The Burden of Disclosure:

Increased Compliance with Distrusted Advice

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Abstract

Professionals are often influenced by conflicts of interest when they have a personal, often material, interest in giving biased advice. Although disclosure (informing advisees about the conflict of interest) is often proposed as a solution to problems caused by such conflicts, prior research has found both positive and negative effects of disclosure. We present six experiments that hold advice constant to reveal a previously unrecognized perverse effect of disclosure: While disclosure can decrease advisees’ trust in the advice, it simultaneously increases pressure to comply with that same advice. This compliance pressure comes from two mechanisms: recipients (1) fear signaling distrust of advisors, and (2) feel an increased pressure to help satisfy their advisors’ personal interests when those interests have been disclosed. Hence, disclosure can burden those it is ostensibly intended to protect. We show that the increased pressure to comply is reduced if (1) the disclosure is provided by an external source rather than from the advisor, (2) the disclosure is not common knowledge between the advisor and advisee, (3) a cooling-off period is introduced, or, (4) the advisee can make the decision in private.

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The Burden of Disclosure: Increased Compliance with Distrusted Advice

Suppose that during a visit to your doctor she informs you that, under disclosure rules, she is required to tell you of a conflict of interest: She will receive a “referral fee” if you enroll into the clinical trial she is recommending. What do you do with that information? How do you feel towards your doctor, and are you more likely or less likely to follow her advice after the disclosure? This paper addresses these questions by examining what we call the burden-of-disclosure: Disclosure places advisees in an effective bind because it causes advisees to trust the advice less but also experience increased pressure to comply with the advice. Thus, instead of the disclosure serving as a warning, it can actually place a burden on those it was supposed to protect.

By a conflict of interest (COI), we mean a conflict between an individual’s professional role and his or her personal interests. More formally, the recent Institute of Medicine report on “Conflict of Interest in Medical Research, Education, and Practice” (2009) defined a COI as “a set of circumstances that creates a risk that professional judgment or actions regarding a primary interest will be unduly influenced by a secondary interest” (p. 6). COIs are ubiquitous, from real estate agents who often benefit from a quick sale, to lawyers who often have financial interests that differ from their client’s, to doctors who are paid for tests and procedures and who often receive gifts and funding from pharmaceutical companies and device manufacturers.

Many of the recent economic problems that have plagued the United States were exacerbated by COIs. In the latest mortgage crisis, credit-rating agencies that evaluated the mortgage-backed securities were hired and fired by firms whose bonds they were rating. The abrupt demise of WorldCom and Enron was fueled, at least partly, by accounting firms who faced COIs between their auditing responsibilities and their desire to retain highly profitable
consulting contracts with the same firms. And, significant rises in healthcare costs in the United States have been partly attributed to the fee-for-service remuneration model and physicians receiving payments from industry (Kassirer, 2005).

Not surprisingly, given their ubiquity and recognized significance, great efforts have been made to deal with COIs, including efforts to eliminate them, e.g., by splitting accounting firms into separate auditing and consulting companies, and by “managing” them, as is common at many academic medical centers. Across interventions, however, there is one striking constant: Disclosure. Virtually all policies intended to mitigate the negative effects of COIs—whether in medicine, business, government, or academia—include, or are limited to, disclosure. The American Medical Association states in its 2005 code of ethics that “Physicians are required to disclose when referring patients to facilities that they have ownership interest in, or recommending patients for clinical trials that they will benefit from financially.” MedPAC, the Medicare Payment Advisory Commission, recommended in 2009 that Congress require hospitals and other entities that bill Medicare to report and publicly post physician ownership interests. The 2010 Patient Protection and Affordable Care Act also calls for increased transparency in physician relationships, and requires by 2013 that every manufacturer of a covered drug, device, or medical-supply product operating in the U.S. report all recipients of payments or transfers in excess of $10. Financial media sources such as CNBC and CNNfn require stock analysts to disclose their COIs when they offer televised advice on stocks and a new independence rule from the SEC requires client firms to disclose the amount of non-audit fees paid to their auditors so that investors are warned of a potential compromise of the auditor’s independence. As Parascandola (2007) writes in a recent review published in the medical literature, “disclosure
has… become the primary tool in the scientific community for addressing potential or apparent conflicts of interest” (p. 3778).

Disclosure provides information that, at least in theory, enables recipients of advice to make informed decisions. “By creating minimum disclosure requirements, regulators reduce the information gap between informed and uninformed” (Healy & Palepu, 2001). Disclosure can also be attractive to advisors, as it involves minimal disruption to the status quo, and, through a process termed “moral licensing” (Monin & Miller, 2001; Cain, Loewenstein, & Moore, 2011), can free advisors from the perceived need to grapple with the conflict between personal interest and professionalism. By extension, disclosure can also decrease advisors’ feelings of guilt or personal responsibility towards unfavorable outcomes that may occur. However, for disclosure to have the desired effect, recipients of advice must first be able to comprehend and correctly discount for the biasing influence, and second, must feel comfortable and able to act on the information given to them. This turns out to be difficult.

Indeed, disclosure can have perverse effects, as revealed by Cain, Loewenstein, and Moore (2005) who show that disclosure can sometimes lead advisors to give even more biased advice. This is due, in part, to advisors feeling morally licensed to offer biased advice once they have disclosed their COI, and in part due to “strategic exaggeration” – giving more biased advice to offset the expectation of greater discounting of advice as a result of disclosure. Moreover, since many instances of bias are unconscious and unintentional (Dana & Loewenstein, 2003), even if advisors wish to provide unbiased advice, they are often unaware that they are biased at all, let alone being aware of the extent of their bias, and so they feel little need to adjust their recommendations.
Problems also exist on the advisee side of the advisor-advisee relationship. Due to anchoring effects (Strack & Mussweiler, 1997; Tversky & Kahneman, 1974), the recipient of biased advice is unlikely to adjust sufficiently for the bias produced by the disclosed COI, nor for the added bias caused by the disclosure itself. Hence, advisees can end up in a worse position for having been warned of the COI. Of course, advisees may also discount too heavily, and the large variance in discounting poses a problem. Discounting for biased advice is the intended point of disclosure, but existing research suggests that advisees discount insufficiently and often erratically (Morris & Larrick, 1995; Cain et al., 2005).

The Burden of Disclosure

Disclosure can have another unintended consequence that has not been addressed empirically; it can place recipients of advice in an effective bind, in which they trust the advice less, yet feel increased pressure to comply. Unlike prior research which looks at perverse effects resulting from the impact of disclosure on the advice that advisors provide, this paper examines how the same advice coupled with disclosure (vs. that advice with no disclosure) can effectively pressure advisees to follow that advice despite reductions in trust.

Decreased trust in advice with disclosure is neither surprising nor necessarily incorrect; it results from an uncertainty in advisees as to whether the advice was given only with recipients’ interests in mind or with an eye to the self-interests of the advisor. Common sense suggests that, having been alerted to the existence of a COI, recipients of advice may feel less satisfied with, and trustful of, the advice they receive and of the person who gave it to them.

The increased pressure to comply with disclosed advice is more surprising and results from two main mechanisms. First, recipients may feel uncomfortable turning down recommendations because they worry that it will signal distrust of the advisor. We call this
mechanism *insinuation anxiety*. Second, recipients may feel pressured to comply with advice to help their advisor when the advisor’s personal interests have been disclosed. This *panhandler effect* can be considered a form of “reluctant altruism” (Broberg, Ellingsen, & Johannesson, 2007; Dana, Cain, & Dawes, 2006; DellaVigna, List, & Malmendier, 2009; Lazear, Malmendier, & Weber, 2009).

Under these circumstances, disclosure effectively puts the advisees in a bind; they distrust the advice but also feel pressured to comply with it. This paper examines these aspects of disclosure in a series of experiments. The next section explains these forces in more detail.

**Decreased Trust**

Disclosure introduces uncertainty about whether the advice is given with the recipients’ best interests in mind or influenced by the advisor’s self-interests, doubts that would be unlikely to occur if, absent disclosure, the advisee was unaware of the conflict. Trust is central to research on advice-taking (Gino, 2008; Gino & Schweitzer, 2008) and has been defined, variously, as a behavior, an attitude, a belief, an expectation, a confidence, and an interpersonal variable (Dirks & Ferrin, 2002; Kramer, 1999; Lewicki & Bunker, 1996; McAllister, 1995; Pillutla, Malhotra, & Murnighan, 2003; Schoorman, Mayer, & Davis, 2007). Kramer (1999) and Dirks and Ferrin (2002) note that it is problematic to operationalize trust as a behavior because behaviors that are associated with trust, such as cooperation, are equally likely to arise from other causes (such as the benefits from cooperation). This is a key point in our studies, in which increased compliance can occur despite *diminished* trust, i.e., without private acceptance (Kelman, 1958).

Mayer, Davis and Schoorman (1995) propose a widely adopted tripartite account of trust according to which three attributions must be present for trust to be established: integrity, ability
(i.e., competence), and benevolence. Trusting an advisor may incorporate all of these elements, and different aspects of trust will be dependent on the context. Trust in the advice requires not only competence (which may be guaranteed if, for example, the advisor has the necessary professional qualification), but also integrity and benevolence. We measure trust in our experiments simply by asking advice-recipients if they felt their advisor had their best interests at heart. In the medical context, we also ask participants how much they trust their doctor and how likely the patients would be to see the same doctor in the future. We expect that disclosure of a COI reduces trust as measured in these ways.

