

Insinuation Anxiety: Concern That Advice Rejection Will Signal Distrust After Conflict of Interest Disclosures

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Abstract

When expert advisors have conflicts of interest, disclosure is a common regulatory response. In four experiments (three scenario experiments involving medical contexts, and one field experiment involving financial consequences for both parties), we show that disclosure of a financial or nonfinancial conflict of interest can have a perverse effect on the advisor–advisee relationship. Disclosure, perhaps naturally, decreases an advisee’s trust in the advice. But disclosure can also lead to concern that failure to follow advice will be interpreted as a signal of distrust. That is, rejecting the advice could suggest that the advisee is insinuating that the advisor could be biased by the conflict of interest. We show that this *insinuation anxiety* persists whether the disclosure is voluntary or required by law and whether the disclosed conflict is big or small, but it diminishes when the disclosure is made by an external source rather than directly by the advisor.

Keywords

advice, decision-making, ethics, conflicts of interest, disclosure

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A conflict of interest (COI) exists when primary ethical or professional interests clash with personal interests (Institute of Medicine, 2009). For example, physicians confront COIs when offered gifts from pharmaceutical companies, receive referral fees for enrolling patients in clinical trials, or benefit financially from tests or procedures they recommend to patients. Neither the American Medical Association’s 2005 Code of Ethics nor the 2010 Health Care Reform Act discourages physicians from exposing themselves to conflicts, but both require that physicians and the industry disclose them. Disclosure is the most ubiquitous policy response to COIs across a diversity of industries and professions. In theory, disclosing COIs provides potentially useful information about the incentives an advisor faces, enabling advisees to make more informed decisions about whether to follow the advice they receive.

Although disclosure can have benefits, such as enabling oversight of practices, it is not a panacea. Several negative effects of disclosure have been documented in prior research, which has shown that disclosures often fail to undo the influence of potentially biased advice (Beshears, Choi, Laibson, & Madrian, 2009), sometimes even increasing trust in the advisor (Sah, Malaviya, & Thompson, 2018). In other research, disclosure decreased trust but increased compliance with advice due to a *panhandler effect* (Sah, Loewenstein, &

Cain, 2013), whereby COI disclosure makes an advisee aware of the advisor’s self-interest, and advisees then view the disclosure as an implicit favor request that is difficult to deny—for example, effectively, “Now that I have disclosed that I get a bonus if you take my advice, please help me receive that bonus.”

In this article, we empirically demonstrate an important mechanism, *insinuation anxiety*, which refers to advisees’ concern that rejection of advice may be interpreted by an advisor as an indication of distrust—a signal that the advisee may view the advisor as biased or corrupt. Prior summary papers have briefly introduced the concept of insinuation anxiety, along with other mechanisms (such as the panhandler effect), that could lead to unintended consequences of COI disclosure (Loewenstein, Cain, & Sah, 2011; Loewenstein, Sah, & Cain, 2012; Sah, 2012). In this article, we focus on insinuation anxiety, describe the concept in

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greater detail, differentiate the concept from the panhandler effect, and document empirical evidence of its existence across four experiments. We also empirically examine potential moderators of insinuation anxiety, such as source of the COI disclosure, whether the disclosure is mandatory or voluntary, and the magnitude of the COI.

Insinuation Anxiety

To better understand insinuation anxiety, imagine that a patient rejects a doctor's advice to enter a clinical trial rather than stick with the drug that he or she has been taking. In the absence of a disclosed COI by the physician, there are many plausible medical or personal explanations for the patient's decision to stay on the current drug (e.g., an aversion to risk or satisfaction with the current drug). However, if the doctor has disclosed that he or she will benefit from the patient entering the new drug trial, a new and salient explanation is introduced for the patient's unwillingness to enroll: Perhaps the patient worries that the doctor's advice is biased by the conflict. The patient may worry further that this interpretation will be especially offensive to the doctor, because being affected by a COI is traditionally (but often incorrectly) thought to stem from intentional corruption rather than unintentional bias (Banaji, Bazerman, & Chugh, 2003; Dana & Loewenstein, 2003; Sah & Fugh-Berman, 2013; Sezer, Gino, & Bazerman, 2015). Physicians also tend to believe that their colleagues may be susceptible to influence from COIs but believe themselves to be personally invulnerable (McKinney et al., 1990). After a COI disclosure, refusing a doctor's recommendation can therefore be tantamount to insinuating that the doctor is a crook.

It is almost inevitable that the advisor will make some inference about the advisee's motives for rejecting the advice (Jones, 1990) and that—due to a number of concerns, including saving the “face” of the advisor (Goffman, 1956; Lim & Bowers, 1991), evading embarrassment (Modigliani, 1968, 1971), or showing politeness (Brown & Levinson, 1987)—the advisee will want to avoid signaling a negative attitude toward the advisor (Apfelbaum, Sommers, & Norton, 2008). Impression management concerns are clearly important, even in economic lab games (Murnighan, Oesch, & Pillutla, 2001; Pillutla & Murnighan, 1995), let alone in more developed social relationships (Tetlock, 2002). People put considerable effort into maintaining harmony in relationships (Baumeister & Leary, 1995), and rejecting an advisor's recommendation risks undermining that harmony. Indeed, prior research has demonstrated that closer relationships may enhance these dynamics such as when dental patients opt for more expensive treatment the longer they have known their dentists (Schwartz, Luce, & Ariely, 2011, and for the contra view that breaches of trust are more salient in new relationships, see Lount, Zhong, Sivanathan, & Murnighan, 2008).

Given these points, how does disclosure affect patient compliance with medical advice? On one hand, by alerting

the patient to potential bias, disclosure should reduce trust (if advisees have sufficient resources to deliberate on the meaning of the disclosure; Hwang, Sah, & Lehmann, 2017; Kesselheim et al., 2012; Sah et al., 2018) and hence reduce compliance. On the other hand, by introducing insinuation anxiety, disclosure can increase pressure to comply. Although the net effect of these two influences is indeterminate and will vary by context (as it did in our experiments), both effects risk poisoning the doctor–patient relationship. Furthermore, lack of trust in advice can have adverse consequences for advisees when advice is, in fact, unbiased (Sah & Feiler, 2018), or when following the advice is better than doing nothing at all, for example, leaving a medical condition undiagnosed or untreated.

Relationship to the Panhandler Effect

Although the effect of insinuation anxiety may overlap with the panhandler effect (Sah et al., 2013), insinuation anxiety is a separate phenomenon. Insinuation anxiety is primarily about advisees wanting to avoid signaling distrust, while the panhandler effect is primarily about advisees wanting to avoid signaling unhelpfulness. Panhandler effects are likely to be strongest in situations in which advice recipients feel some pressure to help the advice giver, as might be the case, for example, when interacting with door-to-door fundraisers. However, panhandler effects are likely to be weakened in many of the most important settings in which COIs occur, for example, in medicine, because advice givers are generally assumed to be acting predominantly with an eye to the interests of advice recipients. In such situations, there is likely to be a more negative reaction to implicit requests that seem self-serving. Hospital patients, for example, who are told by doctors that their physician will receive a referral fee if they enter a clinical trial, may not feel much pressure to increase their doctors' income. However, the same patients may well feel pressure to avoid signaling distrust to their doctors.

