and uncertainty posing by providing participants with examples of one of the forms of deception before assessing their perceptions of its moral acceptability. First, I predicted that participants would perceive certainty posing to be more ethical than blatant deception (Hypothesis 1). Furthermore, should certainty posing be perceived as more ethical than blatant deception because it involves a lesser probabilistic distortion, then I also expected uncertainty posing to be perceived as more acceptable than blatant deception. I also predicted that certainty posing would be perceived as more acceptable than uncertainty posing. The latter prediction, if true, would provide evidence that the introduction of simple risk into a situation makes it seem more morally acceptable.

Participants

I collected data from 225 undergraduate business students who completed this study as part of a prescreening survey that they took in exchange for course credit. Their mean age was 21.50 years ($SD = 2.59$) and 54% of them were female.

Procedure

I presented participants with three scenarios in a randomized order. They were randomly assigned to read scenarios forcing them to consider the act of certainty posing, uncertainty posing, or blatant deception in between-subjects fashion. The scenarios asked participants to imagine they were a construction estimating the likelihood of completing a project by a deadline, a salesperson estimating a car's likelihood of running for 100,000 miles, and a student estimating the likelihood of their campus organization's revenue exceeding a particular threshold during a job interview (see Appendix B for the full versions of each scenario). All three scenarios were constructed such that it would be most convenient and desirable to make a probability estimate of 100% for each outcome. However, participants either privately believed the likelihood of each outcome to only be 0% (uncertainty posing and blatant deception conditions) or 50% (certainty posing condition).

After participants read about their private beliefs about the likelihood of each event, they proceeded to learn about others in their same position who have either engaged in certainty posing (claiming the outcome had a 100% probability despite privately believing it only had a 50% probability), uncertainty posing (claiming the outcome had a 50% probability despite privately believing it only had a 0% probability), or blatant deception (claiming the outcome had a 100% probability despite privately believing it only had a 0% probability). As an example, consider the scenario involving the sale of a car [certainty posing condition / uncertainty posing condition / blatant deception condition]:

You are a salesman at a local car dealership. A buyer approaches you about purchasing the latest model produced by a relatively obscure car company. While negotiating over the price of the car, the buyer asks you about the car's reliability and durability. Because your dealership has sold many cars produced by this company, you have a good idea how likely it is that the car can make it to 100,000 miles. Unfortunately, you think there is a [50% / 0% / 0%] probability of the car making it to 100,000 miles. Suppose you know of other salesman who have admitted to telling buyers that there is a [100% / 50% / 100%] chance of a car making it to 100,000 miles despite them privately believing that the car has a [50% / 0% / 0%] chance of making it to 100,000 miles.

Critically, the blatant deception condition involves a greater probabilistic distortion (100%) than the uncertainty posing and certainty posing conditions (50%), which are identical in the magnitude of probabilistic distortion, but vary in terms of whether participants privately believe that the desirable outcome has a 50% likelihood of occurring (certainty posing condition) or a 0% likelihood of occurring (uncertainty posing condition).

After reading each scenario, participants indicated the moral acceptability of each form of deception using a moral outrage scale adapted from Kennedy and Kray (2014). Participants indicated the extent to which the seven different words described their impression others' response (i.e., publicly claiming a probability different from what they privately believe) in their same situation on a scale ranging from 1 (*not at all*) to 7 (*very much*). Participants were presented with the words disgusting, objectionable, upsetting, offensive, shameful, contemptible, and morally acceptable (reverse-scored). The items were reliable ($\alpha = .91$) and averaged to form an index. To make the index correspond with perceived moral acceptability, it was reverse-scored.

Results

A one-way ANOVA revealed a main effect of deception type on moral acceptability, $F(2, 222) = 5.58, p = .004, \eta_p^2 = .05$.⁶ As expected, participants perceived certainty posing ($M = 3.71, SD = 1.00$) to be more morally acceptable than blatant deception ($M = 3.30, SD = 0.98$), $t(150) = 2.62, p = .010, d = 0.43, 95\% CI = [0.11, 0.75]$. They also perceived uncertainty posing ($M = 3.78, SD = 0.95$) to be more acceptable than blatant deception, $t(148) = 3.13, p = .002, d = .52, 95\% CI = [0.19, 0.84]$, but similarly in acceptability to certainty posing, $t(146) = 0.44, p = .660$. Thus, participants perceived the form of deception involving the largest probabilistic distortion (blatant deception) to be less morally acceptable than the two forms of deception involving a more moderate probabilistic distortion (certainty posing and uncertainty posing). However, they did not differentiate certainty posing from uncertainty posing from one another, suggesting that they were sensitive to the magnitude of probabilistic distortion, but not the presence of simple risk (certainty posing) versus outcome certainty (uncertainty posing).