**Increased Pressure to Comply: Insinuation Anxiety**

Imagine that a doctor advises you to enter a clinical trial rather than take a standard drug. In considering the doctor’s recommendation, there could be a number of medical or personal reasons you might elect to not take the doctor’s recommendation, e.g., you do not like taking a risk, or the side effects of the clinical trial drug sound worse. However, suppose that the doctor discloses a COI: He or she will benefit financially if you enter the clinical trial. The disclosed COI introduces an additional, highly salient explanation for your failure to enroll: that you do not trust your doctor to give good advice. People put much effort into maintaining harmonious relationships (Baumeister & Leary, 1995), and rejecting the recommendation runs the risk of undermining harmony by signaling distrust. Almost inevitably, the advisor will make some inference about the advisee’s motives for rejecting the advice (E. Jones, 1990), and advisees will want to avoid insinuating something negative about the advisor (Apfelbaum, Sommers, & Norton, 2008). When advice rejection can be attributed to a lack of trust, it is likely to have a significant impact on the relationship.
Turning down advice can be surprisingly hard to do (Cialdini & Goldstein, 2004; Cialdini, Levy, Herman, Kozlowski, & Petty, 1976; Flynn & Lake, 2008; Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006; Petty & Cacioppo, 1977, 1979; Ryan & Connell, 1989; Sagarin, Cialdini, Rice, & Serna, 2002; Tormala, Brinol, & Petty, 2006). When (even unhelpful) advice is seen as given with the intent to help, advisees feel the need to reciprocate by following that advice (Grant & Gino, 2010). And, even when advice is harmful, it can be hard to turn down. This was classically shown in Milgram’s (1974) studies of obedience to authority (replicated by Burger, 2009). Milgram found that the perception of authority, not actual authority, drove participants’ compliance: “Society is built and held together by social occasions and the operation of certain situational etiquette – each person respects the definition of the situation presented by another and in this way avoids conflict, embarrassment and awkward disruption of social exchange” (Milgram, 1974). Although participants in Milgram’s experiments occasionally revealed their feelings of discomfort to the experimenter (but still complied), insinuation anxiety posits that advisees will attempt to conceal their discomfort, either due to concern for maintaining the “face” of their advisor (Goffman, 1956; Lim & Bowers, 1991), embarrassment (Modigliani, 1968, 1971), or politeness (Brown & S. C. Levinson, 1987).

If insinuation anxiety is an important force increasing the pressure to comply with the advisor’s recommendation, we should find a drop in compliance when the situation eliminates or decreases this anxiety. In fact, anxiety itself has been shown to increase compliance with both good and bad advice (Gino, Wood, & Schweitzer, 2011). Just as Milgram (1974) found that closeness to authority and physical presence (necessitating face-to-face interaction) increased compliance, we hypothesize that increasing distance by allowing cooling-off periods, or by
enabling an advisee to make a decision in private, will decrease the pressure to comply with the advisor’s recommendation. We investigate these manipulations in the final experiment.

**Increased Pressure to Comply: Panhandler Effect**

Central to most COIs is the reality that an advisor will gain if the advisee takes an action that is not in the advisee’s own interest. This means that a failure to take such an action will effectively deprive the advisor of this gain. Research on what has come to be known as “reluctant altruism” (Broberg et al., 2007; Dana et al., 2006; DellaVigna et al., 2009; Lazear et al., 2009) identifies situations in which people feel pressured to behave generously, but would have preferred not to be in the situation in the first place. This is illustrated by the classic behavior of crossing the street to avoid a beggar. We may succumb to the beggar’s entreaties when confronted, but attempt to prevent the interaction from occurring. Likewise, imagine a tip jar placed in plain sight between you and the sandwich guy at the cash register: The proximity of both the jar and the worker increases the likelihood of you leaving a tip. If the tip jar were out of sight of the sandwich guy, even though you may be aware of its presence, you would likely feel less pressure to leave a tip because he cannot see whether you tip. Furthermore, if it is plausible that you are unaware of the tip jar, you can claim possible ignorance that a tip was even requested or appropriate. The example illustrates how common knowledge of a request (i.e., “you know that I know about it”) introduces extra pressure to satisfy that request. The problem with disclosure of a COI is that it also makes an implicit request common knowledge (“Do this and I get more money”), and, in the presence of the advisor, makes it hard to turn down that request (Zajonc, R. J. Wolosin, M. A. Wolosin, & Loh, 1970; Dana et al., 2006). As with the process of insinuation anxiety, the panhandler effect is likely to be diminished if the interaction
is not face to face. The advisor’s needs may still be present but they are less pressing from far away. We investigate this in greater detail in Experiments 4 to 6.

Our first two experiments examine the burden of disclosure in medical vignette studies in which participants play the role of a patient making healthcare choices. Four experiments then examine real choices between lotteries, where choosers receive advice from advisors with a conflict that is or is not disclosed. In some, we manipulate the source of the disclosure and, in others we manipulate other factors affecting the social component of the disclosure, in part to rule out alternative mechanisms that could lead to increased compliance.

Medical Studies

The first two studies address the impact of disclosure only on the advice-recipient (not on the advisor). Holding the advice constant, we predict that disclosure will create conflicting forces on the recipient, decreasing trust in the advice yet increasing the pressure to comply.

Participants experience a simulation of a common situation that they may face at a doctor’s office. In each situation, a physician mentions two options to the patient and recommends the one that yields a benefit to the physician. The benefit is financial in Experiment 1 and non-financial (advancement of the doctor’s research) in Experiment 2. The main experimental manipulation varies whether the physician discloses this extra benefit to the patient. The two main dependent variables are trust in the physician’s recommendation, measured by three survey items, and pressure to comply with the physician’s advice, measured by one survey item which focuses on insinuation anxiety (in subsequent experiments, we test the panhandler effect). Our main predictions are that the disclosure will (1) reduce trust in the doctor’s recommendation, but (2) also increase the pressure that the patient feels to follow that recommendation. In both experiments, we also asked participants to predict whether they would
follow the doctor’s recommendation. On the one hand, the negative impact of disclosure on trust should make the patient less likely to follow the doctor’s recommendation. On the other hand, the increased pressure to comply that patients are likely to feel will increase their likelihood of following the doctor’s recommendation. The net effect of these influences (reduced trust, added pressure to comply) depends on which force is greater, as well as the value of the advice itself (advice quality is unclear in the medical scenarios). So, we are less interested in the patient’s final decision about whether to take the advice (since that would vary from patient to patient and scenario to scenario). We also doubt that subjects are very accurate in predicting whether they would, in fact, follow the doctor’s advice in the hypothetical situation. People have a hard time in general predicting the power of the situation (Ross & Nisbett, 1991), and, to the extent that social/insinuation anxiety pressures embarrass patients into compliance, prior research has found that people who are not themselves currently embarrassed or anxious underestimate the impact of embarrassment and anxiety on their own behavior and that of others (Van Boven, Loewenstein, & Dunning, 2005; Van Boven, Loewenstein, Welch, & Dunning, 2010; Wray & Stone, 2005). Our later experiments put participants into a non-hypothetical, non-medical, advisor relationship, and there we will discuss ultimate choice in greater detail.

**Experiment 1: Medical Disclosure of a Financial Conflict Of Interest**

The first experiment examines the impact of disclosure of an advisor’s COI on advisees (patients). We predict that disclosure will create conflicting forces on the recipient, decreasing trust in the advice yet increasing the pressure to comply. We compare this “disclosure” condition to one of “no-disclosure,” where the doctor gives no further information to the patient.
Method

Participants. Participants were 627 community members (61% female; 67% between 18-55 years of age) recruited without pay, by clicking on a link either at one of the author’s university’s website, or on a link in the online version of the *New York Times* (http://tierneylab.blogs.nytimes.com). Participants varied widely in education level, and occupation. Approximately 53% had a college or masters degree; 81% were Caucasian and 6% were Asian.

Procedure. Participants imagined they were patients visiting their doctor. They were given a brief description of the symptoms and history of the patient and listened to a voice recording from the doctor regarding options for their medical care. One of the situations (“C” for colonoscopy) involved a decision to undergo a colonoscopy at an earlier date (as the doctor advised) than the colonoscopy society’s guidelines recommended, and the other scenario (“A” for ambulatory center) involved a decision regarding the location of some minor surgery: at the distant ambulatory surgery center (as the doctor recommended) or at the nearby hospital where the patient had a similar successful treatment previously.

Patients then experienced one of two conditions: In the no-disclosure condition, the patient received no further information; in the disclosure condition, the doctor revealed a common financial COI by saying (in C scenario): “*However, I should tell you that I receive a payment for every colonoscopy I perform*” and (in 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.*”

After listening to the doctor, the patient (participant) was then asked to write down his or her considerations and reported, on a 1-5 scale, how strongly he or she agreed or disagreed with
the following considerations: “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,” (these three questions measured trust), and, “I worry that the doctor will believe I think he is biased if I turn down his recommendation” (measuring increased pressure to comply via insinuation anxiety). Finally, participants were asked how likely they would be to take the doctor’s recommendation.

**Results**

The responses to the three trust questions were highly correlated (all $ps < .001$) and loaded onto one factor with a high Cronbach’s alpha (.86), so were averaged to give a composite measure of trust. There were significant differences between no-disclosure and disclosure conditions (see Figure 1): Participants who received disclosure showed less trust in the advice, $F(1, 625) = 23.61, p < .001$, yet were worried that turning down the recommendation could communicate suspicion to the doctor, $F(1, 625) = 12.62, p < .001$.\(^1\) Thus, conflicting forces on the patient were present when making a decision of whether or not to take the doctor’s recommendation.

