Misjudging our Influence on Others: Blind Spots in Perceptions of Peer Use of Advice

by

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Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor of Philosophy
in Business Administration
in the Graduate School
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2015

ABSTRACT

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Abstract

People give each other advice on a variety of topics throughout their lifetimes. In this dissertation, I ask: Do advisors accurately perceive the impact of their advice? Or, do they possess blind spots that prevent them from doing so? I focus on whether advisors recognize the information they need in order to form judgments of the impact of their advice, which I call "impact judgments". Four studies demonstrate that advisors have blind spots in their perceptions of their influence and that these blind spots have consequences for advisors' accuracy and subsequent behavioral intentions. First, a free-recall task (Study 1) and a manipulated scenario task (Study 2) showed that advisors failed to recognize when they were missing information needed to form accurate impact judgments, namely, information on the advisee's initial, pre-advice opinion, unless they were prompted to think about why they need that information. Second, an experiment where participants were assigned the role of advisor or advisee (Study 3) demonstrated that advisors' impact judgments were less accurate when advisors did not know the advisee's initial, pre-advice opinion. Third, participants' recollections of a time they gave advice (Study 4) showed that advisors relied on their impact judgments for forming downstream behavioral intentions such as willingness to give advice again, even when they recognized that they were lacking needed information. I conclude with a discussion of the implications for advice giving by individuals and members of organizations, a general framework for impact judgments, and areas for future research.

Dedication

To my parents, Ann and Tom Rader

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Acknowledgements

I am thankful for the support of so many people in my journey through the doctoral program at Duke. First and foremost, I am deeply grateful to have had the opportunity to work with my advisor, Rick Larrick, and my unofficial advisor, Jack Soll, who are (in my opinion) the smartest, most generous advisors a student could hope for. Rick and Jack, you taught me how to think: especially how to explore problems, how to answer research questions with data, and how to craft an argument. I hope to make you proud as I continue to develop my thinking in the years to come. I am also grateful to my friend and committee member, Sunita Sah. Sunita, you have always been a model to me of an accomplished young scholar and devoted friend. Additionally, this dissertation is a product of joint work with Sunita and Rick and is much improved by their contributions. Sim Sitkin, also on my committee, has brought interesting questions, a supportive tone, and endless inspiration. Sim, I am grateful for the way you have helped me embrace the whole person I can be as a scholar and educator. Finally, I wish to acknowledge Kim Wade-Benzoni, who has consistently contributed to my development during the PhD program.

A very special group of friends gave me the unique blend of emotional and intellectual sustenance needed to survive and thrive in a PhD program: Lalin Anik, Heather Mann, Esther Sackett, Catherine Shea, Deirdre Snyder, Virginia Stewart, and Ulya Tsolomon. Thank you, ladies! I couldn't have done it without you.

I also wish to thank the many colleagues, Fuqua staff, and friends who supported me in my research and job search with great conversations, technical assistance, and moral support, including Juan Camilo Baquero Medina and family, Min Bang, Adrian Camilleri, Drew Carton, Bobbie Clinkscales, Erin Cooke, Vicky Davenport, Hengchen Dai, Emily Dysart, Matt Fox, Amanda Gonzales, Bradley Hintze, Adrienne Huddleston, Christy Zhou Koval, James Logan, Georges Potworowski, Devon Proudfoot, Denise Rousseau, Nicole Ruedy, Sudhir Shah, Christina Shepherd, Steve Shepherd, Jeanine Solomon and the Denver Landmark community, Linda Stier and the NC Landmark community, Teryl Taylor, Leigh Tost, Elena Vidal, Thomas Wicker, and all the Management PhD students and members of the Management faculty who provided valuable feedback.

Finally, I want to thank my family – Ann and Tom Rader, Nick Rader, Forrest, Arthur, Bryson, and Griffin Rader, and my sweet dog, Jack. You made the tough times easier and the great times brighter. We did it!

1. Introduction and Literature Review

People give each other advice on a variety of topics throughout their lifetimes. Friends give each other advice on what to do in difficult situations. Professors give students advice on career choices. Consultants, lawyers, and accountants give their clients advice on critical business decisions. Mentors give their mentees advice on ways to improve their job performance. Across these scenarios, advisors may be motivated for a variety of reasons in giving that advice, including to improve the quality of the advisee's life (Guntzviller & MacGeorge, 2013), to steer the advisee in the advisor's preferred direction (Guntzviller & MacGeorge, 2013), or to be viewed by the advisee as a likeable and capable person (Baumeister, 1998; Brown & Levinson, 1987). To evaluate their success in achieving these goals, advisors are likely to consider how much their advice impacted the advisee's decision (e.g. Ashford, Rothbard, Piderit, & Dutton, 1998; Detert & Burris, 2007; Morrison, 2011, 2014).

In this dissertation, I ask: Do advisors accurately perceive the impact of their advice? Or, do they possess blind spots that prevent them from doing so? In particular this dissertation focuses on whether advisors recognize the information they need in order to form judgments of the impact of their advice, called "impact judgments". Failure to appreciate the information necessary to form impact judgments could have multiple consequences. First, it could lead advisors to make confident conclusions in impact judgments that may be inaccurate due to the lack of information needed to form

such judgments. Second, it could preclude advisors from seeking out the information they need to form accurate judgments, meaning that inaccurate impact judgments are unlikely to be corrected. Third, inaccurate impact judgments could feed into downstream behavioral intentions such as willingness to give advice again, leading advisors to choose behaviors that are different from those they would have chosen had they formed accurate impact judgments.

I will address these aforementioned potential consequences by investigating a particular blind spot in advice giving. Specifically, people fail to recognize when they are lacking necessary information to draw conclusions about their influence, namely, information about the advisee's initial, pre-advice decision. When advisors are lacking that information, advisees may appear to have taken advice, when in fact they were planning on taking that action in any case, leading advisors to overestimate their influence. Likewise, advisees can appear to have ignored the advice, when in fact, they shifted substantially from a position that was even further removed, resulting in advisors underestimating their influence. I study these perceptions using advisors' recollections of a time they gave advice as well as a manipulated advice-giving event with a peer, and I test an intervention designed to address the failure to recognize when information is missing.

Accuracy of impact judgments is important, for a variety of reasons. First, advisors who are interested in being helpful or influential may use impact judgments as

feedback to determine whether their attempts were successful. Second, impact judgments may be used by advisors as a basis for downstream behaviors, such as willingness to give advice again. Therefore, I also investigate the downstream effects of impact judgments on advisors' willingness to give advice again. This work speaks to the literature in judgment and decision making on advice taking (Bonaccio & Dalal, 2006; Gino & Moore, 2007; Sniezek & Buckley, 1995; Yaniv, 2004; Yaniv & Kleinberger, 2000) and the psychological literature on perceived influence (Bohns & Flynn, 2013; Bohns, Roghanizad, & Xu, 2014).

The remainder of this chapter introduces the literature on advice giving and taking, followed by a review of the literatures on perceptions, confidence, and perspective taking that help inform my thinking about blind spots in perceptions of impact. Finally, I develop my predictions: that advisors will fail to recognize when they lack information needed to form impact judgments, that lacking such information will make them less accurate, and that they will rely on their impact judgments nonetheless to form downstream behavioral intentions such as their willingness to give advice again in the future.

1.1. Giving and Taking Advice

This dissertation begins with a review of the basic findings on giving and taking advice, as context for the motivations and situations that advisors may face when forming judgments about the impact of their advice. Three disciplines in particular have

considered questions related to giving advice: the judgment and decision making literature on advice giving and taking, the communication literature on social support, and the organizational behavior literature on speaking up and employee voice.

1.1.1. Judgment and Decision Making Literature on Advice Giving and Taking

While this dissertation is focused on the advisor's perspective of whether his or her advice is taken, it is useful to begin with some discussion of the factors that objectively do influence advice taking, a topic that has been widely studied in the judgment and decision making (JDM) literature on advice taking. This literature frequently employs a paradigm where one participant is assigned the role of advisee (the "judge") and another participant or participants are assigned the role of advisor(s), called the "judge-advisor system" or JAS (Sniezek & Buckley, 1995). The advice provided is usually about topics of a factual nature, such as estimating the weight of a person in a photo or choosing the correct answer to multiple choice knowledge questions, allowing the researcher to calculate how much the advice was used and also the effects for judgmental accuracy (Harvey & Fischer, 1997; Minson, Liberman, & Ross, 2011; Yaniv & Kleinberger, 2000). One of the most robust findings is that people do take advice somewhat, generally moving 30% of the way towards the advice, on average, in numerical tasks (Yaniv & Kleinberger, 2000), but this is a combination of frequently ignoring the advice and only sometimes combining it with one's own opinion or listening to it fully (Soll & Larrick, 2009). The degree to which the advice is used

depends on properties of the advisor, advisee, and task. People take more advice from more expert and more confident advisors (Harvey & Fischer, 1997; Sniezek & Buckley, 1995). Advisees take more advice when they trust the advisor (Van Swol, 2009) or when they are experiencing emotions like love or anxiety (Gino, Brooks, & Schweitzer, 2012; Gino & Schweitzer, 2008). Finally properties of the task can affect advice taking, with people taking more advice on difficult tasks (Gino & Moore, 2007) or when they paid for the advice (Gino, 2008) or are paid for accuracy (Sniezek, Schrah, & Dalal, 2004).

Most of the judgment and decision making literature on advice has focused on advice taking rather than advice giving (Bonaccio & Dalal, 2006). The literature that does exist on advice giving has addressed the content of the advice given and how it may be biased (Sah & Loewenstein, 2012, 2014) or how the advice may compare to decisions the advisor would make for themselves (Danziger, Montal, & Barkan, 2012; Jonas & Frey, 2003; Jonas, Schulz-Hardt, & Frey, 2005; Kray, 2000; Kray & Gonzalez, 1999; Polman, 2010, 2012), rather than the choice to provide advice or not. Thus, the JDM literature is largely moot on the perspective of the advice giver in an advice-giving interaction.

1.1.2. Communication Literature on Advice as Social Support

The communication literature on social support has given more attention to the role of the advice giver, by studying interactions between two people where one is dealing with some kind of an issue, sometimes called a "troubles talk" episode. This

literature investigates questions such as how the dialogue between the two people may contribute to a sense of support or beneficial outcomes. In addition to considering the styles of advice giving that are most helpful to recipients, research in this area has uncovered some of the dilemmas and motivations of advice givers. Goldsmith and Fitch (1997) detail the three dilemmas of advice giving and taking in this realm. First, advice giving can be viewed by the advisee as helpful and caring, or it might be experienced as "butting in" – offering criticism or disapproval and threatening the advisee's autonomy and self-worth. Thus, advisors have a concern for whether their advice is helpful (efficacious) or whether it could be viewed as criticism and therefore come at a cost to the relationship. Second, advisors face the conflicting expectation that they are both supportive and honest, suggesting a balancing act between giving advice that might change the advisee's behavior versus giving advice that supports the advisee's point of view. Third, by asking for and taking advice, the advisee risks appearing less autonomous and competent, whereas rejecting advice appears disrespectful and ungrateful. Consistent with the dilemmas uncovered by Goldsmith and Fitch (1997), Guntzviller and MacGeorge (2013) found that advice-givers' goals in an interaction influenced advisees' evaluations of the advice: goals to give efficacious and feasible advice, novel advice, or be polite resulted in positive evaluations by advisees, whereas goals to change the advisee's mind resulted in negative ratings.

The foregoing discussion also hints at the importance of advisors' perceptions of how much their advice is taken. Advisors may be especially attentive to whether their advice is taken as a way to determine whether they were viewed as butting in. Furthermore, because rejection of advice is viewed as disrespectful, impact judgments are likely to carry personal meaning and not be viewed dispassionately. Therefore, it is important to consider how advisors' impact judgments are formed, and particularly, whether advisors recognize when they are missing information that is needed to form accurate impact judgments.

1.1.3. Organizational Behavior Literature on Speaking up and Employee Voice

Within the organizational behavior literature, research has on speaking up has considered the reasons that employees might give suggestions and ideas for improvement to their superiors, a behavior that is akin to giving advice (Detert & Burris, 2007; Hirschmann, 1970; Morrison, 2011; Morrison & Milliken, 2000; Tangirala & Ramanujam, 2008; Van Dyne & LePine, 1998). Also called employee voice, this behavior is defined as the "informal and discretionary communication by an employee of ideas, suggestions, concerns, information about problems, or opinions about work-related issues to persons who might be able to take appropriate actions, with the intent to bring about improvement or change" (Morrison, 2014). The most prominent models of voice have suggested that the decision to speak up is the result of a rational calculus on the perceived efficacy of speaking up and the perceived safety of speaking up (for reviews,

see Morrison, 2011, 2014). Dozens of studies have considered factors that may act as antecedents to these perceptions, largely grouped into individual factors (such as personality, job attitudes, and sense of personal control) and contextual factors (such as leadership, psychological safety, and organizational culture) (Morrison, 2011). For example, individuals who are high on conscientiousness and extraversion voice more frequently than others, presumably because they are motivated to discuss ways to improve the organization and are comfortable speaking up, respectively, whereas those who are high on neuroticism and agreeableness voice less frequently, likely because they are more insecure about speaking up and want to conform to norms, respectively (LePine & Van Dyne, 2001).