Discussion

Overall, these results provide support for Hypothesis 1 while failing to find evidence in support of Hypothesis 2. On the one hand, participants perceived certainty posing to be more morally acceptable than blatant deception. Because they also perceived uncertainty posing to be more acceptable than blatant deception, this suggests that participants were sensitive to the magnitude of probabilistic distortion. On the other hand, participants did not differentiate between certainty posing and uncertainty posing with respect to their moral acceptability. This finding suggests that participants did not perceive deception as being more acceptable under simple risk when holding constant the magnitude of probabilistic distortion.

However, one possibility for the failure to find a difference in moral acceptability between certainty posing and uncertainty posing could be that it depends on the context in which certainty posing occurs. Scholars have distinguished between internal uncertainty attributable to

⁶ To assess whether the effect size differed by scenario, I also conducted a 3 (deception type) X 3 (scenario) mixed ANOVA. The interaction term was not significant, $F(2, 222) = 2.45, p = .088$, suggesting that the effect size of deception type was not substantially different across the three scenarios.

one's state of knowledge and external uncertainty attributable to statistical randomness (Fox & Ülkümen, 2011; Kahneman & Tversky, 1982), so the source of uncertainty may influence the extent to which certainty posing is perceived as morally acceptable. As documented in the first chapter of this dissertation, people experience a credibility threat in the face of internal uncertainty that provides them with an instrumental motive to engage in certainty posing. However, it could also be possible that certainty posing feels more justifiable under internal uncertainty than under external uncertainty. Should this be the case, then it may be possible that the act of certainty posing is under internal uncertainty is perceived as more acceptable than uncertainty posing, but that certainty posing under external uncertainty is not. In Experiment 1, participants were prompted about the likelihood of desired outcomes using statements framed around the likelihood of a specific outcome (i.e., "there is a 50% chance of..."). People tend to attribute statements framed in this manner to external uncertainty (Fox & Ülkümen, 2011; Ülkümen, Fox, & Malle, 2015), so if certainty posing is perceived as more acceptable under internal uncertainty than under external uncertainty, then Experiment 1 may not have provided a fair test of Hypothesis 2. Thus, I conducted an exploratory experiment to examine whether certainty posing is perceived as more morally acceptable under internal uncertainty as opposed to external uncertainty. Because Experiment 1 found that certainty posing and uncertainty posing were perceived as similar in moral acceptability, then if there were any possibility of certainty posing under internal uncertainty being perceived as more acceptable than uncertainty posing, certainty posing would necessarily have to be perceived as more acceptable under internal uncertainty than external uncertainty.

In the exploratory experiment, I adapted the financial advice scenario from the prior chapter of this dissertation (Experiments 2-5) and randomly assigned 200 Amazon Mechanical Turk workers to read the scenario framed in a manner that was either consistent with internal uncertainty or external uncertainty. People perceive probabilistic statements referring to an outcome as being attributable to external uncertainty while they perceive statements referring to the accuracy of a judge's decision as being attributable to internal uncertainty (Fox & Ülkümen, 2011; Ülkümen, Fox, & Malle, 2015), an assertion that was supported by the results of Experiments 2-5 in the first chapter of this dissertation. As such, I randomly assigned participants to read statements framed with respect to either the accuracy of their own judgment (internal uncertainty) or to the probability of an outcome (external uncertainty). In both conditions, participants read the following:

You are a financial advisor. A new client has approached you with two potential investment opportunities. The client is committed to investing in one of the opportunities, but not both. These potential investments will be referred to as Investment A and Investment B.

The client is paying you a small fee to provide advice about the best investment option.

Participants assigned to the internal uncertainty condition read the following:

Suppose that after evaluating your client's investment options, you conclude that there is a 50% chance that you can accurately tell your client which investment will earn the best return.

You believe that Investment B is the best option.

Suppose you know of other financial advisors in your same situation who have admitted to telling clients that there is a 100% chance that they can accurately identify the best investment despite privately believing that there is only a 50% chance that they can actually identify the best investment with accuracy.