In this experiment, participants predicted that they would be less likely to take the doctor’s advice with disclosure, $F(1, 625) = 24.89, p < .001$. However, we are less interested in average choices, and skeptical of whether patients could accurately predict which of the opposing forces (trust or insinuation anxiety) would be greater. Of greater importance is whether the opposing forces mediate the relationship between disclosure and taking the doctor’s advice. To test for mediation, we conducted bootstrapping mediation analyses using methods described by Preacher and Hayes (2008) for estimating direct and indirect effects with multiple mediators

\(^1\) Both scenarios gave similar results in the same direction, although the magnitude of the difference between disclosure and no-disclosure for “insinuation anxiety” was larger for the A scenario than the C scenario. This is not surprising since fee-for-service payments may be more acceptable than a partnership in a surgery center.
(this allows us to test the opposing mediators, simultaneously comparing the effects with one another). Results (shown in Figure 2) reveal that the opposing forces fully mediated the association between disclosure and taking the doctor’s recommendation. Furthermore, the analysis reveals that the indirect effect of disclosure was significant for both trust (-.29), 95% confidence interval (CI) (-.42, -.19), and insinuation anxiety (.03), 95% CI (.01, .06).

**Experiment 2: Medical Disclosure of a Non-Financial Conflict Of Interest**

Since non-financial as well as financial COIs represent important influences on doctor’s behavior, this experiment explored the effect of disclosure from the doctor when the COI was non-financial. Again we predict that disclosure of a COI will create opposing forces on the patient, decreasing trust yet increasing pressure to comply. However, to interpret whether the no-disclosure condition is a true baseline and led patients to believe the doctor had no COI, we also include a “disclosure of no-conflict” condition in which the doctor explicitly states he has no personal agenda in the decision the patient makes. Further, to investigate whether the magnitude of the disclosed COI matters to patients, we examine whether a large COI creates greater distrust and/or greater insinuation anxiety than a small COI, or whether, instead, patients view a doctor’s COI in a binary way, registering just the presence or absence of such a conflict in advice.

**Method**

**Participants.** Participants were 485 alumni at one of the author’s universities (46% female; 74% between 26-55 years of age; 81% Caucasian, 12% Asian). To achieve a high response rate, we offered each participant an official university T-shirt if we achieved a response rate of over 80%. We emailed 736 alumni and achieved a 67% response rate (despite not reaching 80%, we gave all respondents the T-shirt).
**Procedure.** As in Experiment 1, patients listened to a voice recording from the doctor offering two options for treatment – this time to take a standard drug that the patient had taken previously or be entered into a clinical trial. In all experimental conditions, the doctor recommended that the patient enter the clinical trial. Patients then experienced one of four different between-subject conditions – (1) no-disclosure, in which no further information from the doctor was given, (2), 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,*” (3), disclosure of a small COI, where the doctor said, “*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 that are eligible,*” and (4), disclosure of a large COI, in which the doctor said the same first sentence as in the third condition but then gave a different 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.*”

**Results**

As before, due to high correlations between the three trust survey items ($p < .001$) and a Cronbach’s alpha of .79, we created a composite average measure of trust. Means and results from a univariate ANOVA and planned contrasts are displayed in Figure 3 and Table 1.

Participants appeared to appreciate doctors who disclosed that they had no personal agendas: comparing this condition specifically to no-disclosure, participants were significantly more likely to trust the advice ($p = .01$) and less likely to feel uncomfortable about turning down the doctor’s recommendation ($p = .03$). Thus, doctors reassuring patients of their lack of
personal agenda relieved patients of some of the burdens associated with receiving disclosure of a COI, and also increased trust over those with no-disclosure. This suggests that COIs are already a salient concern for some patients (although these participants were highly educated), and it is interesting that these patients did not fully trust their doctor’s advice when no further information was given – trust can be increased when the doctor’s lack of self-interest is disclosed.

Comparing disclosure of conflict, both large and small, with no-disclosure revealed significant burden effects. With disclosure, participants trusted the advice less ($p < .001$), yet experienced greater discomfort about turning down the advice ($p < .01$). Thus, disclosure of a COI created conflicting forces on patients facing the decision of whether to take the doctor’s recommendation. Comparing disclosure of a small conflict with a large one did not reveal any significant differences between the two conditions; the magnitude of the disclosed COI did not appear to matter in this context – a small COI led to increased burdens similar to disclosure of a large COI, i.e., insinuation anxiety was similar in both of these cases.

Participants introspections again led them to believe that, with disclosure, they would be less likely to follow the physician’s advice. We are again skeptical of this result, since participants were not facing the actual social pressure that would have operated in the situation, which would have been especially acute given an established relationship with the doctor. Regardless of the ultimate impact on the patient’s choice of whether to follow their physician’s advice, the experiment shows that disclosure does create increased pressure to comply. Ideally, patients should not have to concern themselves with the doctor’s feelings when making a decision about medical care.
Again, we conducted similar bootstrapping analyses as with Experiment 1. Results (in Table 2) reveal that the effect of disclosing a conflict on taking the doctor’s recommendation was significantly reduced when the opposing mediators were included in the model. Furthermore, the analyses revealed with 95% confidence that the indirect effect of disclosure through the two mediators was significant for each type of disclosure and for each mediator (resulting in 95% confidence intervals that excluded zero). Thus, both opposing forces significantly mattered in whether the patient took the doctor’s advice.

Discussion

The results of the first two experiments show that disclosure of a doctor’s financial or non-financial conflict-of-interest has an adverse effect on the doctor-patient relationship. It decreases trust in the doctor’s advice, which is, however, accompanied by increased pressure to comply with the doctor’s disclosed interest. Thus, instead of being merely a warning, disclosure can become a burdensome request to comply with advice that is trusted less. These findings also demonstrate that disclosure can hurt advisors; after all, it is not clear which of the two options in each scenario is objectively better for the patient, yet the advisors are trusted less simply because they disclosed their COI. And, while disclosure might still be a net positive for the patient, it can also make patients deal with issues that are best not dealt with in a doctor-patient relationship.

Die-Roll Studies

The next four experiments examine the impact of disclosure in incentive-compatible lab experiments in which participants choose between two lotteries (die-rolls). Social interactions in these next experiments were real and face-to-face; thus social pressure to comply with advice was also real rather than hypothetical.
Within the medical context, while many patients are ready to acknowledge that doctors might generally be affected by COIs, few can imagine that their own doctor would be affected (Gibbons et al., 1998). Also, patients may take disclosure from their doctor as a signal of expertise, enhanced knowledge, or professional standing (Pearson, Kleinman, Rusinak, & W. Levinson, 2006). To avoid any inference of expertise in these incentive-compatible experiments, advice-recipients were given the same complete information regarding the lotteries as advisors had. Therefore, unlike the medical scenarios, advisors are not relative experts, but can only offer an additional perspective on the decision.\(^2\) Even though expertise is attenuated in these studies, lotteries are a good proxy for advice-giving, since the outcome is complex and probabilistic, common properties of decisions for which advice is commonly sought.

It makes less sense in this context to ask whether advice-recipients were worried about insinuating advisor-bias (since the bias is more apparent when offering suboptimal advice, and self-interested advice is more acceptable for random sidewalk advisors than for medical professionals). Therefore, we measured “rejection discomfort” in a more general sense (how uncomfortable advice-recipients felt turning down the advice), as well as directly examining panhandler effects.

\(^2\) We also conducted an additional lottery experiment in which, instead of giving full information on the prizes to choosers, one of the prizes that the advisor had knowledge of was not revealed to the chooser (referred to as the ‘mystery gift’). We found similar results as reported in what follows. Our reported designs happen to better rule out alternative hypotheses, and (because of the full information about the lottery) they make it clearer that advisees are making a “mistake” when choosing the suboptimal lottery.
Experiment 3: Disclosure’s Effect on Advisors and Advisees

Method

Participants. Two hundred forty participants (120 advisors) were recruited to board a mobile ‘data truck’ parked in an urban residential area, via posters announcing a chance to win various prizes. A broad cross-section of the public over the age of 18 participated.

Procedure. Participants were randomly assigned to one of two roles: “chooser” (advice recipient) or “advisor.” If participants arrived together, we made sure that they were partnered with a stranger. Choosers remained outside of the truck and were asked to choose between two different die-roll lotteries (A or B) that awarded prizes depending on the number rolled. Before choosers made their choice, advisors gave them advice on which die-roll they should choose. Overall, die-roll A offered more attractive prizes than die-roll B (Table 3). Advisors were directed onto the data truck and were given instructions and a communication (advice) form to complete, which contained all the information on the different prizes. On the communication form, advisors circled which die-roll they recommended (A or B) and wrote out an explanation for their recommendation.

There was a no-conflict condition, in which advisors gave advice to choosers but were not subject to a COI; these advisors were rewarded with (their own choice of) a die-roll regardless of which die-roll their chooser picked. The remaining advisors were subject to a COI: They were rewarded with a die-roll themselves if, and only if, their chooser picked die-roll B (the less attractive option), in which case the advisor could pick either die-roll for him or herself. The advisors with a COI were randomly assigned to a disclosure or no-disclosure condition. In the disclosure condition, the advisors were required to disclose their incentive by writing out word for word the following statement on the communication form: “First, I should let you know
that I get a die-roll myself if you choose die B. I get nothing if you choose die A, so it is in my interest that you choose die B.” In the no-disclosure condition, advisors were specifically told not to mention their COI to the chooser. Aside from this, in both conditions, advisors were free to provide any justification for their recommendation. Researchers were discreetly in earshot during the interaction between advisor–advisee to ensure that no disclosure took place in the no-disclosure condition. In both conditions, after the interaction, both parties were asked if there had been disclosure. It was also made clear that no deals could be made between partners, e.g., they were not allowed to share prizes. This was also enforced by making sure that die-rolls were conducted separately and that choosers left before advisors left (both advisors and choosers were aware of this procedure beforehand).