Panhandler effects have been shown in contexts in which (a) advice was obviously self-serving to the advisor and (b) compliance with that advice was obviously self-sacrificial to the advisee (Sah et al., 2013). In such contexts, insinuating that the advice was self-serving would be redundant. In other words, panhandler effects are more likely than insinuation anxiety effects when it is more appropriate to offer self-serving advice—for example, with used car salespersons, real estate agents, or door-to-door fundraisers. Consider that car shoppers are unlikely to trust used car salespersons. Salespersons likely know that most buyers do not fully trust them, and car shoppers know that salespersons know they are not trusted. Hence, a car seller's disclosure to a potential customer that he or she needs to sell a car to meet his or her quota and retain his or her job would be unlikely to elicit insinuation anxiety from the shopper, but it could produce a panhandler effect, if framed effectively by the salesperson. On the contrary, if the car dealer is a dear friend, turning

down the offer—pitched as an exceptional opportunity—could produce insinuation anxiety. That is, rejecting the car could be interpreted as a signal that the customer does not believe the seller has prioritized the altruism of friendship over the desire to sell the car at a profit. Our point is that, in many important social contexts, advice is often supposed to be helpful to the advisee, and in these, insinuation anxiety is likely to be a greater concern. In this article, we document the empirical evidence of the existence of insinuation anxiety as a reason for perverse compliance with conflicted advice and identify one policy—external disclosure—that can mitigate it.

In the experiments presented here, we first examined the occurrence and impact of insinuation anxiety in three medical scenarios in which patients were unsure whether the advice was self-serving. We then moved to the field and a more general advice-taking context in which advisor–advisee interactions were face-to-face, and in which following or not following advice had material consequences for both parties. In Experiments 2 to 4, we explicitly tested for the panderer effect as well as insinuation anxiety to distinguish between the two effects.

The Experiments

In the first three scenario experiments, participants adopted the perspective of a patient receiving recommendations from a doctor who presented two options and recommended one of them. The main experimental manipulation varied whether the physician did or did not disclose to the patient that the recommended option would yield a personal benefit to the physician. Our main predictions were that the disclosure would (a) reduce trust but (b) increase pressure to follow the recommendation due to insinuation anxiety. The fourth field experiment involved real monetary stakes and examined advice taking when advisor–advisee interactions were face-to-face. We also examined mandatory versus voluntary disclosure (Experiment 2) and the disclosure of small versus large COIs (Experiment 3).

Across all experiments, we report all participants recruited, all experimental conditions, and all measures. In all our experiments, we based our decisions on sample size on rules of thumb (personal views) about “adequate” sample sizes (50 or more), opportunity, and budget. All analyses were conducted only after the data collection for that experiment was finished.

Experiment 1: Disclosing Financial COIs

Method

Participants. Participants ($N = 112$; 43 women, 68 men, one gender not reported; median age category = 26–35 years¹) were recruited from MTurk.

Procedure. Participants were randomized into either a non-disclosure or a disclosure condition and instructed to adopt the perspective of a patient and to read a brief description of that patient’s symptoms. They listened to a voice recording of a doctor (an advanced medical student playing the role of a physician) who described two treatment options: to enter a clinical trial, as the doctor recommended, or to continue to use a standard drug.

In the nondisclosure condition, the patient received no further information. In the disclosure condition, the same recording was used with an additional sentence after the doctor delivered his recommendation: “I do think it is important, however, to let you know I will receive a referral fee from the manufacturer of the drug if I refer you for the clinical trial.”

After listening to the doctor, insinuation anxiety was measured using a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*) with the statement: “I worry that the doctor will believe I think he is biased if I turn down his recommendation.” We predicted participants would report higher levels of insinuation anxiety with COI disclosure than without disclosure.

The participants also indicated their agreement with three statements relating to trust in the relationship using the same 5-point scale: “My doctor has my best interests at heart,” “I trust my doctor’s recommendation,” and “I will continue to see the doctor in the future.” We predicted participants would report lower trust with COI disclosure than without.

The participants also rated how likely they were to follow the doctor’s recommendation on a 5-point scale. Please see the Supplemental Material for more details on the procedure and questions.

Results and Discussion

Responses to the three trust statements were highly correlated ($r_s > .58$; $p_s < .01$) and loaded onto a single factor with good reliability (Cronbach’s $\alpha = .83$) and so were averaged to give a composite measure of trust.² Relative to nondisclosure, disclosure led to less trust ($M = 3.68$, $SD = 0.87$ vs. $M = 4.02$, $SD = 0.61$), $F(1, 110) = 5.73$, $p = .02$, $\eta_p^2 = .05$, 95% confidence interval (CI) = $[-0.62, -0.06]$, yet greater insinuation anxiety ($M = 3.13$, $SD = 1.13$ vs. $M = 2.41$, $SD = 0.97$), $F(1, 110) = 12.90$, $p < .001$, $\eta_p^2 = .11$, 95% CI = $[0.32, 1.11]$.

No difference was reported between conditions regarding compliance with the doctor’s advice ($M = 3.30$, $SD = 1.16$ vs. $M = 3.48$, $SD = 1.17$), $F(1, 110) = 0.71$, $p = .40$, $\eta_p^2 = .006$, 95% CI = $[-0.62, 0.25]$, suggesting that the increased pressure to comply associated with insinuation anxiety and the decreased desire to comply because of decreased trust may have offset each other.³

One way to test our causal model is to examine whether insinuation anxiety and trust mediated the relationship from our manipulation of disclosure (X) to taking the doctor’s advice (Y). However, the direct path from X to Y was

nonsignificant in this experiment. Although some statisticians argue that this path should not be a requirement in mediation analyses when there is a prior belief that suppression is a possibility (Shrout & Bolger, 2002), there are limitations in interpreting such mediation models (Little, Card, Bovaird, Preacher, & Crandall, 2012). Thus, for this and the following experiments, we report the full mediation analyses results in the Supplemental Material. For this experiment, we found that bootstrapping mediation analyses (Hayes, 2013) for estimating direct and indirect effects with multiple mediators revealed that the opposing forces (insinuation anxiety and trust) mediated the relationship between disclosure and compliance (see eFigure 1 in the Supplemental Material).

This experiment demonstrated that insinuation anxiety increased while trust decreased with COI disclosure. Our model implies that whether insinuation anxiety ultimately alters behavior, and in which direction, could depend on the relative strength of both forces (insinuation anxiety and trust).

Experiment 2: Mandatory and External Disclosure

To examine whether the source and type of disclosure affect trust and insinuation anxiety, this experiment included two extra conditions in addition to nondisclosure and (personal) COI disclosure: external disclosure and legally required disclosure.

External Disclosure

External disclosure—disclosure from a third party—gives advisees the same information about the COI as personal disclosure but from a different source. We propose that disclosure decreases trust (due to the information raising suspicion that the advice may be biased) and increases the pressure to comply (due to concerns regarding the advisor–advisee relationship; Sah et al., 2013). Thus, the decrease in trust should be similar whether the information comes directly from the advisor, from an external source, from a legally required source, or even from a voluntary source. However, the pressure to comply may change depending on the source of the disclosure, that is, it may be greater with personal (direct from the advisor) rather than external disclosure.

With personal disclosure received directly from an advisor, lack of trust should be a more salient explanation for advice rejection than in the case of external disclosure, in which there is no explicit communication from the advisor about the conflict. Advice rejection with external disclosure would convey less about the advisor’s integrity because external disclosure is less salient to the advisor (and as we opened this article suggesting there are many reasons to reject advice when it is not accompanied by salient disclosure). At the extreme, with external disclosure, the disclosure

could be made without the advisor’s knowledge. Then disclosure-induced lack of trust could not possibly be salient to the advisor as a reason for noncompliance. Even if the advisor believes that the disclosure was made externally, unless the doctor is for some reason focused on what might have been externally said, an external disclosure will often be less salient than when the advisor personally discloses directly prior to giving advice. Therefore, with external disclosure, we predicted that trust would decrease similarly to that seen with personal disclosure, but that insinuation anxiety would be less than with personal disclosure.