In contrast, participants assigned to the external uncertainty condition read the following:

Suppose that after evaluating your client's investment options, you conclude that there is a 50% chance that Investment B will earn your client a better return than Investment A. Suppose you know of other financial advisors in your same situation who have admitted to telling clients that there is a 100% chance of one particular investment earning the better return despite privately believing that there is only a 50% chance of the investment actually earning a better return.

After reading these statements, participants indicated the extent to which they found each form of deception to be morally acceptable using the same measure as Experiment 1 ($\alpha = .89$). The results indicated that participants found certainty posing to be similar in moral acceptability irrespective of whether it occurred under internal uncertainty ($M = 2.96, SD = 1.31$) or external uncertainty ($M = 2.90, SD = 1.32$), $t(198) = 0.28, p = .778$. This result suggests that participants did not perceive certainty posing to be any more morally acceptable under internal uncertainty than under external uncertainty.

Experiment 2

Using a direct measure of moral acceptability, Experiment 1 found that participants perceived certainty posing to be more acceptable than blatant deception, but no more acceptable than uncertainty posing. Experiment 2 seeks to expand on this finding by behaviorally examining individuals' likelihood of engaging in deception. Because people perceive certainty posing to be more acceptable than blatant deception, I expect them to be more likely to engage in it when presented with the opportunity. Furthermore, because the results of Experiment 1 also suggest that people are sensitive to the magnitude of probabilistic distortion, I also expect that they should be more likely to engage in uncertainty posing than blatant deception.

In addition to comparing individuals' likelihood of engaging in certainty posing, uncertainty posing, and blatant deception, I also consider whether the manner in which certainty posing is framed influences individuals' likelihood of engaging in deception. As documented in the first chapter of this dissertation, people are more likely to engage in certainty posing under internal uncertainty than under external uncertainty because of strategic motives to appear credible. However, as suggested by the results of the Exploratory Experiment that followed Experiment 1, people do not differentiate between the ethicality of engaging in certainty posing under internal uncertainty as opposed to external uncertainty. As such, I expect that because they allow people an opportunity to engage in a moderate amount of deception (as opposed to blatant deception), participants should deceive to a similar degree when presented with an opportunity to engage in uncertainty posing as they are when presented with an opportunity to engage in certainty posing where they convey external uncertainty. I also expect that certainty posing when conveying internal uncertainty should be the most common form of deception, as it not only

allows people to engage in moderate degrees of deception, but also provides them with an instrumental motive to appear credible.

Participants

I recruited 505 Amazon Mechanical Turk workers to complete a strategic choice game in exchange for a minimum payment of \$1.00.⁷ Their mean age was 33.45 ($SD = 10.54$) and 42% of them were female.

Procedure

Participants played an adapted version of the Cheap Talk Game (Gneezy, 2005), which is a paradigm involving a message sender and a message receiver. In the game, message senders are told the precise payoffs associated with two payment options that determine both parties' payoffs in the game. However, there is an information asymmetry such that message receivers are not told about these payoffs. Instead, receivers must rely on a message from the sender that recommends one of the payoff options. Because receivers make the choice about which payoff option is enacted and senders are aware of the information asymmetry, senders have an opportunity to send a deceptive message to receivers so that they can influence them to select the payoff option that is in their own economic self-interest. I simulated receivers' choices based on a small sample of responses ($N = 100$) and did not analyze these choices due to the small sample.

Deception opportunity conditions. Participants were randomly assigned to one of four conditions where they had an opportunity to engage in blatant deception, uncertainty posing, or certainty posing where they conveyed either internal or external uncertainty.

Blatant deception condition. The blatant deception condition closely resembled the traditional version of the game. In this condition, participants had the following payoff options:

Option A

\$1.00 to you and \$2.00 to the other player

Option B

\$1.50 to you and \$1.50 to the other player

After being presented with these payoff options, participants were given a binary choice about whether to send a message indicating that “there is a 0% chance that Option B will pay you more money than Option A” (truthful message) or that “there is a 100% chance that Option B will pay you more money than Option A” (deceptive message).