Choosers sat at one of two tables outside the truck, where they were handed instructions. After advisors had filled out the communication form in the truck, advisors went outside to be paired with a chooser. Advisors handed the communication form to the chooser with all the information about the die-rolls and their recommendation, then the chooser decided which die-roll to take by circling his or her answer (A or B) on the communication sheet as the advisor looked on. The participant pairs were separated again, and each participant answered questions regarding the choice he or she made (e.g., how pleased they were, how attractive they found each die-roll etc.), considerations he or she had taken into account (e.g., trust in advice and how uncomfortable they felt turning down the advisor’s recommendation), and feelings about the situation and their partner (e.g., how honest the advisor was, how much they liked the advisor etc.). Advisors were asked some questions regarding the strength of their recommendations, their preferences, and the considerations they had taken into account. In the conflicted conditions, if their chooser had picked die-roll B advisors were also asked which die-roll they
would like to make. Choosers then rolled their chosen die, collected their prize, and left; finally advisors also claimed a prize (by die-roll) if they were entitled to one.

**Results**

Recall that die-roll A, on average, provides superior prizes. In the no-conflict condition, advisors recommended die-roll A 93% of the time (only 2 advisors out of 27 recommended die-roll B), and nearly all choosers picked the superior die-roll A (93%). This advice and choice of die-roll was similar to preferences for die-rolls seen in our pilot studies when there was no advisor. Further, these choosers were significantly more likely to feel pleased with their choice, more likely to trust their advisors, and feel their advisor was honest and gave their interests priority, compared to choosers with conflicted advisors (all \(ps < .01\)). Just focusing on advisors who recommended die-roll A along with choosers who picked die-roll A, those choosers with un-conflicted advisors (n = 24) were the most pleased (\(M = 4.25\)); they were both more pleased compared to choosers paired with conflicted (but undisclosed) advisors (n = 11) (\(M = 3.73\), \(t(35) = 2.04, \ p = .049\), and to those with conflicted advisors who disclosed their COI (n = 3) (\(M = 3.33\), \(t(35) = 2.13, \ p = .04\), (note that the small ns in these latter conditions was due to the fact that few conflicted advisors recommended die roll A).

In the conflicted conditions, the majority of advisors recommended the inferior die-roll B; with no-disclosure 77% of advisors recommended die-roll B, and with disclosure, 88% recommended B; this difference was not statistically significant, \(\chi^2 = 1.82, \ p = .18\). It seems that advisors consciously gave biased (or “bad”) advice, since they personally thought die-roll A was significantly more attractive than die-roll B, paired \(t\) for attractiveness of die-roll A versus die-roll B: \(t(92) = 2.64, \ p = .01\). Choosers also thought die-roll A was more attractive than B, \(t(90) = 3.51, \ p = .001\).
Focusing on just the advisors who recommended die-roll B in the conflicted conditions (n = 76 advisors), with no-disclosure, 52% of choosers complied with their advisor’s recommendation and picked the inferior die-roll B. However, with disclosure, this increased to 81%, $\chi^2 = 6.63, p = .01$.

Figure 4 shows some of the choosers’ underlying feelings in making this choice in the conflicted conditions. When advisors recommended B (the bad advice), choosers who received disclosure, as compared with those who did not receive disclosure, were less pleased with their choice, $F(1,72) = 4.58, p = .04$, and less likely to trust the advice (i.e., think the advisor gave their interests priority), $F(1,74) = 5.64, p = .02$. At the same time, advisees who received disclosure felt increased pressure to help their advisor (the panhandler effect), $F(1,74) = 4.58, p = .04$, and felt more uncomfortable rejecting the recommendation, $F(1,74) = 6.19, p = .02$. These two measures for increased pressure to comply were significantly correlated ($p < .01$) and loaded on one factor. Therefore, we computed an average $z$-score to create a new variable from the standardized responses (Cronbach’s $\alpha = .59$) measuring the “increased pressure to comply,” which demonstrated a significant increased burden felt by advisees who received disclosure, $F(1,74) = 7.80, p = .007$.

To examine whether an increased pressure to comply mediated the effect of disclosure on the chooser’s choice of die-roll, we followed the steps recommended by Baron and Kenny (1986), adapted for binary dependent variables (MacKinnon & Dwyer, 1993). This analysis revealed that increased pressure to comply mediated the relationship between disclosure and choice of die-roll (Sobel $z = 2.11, p = .04$); disclosure significantly affected the choice of die-roll ($\beta = 1.32, p = .01$) and the mediator ($\beta = .52, p = .007$) in simple logistic and ordinary least squares (OLS) regression models respectively, and with both disclosure and the mediator in the
model, the effect of disclosure was reduced ($\beta = .72$, $p = .23$), while the mediator significantly affected the die-roll choice ($\beta = 1.45$, $p = .001$).³

With disclosure, choosers were marginally less likely to like their advisors, $F(1,74) = 3.76, p = .056$. There was no significant difference between conflicted conditions in how attractive choosers found die-roll A or B, in how much they trusted their advisor, or how honest they felt their advisor was. Advisors indicated no significant difference between conflicted conditions on how strongly they said that they recommended die-roll B, on how much they prioritized their partners or themselves with their advice, or on the rapport they felt they had established with their partner. Even though their advice was no better with disclosure (in fact, it was directionally but non-significantly worse), advisors felt they gave more honest advice with disclosure, $F(1,74) = 7.67, p = .007$, but advisors were also aware that their partner felt more uncomfortable turning down their recommendation, $F(1,73) = 5.48, p = .02$, and felt that their partner felt increased pressure to help them, $F(1,73) = 4.70, p = .03$, than with no-disclosure.

If the chooser picked B, then the advisor had a choice of which die-roll to take. Without disclosure, of the advisors who recommended die-roll B, 33% chose to take superior die-roll A, and with disclosure, this was significantly more, with approximately 62% of advisors choosing die-roll A, $\chi^2 = 4.02, p = .045$.

³ Mediation analysis was also conducted for each of the two mechanisms (panhandler effect and rejection discomfort) separately, resulting in a similar pattern of results (panhandler effect showed full mediation and rejection discomfort partial mediation). The combined mediator is reported for parsimony and due to the significant correlation between the two mediators. We also conducted bootstrapping mediation analysis (on the combined mediator) to construct bias-corrected 95% confidence intervals (CI) based on 1,000 random samples with replacement from the full sample (MacKinnon, Fairchild, & Fritz, 2007; Preacher & Hayes, 2004; Shrout & Bolger, 2002) which gave an indirect effect of .82 and an interval excluding zero for the mediator (.20, 1.65).
**Discussion**

Disclosure resulted in more compliance with conflicted advice through feeling increased pressure to comply. The burden to comply was serious enough to affect behavior, with over 80% of choosers choosing to take patently bad advice when the advisor recommended it. Disclosure created highly conflicted feelings in choosers; they were aware that the advisor had not prioritized their best interests, and they liked their advisors less than with no-disclosure, but due to the pressure of the situation, they were much more likely to comply with the advice and be less satisfied with their choice. In particular, with disclosure, choosers indicated that they felt much more uncomfortable turning down the advisor’s recommendation, and they also felt increased pressure to help their advisor than with no disclosure. This compliance was not altruistic “warm-glow” helping in the classic sense (Andreoni, 1990); they did not report having enjoyed helping their advisor, they were less likely to like their advisors, and they were less pleased with their choice overall with disclosure. Thus, it seems that advisees helped advisors reluctantly, rather than out of a pure concern for the advisor’s outcomes. It is also unlikely that choosers were rewarding their advisor’s honesty since they did not report that advisors who disclosed were more honest than advisors who did not disclose (see Experiment 6 for further evidence regarding this).

All advisors rated die-roll A as significantly more attractive than die-roll B. Although we did not see a statistically significant difference in the advice given with disclosure compared to no-disclosure, there were directional indications of moral licensing, with directionally more advisors in the disclosure condition recommending the inferior die-roll. Also strikingly consistent with moral licensing were the differences between the disclosure and no disclosure conditions in the choices of advisors who, because the chooser selected die-roll B, were able to
choose a die roll for themselves. Advisors whose conflict was not disclosed were far more likely to choose die-roll B (66%), as if they were trying to persuade themselves that they had not misled the chooser as to which was the superior alternative. In contrast, the majority (62%) of advisors whose conflict was disclosed seemed to be comfortable selecting die-roll A that they knew to be superior, even though most recommended B to their advisee. Note that the advisor’s choice of die-roll was elicited privately, so consistency of advice to the chooser and social desirability are not likely interpretations. It therefore seems likely that the disclosure reduced advisors’ guilt about the bad advice they gave.

The next experiment separates the informational and social components of disclosure. If the informational aspect of disclosure regarding an advisor’s COI drives the decrease in trust, then trust will be decreased similarly if the advisor discloses the COI or a third party reveals this information. In contrast, if it is the social component of disclosure (from relationship concerns) that drives the increased pressure to comply then choosers will feel this more with personal disclosure than with external disclosure (disclosure provided by a third party). External disclosure may reduce the signal of distrust that advice rejection brings when there is personal disclosure, since the (insinuating) motive for rejecting the advice would be less apparent to the advisor if she did not know that the advisee knew of her COI. External disclosure may also reduce the panhandler effect: If the advisor’s personal interest is known, but the advisor is obviously unaware that the advisee knows what is at stake for the advisor, then the advisor’s disclosed interest may be less burdensome to the advisee precisely because it is not obvious common knowledge.
Experiment 4: External Disclosure

This experiment employed a similar design to the previous study but compared external disclosure (disclosure from a third party) to disclosure from the advisor. We predict that with external disclosure recipients would feel less uncomfortable about turning down the recommendation and feel less pressure to help their advisor so that, overall, pressure to comply would be reduced. As the same information regarding the advisor’s COI is given, we also predict that decreased trust in the advice would be similar with both personal and external disclosure.