Although this dissertation is focused on peer-to-peer communication of advice, the voice literature is instructive about the possible consequences of impact judgments: voice researchers have found that employees' perceptions of whether they will be influential determine whether they speak up with suggestions for improvement and information about potential problems (Ashford et al., 1998; Morrison, 2011, 2014; Saunders, Sheppard, Knight, & Roth, 1992). Thus, it is likely that advisors will use impact judgments in the same way – to determine whether to give advice again – and therefore it is important to understand the basis of such impact judgments and whether they are subject to blind spots.

1.2. Advisors' Impact Judgments When Information is Missing

In this dissertation, I will argue that people fail to recognize when they are missing data needed to form impact judgments – creating blind spots. To develop this idea, I first describe the information that is needed, at a minimum, to accurately determine the impact of advice. Next, I discuss the reasons that advisors might be missing some of the necessary information to form impact judgments. Finally, I explain why people may fail to recognize the fact that they are missing information, based on findings from the judgment and decision-making literature on overconfidence and the social psychology literature on faulty perspective taking.

1.2.1. Information Needed to Determine Impact

To understand the impact of their advice, advisors need three pieces of information at the very minimum: the advice, the advisee's final decision, and the advisee's initial, pre-advice decision (Figure 1). All three pieces are necessary to be able to tell how much the advisee's initial decision was changed by receipt of the advice to form his or her final decision. With these three pieces of information, it is possible to calculate the commonly used weight of advice (woa, Yaniv, 2004), which applies in the context of a numerical decision (such as how much money to spend on a purchase).[1] Weight of advice measures how far the advisee moved as a proportion of how far apart

[1] Note that in some instances, the advisee may not have an explicit initial, pre-advice decision, because they have not thought about the problem before receiving advice. However, even then it is possible to assume a counterfactual what-would-the-advisee-have-done absent the advice as a benchmark against which to judge the influence of advice.

the advisee's and advisors' opinions were to start: woa = (final – initial) / (advice – initial). While these three pieces of information are the minimum needed for a simple act of taking advice, the decision context can be much more complex and can include advice from others as well as impacts on the advisee's decision process, confidence, or implementation (Figure 2), all of which would require additional information to truly understand the degree to which the advice impacted the advisee's decision. For the sake of simplicity, this dissertation focuses on just the three pieces of information that are needed in the simple advice-giving context; I return to the question of additional inputs in the General Discussion in Chapter 5.

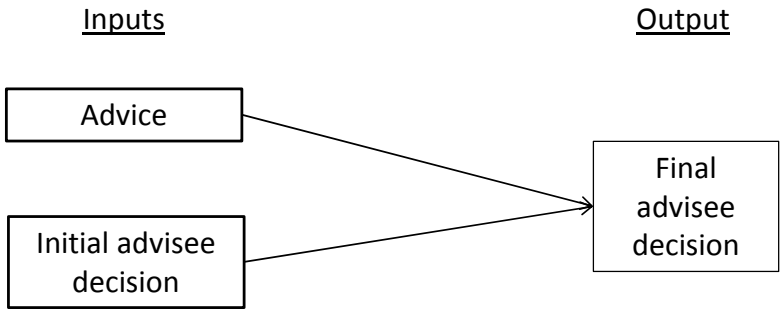

Figure 1: Data needed to assess the influence of one's advice with a simple decision.

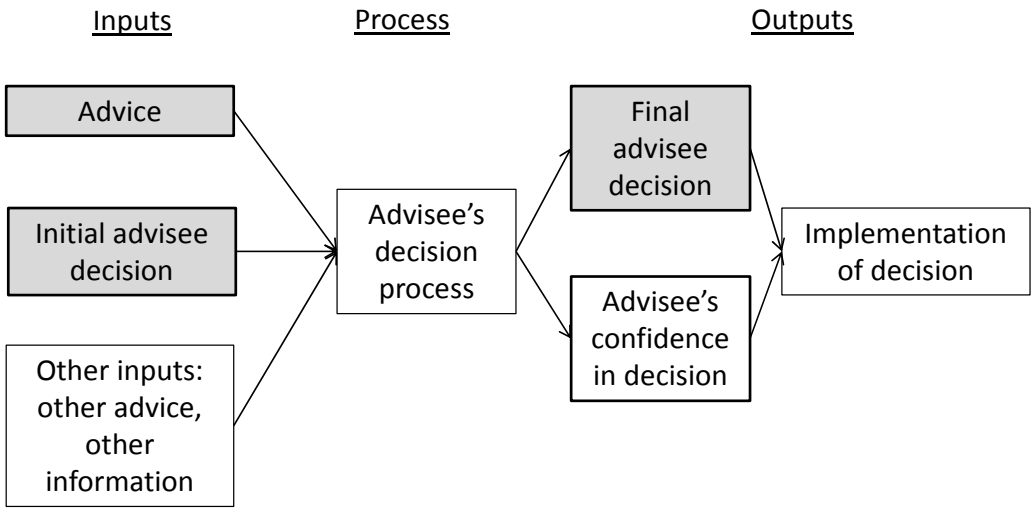

Figure 2: Data needed to assess the influence of one's advice with a multi-input, multi-output scenario. The key elements from Figure 1 are highlighted for reference.

1.2.2. Needed Information May be Missing

People may not always have all of the three pieces of information that are necessary to determine the influence of their advice. For example, information on the advisee's initial decision may be withheld due to social norms. Fay, Ehrlinger, & Goplen (2012) found that advisees hid their disagreement with advisors due to pressure to be polite, leaving advisors with inaccurate information about both the advisee's initial and final decisions. In other cases, information on the advisee's initial opinion may not be volunteered because advisees are seeking the advisor's independent opinion and do not want to bias advisors with their initial opinion, which can diminish the benefits of advice taking (Clemen & Winkler, 1985; Hogarth, 1978).

1.2.3. Failure to Recognize That Needed Information is Missing

The crux of this dissertation is the idea that when needed information is missing, advisors may fail to recognize that they are missing some of the information needed to form impact judgments. This notion is supported by decades of research in judgment and decision making on the information people use to form their judgments and the confidence they hold in those judgments, as described below. Additionally, I propose that advisors are particularly likely to fail to recognize when they are missing one of the three types of information in particular: information on the advisee's initial, pre-advice decision. I suggest that this will occur because if information about the advisee's initial, pre-advice decision is missing, recognizing this requires the advisor to take the perspective of another person, a task at which people are notoriously bad.

1.2.3.1. Overconfidence

Much research has shown that people are overconfident about the accuracy of their judgments (Klayman, Soll, González-Vallejo, & Barlas, 1999; also called overprecision, Moore & Healy, 2008). Particularly relevant to this discussion is the fact that people are highly confident in their judgments even when they are lacking information needed to form a judgment. As Daniel Kahneman (2011, p. 87) explained, people act as if "what you see is all there is" (abbreviated WYSIATI): "The confidence that individuals have in their beliefs depends mostly on the quality of the story they can tell about what they see, even if they see little." This applies even when information is

clearly missing: Brenner, Koehler and Tversky (1996) had participants read a set of facts in a legal dispute along with the plaintiff's argument or the defendant's argument. Although participants were repeatedly told that they were only seeing the plaintiff's or defendant's argument and could have easily generated the argument for the other side themselves using the facts of the case provided, their judgments leaned strongly to the side whose argument they read, and they were more confident in their judgments than participants who read both sides of the case. Brenner et al described this as "people do not compensate sufficiently for missing information even when it is painfully obvious that the information available to them is incomplete" (p. 59). As a further example of overconfidence, when researchers ask participants to give numerical answers to general knowledge questions and set 90% confidence intervals, the intervals are much too narrow, containing the correct answer less than 50% of the time (Alpert & Raiffa, 1982; Klayman et al., 1999; Soll & Klayman, 2004). Therefore, one would expect people to be confident in their assessments of their influence on others, even when lacking complete information to make such a judgment.

1.2.3.2. Faulty perspective taking

In addition to the general tendency people have to form confident judgments when lacking information, failures at perspective taking are likely to contribute to advisors being particularly bad at recognizing when they are missing information on the advisee's initial decision. To recognize that information on the initial decision is missing

requires taking the advisee's perspective and considering the fact that the advisee had an initial opinion to begin with. People are often face barriers in perspective taking, however, that would make it difficult for them to recognize that they are missing information on the advisee's initial opinion (Epley & Caruso, 2008; Epley, Keysar, Van Boven, & Gilovich, 2004). Barriers exist at every step of the process of accurately taking another's perspective: people must first activate the mental process of perspective taking, must then get beyond their own experience, and finally must use accurate information in place of their own perspective to adopt the other person's perspective (Epley & Caruso, 2008). These principles can be observed in a variety of psychological effects: people focus on their own performance when comparing themselves to others, making people likely to think they are better than average for easy tasks and worse than average for difficult tasks (Kruger, 1999). Additionally, people overestimate how much their actions are attended to by others (the "spotlight effect"), including the prominence of their comments in a group discussion (Gilovich, Medvec, & Savitsky, 2000). Therefore, considerations of whether advice had an influence on the advisee are likely to be based on the advisors' own perspectives, which will naturally focus on their advice and the perceived quality of their advice, less than considerations of the advisee's perspective, making it particularly unlikely that advisors will notice that they are missing information on the advisee's initial opinion needed to assess the impact of their advice.

1.3. Predictions

Here, I develop a set of predictions on advisors' ability to recognize when they are missing information needed to form impact judgments and their confidence in such judgments, the accuracy of impact judgments, and the downstream effects of impact judgments on behavioral intentions such as willingness to give advice again. These predictions will be tested in the dissertation.

1.3.1. Information Needed to Form Impact Judgments and Confidence

Often, advisors are not aware of the advisee's initial decision, yet this is necessary to understand the influence of their advice. Given that people often have high confidence in their perceptions, even when those perceptions are based on incomplete information (Brenner et al., 1996; Kahneman, 2011; Klayman et al., 1999; Moore & Healy, 2008), I make the following predictions. First, I predict that advisors will fail to recognize that they are missing information needed to form accurate impact judgments when they do not know the advisee's initial, pre-advice judgment. Furthermore, I predict that because advisors often do not recognize that they are lacking information needed to form accurate impact judgments, they will be highly confident in those judgments even when they lack information on the advisee's initial, pre-advice judgment. Finally, I predict that advisors can be debiased via an intervention. For example, Brenner et al (1996) found that people who saw one-sided evidence could be debiased by asking them to consider the strength of opposing side's undisclosed

argument. Similarly, I predict that if advisors are asked to consider carefully why they might need to know the advisee's initial, pre-advice judgment, they will be more likely to recognize when they are missing needed information on that judgment. These predictions are tested in Chapter 2 of the dissertation.

1.3.2. Accuracy of Impact Judgments

Although advisors may be highly confident in their impact judgments when lacking information needed, this confidence is likely unjustified. Advisors who do not know the advisee's initial judgment are likely to form less accurate impact judgments than those who know the advisee's initial judgment, simply because they are missing necessary information. However, I do not predict that impact judgments will be biased in any particular direction overall, simply that the judgments will be less accurate. This prediction is tested in Chapter 3 of the dissertation.

1.3.3. Downstream Effects

I also expect that there will be downstream effects of impact judgments. Specifically, there is likely to be an effect on willingness to give advice again in the future. Consistent with this idea, research in organizational behavior on employee voice has suggested that before speaking up, people consider whether their advice will be effective (Morrison, 2011). I suggest that in addition to considering *before* giving advice whether their advice will be effective, advisors will also consider *after* giving advice whether their advice was indeed effective, and then they will feed that perception into

future decisions about whether to give advice, making advice giving a dynamic process (a topic to which I will return in Chapter 5). That is to say, after people give advice, they will use their impact judgments as input in their decision of whether to give advice in the future. Thus, I predict that advisors' perceptions of the impact of their advice will be positively related to their willingness to give advice in the future.

Furthermore, advisors are likely to form impressions of the advisee based on their perceptions of how much the advisee relied on the advice. Existing research supports the idea that advisors form impressions of their advisees. For example, the act of seeking advice has been shown to raise perceptions of the advisee's competence (Brooks, Gino, & Schweitzer, forthcoming), and this may extend to the act of using the advice (or not). Furthermore, impressions of others' warmth and competence have been shown to predict people's willingness to help and associate with others (Cuddy, Fiske, & Glick, 2007), and therefore such perceptions are likely to inform advisors' willingness to give advice in the future. Thus, I predict that advisors' willingness to give advice in the future will be partially mediated by advisors' assessments of the advisee's warmth and competence.

Finally, I predict that advisors will rely on their impact judgments for forming downstream behavioral intentions even when they believe they lack sufficient information to form accurate impact judgments. This can be considered a secondary blind spot: one logical way to deal with the lack of information for accurate impact

judgments would be to temper the downstream decisions deriving from those judgments, however, I propose that advisors will not do this, instead relying on their impact judgments to the same degree as if complete information was available. These predictions are tested in Chapter 4 of the dissertation.

2. Advisors Fail to Recognize the Need to Know the Advisee's Initial Opinion

Chapter 1 discussed the fact that people often have high confidence in their perceptions, even when those perceptions are based on incomplete information (Brenner et al., 1996; Kahneman, 2011; Klayman et al., 1999; Moore & Healy, 2008) and developed the prediction that advisors will therefore possess a blind spot in determining the impact of their advice (hereafter "impact judgments"). Specifically, I predicted that advisors are likely to focus on the advisee's final decision and whether that matched their advice, failing to recognize the need to know the advisee's initial opinion. Chapter 2 presents the results of two studies designed to test those predictions. Study 1 asked participants to list the information they needed to form an impact judgment, which was then coded for mentions of the advisee's initial and final decisions. Study 2 used a scenario to manipulate whether information about the advisee's initial opinion was known to the advisor and asked the advisor whether they have enough information to form impact judgments. Additionally, Study 2 sought to debias advisors by asking them to consider why they might need to know the advisee's initial opinion in order to form accurate impact judgments.