Uncertainty posing condition. The payoffs in the uncertainty posing condition were identical to the blatant deception condition. However, rather than being presented with a binary choice between a truthful message or a message that tells the polar opposite of the truth, participants were given the extent to deceive to more moderate degrees. Specifically, participants sent a message that read as follows: “There is a ___% chance that Option B will pay you more money than Option A.” To fill in the blank, they selected a percentage on a sliding scale ranging from 0 to 100. The scale was anchored at 0 (the truth). As they could select any percentage they

⁷ Some of these participants are included in the analyses of Experiment 5 in the prior chapter of this dissertation, which focused on two of the four experimental conditions collected in this experiment.

wanted, this condition presented participants with an opportunity to engage in deception to a lesser magnitude than the blatant deception condition.

Certainty posing conditions. I adapted the payoffs in the certainty posing conditions by imposing uncertainty regarding the other player's payoff. Critically, the other player's expected payoffs were identical to the blatant deception and uncertainty posing conditions. In both certainty posing conditions, participants had the following payoff options:

Option A

\$1.00 to you and \$2.00 to the other player

Option B

A 50% chance of one of the following:

\$1.25 to you and \$2.50 to the other player

\$1.25 to you and \$0.50 to the other player

The only difference between conditions was the manner in which the message was framed. In a condition involving external uncertainty (referred to as the "external certainty posing condition") read exactly like the uncertainty posing condition, as participants sent a message reading as follows: "There is a ___% chance that Option B will pay you more money than Option A." However, participants selected a probability on a scale ranging from 50 to 100 (as opposed to 0 to 100). The scale was anchored at 50 (the truth). In a condition involving internal uncertainty (referred to as the "internal certainty posing condition"), the message read: "There is a ___% chance that I can accurately tell you which option will pay you the most money." Participants then proceeded to recommend a payoff option to accompany their message. With the exception of the message's linguistic content, everything else (including the scale range) was identical to the external uncertainty condition.

Dependent measures. The primary dependent measure of interest was participants' likelihood of engaging in deception by claiming any probability other than what they know to be true. In addition to assessing whether participants engaged in any deception whatsoever, I also assessed the magnitude to which they engage in deception. Because the scale used in the uncertainty posing condition differed from the one used in both certainty posing conditions with regards to the starting point (0% vs. 50%) and range (0 to 100 vs. 50 to 100), I normalized the magnitude of deception across conditions by creating a measure that represented the degree to which participants distorted the true probability in their message as a percentage of the maximum extent to which they could do so. This means that in the blatant deception and uncertainty posing conditions, the measure was calculated as so:

Message Probability / 100

However, because participants had an inability to indicate a percentage below 50 in both certainty posing conditions, this measure was normalized for those condition:

(Message Probability – 50) / 100

Effectively, the magnitude of deception measure represents participants' magnitude of deception as a proportion of the maximum possible degree of deception in which they could engage.

Results

An analysis of the binary deception measure revealed a main effect of deception opportunity condition, $\chi^2(3, N = 254) = 41.22, p < .001$ (see Table 1 for conditional percentages). As expected, participants were more likely to engage in deception when presented with an opportunity to engage in uncertainty posing than they were when presented with an opportunity to engage in blatant deception, $\chi^2(1, N = 251) = 13.03, p < .001$. However, though they were slightly more likely to engage in deception in the external certainty posing condition than in blatant deception condition, this difference was not statistically significant, $\chi^2(1, N = 250) = 13.03, p = .101$. Furthermore, participants were *less* likely to engage in deception in the external certainty posing condition in the uncertainty posing condition, $\chi^2(1, N = 253) = 3.98, p = .046$. As predicted, participants' likelihood of deceiving was greatest in the internal certainty posing condition, as they deceived more in this condition than in the uncertainty posing condition, $\chi^2(1, N = 255) = 7.09, p = .008$, and in the external certainty posing condition (as documented in Experiment 5 of the prior chapter), $\chi^2(1, N = 254) = 21.05, p < .001$.