Legally Required Disclosure

To rule out an alternative account of the results—that insinuation anxiety is produced with disclosure only because the doctor appears especially forthcoming (via voluntary disclosure)—we also included a condition in which disclosure was legally required. Because the voluntary/mandatory distinction does not affect the salience of the corruption insinuation for the patient rejecting the advice, we predicted that insinuation anxiety would be similar regardless if the disclosure was required. One could hypothesize that voluntary personal disclosure would create more trust than legally required disclosure (and even external disclosure). On the contrary, as we have mentioned, trust may not vary due to *how* the COI disclosure is communicated but instead may decrease similarly; this is because the disclosure provokes the same uncertainty about the quality of the advice. We therefore predicted that legally required disclosure would lead to a similar decrease in trust and a similar increase in insinuation anxiety as personal disclosure.

Method

Participants. We aimed to recruit 800 participants from MTurk. After removing 16 participants who did not hear the audio recording and/or did not complete any questions, our sample size was 785 (325 women, 460 men; median age category = 26–35 years).

Procedure. Participants again listened to a voice recording from the “doctor,” as in the first experiment. Participants were randomized to one of four disclosure conditions (personal, required, external, and nondisclosure). We also varied the scenarios to verify the robustness of the insinuation anxiety effect; participants were randomized to either a colonoscopy (C) or ambulatory center scenario (A). The C scenario involved the doctor’s recommendation to have a colonoscopy “early,” contrary to the colonoscopy society’s guidelines. The A scenario involved the doctor’s recommendation to obtain minor surgery at a distant ambulatory surgery center, rather than at the nearby hospital where the patient had a previous similar successful treatment. The disclosure conditions were the following:

Table 1. Descriptive Statistics and Outcomes by Disclosure Condition, Experiment 2.

Measures	Nondisclosure <i>M (SD)</i>	Personal disclosure <i>M (SD)</i>	Required disclosure <i>M (SD)</i>	External disclosure <i>M (SD)</i>	Effect of condition		Nondisclosure vs. personal disclosure	Nondisclosure vs. required disclosure	Personal vs. required disclosure	Nondisclosure vs. external disclosure
					<i>F(3, 781) statistic</i> <i>p value</i> η_p^2	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>	
Trust	3.91 (0.75)	3.41 (0.91)	3.47 (0.80)	3.32 (0.80)	<i>F</i> = 20.74 <i>p</i> < .001 η_p^2 = .07	<i>t</i> = -6.05 <i>p</i> < .001 <i>d</i> = -0.60	<i>t</i> = -5.35 <i>p</i> < .001 <i>d</i> = -0.57	<i>t</i> = -0.70 <i>p</i> = .49 <i>d</i> = -0.07	<i>t</i> = -7.24 <i>p</i> < .001 <i>d</i> = -0.76	
Insinuation anxiety	2.28 (1.00)	2.73 (1.23)	2.78 (1.23)	2.54 (1.10)	<i>F</i> = 7.98 <i>p</i> < .001 η_p^2 = .03	<i>t</i> = 3.94 <i>p</i> < .001 <i>d</i> = 0.40	<i>t</i> = 4.40 <i>p</i> < .001 <i>d</i> = 0.45	<i>t</i> = -0.46 <i>p</i> = .65 <i>d</i> = -0.04	<i>t</i> = 2.24 <i>p</i> = .03 <i>d</i> = 0.25	
Panhandler effect	3.10 (1.10)	2.70 (1.05)	2.87 (0.99)	2.70 (1.09)	<i>F</i> = 6.32 <i>p</i> < .001 η_p^2 = .02	<i>t</i> = -3.75 <i>p</i> < .001 <i>d</i> = -0.37	<i>t</i> = -2.19 <i>p</i> = .03 <i>d</i> = -0.22	<i>t</i> = -1.55 <i>p</i> = .12 <i>d</i> = -0.17	<i>t</i> = -3.74 <i>p</i> < .001 <i>d</i> = -0.37	
Take doctor's recommendation	3.73 (1.09)	3.14 (1.19)	3.25 (1.08)	2.89 (1.06)	<i>F</i> = 20.24 <i>p</i> < .001 η_p^2 = .07	<i>t</i> = -5.32 <i>p</i> < .001 <i>d</i> = -0.52	<i>t</i> = -4.31 <i>p</i> < .001 <i>d</i> = -0.44	<i>t</i> = -1.00 <i>p</i> = .32 <i>d</i> = -0.10	<i>t</i> = -7.56 <i>p</i> < .001 <i>d</i> = -0.78	

Note. All responses were on a labeled 5-point Likert-type scale from 1 (*strongly disagree/very unlikely*) to 5 (*strongly agree/very likely*).

1. "Personal disclosure," in which the doctor said (C scenario), "However, I should tell you that I receive a payment for every colonoscopy I perform," or (A scenario) "I should notify you that I have a partnership interest in the ambulatory surgery center and I will receive a larger payment if you have the procedure done at this surgery center rather than at the hospital."
2. "Required disclosure," in which participants received the same personal disclosure from their doctor and were also instructed that "Your doctor will tell you about a conflict of interest because he is required to do so by law" (displayed in italics and red font when the participant was listening to the doctor).
3. "External disclosure," in which participants read, "Before you walk into the doctor's office, the receptionist hands you a sheet of paper that reads . . .," which was followed by (C scenario) "The director of the clinic would like to disclose the following information to you. Each doctor on this premise receives a payment for every colonoscopy that the doctor performs," or (A scenario) "The medical director would like to disclose the following information to you. Some doctors in this clinic have partnership interests in the Ambulatory Surgery Center and will receive larger payments if a patient receives treatment at this center instead of the hospital . . . Dr. Brooks is listed among the doctors with a partnership interest in the Ambulatory Surgery Center."
4. "No disclosure," in which the participant received no COI information.

Again, after listening to the doctor, we measured the patients' trust ($\alpha = .88$), insinuation anxiety, and whether the

patient would take the doctor's advice, using the same measures as in the previous experiment. We also included an additional question on the same 5-point scale to measure the panhandler effect. The question was similarly worded to previous experiments that measured this effect (Sah et al., 2013): "I want to help the doctor by following his advice."

Results⁴ and Discussion

There were significant differences across the four disclosure conditions for all our measures—trust, insinuation anxiety, panhandler effect, and taking the doctor's advice (see Table 1 for means and statistics). Participants who received disclosure in any form reported less trust than those with nondisclosure (personal: 95% CI = [-0.66, -0.34]; required: 95% CI = [-0.60, -0.28]; external: 95% CI = [-0.76, -0.43]). All three disclosures also resulted in significantly greater insinuation anxiety than nondisclosure (personal: 95% CI = [0.23, 0.68]; required: 95% CI = [0.28, 0.73]; external: 95% CI = [0.03, 0.48]; see Figure 1).

As predicted, required disclosure affected the advisee in much the same way as personal disclosure: with no differences in trust, 95% CI = [-0.22, 0.11]; insinuation anxiety, 95% CI = [-0.28, 0.18]; the panhandler effect, 95% CI = [-0.38, 0.05]; or taking the doctor's recommendation, 95% CI = [-0.33, 0.11].