2.1. Study 1: Listing Information Needed for Impact Judgments

In Study 1, I sought to understand the information advisors believe they need in order to form an impact judgment when asked to generate a list of such information without aids or prompting.

2.1.1. Method

I report how I determined sample size, all data exclusions (if any), and all measures in the study. There were no manipulations in the study.

2.1.1.1. Participants

A total of 100 members of Amazon's Mechanical Turk participated in the study (M_{age} = 31, 38% female). This was the a priori sample size and no responses were excluded.

2.1.1.2. Procedure

Participants were asked to "Imagine that you gave advice to a friend about an important topic. Afterwards, you want to figure out how much your friend relied on your advice." Next, participants were asked "What information do you need to know to figure out how much your friend relied on your advice? Please make a list in the box below."

2.1.2. Results

2.1.2.1. Coding

Responses were coded by a pair of research assistants (average interrater agreement across all codes as measured by Cohen's Kappa was .69), and all disagreements were resolved through discussion. Codes were developed by the researchers a priori and then expanded after looking at the data to include additional codes to capture the main themes. A single response could be assigned multiple codes. Results are presented in Table 1.

2.1.2.2. Information about the advisee's final and initial decisions

I predicted that advisors would focus on whether they knew the advisee's final decision but would be less likely to consider whether they knew what the advisee was planning to do absent the advice. The results of Study 1 are largely consistent with these predictions. The vast majority of participants (70%) noted that they would need to know the advisee's final decision after receiving the advice. By contrast, only a small minority of participants (5%) explicitly said they would need to know what the advisee was initially planning to do.

Table 1: Study 1. Results

Code *"Example text"*	**%**
Advisee's final decision/actions (after receiving advice) *"I would talk to my friend about what happened, what she decided to do"*	70%
Results of advisee's actions *"The results of their actions"*	31%
Advisee's answer when asked about how much they used the advice *"Ask if they followed your advice"*	26%
Other advice received from other people *"If they asked anyone else for advice on the same topic"*	14%
Advisee's thought process about the decision; reasons for the decision *"I would want to know why they chose that option"*	13%
Advisee's feelings about the advice, including trusting the advice or not *"Whether he trusted my advice" "How they felt about my advice in the first place"*	11%
Advice given to advisee *"My advice"*	7%
Advisee says the advice helped with the decision, regardless of whether they followed it *"Whether they thought it was helpful"*	6%
Advisee's initial opinion/decision/plan (before receiving advice) *"What was my friend's opinion before he heard my advice?"*	5%
Changes to the advisee's situation after the advice was given *"If my friend's situation has changed"*	2%
Restated the question *"I would need to know if my friend was persuaded by my advice"*	2%
Other options considered by the advisee *"What other options they considered"*	2%
What the advisee usually does in this kind of situation *"What they usually do"*	1%
Other	31%

2.1.2.3. Other themes

A few other themes emerged. About a quarter of advisors (26%) said that they would ask the advisees about their advice use, although the majority of advisors appeared to intend to ask only what the advisee's final decision was, rather than asking how much the advisee relied on the advice compared to what they were initially planning to do. Many advisors (31%) said they needed to know whether the actions that the advisee took resulted in a successful outcome -- an interesting thing to know, but not information that is necessary to determine how much the advisee relied on the advice. Finally, advisors seemed to be better at noticing other inputs to the advisee's decision than the advisee's own initial opinion, with 14% of advisors saying that they need to know what other advice the advisee received.

2.1.3. Discussion of Study 1

Study 1 provided initial evidence that advisors do not spontaneously consider what the advisee was planning to do absent the advice – only a very small minority of respondents mentioned needing to know the advisee's initial opinion. However, it is possible that respondents to the study assumed that they already knew what the advisee was planning to do initially and therefore did not include it in their lists. Or, perhaps being asked to generate a list without a specific scenario in mind prevented participants from recognizing the need to know the advisee's initial opinion. Study 2 sought to

address these questions by presenting participants with a concrete advice-giving scenario where information about the advisee's initial opinion was manipulated.

2.2. Study 2. Debiasing Study

Study 2 aimed to test two things: (1) whether advisors would display the same neglect of information on the advisee's initial opinion when asked to consider a specific scenario and (2) whether this neglect could be debiased by asking advisors to think about why it would be important to know the advisee's initial opinion.

Study is a 2 x 3 between subjects design. Participants read a short scenario about an advice giving interaction and rated how much the advice was used, their confidence in the ratings, and whether they had enough information to form an accurate rating. They were randomly assigned to conditions where they either knew the advisee's initial opinion or did not know the advisee's initial opinion ("knew initial" and "didn't know initial" conditions, respectively). Additionally, they were randomly assigned to one of three debiasing conditions: thinking about why knowing the advisee's initial opinion could be important ("debias-initial condition"), thinking about why knowing the advisee's *final* decision could be important ("debias-final condition"), and a control with no additional thinking prompts. I predicted that participants in the control condition would state that they had enough information to form accurate impact judgments, regardless of whether they knew the advisee's initial opinion or not. On the other hand, I predicted that participants in the debias-initial condition would recognize when they

did not have enough information. The debias-final condition allowed a test for whether any debiasing found in debias-initial was due to simply being asked to think more about the problem or whether it was specifically the thoughts about the advisee's initial opinion (I predicted the latter).

2.2.1. Method

I report how I determined sample size, all data exclusions (if any), all manipulations, and all measures in the study.

2.2.1.1. Participants

A total of 373 participants (59% female; M_{age} = 35.5) from Amazon's Mechanical Turk participated in the online study. This sample size was chosen based on a priori power calculations. Consistent with the a priori planned method, 8 participants were dropped who failed our attention check. (The check asked for the name of the person in the scenario. The name was mentioned several times in the study, across multiple pages. The correct answer was "Pat" and any name starting with the letter "P" was deemed sufficient to pass the test.)

2.2.1.2. Procedure

Participants read the following scenario:

"Imagine you are talking with your friend Pat, who will be receiving a large tax refund this year. Pat has already been making plans for how much of the refund to save and how much to spend. [knew initial condition: Pat is currently planning to put 20% of

the refund into savings. / didn't know initial: omitted] You tell Pat "I recommend you put 50% of your refund into savings." A few months later, Pat gets the refund, and you find out that Pat put 25% of the refund into savings."

After reading the scenario, participants in the two debiasing conditions were asked follow up questions. In the debias-initial condition, they were asked the following questions, with separate response blanks for each question: "Think about the paragraph you read. [paragraph repeats in grey text] Did the paragraph tell you how much of the refund Pat had been planning to save originally, before you gave advice? Did the paragraph tell you how similar your advice was to how much Pat had been planning to save originally, before you gave advice?[1] Why might it be helpful to know how much Pat had been planning to save originally, before you gave advice? How could knowing how much Pat had been planning to save originally help you figure out how much Pat used your advice?" The questions for the debias-final were similar, except that participants were asked to think about Pat's final answer, rather than Pat's initial answer.

Next, participants completed the dependent measures in the study. First, they gave impact judgments in response to the question "Overall, how much did Pat use the advice you gave?" on a 7-point single-item Likert scale with anchors of *1 = Pat didn't use the advice at all* and *7 = Pat used the advice very much*. Next, they indicated their

[1] The participants who answered that paragraph did tell them what Pat was planning to do originally received an extra question at the end of the study asking them to explain that answer.

confidence in their answer by typing in a number between 0 to 100, where "100 means you are completely certain that your answer is right. 50 means you think that your answer is equally likely to be right or wrong. 0 means you are completely certain that your answer is wrong." Finally, on the next page, they reported whether they had enough information to form an accurate impact judgment. "On the previous page, we asked you a question about how much Pat used your advice. The question looked like this: [graphic of question] Did you have enough information to be able to answer that question accurately?"[2] Finally, respondents reported their age, gender, race, and whether English was their native language.

Prior to running the main study, the scenarios were pretested with a variety of values for the amount that Pat planned to save originally, in order to find the values above which had equivalent means for the impact judgments regardless of whether participants knew Pat's initial opinion or not, $M_{knew\ initial} = 3.11$, $M_{didn't\ know\ initial} = 3.22$, $t(124) = 0.43$, $p = 0.665$.

2.2.2. Results

In order to test the prediction that advisors would not recognize the need to know the advisee's initial opinion unless they were prompted to do so by the debias-initial condition, I used two main dependent variables: the proportion of respondents who said they had enough information to form an accurate impact judgment and the

[2] The participants who answered that they didn't have enough information were given an additional question asking them for what information they needed that they didn't have.

confidence participants expressed in their impact judgments. Before turning to the main predictions, however, it is important to consider advisors' impact judgments and how the key dependent variables related to impact judgments.

2.2.2.1. Impact judgments

Figure 3 presents impact judgments by condition.

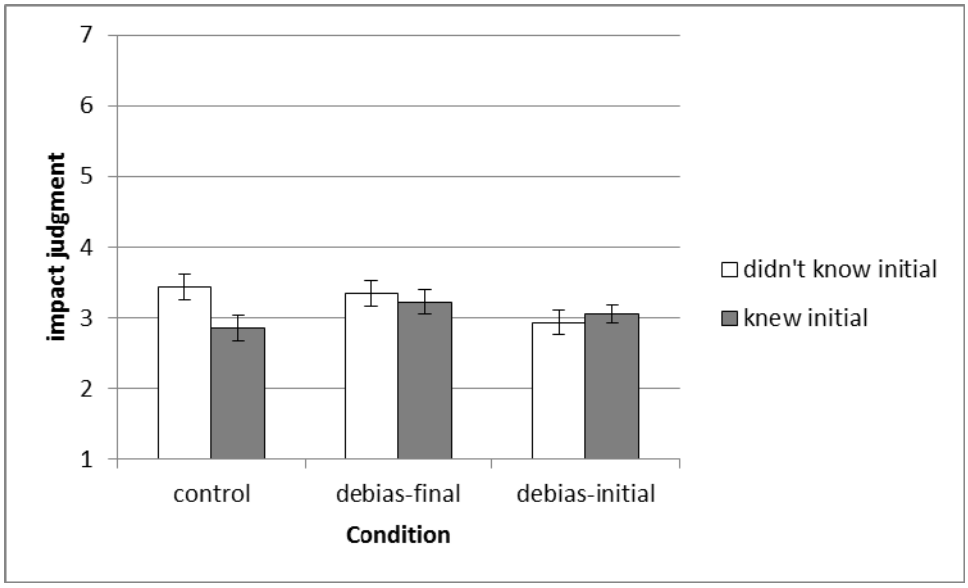

Figure 3: Study 2. Impact judgments. N = 365. Error bars represent the standard error of the mean.

Because the key dependent variables could be influenced by the values participants gave for their impact judgments, I tested to see whether impact judgments varied by condition. A two-way ANOVA with factors for knowledge of the advisee's initial opinion and debias condition found no interaction, $F(2, 359) = 2.16$, $p = .116$, however planned comparisons within each debias condition did show an unanticipated

significant difference within the control condition, $F(1, 122) = 5.12$, $p = .025$, while the other two conditions showed no differences, both Fs < .40, both ps > .5.

Furthermore, the relationship between our key dependent variables and impact judgments was tested by regressing the dependent variables on impact judgments and squared impact judgments. The resultant equations are plotted in Figure 4 and Figure 5, which show that impact judgments have a curvilinear relationship with perceptions of having enough information and confidence in impact judgments, such that people are very confident in extreme judgments but less so with middling judgments.

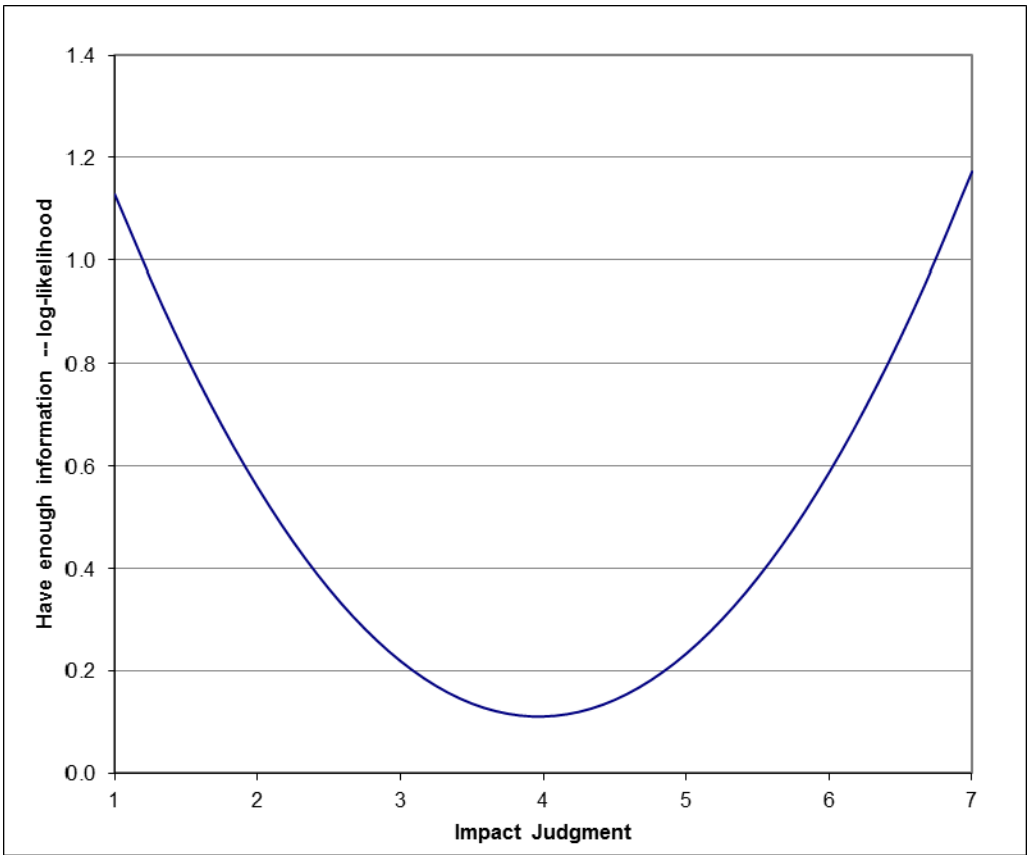

Figure 4: Study 2. Having enough information as a function of impact judgments. $N = 365$. Equation: $Y = 1.93 + -0.92X + 0.12\ X^2$. All coefficient estimates are significantly different from zero at $p < .05$.