Method

Participants. One hundred forty-four new participants (72 advisors) were recruited onto the mobile data truck parked in a residential area in Pittsburgh, PA.

Procedure. Participants were again randomly assigned into two roles upon approaching the data truck: advisors or choosers. Die-roll A was made even more attractive relative to die-roll B by switching the colas around (Coke vs. Sam’s club) so that the generally preferred cola (Coke) was now also part of die-roll A. In this two-cell experiment, all advisors were subject to a COI, and there was always some form of disclosure. In one condition (personal disclosure) it occurred personally, exactly as in the previous study; in the other (external disclosure) it was provided externally in the choosers’ instructions: “Private information - In his or her instructions, your advisor has been informed that he/she will be rewarded (with a die-roll and resulting prize) only if you choose to roll die-B. Your advisor will not receive any reward if you choose die-A. You should not mention to your advisor that you know about this.” An important component of the external disclosure was that it was at least as salient to the chooser as was the personal disclosure of the other condition. The external disclosure was given to the chooser just
before their meeting with the advisor as a note written on the back of their instructions. As previously, choosers were given full information on the prizes. All other procedures were as with the prior truck study, so, from the advisors’ point of view, external disclosure felt a lot like no-disclosure.

**Results**

Again, the majority of advisors recommended the inferior die-roll B, and there was no statistical difference between the two conditions; 81% of advisors in the external condition and 86% in the personal disclosure condition, $\chi^2 = .40, p = .53$. Again, both advisors and choosers thought die-roll A was significantly more attractive than die-roll B, paired t for attractiveness of die-roll A versus die-roll B; advisors, $t(71) = 7.37, p < .001$; choosers, $t(69) = 4.21, p < .001$.

Focusing on choosers paired with advisors who recommended inferior die-roll B ($n = 60$ advisors), with external disclosure, 52% of choosers picked inferior die-roll B, and with personal disclosure, 84% of choosers picked die-roll B, $\chi^2 = 7.16, p = .007$.

Figure 4 summarizes choosers’ self-reported feelings in the two conditions. Focusing on choosers paired with advisors who recommended B, although there was no significant difference between the conditions in trust, $F(1,57) = .79, p = .38$, choosers who experienced personal disclosure from their advisors felt significantly increased pressure to help their advisor, $F(1,58) = 6.62, p = .01$, and felt more uncomfortable turning down the recommendation, $F(1,58) = 8.75, p = .004$. Again, these two variables were significantly correlated ($p < .01$) and loaded onto one factor. We computed an average z-score for the “increased pressure to comply,” (Cronbach’s $\alpha = .77$) which was significantly higher for choosers receiving personal disclosure compared to external disclosure, $F(1,58) = 9.67, p = .003$. To test whether an increased pressure to comply mediated the effect of personal disclosure on the chooser’s choice of die-roll, we used the same
procedures as in the previous experiment. A logistic regression for the chooser’s choice and OLS regression for the mediator revealed a significant outcome for personal disclosure (for the choice of die-roll, $\beta = 1.58$, $p = .01$; for the mediator, $\beta = .68$, $p = .003$), and a final logistic regression showed that, while controlling for disclosure type, increased pressure to comply predicted the chooser’s choice of die-roll ($\beta = 1.45$, $p = .002$), while the effect of personal disclosure on choice of die-roll decreased ($\beta = .99$, $p = .16$); (Sobel $z = 2.14$, $p = .03$)\(^4\). Thus, increased pressure to comply fully mediated the effect of type of disclosure (personal or external) on the chooser’s choice of die-roll.

There was no significant difference between the two conditions in how attractive choosers found die-roll A or B, how pleased they were with their choice, how much they liked or trusted their advisor, or how honest they felt their advisor was. For advisors who recommended B, there were no significant difference between external and personal disclosure in how strongly they recommended this die-roll, nor on how much they prioritized their partners or themselves with their advice, although they did feel that their partners trusted them more with personal disclosure than with external disclosure, $F(1,58) = 5.48$, $p = .02$. With personal disclosure, advisors also felt that they gave more honest advice, $F(1,58) = 10.75$, $p = .002$, but also that their partner felt increased pressure to help them, $F(1,58) = 8.61$, $p = .005$. They did not feel that their partner felt more uncomfortable turning down the recommendation.

In contrast to Experiment 3, in which 66% of advisors who recommended the inferior die-roll B in the no-disclosure condition ended up choosing it for themselves (and 38% of advisors in the disclosure condition), in Experiment 4, nearly all advisors chose die-roll A (80%

\(^4\) Mediation analysis on separate mediators (panhandler effect and rejection discomfort) revealed similar patterns; this time, both variables fully mediated the type of disclosure on chooser’s choice of die-roll. Bootstrap analysis (on the combined mediator) showed that the 95% bias-corrected confidence intervals for the size of the indirect effect (.98) excluded zero [.27, 2.98].
in the external disclosure condition and 85% in the personal disclosure condition), even after their partner chose die-roll B in line with their recommendation. This could be due to the fact that die-roll A was made more obviously attractive in this study (for common consumer preferences, item by item, A dominated B), so advisors could less easily convince themselves that die-roll B was not so bad. In the next 2 studies, we refrain from fully reporting the results on advisors since they are not a primary focus of this paper and do not depart substantially from the results reported in this experiment.5

**Discussion**

This study separated informational and social components of disclosure and the results support the implication that decreased trust occurs due to information regarding the advisor’s COI (and was similar whether the disclosure occurred personally from the advisor or externally from a third party) whereas the social component of increased pressure operates when the advisor, rather than a third party, discloses the COI. Since more compliance occurred with personal disclosure vs. external disclosure, we can also rule out any fairness concerns that come with the *information* regarding the advisor’s self-interest.

The 52% compliance with biased advice observed with external disclosure is comparable with the 52% rate of compliance in the no-disclosure condition of the previous experiment, even though the inferior option was relatively less desirable in this experiment. Compliance with external disclosure could have occurred due to uncertainty in the chooser’s mind about whether the advisor knew that the chooser had been warned by disclosure (uncertainty present in Experiment 4’s external disclosure, but absent in Experiment 3, where, without any disclosure, the advisor’s COI might not even occur to the chooser). The next experiment clarifies this

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5 Detailed results on advisors are available from the authors.
ambiguity by again giving choosers an external disclosure, but this time explicitly mentioning whether this revealed information was common knowledge with the advisor. This allows us to test the social component of disclosure further by, this time, keeping the source of the information the same (external disclosure) but manipulating (common knowledge) whether the advisor knows about the disclosure or not.

**Experiment 5: Clarifying Common Knowledge Effects**

Experiment 5 followed the same basic design of the previous one. Whereas in the previous experiment we examined a difference in the source of information, this experiment kept the source of information constant (and external) and further manipulates the social component – whether the advisor knows about the disclosure. There are two external disclosure conditions (in addition to the personal disclosure condition): one external disclosure in which the advisor is aware of the disclosure and another in which the advisor is not. We predict that, without common knowledge of the COI, choosers will feel less uncomfortable about turning down the recommendation and feel less pressure to help their advisor. These choosers will feel more comfortable as their advice-rejection cannot send a signal of distrust to the advisor since the advisor is unaware of the disclosure.

**Method**

**Participants.** Two hundred and fifty-two new participants (126 advisors) were recruited onto the mobile data truck parked in a residential area. The same recruitment procedures were used as in the previous experiments.

**Procedure.** As before, participants were randomly assigned to the role of advisor or chooser. The prizes associated with the different die-rolls, A and B, were changed slightly, as some options were no longer available to us for procurement. Die-roll A offered superior prizes
to die-roll B, with the exception of Sam’s Club cola, so the set-up more closely resembles Experiment 3 in terms of the relative desirability of the die-rolls. Pretests again showed that nearly everyone preferred die-roll A to die-roll B.

All advisors were subject to a COI, and there was always some form of disclosure. In one condition (personal disclosure) it occurred personally from the advisor, as in the previous experiments; in a second condition (external disclosure with common knowledge) the disclosure read as follows: “Private information - In his/ her instructions, your advisor has been informed that he/she will be rewarded (with a die-roll and resulting prize) only if you choose to roll die-B. Your advisor will not receive any reward if you choose die-A. Your advisor knows that you know this information but your advisor will not discuss personal benefits with you. You should also not mention the advisor’s personal benefits when you speak with your advisor.” A third and final condition (external disclosure with no common knowledge) read as follows: “Private information - In his/ her instructions, your advisor has been informed that he/she will be rewarded (with a die-roll and resulting prize) only if you choose to roll die-B. Your advisor will not receive any reward if you choose die-A. Your advisor is not aware that you know this and you should not mention to your advisor that you know about this.”