Also, as predicted, when disclosure was externally provided, there was less insinuation anxiety than there was with personal, $t(781) = -1.68$, $p = .09$, $d = -0.16$, 95% CI = [-0.42, 0.03], or required, $t(781) = -2.13$, $p = .03$, $d = -0.21$, 95% CI = [-0.48, -0.02] disclosure, although insinuation anxiety was still higher than with nondisclosure.

Interestingly, there was a significant *decrease* in the panhandler effect with all three disclosures compared with

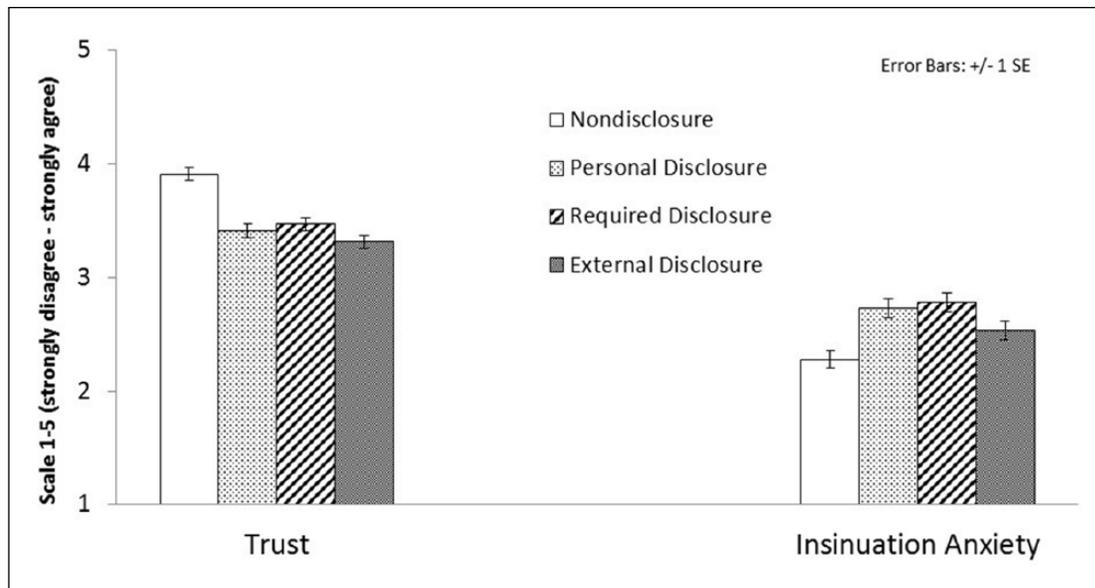


Figure 1. The effect of personal, external, and required disclosure on trust and insinuation anxiety, Experiment 2.

Note. Personal and required (mandatory) disclosure creates decreased trust and increased insinuation anxiety. External disclosure elicits decreased trust with only a smaller corresponding increase in insinuation anxiety.

nondisclosure (personal: 95% CI = $[-0.61, -0.19]$; required: 95% CI = $[-0.44, -0.02]$; external: 95% CI = $[-0.61, -0.19]$). There was no difference in the panhandler effect among the different types of disclosures. Although we expected insinuation anxiety to be greater than the panhandler effect, the decrease with disclosure may represent the advisees' surprise that they could possibly be asked to help the doctor in this situation (this can be compared with a commercial situation in which it is more acceptable for an advisor to be self-serving; Sah et al., 2013). This provides evidence that, in this context, disclosure's increased pressure to comply with the doctor operates through the different mechanism of insinuation anxiety versus the panhandler effect.

In this experiment, participants with disclosure indicated that they would be less likely to comply compared with nondisclosure (personal: 95% CI = $[-0.81, -0.37]$; required: 95% CI = $[-0.70, -0.26]$; external: 95% CI = $[-1.06, -0.62]$). The first force (decreased trust) was likely to be greater than the second force (insinuation anxiety). See eTable 2 in the Supplemental Material for the mediation analyses. However, there were differences in compliance between types of disclosure. With personal, $t(781) = 2.21$, $p = .03$, $d = 0.22$, 95% CI = $[0.03, 0.47]$ and required disclosure, $t(781) = 3.21$, $p = .001$, $d = 0.34$, 95% CI = $[0.14, 0.58]$, participants were significantly more likely to comply than with external disclosure. Therefore, when insinuation anxiety was reduced (in external disclosure vs. personal and required disclosure), compliance was also reduced.

Although we believe that the absolute magnitude of insinuation anxiety may be greater in a real-world context, the

differences between the disclosure conditions are informative. Specifically, information provided by a third party about the doctor's COI may allow patients to reject the recommendation (arguably the intended purpose of disclosure) without sending a mutually embarrassing signal of distrust to the doctor. Furthermore, these signals appear distinct from panhandler effects.

Experiment 3: Magnitude of the COI

Advisors and managers often insist that small gifts do not tarnish their objectivity (Sah & Larrick, 2018; Wazana, 2000). By manipulating the magnitude of the conflict, this experiment also investigated whether larger COIs create greater distrust and also greater insinuation anxiety or whether patients view COIs in a binary way, registering only their presence or absence. Furthermore, because nonfinancial as well as financial COIs constitute important influences on a doctor's behavior, we explored the effect of the disclosure of a nonfinancial COI. We were interested in whether nonfinancial COIs would increase both panhandler and insinuation anxiety effects. Although patients may not feel much pressure to increase their doctors' income (reducing the presence of the panhandler effects), they may feel pressure to comply with their doctors' requests to help them nonfinancially. Again, we predicted that disclosure would exert opposing forces on the advisee: increasing pressure to comply due to insinuation anxiety, combined with decreased trust.

In addition, we included a "disclosure of no conflict" condition in which the doctor explicitly stated that he had no

personal agenda in recommending the treatment. Past experiments have shown that advisors who declare the absence of conflicts are trusted more and this signal improves the advisor–advisee relationship (Sah & Loewenstein, 2014).

Method

Participants. Participants were 485 alumni at one of the authors' universities (222 women, 262 men, one gender not reported; median age category = 36–45 years). To encourage a high response rate, we offered each participant a university T-shirt if we achieved a response rate of over 80%. We emailed 736 alumni and achieved a 66% response rate (but nevertheless gave all respondents T-shirts).

Procedure. The experiment consisted of a four (disclosure conditions: nondisclosure, disclose no conflict, small COI disclosure, larger COI disclosure) between-subjects design. As in Experiment 1, the participants listened to a voice recording from the doctor offering two treatment options: to take a standard drug that the patient had taken previously or to enroll in a clinical trial. The doctor recommended the clinical trial in all four conditions: (a) nondisclosure, in which no further information was given; (b) disclosure of no conflict, where the doctor stated, “But let me also say that I have no personal interest; I have nothing to gain from you entering the trial”; (c) disclosure of a small COI, communicated by, “I do think it is important to let you know that I am part of the research team conducting the clinical trial and we need more people to participate in order for me to publish our results in a top medical journal . . . So, it would be helpful for my career if you could participate in the trial. But let me also say that there are plenty of other patients who are eligible”; and (d) disclosure of a larger COI, in which the doctor said the same first sentence as in the third condition but then gave a different and stronger ending: “So, it would be tremendously helpful for me and my career if you could participate in the trial. We are only a few participants away from completing the study.”