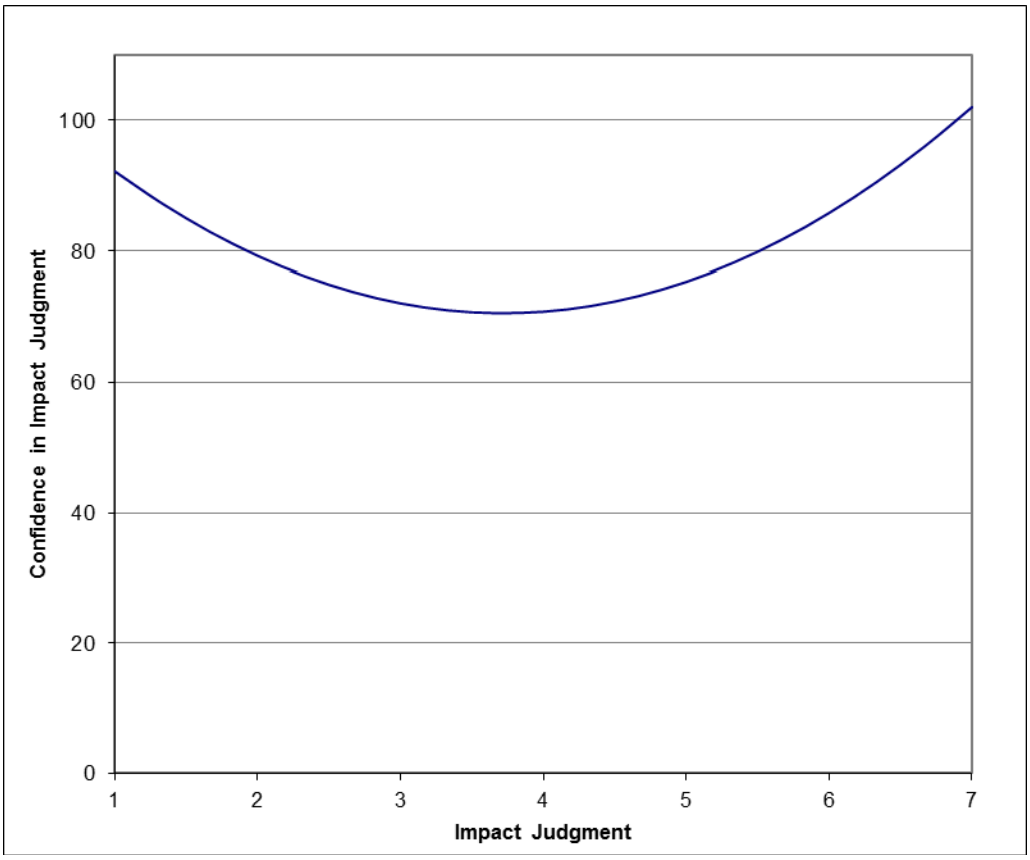

Figure 5: Study 2. Confidence in impact judgments as a function of impact judgments. N = 365. Equation: Y = 111 + -21.72X + 2.92 X^2, *Adjusted* R^2 = .10. All coefficient estimates are significantly different from zero at $p < .05$.

Because impact judgments affect confidence in impact judgments and perceptions of having enough information, and because there was no way to manipulate participants to hold exactly equal impact judgments, impact judgments are included as a covariate in the analyses that follow, where appropriate.

2.2.2.2. Information needed to form impact judgments

Turning now to the key question about whether advisors recognize the information they need to form impact judgments, Figure 6 presents the proportion of respondents who said they had enough information to form accurate impact judgments.

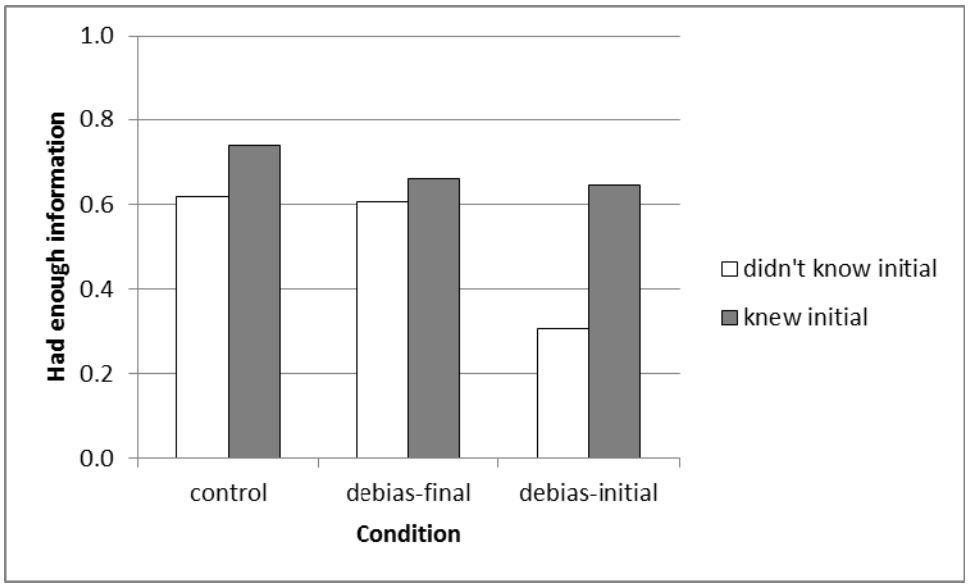

Figure 6: Study 2. Proportion of respondents who said they had enough information to form accurate impact judgments. $N = 365$.

Building on the results of Study 1 that showed people did not list information about the advisee's initial opinion as a critical piece of information when forming impact judgments, I predicted that advisors would not notice when that piece of information was missing, unless they were prompted to think about why it was necessary. That is, I predicted a pattern of moderation: The proportion of advisors who thought they had enough information to form impact judgments would decrease more from not knowing the advisee's initial opinion when participants were in the debias-initial condition than

in the other two conditions. Moderation was tested by running a logistic regression with knowledge of the advisee's opinion contrast coded (-0.5 = didn't know initial; 0.5 = knew initial), the debiasing condition effects coded (with the control condition as the level receiving -1 for both effects codes), the two terms for the interactions of knowledge of the advisee's opinion with the two debiasing condition effects codes, and impact judgments (mean centered) and the square of impact judgments. The main parameter estimate of interest in the equation is the interaction of the effect code for the debias-initial effect with the contrast code for knowing the advisee's initial opinion, which was positive and statistically significant, $\beta = 0.81$, Wald $\chi^2 = 6.26$, $p = .012$, indicating the predicted pattern of moderation.

Probing the results of the interaction, I predicted that participants in the control condition would demonstrate the same blind spot as found in Study 1 and would think that they had enough information to form an impact judgment even when they did not know the advisee's initial opinion. The results are consistent with this prediction: 62% of participants who did not know the advisee's initial opinion said that they had enough information. Comparing this with respondents who knew the advisee's initial opinion, 74% said that they had enough information, $\chi^2(1) = 2.00$, $p = .158$. Additionally, I predicted that participants could be debiased by asking them to think about why information about the advisee's initial opinion was important for forming impact judgments. This had the desired effect: only 31% of participants who did not know the

advisee's initial opinion said that they had enough information after being exposed to the debiasing question, far less than the 64% who did know the initial opinion and were exposed to the debiasing question, $\chi^2(1) = 13.83$, $p < .001$. I also predicted that thinking about the advisee's final decision would not debias advisors, because rather than simply thinking more about the interaction, they needed to think specifically about the advisee's initial opinion in order to be debiased. Results were consistent with these predictions: 61% of participants who did not know the advisee's initial and thought about why knowing the final was important said they had enough information to form accurate impact judgments, similar to the 66% of participants who did know the advisee's initial, $\chi^2(1) = 0.38$, $p = .536$.

2.2.2.3. Confidence in impact judgments

The second main dependent variable is confidence in impact judgments. Figure 7 presents the results for advisors' confidence in their impact judgments.

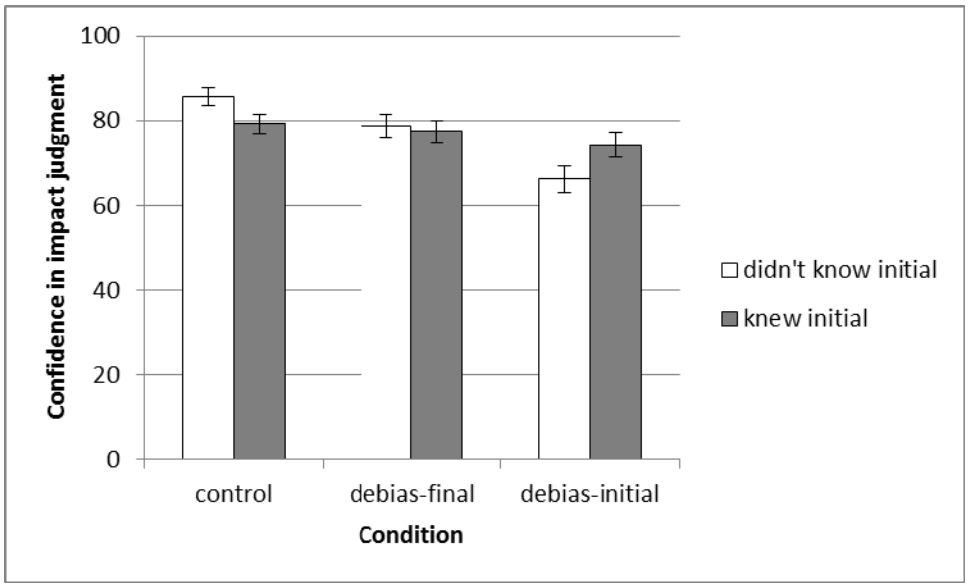

Figure 7: Study 2. Confidence in impact judgments. N = 365. Error bars are standard error of mean.

I made similar predictions for confidence in impact judgments as for advisors' perceptions that they had enough information. That is, I predicted that advisors would be highly confident in their impact judgments regardless of whether they were missing information on the advisee's initial opinion, unless they were prompted to think about why it was necessary to know the initial opinion. This would be evidenced by a pattern of moderation whereby advisors would display a greater decrement in confidence when they didn't know the advisee's initial opinion in the debias-initial condition than in the other conditions. To test these predictions, I ran a two-way ANOVA with factors for knowledge of the advisee's initial opinion and debias condition, plus covariates for impact judgment (mean-centered) and impact judgment squared. As predicted, there was a significant interaction, $F(2, 357) = 6.89$, $p = .001$.

Probing the results of the interaction, I predicted that when participants in the control condition did not know the advisee's initial opinion, they would be as confident in their impact judgments as if they did know the initial opinion. In fact, participants in the control condition who did not know the advisee's initial opinion were *more* confident in their impact judgments than those participants who did know the initial opinion, $F(1, 120) = 8.97$, $p = .003$. Furthermore, I predicted that participants could be debiased by asking them to think about why information about the advisee's initial opinion was important for forming impact judgments. This led to participants having lower confidence when they didn't know the initial opinion than when they did, $F(1, 117) = 7.44$, $p = .007$. I also predicted that thinking about the advisee's final decision would not debias advisors, because they needed to think specifically about the advisee's initial opinion in order to be debiased, rather than simply thinking more about the advisee's final answer or the advice-giving event, which they were probably already doing. Results were consistent with these predictions: there was no difference in confidence between advisors in this condition who knew or didn't know the advisee's initial opinion, $F(1, 116) = 0.06$, $p = .801$.

2.2.2.4. Sensitivity analyses

Following the recommendations of Simmons, Nelson, & Simonsohn (2011), sensitivity analyses were performed to understand the robustness to our results of removing the covariate and including the dropped observations. All statistically

significant results remained so, with the following exceptions. For having enough information, the interaction between debias-condition and knowledge of the advisee's initial became marginally significant if the a priori excluded observations are included at the same time that the impact judgment covariate is dropped, $b = 0.60$, *Wald* $\chi^2 = 3.73$, $p = .053$. For confidence in impact judgments, the comparison within the debias-initial condition for those who did and did not know the advisee's initial becomes marginally significant if the model does not include the covariate, $F(1, 119) = 3.59$, $p = .061$, and it becomes insignificant if the a priori excluded observations are included at the same time as dropping the covariate, $F(1, 122) = 2.55$, $p = .113$.