Results

There was no difference between the conditions in the advisors’ recommendations; 77% of advisors in the external-disclosure not-common-knowledge condition recommended die-roll B (the inferior die), 75% in the external-disclosure common-knowledge condition, and 76% in the personal disclosure condition, \( \chi^2 = .07, p = .97 \). Again, both advisors and choosers reported that die-roll A was significantly more attractive than die-roll B, paired-t for attractiveness of die-roll A verses die-roll B; advisors \( t(124) = 8.33, p < .001 \); choosers, \( t(125) = 5.17, p < .001 \).
Focusing on advisors who recommended die-roll B (n = 96 advisors), with external-disclosure not-common-knowledge, 47% of choosers complied and picked the inferior die-roll B; with external-disclosure common-knowledge this increased to 72% of choosers, and with personal disclosure, 92% picked die-roll B, $\chi^2 = 14.36, p = .001$. Choosers who received external-disclosure not-common-knowledge were significantly less likely to choose the inferior die-roll (47%) than choosers who received external-disclosure common-knowledge (72%), $\chi^2 = 4.61, p = .03$, and choosers with external-disclosure common-knowledge were significantly less likely to pick B than choosers with personal disclosure (92%), $\chi^2 = 3.90, p = .048$.

Again, focusing on choosers paired with advisors who recommended B, there was no significant difference between the conditions in trust (how much they felt their advisor had prioritized their best interests), $F(2,93) = .61, p = .55$, again suggesting that trust is driven by the informational component of disclosure, not the aspects that create compliance pressures. However, there was a significant difference between the conditions in how much pressure choosers felt to help their advisor, $F(2,93) = 4.24, p = .02$, and how uncomfortable they were about turning down the recommendation, $F(2,93) = 7.74, p = .001$. Choosers with personal disclosure from their advisor felt more pressure to help their advisor compared to choosers in the external-disclosure common-knowledge condition, $F(1,60) = 5.50, p = .02$, who in turn felt more pressure to help their advisor than choosers in the external-disclosure not-common-knowledge condition, although this difference was not statistically significant, $F(1,68) = .33, p = .57$. Likewise, choosers with personal disclosure felt more uncomfortable turning down the recommendation than choosers with external-disclosure common-knowledge, $F(1,60) = 12.14, p = .001$, who in turn felt more uncomfortable than choosers in the external-disclosure not-
common-knowledge condition, although, again, this difference was not statistically significant, \( F(1,68) = .14, p = .71 \).

The panhandler effect and rejection discomfort effect were significantly correlated \( (p < .01) \), and we again computed an average z-score for the “increased pressure to comply” (Cronbach’s \( \alpha = .77 \)), which was significantly higher for choosers receiving personal disclosure compared to external-disclosure common-knowledge, \( F(1,60) = 10.60, p = .002 \), which in turn was higher, but not significantly, for choosers receiving external-disclosure not-common-knowledge, \( F(1,68) = .29, p = .60 \). To test whether an increased pressure to comply mediated the effect of type of disclosure on the chooser’s choice of die-roll, we used similar procedures as in the previous experiments. A logistic regression for the chooser’s choice and OLS regression for the mediator revealed a significant outcome for personal disclosure\(^6\) (for choice of die-roll, \( \beta = 2.08, p = .008 \); for the mediator, \( \beta = .74, p < .001 \)), and a final logistic regression showed that, while controlling for personal disclosure, increased pressure to comply predicted the chooser’s choice of die-roll \( (\beta = 1.19, p < .001) \), while the effect of personal disclosure on choice of die-roll decreased \( (\beta = 1.40, p = .09) \), (Sobel \( z = 2.53, p = .01 \))\(^7\).

There was no significant difference between the three conditions in how attractive choosers found die-roll A or B, how pleased they were with their choice, how much they liked or trusted their advisor, or how honest they felt their advisor was.

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\(^6\) Dummy variable for personal disclosure was coded 1,0 which indicates that personal disclosure is assessed against the combined external disclosure conditions. Mediation analysis was also conducted with dummy variables for external disclosure not common knowledge coded 1,0 and similar results were obtained.

\(^7\) Mediation analysis on separate mediators (panhandler effect and rejection discomfort) revealed similar patterns, although the rejection discomfort mediator was only marginally significant in predicting the chooser’s choice of die-roll. Bootstrap analysis for the combined mediator showed that the 95% bias-corrected confidence intervals for the size of the indirect effect (.95) excluded zero (.25, 1.69)
Discussion

Again, personal disclosure, as compared with external disclosure, resulted in greater compliance with conflicted advice through increased experienced pressure to comply. Over 90% of choosers with personal disclosure chose the inferior die-roll when their advisors recommended it, compared to 72% with external-disclosure common knowledge and 47% with external-disclosure not–common-knowledge. With personal disclosure, choosers indicated they felt much more uncomfortable turning down the advisor’s recommendation, and they also felt increased pressure to help their advisors. The least pressure to comply was when choosers were assured that their advisors did not know about the external disclosure; thus, common knowledge between advisors and advisees appeared to drive the process of compliance with bad advice. Common knowledge means that advice-rejection also sends a signal to the advisor regarding mistrust of the advice or unwillingness to help the advisor; advice-rejection with common knowledge has a larger bearing on the relationship than advice-rejection without common knowledge, which can be more easily positioned as being rejection of the advice rather than the advisor.

One implication of these findings, for policies intended to mitigate negative consequences of COIs, is to conclude that advice-recipients would benefit the most when one can ensure that disclosure is not common knowledge. However, while the prior experiment demonstrates the psychological mechanism, it seems impossible to have a real-world disclosure policy of which advisors are not aware. The next experiment investigates more realistic interventions to diminish the burden of disclosure. Specifically, we investigate cooling-off periods (when advice-recipients can later change their mind), and also when choosers can make decisions in private (not in front of the advisor).
This final experiment also further examines the underlying mechanisms causing disclosure to produce increased compliance. In the previous experiments, even though choosers did not indicate that their advisors were more honest when there was personal disclosure, an alternative explanation of compliance with biased advice is that personal disclosure may be interpreted as a sign of honesty/forthrightness that creates good will among choosers who wish to reciprocate. External disclosure, by contrast, gives no such sign to the chooser. The next experiment rules out this explanation. Choosers were given an opportunity to change their mind or to make their decision in private. If reciprocity or rewarding honesty is the force driving greater compliance with disclosure, then choosers will refrain from changing their minds and will take the inferior die-roll even if the decision is in private. However, if, as we hypothesize, compliance is driven largely by rejection discomfort and the panhandler effect, then cooling-off periods and private decisions will decrease this burden, and choosers will be more likely to pick the superior option, demonstrating that their public compliance is not in alignment with their private preference.

**Experiment 6: Cooling Off Periods and Private Decisions**

Experiment 6 examines whether recipients will change their mind if given an opportunity to “cool off” after making their decision in front of their advisor. We also examine recipients’ choices when they can make their decision in private (to be revealed later to the advisor), rather than in front of their advisor. If the physical presence of the advisor amplifies the pressure to comply, then removing the advisor after disclosure should allow the conflicting force (reduced trust in the advice) to surface in the form of discounting of the advisor’s recommendation. However, if straightforward reciprocity (rewarding honesty) is a primary motivator for choosers in the disclosure condition, then these manipulations will not reduce their willingness to comply.
Method

Participants. Two hundred seventy-eight new participants (139 advisors) were recruited as before onto the mobile data truck parked in a residential area in Pittsburgh, PA.

Procedure. Participants were randomly assigned to the role of advisor or chooser, and the die-roll prizes remained the same as in the previous experiment; but this time advisors were rewarded with a $5 Amazon voucher if choosers picked the inferior die-roll B. These vouchers were emailed to advisors after the experiment was completed, which allowed advisors to leave while choosers were given an opportunity to change their mind regarding their die-roll choice or make their decision in private.

All advisors were subject to a COI and were randomly assigned to one of four between-subject conditions: disclosure with private decision; no-disclosure with private decision; disclosure with a public decision followed by a private (re)decision; no-disclosure with a public decision followed by a private (re)decision. The public then private (re)decision conditions followed the same procedure as in the previous experiments until after the chooser had made his or her choice. The advisor then left and the chooser was shown the die-roll prizes again and given an opportunity to change his or her mind if desired. The private decision conditions again followed a similar procedure, but the advisor left before the chooser made his or her decision, so the advisor was unaware of any choice the chooser made until receiving a voucher or not.  

Results

There was no significant difference between the conditions in the advisors’ recommendations, $\chi^2 = 4.05, p = .26$; 76% of advisors without disclosure recommended the

\footnote{To avoid deception, both advisors and choosers were told in their instructions the full procedure, i.e., in the public followed by private decision conditions that the advisor would leave and the chooser would have an opportunity to revise his or her decision. This increases the generalizability of these results, as “cooling off” periods will be known to advisors or sellers, and recipients will make use of them only if they know about them.}
inferior die-roll B (79% in the private decision condition, 73% in the public to private (re)decision condition), and 64% of advisors who disclosed recommended die-roll B (58% in the private decision condition, 71% in the public to private (re)decision condition). As in the previous experiments, both advisors and choosers thought die-roll A was significantly more attractive than die-roll B, paired t; advisors, \( t(136) = 10.93, p < .001 \); choosers, \( t(137) = 8.43, p < .001 \).

Focusing on choosers whose advisors recommended the inferior die-roll B (\( n = 97 \) advisors), in the private decision conditions, only 15% of choosers complied and picked the inferior die-roll B with no-disclosure compared with 59% with disclosure, \( \chi^2 = 9.95, p = .002 \). So, although private decision-making decreased the overall acceptance of the inferior die-roll there was still a significant effect of disclosure.