After listening to the doctor, we measured the patients' trust ($\alpha = .79$), insinuation anxiety, panhandler effect, and likelihood to take the doctor's recommendation, using the same items as in Experiment 2.

Manipulation Check

A manipulation check for the small and large COI disclosure conditions was conducted with 139 MTurk participants (43 women, 96 men; median age category = 26–35 years). Participants were given the same initial instructions as those in the main experiment: They imagined they were a patient, read about their medical symptoms, and listened to a voice recording of their doctor disclosing either a small or large nonfinancial COI. Participants listened to both the small and large COI disclosures in a counterbalanced order. After each

recording, they rated the magnitude of the doctor's COI, that is, the doctor's self-interest in the patient taking the clinical trial, from 1 (very low) to 7 (very high).

A repeated ANOVA with the magnitude as a within-subject variable, and order as a between-subject variable, revealed no interaction, $F(1, 137) = 2.53, p = .11, \eta_p^2 = .02$, and a main effect of magnitude: The large COI was rated as larger ($M = 5.84, SD = 1.19$) than the small COI ($M = 5.42, SD = 1.17$), $F(1, 137) = 17.27, p < .001, \eta_p^2 = .11$. A between-subject *t* test using only the first disclosure the participants heard also confirmed that the large COI was rated larger ($M = 5.94, SD = 1.22$) than the small COI ($M = 5.48, SD = 1.19$), $t(137) = 2.23, p = .03$, Cohen's $d = 0.38$.

Results and Discussion

As hypothesized, there were significant differences between the four disclosure conditions for trust, and insinuation anxiety. There were no differences for the panhandler effect (see Table 2 for statistics). Whereas, in the prior experiment, the panhandler effect was decreased, the nonfinancial COI disclosures in this experiment did not decrease or increase the panhandler effect. The disclosures did increase insinuation anxiety. These results show that insinuation anxiety is distinct from the panhandler effect, because the former is present while the latter is absent in this situation.

The magnitude of the COI had no effect in this scenario (further research could examine whether different magnitudes of *financial* COIs would make a difference to patients); disclosure of both smaller and larger COIs led to similar levels of trust, 95% CI = [−0.25, 0.11]; insinuation anxiety, 95% CI = [−0.20, 0.30]; and likelihood to take the advice, 95% CI = [−0.43, 0.08]. Compared with nondisclosure, disclosure of both a large and a small COI led to decreased trust (95% CI = [−0.64, −0.28] and [−0.57, −0.21], respectively) and greater insinuation anxiety (95% CI = [0.14, 0.64] and [0.09, 0.59], respectively; see Figure 2). These results again demonstrate that disclosure results in conflicting forces.

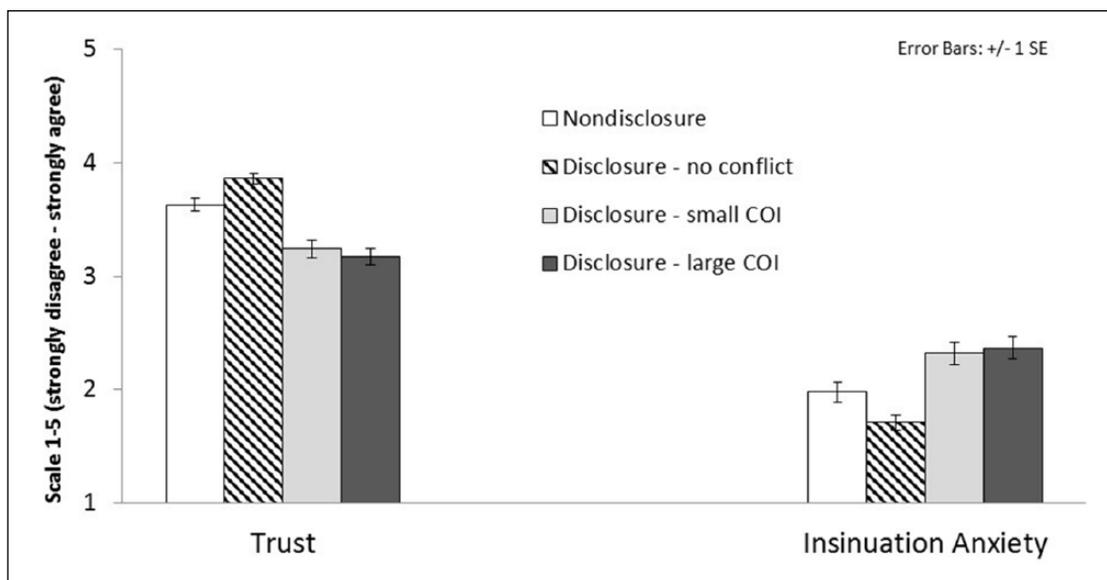
In this experiment, participants believed that, with both large (95% CI = [−0.76, −0.24]) and small (95% CI = [−0.58, −0.07]) COI disclosure, they would be less likely to follow the physician's advice compared with nondisclosure. The first force (decreased trust) was likely to be greater than the second force (insinuation anxiety). See eTable 2 in the Supplemental Material for the mediation analyses.

Finally, participants appeared to appreciate those doctors who disclosed the fact that they had no personal agendas. Compared with nondisclosure, simple contrasts revealed that participants in the disclosure of no-conflict condition were significantly more likely to trust the advice, 95% CI = [0.05, 0.41], and less likely to report feeling insinuation anxiety, 95% CI = [−0.52, −0.02]. Thus, the doctors' reassurances that they had no personal agenda did reassure patients, although there were no differences in the likelihood they would take the doctor's recommendation, 95% CI = [−0.19,

Table 2. Descriptive Statistics and Outcomes, Experiment 3.

Measures	Nondisclosure M (SD)	Disclosure	Disclosure	Disclosure	Effect of condition F(3, 481) statistic p value η_p^2	Nondisclosure	Nondisclosure	Nondisclosure	Disclosure
		of no conflict	of a small conflict	of a large conflict		vs. disclosure of no conflict	vs. disclosure of a small conflict	vs. disclosure of a large conflict	of a small vs. large conflict
Trust	3.63 (0.60)	3.86 (0.52)	3.24 (0.84)	3.17 (0.80)	$F = 26.27$ $p < .001$ $\eta_p^2 = .14$	$t = 2.54$ $p = .01$ $d = 0.41$	$t = -4.26$ $p < .001$ $d = -0.53$	$t = -4.97$ $p < .001$ $d = -0.65$	$t = -0.77$ $p = .44$ $d = -0.09$
Insinuation anxiety	1.98 (0.92)	1.71 (0.79)	2.32 (1.14)	2.37 (1.08)	$F = 12.24$ $p < .001$ $\eta_p^2 = .07$	$t = -2.16$ $p = .03$ $d = -0.31$	$t = 2.66$ $p = .008$ $d = 0.33$	$t = 3.02$ $p = .003$ $d = 0.39$	$t = 0.40$ $p = .69$ $d = 0.05$
Panhandler effect	2.24 (1.02)	2.28 (0.99)	2.29 (1.05)	2.25 (0.99)	$F = 0.07$ $p = .98$ $\eta_p^2 < .001$	—	—	—	—
Take doctor's recommendation	3.01 (0.90)	3.07 (1.04)	2.69 (1.09)	2.51 (1.00)	$F = 8.42$ $p < .001$ $\eta_p^2 = .05$	$t = 0.48$ $p = .63$ $d = 0.06$	$t = -2.52$ $p = .01$ $d = -0.32$	$t = -3.78$ $p < .001$ $d = -0.53$	$t = -1.36$ $p = .17$ $d = -0.17$

Note. All responses were on a labeled 5-point Likert-type scale from 1 (strongly disagree/very unlikely) to 5 (strongly agree/very likely).