I also found a main effect of deception opportunity condition on the measure of deception magnitude, $F(3, 501) = 11.66, p < .001, \eta_p^2 = .07$ (see Table 1 for a conditional means and standard deviations). Though participants were more likely to engage in some degree of deception in the uncertainty posing condition than in the blatant deception condition, the extent to which they engaged in deception was similar in magnitude, $t(249) = 0.55, p = .583$. Consistent with the analyses reported above, participants greater extent in the uncertainty posing condition than in the external certainty posing condition, $t(251) = 2.91, p = .004, d = 0.37, 95\% \text{ CI} = [0.12, 0.62]$. However, the extent to which they engaged in deception was slightly lower in the external certainty posing condition than in the blatant deception condition, $t(248) = 1.96, p = .052$. The pattern of results for the internal certainty posing condition closely mirrored the analyses of the binary deception measure, as participants engaged in deception to the greatest magnitude in this condition, exceeding both the uncertainty posing condition, $t(253) = 3.37, p < .001, d = 0.42, 95\% \text{ CI} = [0.18, 0.67]$, and the external certainty posing condition (as reported in Experiment 5 of the prior chapter), $t(252) = 6.50, p < .001, d = 0.82, 95\% \text{ CI} = [0.56, 1.07]$. Thus, when presented with an opportunity to engage in moderate degrees of deception (as opposed to blatant deception) *and* communicating uncertainty in a manner that provides them with a strong instrumental motive to appear credible, participants were most likely to engage in deception.

Table 1

Experiment 2: Deception Percentage and Deception Magnitude by Condition

Variable	Blatant Deception	Uncertainty Posing	External Certainty Posing	Internal Certainty Posing
Deception Likelihood	46% ^a (<i>n</i> = 124)	69% ^b (<i>n</i> = 127)	56% ^a (<i>n</i> = 126)	83% ^c (<i>n</i> = 128)
Deception Magnitude	45.97 ^{ab} (50.04)	49.09 ^a (39.59)	35.10 ^b (36.94)	65.28 ^c (37.11)

Note. Numbers represent conditional percentages (sample size in parentheses) or means (standard deviation in parentheses). Numbers in the same row with different superscripts differ at $p < .05$.

While the findings generally suggest that participants were both the most likely to engage in deception and did so to the largest extent in the internal certainty posing condition (an expected result), it is puzzling that participants in the external certainty posing were no more likely to engage in deception than those in the blatant deception condition and that they did so to a lesser extent as compared to both the blatant deception and uncertainty posing conditions. Because participants were presented with an opportunity to engage in deception to a moderate degree in the uncertainty posing and external certainty posing conditions, I expected that the types of participants reluctant to engage in deception in the blatant deception condition would be enticed by the opportunity to deceive to a moderate degree, which would both increase their likelihood of engaging in deception and lead to a greater magnitude of deception. However, another possibility could be that while presenting participants with an opportunity to engage in moderate degrees of deception may have enticed some into deceiving, it also made those who may otherwise have engaged in blatant deception less comfortable with doing so, thus increasing their likelihood of engaging in more moderate degrees of deception. To investigate this possibility, I conducted an exploratory follow-up analysis assessing participants' likelihood of engaging in deception to the fullest magnitude possible (100% in the uncertainty posing and blatant deception conditions, 50% in the certainty posing conditions). Despite participants' greater likelihood of engaging in any amount of deception in the uncertainty posing condition as compared to the blatant deception condition, they were less likely to engage in deception to the fullest extent possible in the uncertainty posing condition (18%), $\chi^2(1, N = 251) = 22.42, p < .001$. Similarly, participants were also less likely to engage in deception to the fullest extent possible in the external certainty posing condition (8%) than they were in the blatant deception condition, $\chi^2(1, N = 250) = 46.08, p < .001$. Thus, relative to situations where they faced a binary choice about whether to engage in blatant deception, participants were reluctant to engage in blatant deception when they had an opportunity to engage in more moderate degrees of deception.

Interestingly, participants were more likely to engage in deception to the fullest extent possible in the uncertainty posing condition than in the external certainty posing condition, $\chi^2(1, N = 253) = 5.77, p = .016$. This raises the possibility that differences in the magnitude of deception between the two conditions may be explained by participants' relative tendency to engage in blatant deception in the uncertainty posing condition. When restricting analyses to participants who did not engage in deception to the fullest extent possible, people only engaged in deception to a marginally greater degree in the uncertainty posing condition ($M = 37.84, SD = 34.80$) as compared to the external certainty posing condition ($M = 29.50, SD = 32.95$), $t(218) = 1.82, p = .069$. Furthermore, among participants who engaged in moderate degrees of deception (i.e., they were not completely honest, but not fully deceptive), the difference in deception magnitude between the uncertainty posing condition ($M = 61.48, SD = 22.41$) and the external certainty posing condition ($M = 56.10, SD = 23.74$) was largely mitigated, $t(123) = 1.30, p = .194$. Taken together, these analyses suggest that while participants felt more comfortable engaging in deception to the fullest extent possible in the uncertainty posing condition than in the external certainty posing condition, those who chose not to deceive to the maximum degree engaged in a deception to a comparable extent. Something about the external certainty posing condition seems to have made participants relatively uncomfortable with engaging in blatant deception.