For the public to private (re)decisions, with no disclosure, only 28% of choosers complied and initially picked die-roll B and none of these choosers changed their mind when given the opportunity. However, with disclosure, 88% of choosers complied and picked B in front of their advisors, \( \chi^2 = 17.70, p < .001 \), but many of these (43%) changed their minds when they were allowed to revise their decision in private, resulting in a total of 50% of choosers choosing the inferior die-roll (now an insignificant difference to the no-disclosure condition, \( \chi^2 = 2.50, p = .11 \). Figure 5 illustrates the choices for disclosure conditions when the decision was in private, in public, then private (re)decision. This demonstrates that choosers were aware that the presence of the advisor created a force and their private preference was different from their public compliance.

Again, focusing on choosers paired with advisors who recommended B, with disclosure, choosers indicated that their advisors had given their own interests priority more than with no-
dislosure, $F(1,94) = 15.62, p < .001$. Simultaneously, with disclosure, choosers felt increased pressure to help their advisor, $F(1,95) = 41.67, p < .001$, and more uncomfortable turning down the recommendation, $F(1,95) = 19.72, p < .001$. Also with disclosure, there was a significant difference between the private decision and the public followed by private (re)decision conditions; when the first choice was in private, choosers felt less uncomfortable turning down the advisor’s recommendation, $F(1,44) = 4.05, p = .05$, and less pressure to help their advisor, $F(1,44) = 6.11, p = .02$. These differences between public and private decisions were insignificant in the no-disclosure conditions, since there was a generally reduced pressure to comply. Figure 6 illustrates the pressure to comply showing that both disclosure and public decisions increase the burden to comply with advice. Even when decisions are made in private, disclosure created some lingering burdens that influenced compliance with biased advice.

The panhandler effect and rejection discomfort were again significantly correlated ($p < .01$), and we again computed an average z-score for the “increased pressure to comply,” (Cronbach’s $\alpha = .78$), which was significantly higher for choosers who received disclosure versus no-disclosure, $F(1,95) = 37.90, p < .001$, and for choosers who were in the public decision condition versus private decision condition, $F(1,95) = 3.95, p = .05$. Mediation analysis revealed that increased pressure to comply explained the relationship between disclosure and the chooser’s final choice of die-roll (Sobel $z = 2.85, p = .004$); disclosure significantly affected the choice of die-roll ($\beta = 1.47, p = .001$) and the mediator ($\beta = .96, p < .001$) in simple logistic and ordinary least squares (OLS) regression models respectively, and with both disclosure and the
mediator in the model, the effect of disclosure was reduced ($\beta = .59, p = .27$), while the mediator significantly affected the die-roll choice ($\beta = 1.11, p = .001$).\(^9\)

There was no significant difference between the conditions in how attractive choosers found die-roll A or B, how pleased they were with their choice, or how much they liked or trusted their advisor. Choosers felt their advisor was less honest in the private decision condition than in the public decision condition, $F(1,95) = 5.65, p = .02$, but there was no difference in honesty with disclosure versus no disclosure, $F(1.95) = .31, p = .58$.

**Discussion**

Again, disclosure, as compared with no-disclosure, resulted in greater compliance with conflicted advice as a result of the perception of increased pressure to comply. However, being provided with a cooling-off period gave choosers an opportunity to change their minds, which they made use of in the disclosure condition. It appears that a cooling-off period, or the ability to make a choice in private, decreases the burden substantially and increases the likelihood that the chooser will select the superior die-roll. Thus, disclosure does not appear to induce goodwill or warm altruism on the part of the recipient; any perceived pressure to help is largely due to reluctant altruism and feeling uncomfortable turning down the advisor’s recommendation in his or her presence, rather than reciprocity or rewarding the advisor’s honesty.

**General Discussion**

The results of our six experiments show that people experience conflicting emotions when receiving disclosure of a COI from an advisor. Trust is central to advice-taking (Gino &

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\(^9\) Mediation analysis on separate mediators (panhandler effect and rejection discomfort) revealed similar patterns of mediation, with partial mediation seen for rejection discomfort and full mediation for the panhandler effect. Bootstrap analysis for the combined mediator showed that the 95% bias-corrected confidence intervals for the size of the indirect effect (1.10) excluded zero [.51, 1.91].
Schweitzer, 2008; Pillutla et al., 2003), yet compliance can occur in the absence of trust (Brown & S. C. Levinson, 1987; Goffman, 1956; Griskevicius et al., 2006; Kelman, 1958; Milgram, 1974; Modigliani, 1968, 1971). Advisees are simultaneously aware that the advice is likely to be biased and trust it less, yet feel increased pressure to comply with the advice. Hence, instead of a warning, disclosure can become a burdensome request to comply with advice that is trusted less.

Two mechanisms, insinuation anxiety and the panhandler effect, contribute to this increased pressure to comply, although the magnitude of each of these mechanisms will inevitably vary by context. Experiments 1 and 2 demonstrated that patients were thinking about their doctor’s interpretation of their reasons to turn down the recommendation when disclosure was present. The magnitude of the doctor’s conflict of interest did not appear to be the primary concern of patients; conflicts of interest of different magnitudes had similar effects (Experiment 2). Experiments 3 to 6 involved real social interactions, which revealed large effect sizes for these burdens. The pressure to comply was strong even when recipients had full information about their options and were therefore in an excellent position to judge the soundness of conflicted advice. Our advisees acted against their self-interest and actually behaved according to advice they knew was not in their interest when disclosure suggested that doing so was in the interest of the advisor and/or when not doing so would send mutually embarrassing signals of mistrust – even in these one-shot social interactions when it was clear to both parties that the advice was bad. In the real world, not only are the stakes and social pressures likely to be higher than in these experiments, but advice recipients are likely to be less informed than advice providers. In these more common situations, insinuation anxiety is likely to play a greater role than in Experiments 3 to 6 because one interpretation of turning down the advice is that the
advisee believes the advisor is using his or her superior knowledge for his or her own selfish ends.

Potential alternative explanations for the results of Experiments 3 to 6 are that the behavior of advisees was driven by a sense of fairness, equality, or a desire to reward honesty. The Target’s expectations of what “one ought to do” can often better explain this sort of behavior than a sense of fairness or concern for the target (Milgram, 1974; Bargiela-Chiappini, 2003; Dana et al., 2006; DellaVigna et al., 2009). While Experiment 3 showed that choosers felt increased pressure to help with disclosure, it also found that they were less happy with their choice and liked their advisor less, which would not be predicted if genuinely altruistic motives were responsible for the effect. Furthermore, when disclosure came from an external source (in Experiments 4 and 5) and when they could make their choice in the absence of their advisor (Experiment 6), the propensity to take the advisor’s advice diminished significantly, even though the opportunity to help the advisor was held constant.

The results of Experiments 4 to 6 also cannot be explained by the purely informational account that disclosure changed advice recipients’ interpretations of the advice they received. Although trust decreased similarly regardless of the process of disclosure suggesting that people react similarly in this aspect, advice-taking depended critically on whether the disclosure was personal or external (Experiment 4), whether there was common knowledge of the disclosure (Experiment 5), and whether the choice was made in front of the advisor (Experiment 6). The results of all 6 studies are consistent with the idea that disclosure leads to social pressures to comply with advice, even as it reduces trust in the quality of the advice.

As with all stylized studies, the generalizability of Experiments 3 to 6 to other contexts can be questioned, particularly in the medical context, as it can be argued that the negative
impact of conflicted advisors on choosers was not even a distant approximation of the harm that can result from biased advice in more natural contexts. However, if the adverse consequences of bias are greater in a real medical context, the temptations for bias are also greater. While advisors in our studies stood to gain only a die-roll (or small gift certificate) if they persuaded choosers to take the inferior die-roll, the incentives for doctors can be in the thousands of dollars from an individual patient’s decision (e.g., the payment for successfully referring a patient to a clinical trial), to the hundreds of thousands of dollars per year for some highly conflicted physicians (Harris, Carey, & Roberts, 2007). Moreover, the pressure to comply with advice is also likely to be stronger in a doctor patient relationship. Given the shared view that the role of the physician is to care for the patient, it is likely to be much more difficult to signal distrust to a doctor than to a fellow experimental participant who happens to have been assigned to the role of advisor. In addition, doctors and patients are likely to interact again in the future and to have interacted in the past, so the patient is likely to be anxious to develop or maintain a rapport with the doctor which could be undermined by signaling distrust.

Further, in the die-roll studies it was clear that a “biased” recommendation (to take die-roll B) was inferior advice, whereas in a medical context what is best for the patient is often somewhat ambiguous. This ambiguity provides scope for self-serving bias (Babcock, Loewenstein, Issacharoff, & Camerer, 1995; Thompson & Loewenstein, 1992), where the doctor can persuade herself that biased advice is interest of the patient, and also reduces the potential for learning from clear experience. If following a doctor’s advice produces adverse results, even when the doctor disclosed a conflict, it is unlikely that the patient will be able to be sure that the advice was substandard; the consequences of medical care are inherently uncertain, and bias in
advice is only one determinant of the success (or failure) of treatment. Even biased advice can appear to have many good reasons supporting it at the time (Babcock & Loewenstein, 1997).

Patients are in a vulnerable position, with a lack of expertise in medicine and a limited experience with only a small number of doctors. They enter a medical relationship trusting that the doctor knows best and has their best interests at heart; although, trust could be increased if the doctor disclosed he or she had no conflict (Experiment 2). Research has shown that having more advisors rapidly enhances advisee-judgment (Yaniv, 2004), and many participants in Experiment 1 and 2 indicated that they would seek a second opinion. In real-world settings, this would add cost and inconvenience to the patient, as well as introducing a new signal of distrust (either of expertise or motives) as a result of effectively ‘second-guessing’ the doctor’s advice. For these and probably many other reasons (such as underestimation of variability of advice), second opinions are rarely sought (Foreman, 2001).