2.2.3. Discussion

The results of Study 2 were consistent with the predictions that advisors do not recognize the need to know the advisee's initial opinion when forming impact judgments, unless advisors are prompted to think about why such information is necessary. Thinking about why information about the advisee's initial opinion is needed proved to be an effective way to debias advisors – many of whom stated very clearly why that information was necessary. For example, one participant in the debias-initial condition explained, "knowing what Pat had intended to save before I gave advice would let me know if my advice changed Pat's mind." This suggests that advisors are capable of recognizing when and why they need information on the advisee's initial opinion, but that it simply resides in their blind spot most of the time.

2.3. General Discussion of Chapter 2

Chapter 2 presented the results of two studies that showed that advisors possess a blind spot when it comes to assessing the impact of their advice: Advisors did not recognize when they were missing information that they needed to form accurate impact judgments – information about what the advisee would have done absent their advice – unless they were guided to think about the fact the information was missing and why it was helpful for determining the impact of their advice.

The results of Study 1 also hinted at additional blind spots that advisors may possess, such as not considering other influences on the advisee like advice from other people or changes in the advisee's situation. These influences make knowledge of the advisee's final decision alone insufficient to determine the influence of one's advice.

Given that advisors possess these blind spots, it is important to assess the effects that this can have on the accuracy of their impact judgments and their downstream behavioral intentions. Chapter 3 considers how lacking information on the advisee's initial opinion can affect the accuracy of impact judgments, and Chapter 4 investigates how advisors rely on impact judgments to form downstream behavioral intentions such as willingness to give advice again.

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3. Accuracy of Impact Judgments when Information is Missing

3.1. Study 3: Advice Giving Experiment

Chapter 2 provided evidence that advisors do not recognize when they are missing information needed to form impact judgments, specifically information on the advisee's initial opinion. The purpose of Study 3 was to test whether impact judgments are in fact accurate when advisors do not know the advisee's initial decision, using an advice-giving experiment. Lacking information on the advisee's initial decision could lead advisor to over- or underestimate the impact of their advice: Advisees may appear to have taken advice, when in fact they were planning on taking that action in any case, leading advisors to overestimate their influence, or, advisees can appear to have ignored the advice, when in fact, they shifted substantially from a position that was even further removed, resulting in advisors underestimating their influence. I therefore predicted that participants who did not know the advisee's initial opinion would be less accurate in their impact judgments than those who did know the advisee's initial opinion, although they would not necessarily be biased. To test this, participants were assigned to the role of advisor or advisee and engaged in an advice exchange through a series of online surveys.

3.1.1. Method

I report how I determined sample size, all data exclusions (if any), all manipulations, and all measures in the study.

3.1.1.1. Participants

A total of 336 members of Amazon's Mechanical Turk participated in the experiment (M_{age} = 32, 30% female, for those assigned the advisor role and M_{age} = 31, 39% female for those assigned the advisee role). Sample size was determined a priori.

3.1.1.2. Procedure

The experiment was administered via a series of three surveys. First, 170 participants were assigned the advisor role and gave advice, following a scenario where they were an advisor on team of two people hiring an administrative assistant. Specifically, they read a job description, resume, and letter of recommendation and gave the candidate a rating. Participants in the advisor role were selected to have experience working in an office and were also told that they were the only member of the hiring team to see the letter of recommendation. The aim of this was to make advisors feel some level of expertise in making their recommendation and therefore be more invested in the task and the advisee's response. Due to a computer error, four of the advisors' advice was not recorded and they were removed from the study, leaving a total of 166 advisors. Later that same day, 166 participants were selected for the role of advisee. They were selected based on having never worked in an office job, so that they would have less expertise than the advisor, giving the advisor one more reason to feel involved in the task. Advisees made their own independent ratings of the candidate and then received advice from one of the advisors randomly selected from the pool. They then

gave a final answer. The next day, 150 of the original 166 advisors (90% repeat response rate) completed a follow-up survey where they saw the advisee's final answer and answered questions about how much their advice had been used, their opinions of the advisee, and their willingness to work with the advisee in the future. The follow up survey manipulated whether the advisor was shown the advisee's initial independent opinion, or not.

3.1.1.3. Materials

All participants read a description of the hiring scenario and saw a job description and resume (Appendix A). The job description and resume were modified from an actual job description and resume posted on the internet, following the methods of Bertrand & Mullainathan (2003). Advisors were also shown a recommendation letter for the candidate (also in Appendix A).

3.1.1.4. Measures

The primary measures in this study are those asked of the advisor in the follow-up survey, where they see the advisee's final answer and then are asked how much they think their advice was used (impact judgments), whether they had enough information to form impact judgments, and their confidence in those judgments. The order in which participants were asked for their impact judgments and their confidence in their judgments was counterbalanced. Afterwards advisors reported their opinions of the advisee and willingness to work with the advisee in the future.

Impact judgments. Impact judgments were collected using two scales. The first scale was a 3-item likert scale (α = .97), with items of "How much did the final decision maker use your advice?" "How much did the final decision maker rely on your advice?" and "How much did the final decision maker's final evaluation incorporate your advice?". These were on a scale of *1 = Not at all, 4 = Somewhat, and 7 = Very much*. The second scale asked advisors to estimate the percentage of the distance the advisee moved from their own initial answer towards the advice, which is the weight of advice (woa) measure commonly used in advice taking research (Yaniv, 2004). This measure was communicated to participants using a series of pictures (Appendix B). The participant was told to "imagine that you and the final decision maker are standing at opposite ends of a field. The distance between the two of you represents the distance between your independent opinions about the age of the person in the photo. Next, imagine that the final decision maker walked toward you the distance that represents how much he or she adjusted his or her opinion after seeing your estimate." Advisors were shown examples that if the other participant chose their own answer, they moved 0%; if they chose the advice they moved 100%; and if they averaged they moved 50%. Responses were collected using a radio button format with choices from 0% to 100% at 5% increments.

Confidence in impact judgments. Confidence in impact judgments was collected using a likert scale and a percentage scale. The likert scale consisted of four items (α =

.96) including "How confident are you that you know how much the other person used your advice?" and three other items starting with the same stem but ending as: "relied on your advice", "incorporated your advice", and "acted on your advice". People responded on a scale of *1 = Not at all confident that I know this, 2 = Slightly confident that I know this, 3 = Moderately confident that I know this, 4 = Very confident that I know this, 5 = Extremely confident that I know this, and 6 = So extremely confident that it is impossible to be any more confident*. Because pre-testing indicated that a ceiling effect might occur, each item was presented on a different screen and was preceded by example items to help participants calibrate their responses rather than automatically respond that they were highly confident. The first example item said: "Now we will ask about several things that you may or may not know. We will ask how confident you are that you know that thing. Example: How confident are you that you know your name?".[1]

The percentage measure of confidence in impact judgments was collected after the likert scale using the same scale as in Study 2, which was preceded by the same 1-item question as in Study 2 asking how much the advisee used the advice and then asking advisors how confident they were in their answer on a scale of 0 to 100, where 100 meant they were completely certain that their answer was right and 0 meant they were completely certain that their answer was wrong.

[1] The other calibration items were: whether a coin will land heads or tails if you flip it, whether it is raining in Seattle right now, whether your heart is beating right now, how old you are, whether you are awake right now, whether it is sunny in Miami right now, where you live, whether the temperature is over 120 degrees F in Juneau, Alaska right now, and where you will be at exactly 7:34 pm on July 24, 2015.

Information needed. Two questions at the very end of the survey asked about whether participants had enough information to answer all of the questions of the survey completely accurately. The first asked generally whether they had enough information to answer all the questions,[2] and the second asked them if they had enough information to answer the question about how much the other person used the advice, the same as in Study 2.

Downstream effects. The survey also contained questions about downstream effects of impact judgments such as the advisor's opinion of the advisee's warmth and competence, willingness to work again with the same advisee, and potential moderators of the relationship between impact judgments and willingness to work again with the same advisee. These variables are described in more detail in Appendix C and will be analyzed in Chapter 4.

Demographics. Participants reported their age, gender, race, and whether English was the participant's native language.

Advisee measures. In addition to the measures from advisors described above, measures were also collected from advisees about their perceptions of how much impact the advice had, how much they liked the advisors, their receptiveness to advice from the advisor again, and self-ratings of warmth and competence. Those measures are not central to the predictions of this dissertation and will not be discussed further.

[2] Those participants who indicated they did not have enough information to answer all questions were given a follow up question where they could specify what information was missing.

3.1.2. Results

Table 2 presents the correlations among all variables in the study. The analysis in this chapter will focus on variables related to the information used to form impact judgments, confidence, and accuracy. The other variables on downstream effects of impact judgments will be analyzed in the next chapter along with Study 4.

Table 2: Study 3. Correlations

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Knew advisee's initial[a]	0.50	0.50		-.01	.02	.13	-.09	.34	.28	.14	.36	.14	.10	.15	.08	.14	-.02	.04	.06
2	Gave conf. before IJ[a]	0.50	0.50	-.01		.07	-.17	-.18	-.11	-.08	-.05	.05	.07	-.01	.06	-.02	-.03	-.09	.00	-.03
3	Actual weight of advice (woa)	0.52	0.27	.02	.07		.51	.50	.28	.18	.10	.01	.18	-.07	.17	.22	.37	.11	.08	.04
4	Impact judgment - likert[b]	4.81	1.50	.13	-.17	.51	*.97*	.75	.47	.36	.15	.16	.47	.30	.61	.52	.60	.24	.30	.19
5	Impact judgment - percent	58.30	30.58	-.09	-.18	.50	.75		.42	.24	.19	.07	.42	.26	.48	.46	.47	.24	.30	.16
6	Conf. in IJ - likert[c]	3.01	1.13	.34	-.11	.28	.47	.42	*.96*	.63	.31	.36	.31	.29	.34	.24	.20	.20	.32	.26
7	Conf. in IJ - percent	67.85	21.70	.28	-.08	.18	.36	.24	.63		.29	.24	.31	.26	.28	.16	.17	.25	.25	.17
8	Enough info generally[c]	0.91	0.29	.14	-.05	.10	.15	.19	.31	.29		.35	.25	.14	.21	.09	.12	.24	.26	.20
9	Enough info for IJ[a]	0.75	0.43	.36	.05	.01	.16	.07	.36	.24	.35		.06	.14	.18	.07	.03	.10	.21	.21
10	Warmth[c]	4.79	1.07	.14	.07	.18	.47	.42	.31	.31	.25	.06	*.93*	.65	.76	.42	.40	.21	.29	.27
11	Competence[c]	4.97	0.83	.10	-.01	-.07	.30	.26	.29	.26	.14	.14	.65	*.77*	.63	.39	.33	.32	.40	.38
12	Liking[d]	1.77	2.13	.15	.06	.17	.61	.48	.34	.28	.21	.18	.76	.63		.62	.54	.18	.31	.34
13	Preference for same advisee[c]	4.66	1.54	.08	-.02	.22	.52	.46	.24	.16	.09	.07	.42	.39	.62		.52	.00	.20	.31
14	Willing to give adv. again[c]	6.09	1.18	.14	-.03	.37	.60	.47	.20	.17	.12	.03	.40	.33	.54	.52		.23	.16	.07
15	Conf. in advice given[c]	5.77	0.84	-.02	-.09	.11	.24	.24	.20	.25	.24	.10	.21	.32	.18	.00	.23	*.91*	.53	.22
16	Importance adv. taken[c]	4.78	1.22	.04	.00	.08	.30	.30	.32	.25	.26	.21	.29	.40	.31	.20	.16	.53	*.94*	.59
17	Cared about advisee[c]	4.01	1.53	.06	-.03	.04	.19	.16	.26	.17	.20	.21	.27	.38	.34	.31	.07	.22	.59	*.91*

Note: *N* = 150. Scale reliabilities are given on the diagonal in italics. All correlations > .16 are significantly different from zero at p = .05. Conf. = confidence. IJ = Impact judgment. Adv. = advice.

[a]Dichotomous variable. 1 = yes, 0 = no.

[b]Six-point scale from 1 to 6.

[c]Seven point scale from 1 to 7.

[d]Eleven point scale from -5 = I dislike them very much to 5 = I like them very much.

3.1.2.1. Information needed

Before considering the effect of not knowing the advisee's initial opinion on the accuracy of impact judgments, I ask whether advisors recognized when they did not have enough information to form impact judgments. I predicted that, similar to Study 2, advisors would say they had enough information regardless of whether they knew the advisee's initial opinion or not. This prediction was not borne out in the data: 60% of participants who didn't see the advisee's initial estimate said they had enough information, compared to 91% of those who did see the advisee's initial estimate, $\chi^2(1) = 18.98$, $p < .001$. Thus, it appears that for this task, many advisors were able to recognize that they did not have sufficient information to form impact judgments.

3.1.2.2. Confidence in impact judgments

I again predicted that, similar to Study 2, advisors would be highly confident in their impact judgments regardless of whether they knew the advisee's initial opinion or not. To test this, advisors' confidence in their impact judgments was compared between participants who knew the advisee's initial independent judgment and those that did not. Those who knew the advisee's initial judgment were more confident whether measured on a likert scale, $M_{knew\ initial} = 3.93$, $M_{didn't\ know\ initial} = 2.62$, or percentage scale, $M_{knew\ initial} = 73.92\%$, $M_{didn't\ know\ initial} = 61.77\%$. For each confidence measure, a two-way ANOVA was performed with knowing the advisee's initial opinion and whether confidence or the impact judgment was measured first. There was a main effect of

knowing the advisee's initial for both confidence measures (both *F*s > 12.00, both *p*s < .001). There was no effect of whether confidence or the impact judgment was measured first, neither as a main effect (both Fs < 2.00, both *p*s > .16) nor interaction (both *F*s < .10, both *p*s > .75).