**Figure 2.** The effect of disclosure of a nonfinancial COI on trust and insinuation anxiety, Experiment 3.

Note. Disclosure of no conflict increases trust and decreases insinuation anxiety. Disclosure (of a small or large COI) resulted in similar levels of decreased trust and increased insinuation anxiety. COI = conflict of interest.

0.32], compared with nondisclosure. These findings suggest that biased advice may already be a concern for some participants, and that these participants may not fully trust their doctor's advice. Similar to other experiments in a nonmedical context, this experiment shows that disclosure of a lack of self-interest can increase trust (Sah & Loewenstein, 2014).

In all these medical scenarios (Experiments 1-3), we document evidence of the existence of "insinuation anxiety" that arises with COI disclosure. We also found that the panhandler effect was nonexistent (or greatly diminished) in these

situations; instead, advisees felt pressure to comply with the advice due to insinuation anxiety. In these scenario experiments, the effect on actual compliance, comparing disclosure with nondisclosure, was either zero or a decrease in compliance, which may reflect the fact that people underestimate the discomfort of turning down advice in this hypothetical setting. In the next experiment, which involved real advice from a real advisor who stood to benefit from compliance, the effect was a significant increase in compliance with greater insinuation anxiety and less trusted advice.

Experiment 4: Face-to-Face Disclosure With Real Choices and Monetary Consequences

In two of the three prior experiments, the reduction of trust appeared to offset the impact of insinuation anxiety, leading to reduced reported compliance with the physician's advice. In real advisor–advisee interactions, however, insinuation anxiety is likely to be stronger than in hypothetical scenarios. People who are not currently feeling an emotion such as anxiety often underestimate the impact of such emotion on behavior (Van Boven, Loewenstein, Welch, & Dunning, 2012). To examine the strength of insinuation anxiety in a real face-to-face interaction, we conducted a field experiment in which an advisor (purportedly a professional at work) gave advice to an advisee, who then made a decision with real material consequences for both the advisee and the advisor. We predicted that, with disclosure in this situation, insinuation anxiety would be stronger than in the hypothetical scenarios to the point that it would increase compliance despite decreased trust.

The advisor in this experiment was trained to play the role of a professional who is (presumably) there to help the advisee and who is demonstrably more knowledgeable. This is an important distinction compared with prior field experiments that examined the panhandler effect in which both parties were equal members of the public and were similarly knowledgeable (Sah et al., 2013). Although it would be interesting to examine insinuation anxiety in an actual medical, or other, real-world professional context in which the advisors supposedly have the best interests of the advisee, there would be ethical constraints attached to conducting such an experiment. We aimed to simulate a situation in which the advisor appeared to be a professional in good standing who would give the advisee helpful, face-to-face advice. This context for studying insinuation anxiety examined real behavior with monetary consequences for both advisor and advisees in which, however, advisees would be unlikely to be seriously harmed by suboptimal advice or by experiencing insinuation anxiety. In prior experiments that were designed to produce the panhandler effect (Sah et al., 2013), compliance was clearly suboptimal for advisees and clearly beneficial for advisors. In contrast, in this experiment, the advice was not clearly suboptimal (i.e., it *might* be good) for the advisee. There was, however, more of a “sales” context here than in prior experiments in medical settings, so we acknowledge that insinuation anxiety and the panhandler effect could co-occur.

Method

Participants. Participants were passengers ($N = 253$; 147 women, 97 men, nine with gender unreported; 219 Caucasian; $M_{\text{age}} = 45.3$ years, $SD = 16.5$) on a ferry from/to Connecticut and Long Island. We aimed for at least 50 participants per condition.

Procedure. A trained confederate (a middle-aged Caucasian man, dressed in business casual) played the role of advisor and asked advisees to take a short survey for US\$5. Upon agreement, participants completed a one-page survey comprised of innocuous questions about the ferry. Next, advisees were given an opportunity to indicate how they would like to be paid—either with US\$5 cash (as initially offered) or a drawing for a mystery cash lottery, which offered somewhere between US\$0 and US\$10. The expected value of the lottery was US\$4.72. In all conditions, the advisor was rewarded with a US\$0.50 bonus for every advisee who chose the mystery cash lottery, so the advisor, although a trained confederate, did in fact have a real interest in guiding participants to play the lottery.

Advisees were randomized into four conditions: nondisclosure, COI disclosure, non-COI disclosure (i.e., a disclosure of something other than the COI), and no-advice. Aside from the no-advice condition (in which participants were not given any recommendation), the advisor was instructed to recommend the mystery cash lottery using the same scripted recommendation: “I’ve seen a bunch of the payouts of the drawing, and I suggest you go for that option [pointing to the lottery]; it often pays nicely.” In the nondisclosure condition, the advisor gave no further information; in the COI disclosure condition, the advisor notified the advisee of his conflict by first saying, “I should tell you that I get a small bonus if you pick the drawing. That said . . .” before giving the scripted recommendation. In the non-COI disclosure, the advisor first disclosed an alternative piece of information that had nothing to do with COIs: “I should tell you that there is some risk if you pick the drawing. That said . . .” This ruled out the possibility that any observed increase in compliance from disclosure was due to the extra time spent conversing with the participant.

After making their choices, participants were told that the researchers conducting the survey were also interested in the quality of the interaction they had with the interviewer.⁵ Using a 7-point scale, the participants completed one item that measured their trust of the advisor: “The interviewer placed his own interests above mine” (reverse coded), and two insinuation anxiety items: “I felt uncomfortable, because I suspected the interviewer’s recommendation may have been biased,” and “I was concerned that the interviewer would believe that I thought he was biased if I turned down his recommendation” ($\alpha = .92$).

We also measured the panhandler effect using the statement, “I felt pressure to help my interviewer.” The advisees also responded to a more general discomfort statement, which could capture insinuation anxiety, the panhandler effect, or both: “It was/would have been uncomfortable to turn down the interviewer’s recommendation.” Participants also rated how much they liked their interviewer and how reputable the lottery was on 7-point scales. They then sealed their responses in an envelope that they knew would go directly to the researchers (i.e., would not be seen by the

Table 3. Men and Women Taking the Advice (Choosing the Lottery), Experiment 4.

Taking the advice (lottery)	No advice	Nondisclosure	Non-COI disclosure	COI disclosure	Effect of condition	Nondisclosure vs. COI disclosure		
						No advice vs. COI disclosure	COI disclosure	Non-COI disclosure vs. COI disclosure
					Chi-square statistic χ^2			
					p value			
					Effect size ϕ			
All participants	5 / 61 (8)	14 / 70 (20)	10 / 60 (17)	26 / 62 (42)	$\chi^2 = 22.47$ $p < .001$ $\phi = .30$	$\chi^2 = 18.57$ $p < .001$ $\phi = -.39$	$\chi^2 = 7.49$ $p = .006$ $\phi = -.24$	$\chi^2 = 9.36$ $p = .002$ $\phi = -.28$
Women	2 / 36 (6)	6 / 41 (15)	7 / 32 (22)	18 / 38 (47)	$\chi^2 = 20.90$ $p < .001$ $\phi = .38$	$\chi^2 = 16.39$ $p < .001$ $\phi = -.47$	$\chi^2 = 9.99$ $p = .002$ $\phi = -.36$	$\chi^2 = 4.92$ $p = .03$ $\phi = -.27$
Men	3 / 25 (12)	8 / 25 (32)	3 / 26 (12)	6 / 21 (29)	$\chi^2 = 5.23$ $p = .16$ $\phi = .23$	—	—	—

Note. COI = conflict of interest.

interviewer/advisor) and finally received either US\$5 cash or their earnings from the mystery prize lottery, which was determined by the advisor's randomized pay sheet.