Discussion

In some ways, the results of Experiment 2 were expected; in other ways, they were not. First, consistent with the pattern of results in Experiment 1, participants were sensitive to the magnitude of probabilistic distortion, as they were more likely to engage in deception under certainty when presented with an opportunity to engage in moderate degrees of deception (the uncertainty posing condition) as opposed to telling the polar opposite of the truth (the blatant deception condition). However, this pattern of results did not necessarily hold for certainty posing, which was found to be similar in moral acceptability to uncertainty posing in Experiment 1. Though presenting participants with an opportunity to engage in moderate degrees of deception elevated deception rates in the uncertainty posing condition, it did not have such an effect in the external certainty posing condition where people conveyed uncertainty in a manner consistent with external uncertainty. Supplementary analyses suggested that a non-trivial proportion of participants engaged in moderate degrees of deception who may otherwise have engaged in blatant deception if forced to choose between complete truth and complete honesty—a pattern that was exacerbated in the external certainty posing condition. Thus, while having an opportunity to engage in moderate degrees of deception appears to have encouraged some participants to engage in deception, it discouraged enough from engaging in blatant deception in the external certainty posing to have an offsetting effect; this can account for the tendency of people to engage in similar degrees of deception in the external certainty posing relative to the blatant deception condition.

What remains unclear is why the uncertainty posing condition seemed to induce more people into engaging in deception to the fullest magnitude possible than the external certainty posing condition. One possible explanation for this pattern of results could be that providing participants with a default option of conveying uncertainty allowed them to feel absolved of responsibility for their counterpart's decision in the game while still providing them with an opportunity to earn the more favorable payoff. People exhibit an aversion to making choices for others, so they often rely on chance mechanisms (i.e., a coin flip) because they reduce their agency in making a decision that harms others (Beattie, Barn, Hershey, & Spranca, 1994; Leonhardt, Keller, & Pechmann, 2011). Participants likely perceived a message containing “50%” in the external certainty posing condition to represent a default chance mechanism that ultimately left payoffs to chance. In essence, they may have perceived an honest response in this condition as presenting them with an opportunity to earn the most favorable payoff while reducing their counterpart's choice to a coin flip situation. Conversely, participants may have perceived engaging in deception to the fullest extent possible by sending a message containing “100%” as nearly certain to induce their counterpart into making a decision that ultimately harmed his or her payoff—effectively rendering a deceptive participant the primary agent responsible for the counterpart's relatively poor payoff.

Finally, it is noteworthy that despite the failure to find an effect where participants were more likely to engage in certainty posing when conveying external uncertainty than they were to engage in blatant deception, they were the most likely to deceive when presented with an opportunity to engage in certainty posing when conveying internal uncertainty. Though people seem to perceive the two forms of deception as similar in moral acceptability, conveying internal uncertainty seemed to activate strategic motives to convey certainty that were not present when conveying external uncertainty. This strategic motive was strong enough to make people more likely to engage in deception in the external certainty posing condition than in any other deception opportunity condition. Thus, while certainty posing may not always occur more frequently than other forms of deception, it appears that in situations where people convey

internal uncertainty, they may be more prone to ethical lapses than they are in situations where they have an opportunity to engage in blatant deception or uncertainty posing.

General Discussion

This chapter investigated the perceived ethicality of certainty posing relative to other forms of deception—blatant deception and uncertainty posing in particular. Consistent with Hypothesis 1, I found evidence in Experiment 1 that research people are sensitive to the magnitude of probabilistic distortion, as people perceived certainty posing to be more ethical than blatant deception and similar in ethicality to uncertainty posing. However, the results of Experiment 2 suggested that this relationship does not necessarily have a direct correspondence with behavioral patterns in deception. While presenting people with an opportunity to engage in moderate degrees of deception appears to have made them more willing to deceive, people were sometimes more willing to engage in uncertainty posing than certainty posing—and other times more willing to engage in certainty posing. Critically, I found that this depended on the manner in which uncertainty was conveyed. On the one hand, participants were less likely to engage in certainty posing than uncertainty posing when conveying uncertainty in a manner consistent with external uncertainty (i.e., “there is a 50% chance of X”). On the other hand, they were more likely to engage in certainty posing than uncertainty posing when conveying uncertainty in a manner consistent with internal uncertainty (i.e., “there is a 50% chance that I can accurately tell you whether X will occur”). Though people perceived these two forms of certainty posing as similar in ethicality in the Exploratory Experiment that followed Experiment 1, people perceive a greater strategic motive to engage in certainty posing when conveying internal uncertainty (as documented in the previous chapter of this dissertation). When taking into account the opportunity to engage in moderate degrees of deception with the strategic motive to appear credible that is activated by internal uncertainty, people were the most likely to engage in deception when presented with an opportunity to engage in certainty posing where they convey internal uncertainty.