3.1.2.3. Accuracy of impact judgments

Given the findings above that the participants who did not know the advisee's original estimate were often correctly aware that they were lacking necessary information to form impact judgments, this study can be considered a test of how accurate impact judgments can be when people are aware that they are missing information. Even with this awareness, I expected advisors' impact judgments to be less accurate when they didn't know the advisee's initial opinion than when they did, due to the missing information. To test this, the true weight of advice (woa) given by the advisee was calculated (Yaniv, 2004). This metric takes on a value of 0 when the advisee uses his or her own opinion and ignores the advice and a value of 1 when the advisee ignores his or her own opinion and uses the advice. As is customarily done in woa calculations, observations were excluded if they gave woas less than 0 or greater than 1 (3% of observations), as well as observations where the advice and the advisee's initial estimate were too close together to create a meaningful index, operationalized here as estimates that were within 2 units of one another (16% of observations). Figure 8 plots each participant's impact judgment against the true woa, along with the regression line

that models participants' judgments, for those participants who did not know the advisee's initial opinion. Figure 9 plots the same data for those participants who did know the advisee's initial opinion. Accuracy was quantified by calculating how far off each participant was from the true woa, by taking the absolute deviation of the impact judgment from woa and then calculating the mean across participants (mean absolute deviation). Results are presented in Table 3. Unsurprisingly, participants who did not know the advisee's initial estimate were less accurate than those who did know it when compared to true woa, pooled $t(119) = 4.49$, $p < .001$, and marginally so when compared to alternate woa, pooled $t(148) = 1.80$, $p = .074$. For a more intuitive measure, the percentage of participants who gave answers within 0.05 woa units of the true woa is also presented. Nearly half of the participants who knew the advisee's initial estimate gave answers within 0.05 units of the true woa, compared to less than 10% of the participants who didn't know the advisee's initial.

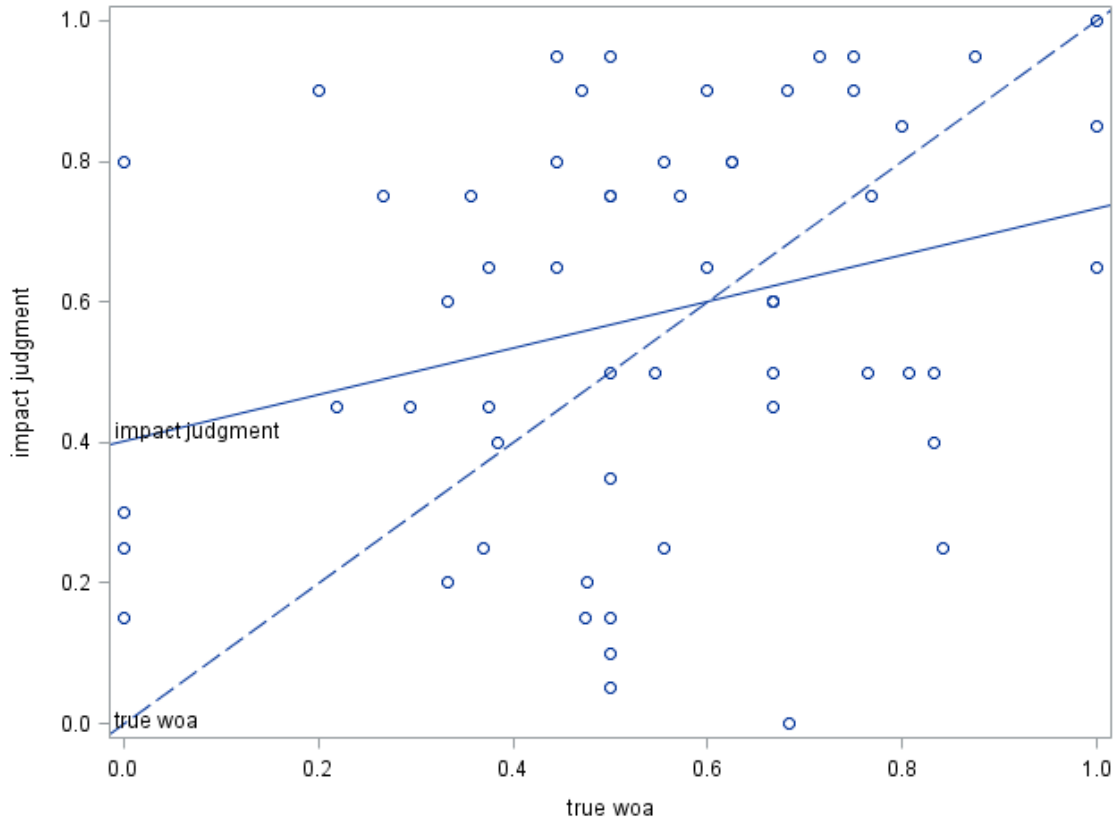


Figure 8: Study 3. Impact judgments when the advisor did not know the advisee's initial opinion. *N* = 58. Woa = weight of advice, calculated as (final – initial) / (advice – initial).

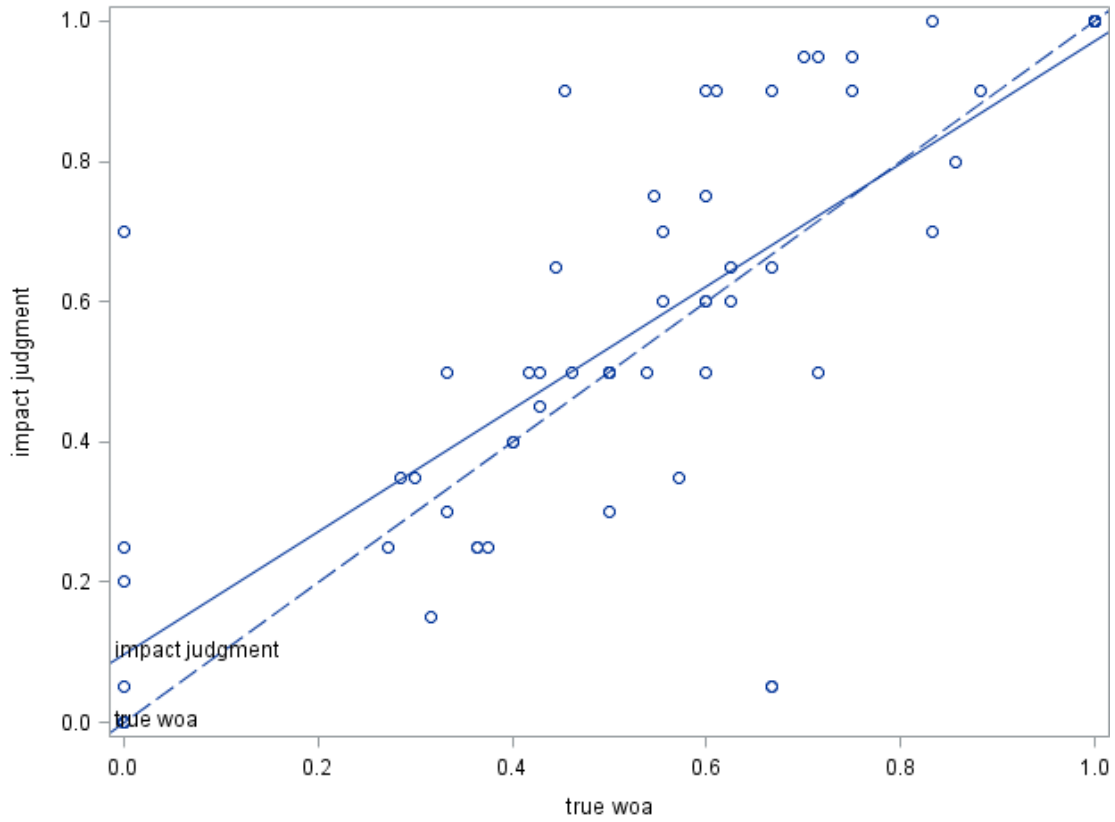


Figure 9: Study 3. Impact judgments when the advisor knew the advisee's initial opinion. *N* = 63. Woa = weight of advice, calculated as (final – initial) / (advice – initial).

3.1.2.4. Bias in impact judgments

Additionally, I asked whether impact judgments displayed an overall systematic bias upward or downward. To check for whether impact judgments were biased upward or downward, the deviation of impact judgments from the true woa (without the absolute value) was calculated, as shown in Table 3. Both participants who knew and didn't know the advisee's initial estimates were unbiased, with average answers no different from zero, as evidenced by the 95% confidence intervals. Further spotlight analyses revealed that, predictably, even though participants who didn't know the

advisee's initial opinion were unbiased on average, they overestimated woa when true woa was low and trended toward underestimating woa when true woa was high. To test this, spotlight analyses were performed on 25th and 75th percentile woa values (0.38 and 0.68, respectively), and found that at 25th percentile woa, participants who didn't know the advisee's initial opinion overestimated woa, $b = 0.15$, $t(117) = 4.08$, $p < .001$, while at 75th percentile woa, they trended towards underestimating woa, $b = -0.06$, $t(117) = 1.58$, $p = 0.12$.

Table 3: Study 3. Accuracy and bias in impact judgments

	Didn't know initial	**Knew initial**
Accuracy measures		
Mean absolute deviation	0.26	0.12
95% confidence interval	[0.21, 0.30]	[0.08, 0.16]
Answers within .05 woa units	8%	46%
Bias measure		
Mean deviation	0.04	0.03
95% confidence interval	[-0.04, 0.13]	[-0.02, 0.08]

In an additional analysis, I calculated an "alternate woa" metric. This metric is meant to be a fairer comparison for participants who did not know the advisee's initial estimate. It is an approximate woa based on the information available to those participants as well as a set of assumptions. Results using alternate woa are consistent with those for true woa. Details on the calculation of alternate woa and results are contained in Appendix D.

3.1.3. Discussion

The results of Study 3 suggest that advisors who do not know the advisee's initial answer will not necessarily be biased in their impact judgments. That is to say, their average answers were centered on true woa. Not being biased does not mean that they were accurate, however. As one would expect, lacking information on the advisee's initial opinion led advisors to be less accurate overall in their impact judgments, compared to advisors who knew the advisee's initial opinion, as measured by the absolute deviations from true woa.

Similar to Study 2, the data in Study 3 also indicated that people can be sensitive to the information available to them, as people who did not know the advisee's initial opinion reported not having enough information and displayed less confidence. This may have occurred because the explicit instructions in the scenario made it very clear that the advisee had just gone through the same process as the advisor of arriving at their own judgment, thereby making the absence of the judgment more obvious. Additionally, the advice-giving interaction was between strangers, which may have made participants think more carefully about the problem at hand or bring an exchange mindset (Heyman & Ariely, 2004) to the problem, both of which may have drawn attention to the missing information.

In sum, Study 3 demonstrated that advisors who didn't know the advisee's initial opinion often had inaccuracies in their impact judgments. If advisors act upon

those inaccurate judgments as if they were fully correct, there could be consequences for downstream behavioral intentions, which is the subject of the next chapter.

4. Reliance on Impact Judgments When Information is Missing

Chapter 4 investigates the downstream effects of lacking knowledge about the advisee's independent pre-advice decision. This chapter expands on previous chapters by looking at a real advice-giving event: Study 4 asks people to report about a time they gave advice to someone else. Additionally, Chapter 4 contains additional analysis on data collected in Study 3 that can speak to the question of downstream effects.

In total, Chapter 4 has three main aims. First, it tests whether the earlier findings that advisors do not recognize when they are missing information needed to form impact judgments will extend to real advice-giving events (Study 4) and not just those created in experiments. Second, it investigates the downstream effects of impact judgments on the willingness to give advice again (Study 4) and willingness to work with the same advisor again (Study 3), as well as mediators of this relationship. Finally, it investigates whether advisors rely less on their impact judgments for determining downstream behaviors when they believe they do not have enough information to form impact judgments, which would be one logical way to make up for lacking information.

4.1. Study 4: Recalling a Time You Gave Advice

In Study 4, people were asked to recall a time they gave advice to someone else. They reported on whether they knew the advisee's initial opinion, their impact judgment, whether they believed they had enough information to form an impact

judgment, their confidence in their impact judgment, downstream intentions to give advice again, and their perceptions of the advisee.

4.1.1. Method

I report how I determined sample size, all data exclusions (if any), and all measures in the study. There were no manipulations in the study.

4.1.1.1. Participants

A total of 630 members Amazon's Mechanical Turk completed the survey. Fourteen participants were removed because they completed the survey in an unreasonably short amount of time or failed multiple attention checks, along with one participant who stated that he made mistakes in the survey, leaving a final total of 615 participants, M_{age} = 34, age range 18-74, 59% female.

4.1.1.2. Procedure

Participants were asked to think of a recent time they gave advice to a friend, family member, or co-worker. They wrote a paragraph about the event and then answered our measures of the independent variables, dependent variables, and moderators. Prior to writing the paragraph, participants answered several open- and closed-ended questions to help them get the event in their mind, including open-ended questions about who they gave advice to and what it was about, the closeness they felt with the advisee using Aron, Aron and Smollan's (1992) inclusion of other in self (IOS) scale (by indicating the degree of overlap between a circle representing themselves and a

circle representing the other person), and multiple choice questions about when they gave the advice, how long they had known the advisee prior to giving them advice, and the topic of the advice.