Results

Advisee choice. There was a significant difference in the advisees' choice of payment across the four conditions (see Table 3 for statistics). In the no-advice condition, only 8% of participants chose the lottery, revealing that the US\$5 cash was the preferred option in the absence of any recommendation. There was no significant difference between the following three conditions: the no-advice condition; the nondisclosure condition in which a recommendation was given for the lottery with no additional information (20% of advisees picked the lottery); and the non-COI disclosure condition in which advisees received a recommendation for the lottery without information on the COI but in which the advisor revealed there could be some risk (17% of advisees picked the lottery), $\chi^2(2, N = 191) = 3.68, p = .16, \phi = .14$.

There were significant differences between the COI disclosure condition, in which the advisees not only received a recommendation to pick the lottery but were also informed about the advisor's COI (42% of participants chose the lottery), and each of the other three conditions: no-advice, nondisclosure, and the non-COI disclosure conditions.

Interestingly, although we did not predict gender differences in this experiment (gender effects were not present in the three prior medical scenario experiments), we found greater effects for women than men (Table 3 displays advisee choice for both women and men separately). Recall that the advisor in this experiment was a middle-aged Caucasian man, dressed in business casual. For women, there was a significant difference between the four conditions in taking the advisor's recommendation. Receiving advice to take the

lottery with a disclosure of the COI led to 47% of the women taking the lottery, while significantly less women took the lottery when receiving the same advice in the nondisclosure (15%) and non-COI disclosure (22%) conditions. For men, there were no significant differences between the four conditions for taking the advisor's recommendation. We therefore report the results for advisee trust, insinuation anxiety, and panhandler effects both with and without gender as a variable.

Trust. Advisees felt significantly less trust in the advisor when the advice was accompanied with a COI disclosure ($M = 4.75, SD = 1.52$) compared with the other two advice conditions (non-COI disclosure and nondisclosure; $M = 5.19, SD = 1.35$), $F(1, 184) = 3.97, p = .048, \eta_p^2 = .02, 95\% CI = [-0.87, -0.04]$.

Including gender as a variable, a 2 (COI disclosure vs. non-COI disclosure and nondisclosure conditions) \times 2 (women vs. men) ANOVA revealed a significant interaction, $F(1, 175) = 4.07, p = .045, \eta_p^2 = .02$, but no other significant effects. Contrasts revealed that women felt significantly less trust in the COI disclosure condition ($M = 4.55, SD = 1.50$) compared with the non-COI disclosure and nondisclosure conditions ($M = 5.30, SD = 1.43$), $F(1, 175) = 6.89, p = .009, \eta_p^2 = .04, 95\% CI = [-1.31, -0.19]$, whereas there was no significant difference for men in trust between the COI disclosure condition ($M = 5.19, SD = 1.54$) and the other advice conditions ($M = 5.00, SD = 1.26$), $F(1, 175) = 0.27, p = .61, 95\% CI = [-0.54, 0.92]$.

Insinuation anxiety. Advisees in the COI disclosure condition ($M = 2.89, SD = 1.07$) felt greater insinuation anxiety than in the other advice conditions ($M = 2.59, SD = 1.04$) although this was only marginally significant, $F(1, 184) = 3.28, p = .072, \eta_p^2 = .02, 95\% CI = [-0.03, 0.62]$.

When gender was included as a variable, the 2 (COI disclosure vs. non-COI disclosure and nondisclosure conditions) \times 2 (women vs. men) ANOVA revealed a significant interaction, $F(1, 175) = 4.80, p = .03, \eta_p^2 = .03$, and no significant main effects. Contrasts again revealed that women in the COI disclosure condition ($M = 2.97, SD = 1.14$) felt greater insinuation anxiety than in the other advice conditions ($M = 2.42, SD = 1.09$), $F(1, 175) = 6.98, p = .009, \eta_p^2 = .04, 95\% CI = [0.14, 0.97]$, whereas there was no significant difference in insinuation anxiety for men between the COI disclosure ($M = 2.71, SD = 0.97$) and other advice conditions ($M = 2.91, SD = 1.14$), $F(1, 175) = 0.53, p = .47, \eta_p^2 = .003, 95\% CI = [-0.73, 0.34]$.

Panhandler effect. There was no significant difference between the COI disclosure ($M = 2.85, SD = 1.21$) and other advice conditions ($M = 2.61, SD = 1.16$) for the panhandler effect, $F(1, 184) = 1.78, p = .18, \eta_p^2 = .01, 95\% CI = [-0.12, 0.61]$.

However, with gender included as a variable, there was a significant interaction, $F(1, 175) = 5.07, p = .03, \eta_p^2 = .03$, and no significant main effects. Again, women in the COI disclosure condition ($M = 2.97, SD = 1.24$) felt greater panhandler effects than in the other advice conditions ($M = 2.47, SD = 1.19$), $F(1, 175) = 4.63, p = .03, \eta_p^2 = .03, 95\% CI = [0.04, 0.96]$, whereas there was no significant difference for men ($M = 2.52, SD = 1.08$ vs. $M = 2.88, SD = 1.08$), $F(1, 175) = 1.40, p = .24, \eta_p^2 = .008, 95\% CI = [-0.95, 0.24]$.

Other measures. There were no other significant differences between the COI disclosure and other advice conditions for general discomfort, $F(1, 183) = 2.34, p = .13, \eta_p^2 = .01, 95\% CI = [-0.08, 0.65]$. Including gender as a variable revealed no interaction, $F(1, 174) = 1.63, p = .20, \eta_p^2 = .009$ and no significant main effects ($ps > .28$). There were also no significant effects for the likability of the interviewer ($ps > .44$), and how reputable ($ps > .57$) participants found the lottery. See Supplemental Material for additional measures on trust and mediation analyses.

Discussion

In this face-to-face context in which advice was real and had monetary consequences, we observed that with COI disclosure there was significantly increased compliance with advice compared with each of the other three conditions. As discussed earlier, the advisor was not as professional as a doctor might be expected to be, which means that the advisees' presumption of the advisor's beneficence might be expected to be lower in this experiment. Thus, as we expect, panhandler effects as well as insinuation effects emerge.

All the main dependent variables of interest (compliance, trust, and insinuation anxiety) were significant in the predicted directions for women but were reduced or nonsignificant for

men. Investigating the specific reasons for these significant gender effects are outside the scope of this article. Perhaps women had higher expectations that the male advisor would put their interests first and, therefore, felt higher insinuation anxiety, whereas, for men, the assumption of advisor beneficence in this situation may have been lacking. Or perhaps these gender effects emerged in the face-to-face interactions due to perceived differences in authority or power between the male advisor and women advisees, or differing expectations of cooperativeness (Cialdini, 2006; Galinsky & Schweitzer, 2015; Gino, Shang, & Croson, 2009; Kray, Reb, Galinsky, & Thompson, 2004; Kray, Thompson, & Galinsky, 2001). Future research could examine the gender differences and also experiment how advisor–advisee authority, power, and status impact trust in the advisor and insinuation anxiety.