Though I found support for Hypothesis 1, I failed to find evidence in support of Hypothesis 2, which posited that the presence of simple risk would make certainty posing seem more ethical than uncertainty posing. Though scholars have directly compared decisions involving ambiguity to those involving simple risk in ethical domains (e.g., Haisley & Weber, 2010; Schweitzer & Hsee, 2002), no published research to my knowledge has directly compared decisions involving simple risk to those involving certain outcomes. While it seems sensible to believe that the presence of simple risk allows people to feel justified in engaging in deception because the possibility remains that any claims of certainty they make could potentially turn out to be true, Experiments 1 and 2 both failed to find evidence consistent with this notion.

While deception under uncertainty—and in particular under simple risk—may not necessarily be more common than uncertainty posing, certainty posing has the potential to be a prevalent form of deception because it is easily justified (relative to blatant deception) and because are often motivated to engage in the behavior for strategic purposes (as documented in the prior chapter of this dissertation). To the extent that people encounter situations where they are uncertain of the truth yet have a motive to appear certain, certainty posing is particularly likely to be a problematic behavior. It is unclear how often people actually engage in certainty posing relative to other forms of deception in their daily lives, but future research would be well-advised to consider the relative frequency of this behavior. Diary methodologies that not only

examine the frequency of different forms of deception, but also identify their antecedents (e.g., Cohen, Panter, Turan, Morse, & Kim, 2014; DePaulo et al., 1996), seem particularly conducive to obtaining a better understanding of how often people engage in certainty posing in their personal and professional lives.

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APPENDIX A

Chapter 1, Experiment 2 Scenarios

Scenario 1: Financial Advice

You are a financial advisor. A new client has approached you with two potential investment opportunities. The client is committed to investing in one of the opportunities, but not both. These potential investments will be referred to as Investment A and Investment B.

The client is paying you a small fee to provide advice about the best investment option.

[Page Break]

Internal Uncertainty Condition

After evaluating your client's investment options, you realize that they both belong to the same industry. The industry is stable and investments belonging to it earn predictable returns. However, you are very uninformed about recent happenings in the industry. Because of uncertainty stemming from your insufficient knowledge of the industry, you conclude that there is a 50% chance that Investment B will earn a better return than Investment A.

External Uncertainty Condition

After evaluating your client's investment options, you realize that they both belong to the same industry. The industry is unstable and investments belonging to it earn unpredictable returns. However, you are very informed about recent happenings in the industry. Because of uncertainty stemming from the unpredictability of the industry, you conclude that there is a 50% chance that Investment B will earn a better return than Investment A.

Scenario 2: Marketing Consultant

You are a marketing consultant. A company's executives have approached you for advice about whether to launch a new marketing campaign through online advertisements or television commercials. The company only has the resources to commit to one of these strategies, but not both.

The company is paying you a small fee to provide advice about the best strategy.

[Page Break]

Internal Uncertainty Condition

After reviewing the company's planned campaign, you realize that an upcoming Congressional vote with a predictable outcome will result in drastic changes to advertising regulations for the types of products sold by the company. However, you have inadequate knowledge about similar

marketing campaigns to help you determine which strategy is best. Because of uncertainty stemming from your lack of knowledge about similar campaigns, you conclude that there is a 50% chance that television commercials will be more profitable than online advertisements.

External Uncertainty Condition

After reviewing the company's planned campaign, you realize that an upcoming Congressional vote with an unpredictable outcome may result in drastic changes to advertising regulations for the types of products sold by the company. However, you have extensive knowledge about similar marketing campaigns to help you determine which strategy is best. Because of uncertainty stemming from the unpredictability of advertising regulations, you conclude that there is a 50% chance that television commercials will be more profitable than online advertisements.