The instructions for the paragraph asked participants to "Please recall everything you can about giving the advice and write it here. Please try to paint a picture of what happened. It might help you to think about where you were, who was there, what was happening just before you gave the advice, what happened and what you and the other person said when you were giving the advice, and what happened after you gave the advice." After this, participants were asked the main measures in the study.

4.1.1.3. Measures

Participants completed measures in the order that they are listed in this section, except where otherwise noted.

Impact judgments, information needed, and confidence in impact judgments. Impact judgments were collected using a single item, "how much did the other person use the advice you gave them?", where *1 = They didn't use the advice at all and 7 = They used the advice very much*. Confidence in impact judgments was collected using the same percentage scale and likert scale as in Study 3 (α = .92).[1] The same two questions as in Study 3 were also asked at the very end of the survey about whether participants had

[1] Five items were actually collected, but the fifth item proved confusing to participants and I therefore deleted it. The fifth item was "I know how much the other person ignored my advice."

enough information to answer all of the questions of the survey and the specific question about impact judgments completely accurately.

Willingness to give advice again to same advisee. Participants reported their willingness to give advice again to the same advisee, with two five-item scales about advice on the same topic and advice on a different topic, on a scale of *1 = strongly disagree to 7 = strongly agree*. The scales were highly correlated and thus were averaged together (α = .95). A sample item is "I would be highly likely to give the advice to this person again on the same topic in the future."

Opinion of advisee. Participants rated the advisee on warmth and competence using Fiske et al's (Fiske, Cuddy, Glick, & Xu, 2002) 9-item adjective scale for how well the adjective described the person, where *1 = not at all* and *7 = extremely* (α = .93 for warmth; α = .77 for competence).[2] They also answered how much they liked the final decision maker on a scale of *-5 = I dislike them very much, 0 = I neither like them nor dislike them, and 5 = I like them very much.*

Knowledge of advisee's initial and final decision. The key independent variables in this study are whether the advisor knew the advisee's initial and final decisions, which were measured *after* the dependent variables. To measure this, participants answered a multiple choice question "Before you gave advice, did you

[2] A variety of other adjectives were piloted to assess impressions of the advisee as someone who is open to receiving advice, someone who sticks with their own values, or someone who is trustworthy. In an exploratory factor analysis, all items loaded onto two factors representing warmth and competence. Therefore, just the Fiske et al items were used in analyses, for the sake of parsimony.

know what the other person was planning to do?". The response options included explanations for yes and no answers which were then coded as either knowing the advisee's initial, clearly not knowing it, or ambiguous. The choices were: "Yes, they told me what they were planning to do" [coded know initial]; "Yes, they had already started to do what they were planning to do" [coded know initial]; "Yes, I know what they always do in these kinds of situations" [coded know initial]; "Yes, someone else told me what they were planning to do" [coded know initial]; "No, I didn't know what they were planning to do" [coded didn't know initial, pending follow-up]; "No, they told me they didn't know what they were planning to do" [coded ambiguous]; "No, I didn't know for certain what they were planning to do, but I did have strong idea about what they might do" [coded ambiguous]; and "Other" [coded ambiguous]. Those who answered that they did not know what the advisee was planning to do were asked a follow up question, "After you gave them advice, did you find out what they had been planning to do originally (before you gave them advice)?" and those who answered "no" were coded do not know initial. To measure whether they knew the advisee's final decision, they were asked "Do you know what the other person's final decision was after receiving your advice?" with a simple yes or no response.

Potential moderators. Several potential moderators were measured, all with a response scale of *1 = strongly agree* to *7 = strongly disagree*. Two six-item scales asked about the importance of the advisee taking the advice and the importance of considering

the advice. A sample item is "It was very important to me that this person take my advice completely" (α = .93). The survey also asked about their confidence in their advice (four items, α = .91), sample item "I am highly confident that my advice was good advice."

Other measures. Other measures included whether the advice was solicited or unsolicited, whether the advisee's decision had the potential to impact the advisor positively or negatively, the advisor's propensity to give advice generally (α = .82, sample item: "I sometimes give advice to strangers"), how much the advisor cared whether the advisee took the advice, the content of the advice based on Dalal and Bonaccio's (2010) categories, the advisor's stated goal in giving the advice, and how much the advisor has given the advisee advice both before and after the event described.

Demographics. Participants reported their age, gender, race, and whether English was the participant's native language.

4.1.2. Results

Table 4 presents the means, standard deviations, and correlations for the variables in Study 4 measured on continuous or dichotomous scales.

Table 4: Study 4. Correlations

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Gender (0 = M, 1 = F)	0.59	0.49		.00	-.05	.02	.00	-.02	-.05	-.02	.03	.04	-.01	.11	.02	.07	.02	.04	.06
2	Closeness[a]	4.22	1.82	.00		.30	-.01	.15	.09	.18	.27	.14	.03	.10	.29	.30	.41	.30	.15	.31
3	Time known[b]	6.75	3.57	-.05	.30		-.03	.06	.00	.06	.13	.10	-.05	.06	.07	.16	.26	.12	.08	.16
4	Propensity to give advice[c]	3.81	1.07	.02	-.01	-.03	*.82*	-.03	.04	-.14	-.11	-.08	-.08	-.06	-.06	-.11	.02	.04	.03	.11
5	Knew advisee's final[d]	0.72	0.45	.00	.15	.06	-.03		.27	.23	.38	.37	.08	.37	.10	.13	.11	.07	.17	.18
6	Knew advisee's initial[d]	0.72	0.45	-.02	.09	.00	.04	.27		.05	.06	.11	.01	.15	.06	.01	.06	.07	.07	.05
7	Impact judgment - likert[b]	4.81	1.89	-.05	.18	.06	-.14	.23	.05		.63	.28	.06	.18	.30	.33	.36	.53	.16	.20
8	Conf. in IJ – likert[a]	3.57	1.30	-.02	.27	.13	-.11	.38	.06	.63	*.92*	.57	.07	.31	.26	.28	.27	.29	.32	.35
9	Conf. in IJ - percent	82.19	18.30	.03	.14	.10	-.08	.37	.11	.28	.57		.11	.37	.11	.16	.10	.07	.27	.25
10	Enough info generally[c]	0.98	0.13	.04	.03	-.05	-.08	.08	.01	.06	.07	.11		.06	-.09	.02	-.04	-.03	-.04	-.02
11	Enough info for IJ[d]	0.88	0.33	-.01	.10	.06	-.06	.37	.15	.18	.31	.37	.06		.01	.02	.01	.04	.14	.14
12	Warmth[c]	5.45	1.21	.11	.29	.07	-.06	.10	.06	.30	.26	.11	-.09	.01	*.87*	.50	.61	.45	.17	.25
13	Competence[c]	5.19	1.19	.02	.30	.16	-.11	.13	.01	.33	.28	.16	.02	.02	.50	*.84*	.52	.39	.06	.09
14	Liking[e]	4.05	1.56	.07	.41	.26	.02	.11	.06	.36	.27	.10	-.04	.01	.61	.52		.56	.13	.27
15	Willing to give adv. again[c]	5.79	1.15	.02	.30	.12	.04	.07	.07	.53	.29	.07	-.03	.04	.45	.39	.56	*.95*	.23	.29
16	Conf. in advice given[c]	6.09	0.90	.04	.15	.08	.03	.17	.07	.16	.32	.27	-.04	.14	.17	.06	.13	.23	*.91*	.56
17	Importance adv. taken[c]	5.16	1.28	.06	.31	.16	.11	.18	.05	.20	.35	.25	-.02	.14	.25	.09	.27	.29	.56	*.93*

Note: $N = 615$. $N = 401$ for correlations involving "knew advisee's initial." Scale reliabilities are given on the diagonal in italics. All correlations > .07 are significantly different from zero at $p = .05$. Conf. = confidence. IJ = Impact judgment. Adv. = advice.

[a]Six-point scale from 1 to 6.

[b]Years, estimated from categorical responses by assigning the midpoint of the category in years.

[c]Seven point scale from 1 to 7.

[d]Dichotomous variable. 1 = yes, 0 = no.

[e]Eleven point scale from -5 = I dislike them very much to 5 = I like them very much.

4.1.2.1. Characteristics of the advice-giving event

People predominantly recounted events where they gave advice to friends (51%) or family members (39%) that they had known for a long time: 85% had known the advisee for 2 or more years, and 45% had known the advisee for 10 years or more. The advice giving events were relatively recent, with 56% occurring in the past 7 days and 89% within the past 30 days. The most popular topics of advice were work, career, and school (32%), romantic relationships (28%), and money, finances, and purchases (13%). The advisee specifically asked for the advice in two-thirds of the cases.

4.1.2.2. Knowledge of advisee's initial and final decision

The multiple choice question about whether the advisor knew the advisee's initial decision was categorized using the codes presented earlier. Roughly one-third of the responses (213 observations) were coded as ambiguous on knowledge of the initial decision and are excluded from analyses using that variable. Table 5 presents the number of participants who knew and didn't know the advisee's initial and final decisions. Knowing the advisee's final decision made it more likely that a participant would also have knowledge of the advisee's initial decision, χ^2 (1) = 28.88, $p < .001$.

Table 5: Study 4. Participant knowledge of advisee's initial and final decisions – cell counts.

	Did not know initial	Knew initial	Total
Did not know final	49	50	90
Knew final	65	238	293
Total	114	288	402

4.1.2.3. Information needed to form impact judgments

The first main aim with Study 4 was to determine whether the effects found earlier for failure to recognize the need to know about the advisee's initial opinion would extend to a real advice taking event. As in Studies 2 and 3, participants were asked if they had enough information to answer the question about how much their advice was used (Table 6). As predicted, knowing or not knowing the advisee's initial decision made no difference, particularly among those who knew the final answer, 97% and 94% of whom said they had enough information, respectively, $\chi^2(1) = 1.05$, $p = .306$.

Table 6: Study 4. Percent of respondents saying they had enough information to answer impact judgment question

	Did not know initial	Knew initial
Did not know final	63%	66%
Knew final	94%	97%

4.1.2.4. Confidence in impact judgments

Figure 10 presents the results for advisors' confidence in their impact judgments, measured using the four-item likert measure. Possessing knowledge of the advisee's initial decision did not affect confidence in impact judgments: A two-way ANOVA with knowledge of the advisee's initial and final decisions as between subjects factors yielded no interaction, $F(1, 398) = 0.88$, $p = .349$, but only a main effect of knowing the final decision, $F(1, 398) = 69.93$, $p < .001$. The percentage measure of confidence showed a similar pattern, with no interaction but only a main effect of knowing the advisee's final decision.

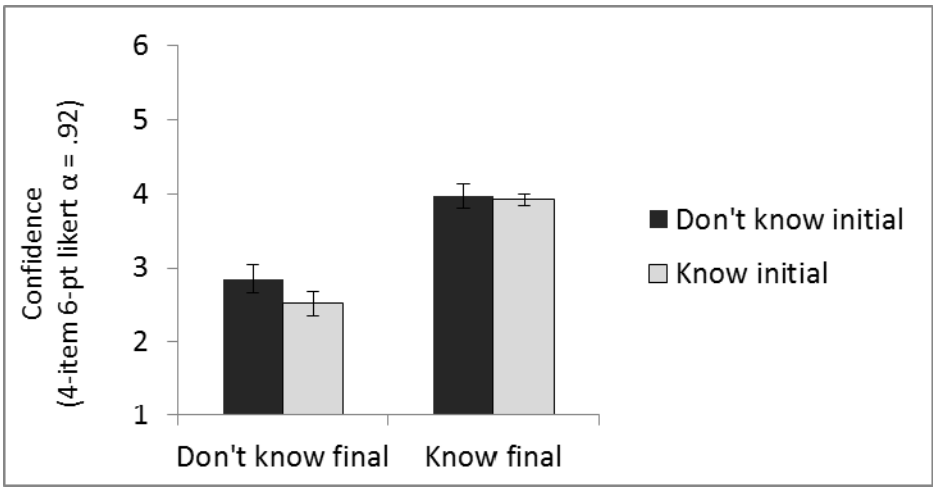


Figure 10: Study 4. Advisors' confidence in their impact judgments as a function of knowledge of advisee's initial and final decisions. Note: Error bars represent the standard error of the mean. Confidence = advisor's confidence in their impact judgment.

4.1.2.5. Downstream effects of impact judgments

The second aim of Study 4 was to understand the downstream effects of impact judgments on advisors' willingness to provide advice again in the future to the same

advisee. This was tested using a series of regressions with willingness to give advice again as the dependent variable, presented in Table 7. The first model regressed willingness to give advice again on a set of control variables, which jointly predicted willingness to give advice again, $R^2 = .10$. The next model added impact judgments and squared impact judgments to the regression, in Model 2, resulting in a large change in R^2, $\Delta R^2 = .26$, $p < .001$. As predicted, impact judgments were positively related to willingness to give advice again, $b = 0.24$, $t(391) = 8.37$, $p < .001$. Additionally, the relationship between impact judgments and giving advice again is a curvilinear one, as evidenced by the term for squared impact judgments, $b = -0.04$, $t(391) = 3.14$, $p = .002$ and plotted in Figure 11, which shows that the relationship is steeper for lower impact judgments than higher ones.