General Discussion

This article documents empirical evidence of the existence of an “insinuation anxiety” that can arise in advisees' minds when a COI is disclosed. The four experiments show that COI disclosure decreases trust in the advice but can increase pressure to comply due to anxiety about implicitly insinuating that the advisor may be biased. Insinuation anxiety is distinct from pressures to help advisors—the panhandler effect—and can lead disclosure to have perverse effects even when panhandler effects are not present.

In Experiment 1, we introduced insinuation anxiety as a significant factor that arises with COI disclosure. In Experiment 2, explicitly stating that the disclosure was required by law did not substantially affect the burdens experienced by participants. Importantly, we found evidence that when a salient external source made the disclosure, as opposed to the advisor making the disclosure personally, it reduced insinuation anxiety and compliance. Reducing insinuation anxiety is likely to be even more important in real-world contexts in which there may be greater power asymmetry or preexisting relationships that the advisee wishes not to damage by rejecting the advice. In Experiment 3, we demonstrated that insinuation anxiety is distinct from the panhandler effect, because the former was present while the latter was absent. We also found that participants felt less insinuation anxiety and greater trust if the doctor disclosed the absence of conflicts. This is encouraging because a disclosure policy may lead advisors to avoid COIs so that they can disclose that they have no conflicts (Sah & Loewenstein, 2014), which would be beneficial both in decreasing potential bias and increasing (justifiable) trust.

In Experiment 4, we move from the controlled lab environment to examine real-world behavior. When the disclosure was personal and face-to-face, both insinuation anxiety and compliance with disclosure were greater, to the point where disclosure significantly increased compliance with biased advice. We found that our effects were stronger for

women than men, which raises several questions for future research on individual differences in vulnerabilities to the phenomenon described here.

Limitations and Future Research

Although we have established that insinuation anxiety is a concern for advice recipients, and a separate phenomenon from other perverse effects of disclosure, open questions remain as to what extent this anxiety impacts ultimate compliance with distrusted advice, as well as the extent that both advisors and advisees are aware of it. If advisors are aware of it, it is possible that they could use it strategically to increase compliance with conflicted advice. If advisees are aware of it, they might engage in efforts to diminish its influence, for example, by coming up with persuasive explanations for why they rejected the advice. It is likely that multiple psychological processes and various modes of reasoning and influence arise with advice taking as has been shown in other research (Bonaccio & Dalal, 2006; Cialdini, 2006; Deutsch & Gerard, 1955; Feng & MacGeorge, 2006; Gino, Brooks, & Schweitzer, 2012; Yaniv, 2004). Our article serves as an existence proof of insinuation anxiety—a mechanism that can weigh on advisees' minds and affect the relationship between advisors and advisees.

An interesting avenue for future research is the extent to which individual and demographic differences play a role. For example, in Experiment 4, the effects were present for women but less so for men. It is possible that gender is a proxy for other differences, such as authority, power, or status or heightened expectations of cooperation, and these variables are also a fruitful avenue for future research. There are sufficient signs that insinuation anxiety is a concern for many of the consumers whom disclosure purports to protect but the latter finding suggests that disclosure may disproportionately harm advisees who are most vulnerable with less authority, power, or status in society.

Policy Implications

Diverse research has documented different ways that COI disclosure can backfire (Cain, Loewenstein, & Moore, 2005, 2011; Loewenstein et al., 2011, 2012; Sah, 2016; Sah et al., 2013, 2018). The adverse consequences of disclosure go beyond effects on trust, the relationship, and (possibly) increased compliance. Disclosure may also cause people to ignore advice that, while conflicted, would, in fact, have been helpful (Kuang, Weber, & Dana, 2007; Li & Madarász, 2008; Sah & Feiler, 2018). People need advice from experts, and disclosure could have disastrous consequences for people who need good medical or financial advice but who ignore advice that is actually beneficial despite being conflicted, or who avoid soliciting advice out of either distrust or fear of getting trapped in the kind of situations documented in this article.

Policies that often seem like “obvious” ways of informing and protecting consumers sometimes have unintended consequences. For example, proponents of calorie labels might assume consumers will use the labels as the proponents themselves would—to cut calories—but those who are most in need of weight reduction often ignore the labels or perhaps they may even use the calorie labels, contrary to the way they were intended, to maximize calories per dollar. The consumers who use the nutritional information as intended tend to be more educated and already eating healthy foods (Tavernise, 2014). This is reminiscent of the notion that savvy, experienced players can better use disclosed information (Koch & Schmidt, 2009; Malmendier & Shanthikumar, 2007). Although this notion may be reassuring, it also suggests that less savvy and less educated people might be more vulnerable to the unintended consequences of COI disclosure.

Another example of a policy that could have a perverse effect is mandatory second opinions. Although multiple opinions are shown to be beneficial in many different domains, recent research demonstrates unintended effects on primary advisors: Primary advisors adopt a profit-maximizing frame and give even more biased advice when they become aware that their advisees may receive a second opinion (Sah & Loewenstein, 2015). Other policies that did not work as intended include cigarette health warning labels, which were supposed to inform consumers of the dangers of tobacco but became a litigation shield for big tobacco to use against consumers who “had been warned.”

Despite the negative effects of disclosure documented here, we generally support policies that increase transparency. Mandatory disclosure can potentially pressure professional societies to reduce the prevalence and severity of COIs and increase the likelihood that advisors themselves will eschew conflicts so as to report their absence or decrease the bias in their advice (Sah, 2017; Sah & Loewenstein, 2014). External disclosures may be useful if they are less socially salient than personal disclosures and reduce insinuation anxiety. Furthermore, it could be argued that advisees have a right to transparency and to know whether their advisors have COIs. Indeed, some advisees may be able to use the disclosed information while minimizing the negative social pressures that information may bring.

All things considered, therefore, disclosure may still be a net positive in the absence of anything better. However, the current research adds to a body of existing research suggesting that disclosure is not the panacea many take it to be; it can fail to achieve its intended purposes and can even have perverse effects. This article documents empirical evidence of the existence of insinuation anxiety that arises from COI disclosure and causes advisees to consider how the advisor will interpret the rejection of their advice. This consideration should be absent from the important decisions advisees make when it comes to important matters such as health and financial decisions. It is the advisees who need protecting, not the advisor's feelings.

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Notes

1. Age was measured in categories rather than in absolute values.
2. Although the three trust items were highly correlated, one of the questions regarding continuing to see the doctor in the future could be considered a behavior intention and may tap into a different psychological construct than our other two indicators of trust. Therefore, we also conducted analyses using responses from each trust question separately (in this and the following experiments) and found similar results. For the sake of parsimony, we report the combined measure of trust in all experiments. In Experiment 4, we also piloted additional questions on trust at the end of the experiment based on Mayer, Davis, and Schoorman's (1995) tridimensional trust measure (see Supplemental Material for more details).
3. Correlations (and other information) among the variables for all four experiments are presented in eTable 1 in the Supplemental Material.
4. Results are presented collapsed over scenarios. Please see Supplemental Material for differences due to scenario (which mainly reveal a greater decrease in trust and a greater increase in insinuation anxiety due to disclosure in the ambulatory center scenario than the colonoscopy scenario).
5. Due to the different setting and nature of this experiment compared with the previous three experiments, the subsequent measures varied the wording slightly to make it appropriate for the new context.

Supplemental Material

Supplemental material is available online with this article.

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