Scenario 3: Legal Advice

You are a lawyer who specializes in providing legal advice about whether to proceed with lawsuits. A prominent artist approaches you for advice about whether to file a copyright infringement lawsuit against a company that used an image bearing a striking resemblance to one of her paintings in a financially lucrative marketing campaign. The artist never provided the company with permission to display her work in the campaign.

The artist is paying you a small fee to provide advice about whether to move forward with the lawsuit against the company for copyright infringement. As you are not a trial lawyer, the artist will not owe you additional fees should she decide to move forward with the lawsuit.

[Page Break]

Internal Uncertainty Condition

After reviewing the case, you realize that because you have insufficient knowledge about similar cases, it is very difficult for you to estimate the legal fees that will be incurred by the artist for proceeding with the lawsuit. However, prior rulings in copyright infringement cases have been consistent and predictable. Due to the uncertainty stemming from your unfamiliarity with similar cases, you conclude that there is a 50% chance that filing the lawsuit will be a winning financial proposition.

External Uncertainty Condition

After reviewing the case, you realize that based on your extensive knowledge about similar cases, it is very easy for you to estimate the legal fees that will be incurred by the artist for proceeding with the lawsuit. However, prior rulings in copyright infringement cases have been inconsistent and unpredictable. Due to the uncertainty stemming from the irregularity of prior rulings, you conclude that there is a 50% chance that filing the lawsuit will be a winning financial proposition.

APPENDIX B

Chapter 2, Experiment 1 Scenarios

Note: [certainty posing condition / uncertainty posing condition / blatant deception condition]

Scenario 1: Construction Deadline

You are a construction manager who is about to meet with a land developer to submit a finalized proposal for the development of a business complex. Knowing that the developer is also considering a competitor's proposal, you hope to convince the manager to hire your company. During your meeting, the developer emphasizes that timing is the most important thing to him, as several businesses have expressed interest in moving into his new complex as long as it is completed within the next two years. A failure to complete the project within two years would put the developer at risk of not being able to find any tenants.

After going through the layout of the complex and receiving a positive reaction from the developer, you are asked about the likelihood of finishing the project within two years. Based on your extensive experience, you think there is a [50% / 0% / 0%] chance of the project being completed on time. This is unfortunate because you stand to receive a large bonus for securing the developer's business.

[Page Break]

Suppose you know of other construction managers who have admitted to telling developers that there is a [100% / 50% / 100%] chance of completing a project on time despite them privately believing that the project has a [50% / 0% / 0%] chance of being completed on time.

Scenario 2: Car Durability

You are a salesman at a local car dealership. A buyer approaches you about purchasing the latest model produced by a relatively obscure car company. While negotiating over the price of the car, the buyer asks you about the car's reliability and durability. Because your dealership has sold many cars produced by this company, you have a good idea how likely it is that the car can make it to 100,000 miles. Unfortunately, you think there is a [50% / 0% / 0%] probability of the car making it to 100,000 miles.

[Page Break]

Suppose you know of other salesman who have admitted to telling buyers that there is a [100% / 50% / 100%] chance of a car making it to 100,000 miles despite them privately believing that the car has a [50% / 0% / 0%] chance of making it to 100,000 miles.

Scenario 3: Job Interview

You are interested in non-profit finance and have been granted an interview for your dream job. If you land the job, you will be required to manage millions of dollars for one of the largest nonprofits in the country. Knowing this, you plan to talk about the expertise you gained while serving as treasurer of a student organization on campus. However, your role in managing the

organization's finances was limited. [Because / Although / Although] a third party managed donations to the organization, filed taxes on behalf of the organization, and set the organization's annual budget, you [have no idea / know exactly / know exactly] how much annual revenue the organization earns. You are worried that revealing this information could cause an interviewer to wonder whether you are qualified for the job.

You go to the interview and things seem to be going well until the interviewer asks whether your organization earned more than \$100,000 in revenue each year. This question makes you nervous because you want to paint your involvement with the organization's finances in the most positive light possible. You are completely [uncertain / certain / certain] about the organization's annual revenue and believe there to be a [50% / 0% / 0%] chance that the organization earned at least \$100,000 in revenue each year.

[Page Break]

Suppose you know of other students who were the treasurers of organizations who have admitted to telling job interviewers that there is a [100% / 50% / 100%] chance that their organization earned \$100,000 in annual revenue despite them privately believing that there was a [50% / 0% / 0%] chance that their organization earned \$100,000 in annual revenue.