Taken as a body, these experiments as well as earlier research (Cain, Loewenstein, & Moore, 2005; 2011) provide grounds for pessimism about the likely impact of disclosure, both on the quality of advice given and its impact on advice recipients. Yet there are hints about how disclosure’s potential perverse effects can be reduced and its beneficial effects accentuated. A lesson from our experiments (5 and 6) is that disclosure of physicians’ conflicts should not come from the physician him or herself, but should be done through some external means. Also, our results suggest that patients should not make important medical decisions in the presence of a physician immediately following the reception of advice, but should be given the opportunity to cool-off and ponder the decision away from the physician (as well as being given a convenient and impersonal way of conveying a decision to not follow the advice).
Lessons from earlier research have shown that disclosure may decrease the bias in advice if sanctions are available (Church & Kuang, 2009), or if reputation is important, for example, with repeated interactions with the same advisor-receiver dyad (Koch & Schmidt, 2009). However, in many contexts, sanctions are not available, and, as discussed, there is usually ambiguity regarding how biased the advice actually is, making it almost impossible to detect whether advice is biased. Church & Kuang (2009) also found that the negative effects of COIs can be somewhat curtailed if there is a realistic option for the advisee not to take the advice, in which case advisors have an incentive to appear unbiased. If patients have easy access to multiple opinions, with disclosure, it will become salient to them which opinions are conflicted and which are not, and they are then more likely to heed unconflicted advice. Moreover, once physicians see that patients are shifting their business in response to disclosed conflicts, they are likely to become more motivated than under the current system to avoid conflicts, so there would be nothing to disclosure except disclosing the absence of conflicts.

Rather than asking whether disclosure is good or bad, future research should focus on exploring the situational determinants of when the benefits of transparency outweigh the costs, and vice versa, and testing interventions to enhance disclosure’s effectiveness. Perverse effects aside for the moment, we are not advocating against transparency, we are warning that transparency may be not be enough and that it comes with surprising costs.

This paper provides experimental evidence to support the case that disclosure could damage the relationship between doctors and patients, decrease trust, and increase the psychological burden on already vulnerable patients. Although compliance with advice preserves the advisor’s dignity, advice-recipients who are unwilling to signal mistrust to their advisors may suffer the consequences of inferior options. The limits of disclosure revealed by
these studies and others suggest that policy makers should focus less on disclosure of conflicts and more on increasing the availability of unbiased advice (Amsterlaw, Zikmund-Fisher, Fagerlin, & Ubel, 2006; Robertson, forthcoming). As many others have advocated (Brennan et al., 2006; Chimonas, Brennan, & Rothman, 2007; McCormick, Tomlinson, Brill-Edwards, & Detsky, 2001), the optimal solution to COIs is to eliminate them wherever possible rather than merely disclose them.
References


Table 1
*Outcomes from Experiment 2*

<table>
<thead>
<tr>
<th></th>
<th>No Disclosure (ND)</th>
<th>Disclosure of No Conflict (D_NC) Mean (standard deviation)</th>
<th>Disclosure of a Small Conflict (DS)</th>
<th>Disclosure of a Large Conflict (DL)</th>
<th>Effect of condition</th>
<th>D_NC vs. ND</th>
<th>DS vs. ND</th>
<th>DL vs. ND</th>
<th>DL vs. DS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trust</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale 1-5 (strongly disagree – strongly agree)</td>
<td>3.63 (.60)</td>
<td>3.86 (.52)</td>
<td>3.24 (.84)</td>
<td>3.17 (.80)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$F = 26.27$, $t = 2.54$, $t = -4.26$, $t = -4.97$, $p &lt; .001$, $p &lt; .001$, $p &lt; .001$.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Insinuation Anxiety</strong></td>
<td>1.98 (.92)</td>
<td>1.71 (.79)</td>
<td>2.32 (1.14)</td>
<td>2.37 (1.08)</td>
<td></td>
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</tr>
<tr>
<td>Scale 1-5 (strongly disagree – strongly agree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$F = 12.24$, $t = -2.16$, $t = 2.66$, $t = 3.02$, $p &lt; .001$, $p = .03$, $p = .008$, $p = .003$.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>How likely are you to take the doctor’s recommendation?</strong></td>
<td>3.01 (.90)</td>
<td>3.07 (1.04)</td>
<td>2.69 (1.09)</td>
<td>2.51 (1.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale 1-5 (Very unlikely – very likely)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$F = 8.42$, $t = -2.48$, $t = -3.78$, $p &lt; .001$, $p = .01$, $p &lt; .001$.</td>
<td></td>
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</tbody>
</table>
Table 2
*Multiple Mediation Analysis, Experiment 2*

<table>
<thead>
<tr>
<th></th>
<th>Disclosure of No Conflict</th>
<th>Disclosure of a Small Conflict</th>
<th>Disclosure of a Large Conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trust</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient $a$</td>
<td>.23*</td>
<td>-.39***</td>
<td>-.46***</td>
</tr>
<tr>
<td>Coefficient $b$</td>
<td>.80***</td>
<td>.80***</td>
<td>.80***</td>
</tr>
<tr>
<td>Point estimate and</td>
<td>.18</td>
<td>-.31</td>
<td>-.37</td>
</tr>
<tr>
<td>95% CI for indirect effect of IV on DV</td>
<td>(.08,.30)</td>
<td>(-.48,-.17)</td>
<td>(-.53,-.21)</td>
</tr>
<tr>
<td><strong>Rejection Discomfort</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient $a$</td>
<td>-.27*</td>
<td>.34**</td>
<td>.39**</td>
</tr>
<tr>
<td>Coefficient $b$</td>
<td>.09*</td>
<td>.09*</td>
<td>.09*</td>
</tr>
<tr>
<td>Point estimate and</td>
<td>-.02</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>95% CI for indirect effect of IV on DV</td>
<td>(.06,-.01)</td>
<td>(.01,.08)</td>
<td>(.01,.08)</td>
</tr>
<tr>
<td><strong>Effect of Disclosure on Taking Doctor’s Advice</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient $c'$ (controlling for mediators)</td>
<td>-.10</td>
<td>-.04</td>
<td>-.17</td>
</tr>
<tr>
<td>Coefficient $c$ (no mediators)</td>
<td>.06</td>
<td>-.32*</td>
<td>-.50***</td>
</tr>
<tr>
<td>Point estimate and</td>
<td>.16</td>
<td>-.28</td>
<td>-.33</td>
</tr>
<tr>
<td>95% CI for indirect effect of IV on DV</td>
<td>(.04,.28)</td>
<td>(-.44,-.13)</td>
<td>(-.50,-.17)</td>
</tr>
</tbody>
</table>

Note: Each independent variable (IV) was a dummy variable for the indicated condition.

Dummies for other conditions were included as covariates in each model. Un-standardized regression coefficients are shown ($a$ refers to effect of IV on the mediator, $b$ refers to the effect of the mediator on the DV (taking doctor’s advice) when controlling for IV), as well as the point estimate and 95% confidence interval (CI) for the bias corrected indirect effects of IV on DV through proposed mediators (ab paths).

*p < .05. ** p < .01. *** p < .001.*
Table 3  
*Experiment 3: Prizes associated with the Die Rolls as seen by Participants*

<table>
<thead>
<tr>
<th>Die roll A</th>
<th>Die roll B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. $20 Amazon.com voucher (can only be redeemed online)</td>
<td>1. Milky way bar</td>
</tr>
<tr>
<td>2. $5 Options Gift card (can be redeemed online or at stores Gap, Banana Republic, Old Navy)</td>
<td>2. $5 Barnes and Noble voucher (can only be redeemed online)</td>
</tr>
<tr>
<td>3. Snickers bar</td>
<td>3. Mr Good bar</td>
</tr>
<tr>
<td>4. Can of Sam’s cola (Walmart brand)</td>
<td>4. Can of Coke</td>
</tr>
<tr>
<td>5. $5 Gift card for Dunkin Donuts</td>
<td>5. $5 Gift card for Starbucks</td>
</tr>
<tr>
<td>6. Toblerone bar (Swiss chocolate)</td>
<td>6. $5 Gap Gift card (can be redeemed online or at Gap store)</td>
</tr>
</tbody>
</table>

Note: These prizes were piloted in a previous study, and the prizes associated with die-roll A were very commonly preferred over die-roll B, with the exception of the Sam’s Club cola, which was added to violate complete dominance of die-roll A (and the Dunkin Donuts gift card, which was preferred by some but not others).
Figure 1. Experiment 1: Reactions to Disclosure of a Financial Conflict of Interest
Figure 2. Experiment 1: Mediation of Conflicting Forces

Note: Un-standardized regression coefficients are shown. $a$ refers to effect of the independent variable (IV: disclosure) on each mediator (trust and insinuation anxiety), $b$ refers to the effect of the mediator on the dependent variable (DV: taking the doctor’s recommendation) when controlling for IV, $c$ refers to the effect of the IV on the DV, $c'$ refers to the effect of the IV on the DV when controlling for the mediators.
Figure 3. Experiment 2: Reactions to Disclosure of a Non-financial Conflict of Interest
Figure 4. Experiment 3: Opposing Forces on the Chooser
Figure 5. Experiment 4: Increased Pressure to Comply on the Chooser
Figure 6. Experiment 6: Choosers who picked Die-roll B when Advisor Recommended B
Figure 7. Experiment 6: Increased Pressure to Comply on the Chooser