Table 7: Study 4. Regression results

	Willingness to give advice again							
	Model 1		Model 2		Model 3		Model 4	
	β		β		β		β	
Intercept	5.62	***	5.72	***	5.79	***	3.84	***
Control variables								
Gender (0 = M, 1 = F)	-0.04		0.04		0.04		-0.01	
Closeness	0.16	***	0.12	***	0.12	***	0.07	**
Time known	0.02		0.03	†	0.03	†	0.02	
Propensity to give advice generally	0.07		0.14	***	0.14	***	0.15	***
Knew initial (N = -0.5, Y = 0.5)	0.01		0.03		0.03		0.00	
Knew final (N = -0.5, Y = 0.5)	0.21		-0.01		0.04		0.03	
Knew initial X knew final	0.18		0.17		0.18		0.26	
Impact judgments								
Impact judgment			0.24	***	0.31	***	0.20	**
Impact judgment^2			-0.04	**	-0.02		-0.04	
Moderators								
Had enough info. (N = -0.5, Y = 0.5)					-0.22		-0.11	
Had enough info. X Impact judgment					-0.12		-0.04	
Had enough info. X Impact judgment^2					-0.04		-0.01	
Mediators								
Warmth							0.21	***
Competence							0.16	***
R^2	.10		.35		.36		.45	
ΔR^2	N/A		.26	***	.00		.09	***

Note: N = 401. All variables are mean-centered unless otherwise noted.
Info. = information.
†p < .10, *p < .05, **p < .001, ***p < .001

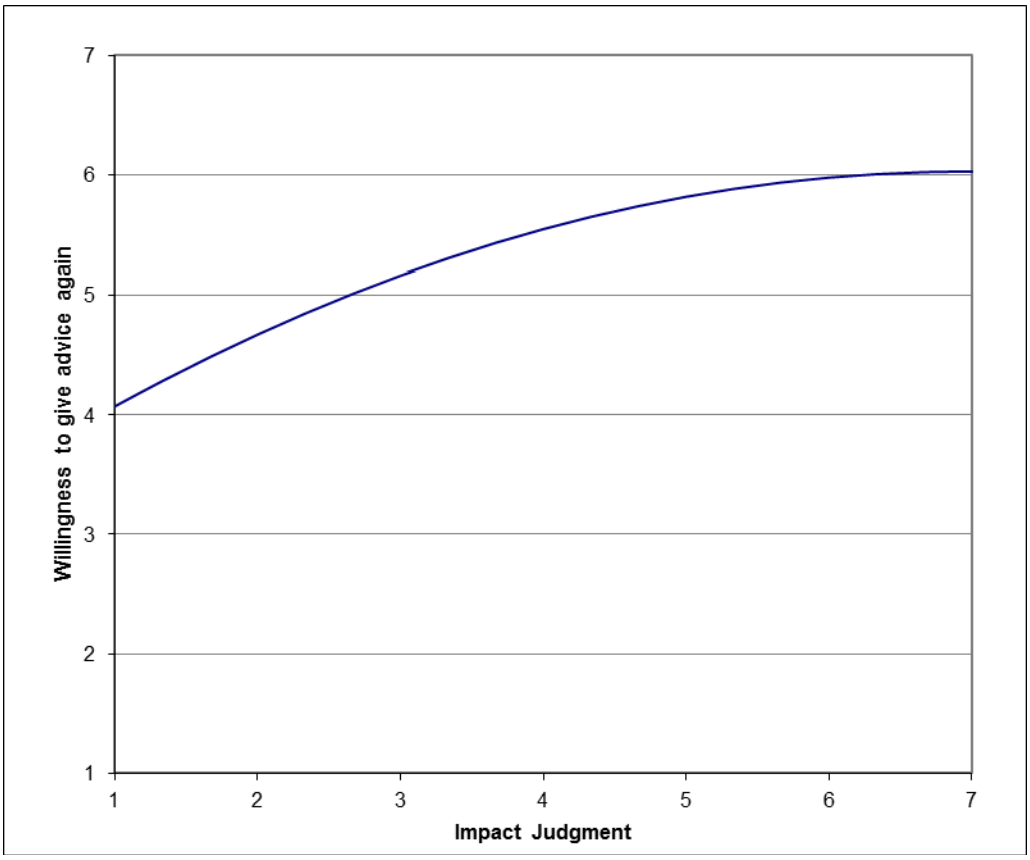


Figure 11: Study 4. Willingness to give advice again as a function of impact judgment. *N* = 613.

Building on the main question about whether impact judgments have downstream effects, a series of models explored moderators and mediators of the effects of impact judgments on willingness to give advice. Model 3 added a moderator to the equation: whether the advisor believed they had enough information.[1] This did not

[1] Other models not presented here considered additional moderators. Confidence in the advice given moderates the relationship between impact judgments and willingness to give advice, with those who are more confident in their advice even more willing to give advice again the more they believe their advice was impactful. The importance of having the advice taken acts as a main effect, not a moderator, with higher importance predicting greater likelihood of giving advice again, which perhaps indicates that advice givers are willing to be tenacious and give important advice repeatedly regardless of whether they believe it was taken previously.

moderate advisors' willingness to give advice again, which I will discuss further in the following section. Turning to the question of mediation, Model 4 adds the proposed mediators to the model: the advisors' assessments of the advisee's warmth and competence, both of which are positively related to willingness to give advice again. Mediation was tested using Hayes and Preacher's (2010) method for mediation with curvilinear relationships, with impact judgments modeled to have a quadratic relationship with willingness to give advice again and with each of the mediators. This method calculates the instantaneous indirect effect of the independent variable on the dependent variable via the mediator, which can then be explored at different values of the independent variable, typically the mean and plus and minus one standard deviation. Results are presented in Figure 12 for the mean level of impact judgments. The impact judgment → willingness to give advice again link was mediated by perceptions of the advisee's warmth, 95% CI = [0.01, 0.12], but not competence, 95% CI = [-0.01, 0.08] when impact judgments were at their mean level. Mediation was not found for warmth or competence when impact judgments were at plus or minus one standard deviation from the mean, all 95% CIs included zero.

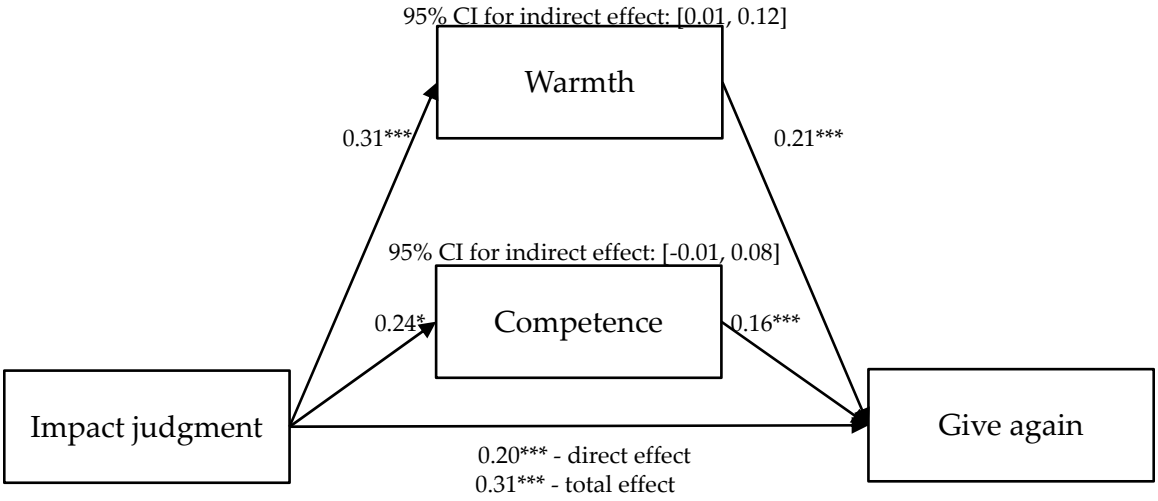


Figure 12: Study 4. Mediation analysis. Note: mediation paths are shown at mean level of impact judgments. All models in the mediation retain the same covariates and moderators as regression model 4 in Table 7. Following the method of Hayes and Preacher, 2010, impact judgments were modeled to have a quadratic relationship with willingness to give advice again and with each of the mediators..

4.1.2.6. Reliance on impact judgments when there is not enough information

The third main aim of Study 4 is to understand how strongly advisors rely on impact judgments for forming downstream behavioral intentions when they believe they do not have enough information to form impact judgments. One logical response to lacking information necessary to form impact judgments would be to rely on those judgments less when determining behavioral intentions to give more advice. Evidence of this behavior would be seen if the relationship between impact judgments and willingness to give advice again were moderated by whether advisors believed they had enough information. Model 3 addresses this question by including having enough information as a moderator, but finds no evidence of moderation of either the impact

judgments or impact judgments squared, b = -0.12, $t(391)$ = 0.75, p = .453 and b = -0.04, $t(391)$ = 0.66, p = .507, respectively. Additional tests for moderation were performed using a variety of alternate model specifications.[2]. Across all alternate models there was no evidence of moderation, all ts < 1.41, all ps > .15, suggesting that advisors relied on their impact judgments to the same degree regardless of whether they believed they had sufficient information to form those judgments.

4.1.3. Discussion of Study 4

Study 4 corroborated the earlier results in Studies 1 and 2 that advisors fail to recognize the need to know the advisee's initial opinion when forming impact judgments. Furthermore, Study 4 showed that advisors rely on their impact judgments to form downstream behavioral intentions and that their reliance on these judgments is not tempered by their beliefs that they have insufficient information (when they do hold such beliefs). It is important to note, however, that these conclusions about downstream effects come from a study where advisors did not recognize the need to know the advisee's initial opinion, and it is reasonable to wonder whether the same results would occur in instances where advisors do recognize the need to know the advisee's initial opinion. Additional analysis on Study 3 will answer that question.

[2] The additional models were: removing all control variables, including additional moderators of confidence in advice given and the importance of having advice taken, and dropping the quadratic impact judgment squared term and the interaction with it.

4.2. Additional Analysis on Study 3

Study 3, originally presented in the previous chapter, contains many variables that can be analyzed in the same way as Study 4 to understand downstream effects of impact judgments and the degree to which advisors rely on impact judgments even when they do not believe that they had sufficient information to form such judgments.

In several instances, these analyses of Study 3 capture similar concepts as in Study 4, but with a different measure. Downstream behavioral intentions are measured in Study 3 as the advisors' stated preference for completing a similar task with the same advisee versus a different advisee, instead of their willingness to give advice again as in Study 4. Impact judgments are measured using the percentage measure of impact judgments, although the three-item likert scale measure gives similar results. Finally, there are fewer control variables than in Study 4, with only gender and knowledge of the advisee's initial opinion as controls.

4.2.1. Downstream Effects of Impact Judgments

A series of regressions was run with preference for the same advisee as the dependent variable, presented in Table 8. Similar to Study 4, impact judgments significantly predicted preference for the same advisee above and beyond the control variables, $\Delta R^2 = .25$, $p < .001$, although the curvilinear portion of the effect was only marginally significant. As in Study 4, the advisor's belief about whether they had enough information did not act as a moderator, which is discussed more in the

following section.[3] Finally, mediation by warmth and competence was tested using Hayes and Preacher's (2010) method for mediation with curvilinear relationships, as in Study 4. Results are presented in Figure 13 for the mean value of impact judgments. The impact judgment → willingness to give advice again link was mediated by perceptions of the advisee's competence, 95% CI = [0.01, 0.83], but not their warmth, 95% CI = [-0.41, 0.71], when impact judgments were at their mean level. Mediation was not found for warmth or competence when impact judgments were at plus or minus one standard deviation from the mean, all 95% CIs included zero.

4.2.2. Reliance on Impact Judgments When There Is Not Enough Information

Study 3 is of particular interest for understanding reliance on impact judgments because participants in this study often recognized when they did not have sufficient information to form accurate impact judgments. Therefore, they might be particularly likely to temper their reliance on impact judgments when forming intentions for downstream behaviors. The results of the regression models to test for this moderation do not support this, however. The interaction between the advisee's belief that they had

[3] Study 2 collected several additional moderators. Both confidence in the advice given and importance of having the advice taken acted as moderators. A measure was also collected of how much the advisor cared about the interaction with the advisee. This was highly correlated with the advisor's assessment of how important it was that the advisee take the advice and therefore was not included in the model to avoid problems of multicolinearity.

enough information and impact judgments is not significant in the models presented in Table 8, nor in any of the other alternate models run.[4]

[4] The additional models were: removing all control variables, substituting knowledge of the initial answer in the interaction in place of having enough information, including knowledge of the initial answer as a three-way interaction with having enough information and the impact judgment, and dropping the quadratic impact judgment squared term and the interaction with it.

Table 8: Study 3. Regression results.

	Preference for the same advisee							
	Model 1		Model 2		Model 3		Model 4	
	β		β		β		β	
Intercept	5.07	***	5.47	***	5.46	***	5.46	***
Control variables								
Gender (0 = M, 1 = F)	-0.32		-0.46	†	-0.47	†	-0.48	*
Knew initial (N = -0.5, Y = 0.5)	0.29		0.48	*	0.49	*	0.36	
Impact judgments								
Impact judgment (percent)			2.21	***	2.20	***	1.73	***
Impact judgment^2			-2.23	†	-1.97		-1.74	
Moderators								
Had enough info. (N = -0.5, Y = 0.5)					0.08		-0.06	
Had enough info. X Impact judgment					0.07		0.23	
Had enough info. X Impact judgment^2					-0.93		0.00	
Mediators								
Warmth							0.09	
Competence							0.46	**
R^2	.02		.26		.26		.34	
ΔR^2	N/A		.25	***	.00		.07	***

Note: $N = 150$. All variables are mean-centered unless otherwise noted.

Info. = information.

†$p < .10$, *$p < .05$, **$p < .001$, ***$p < .001$

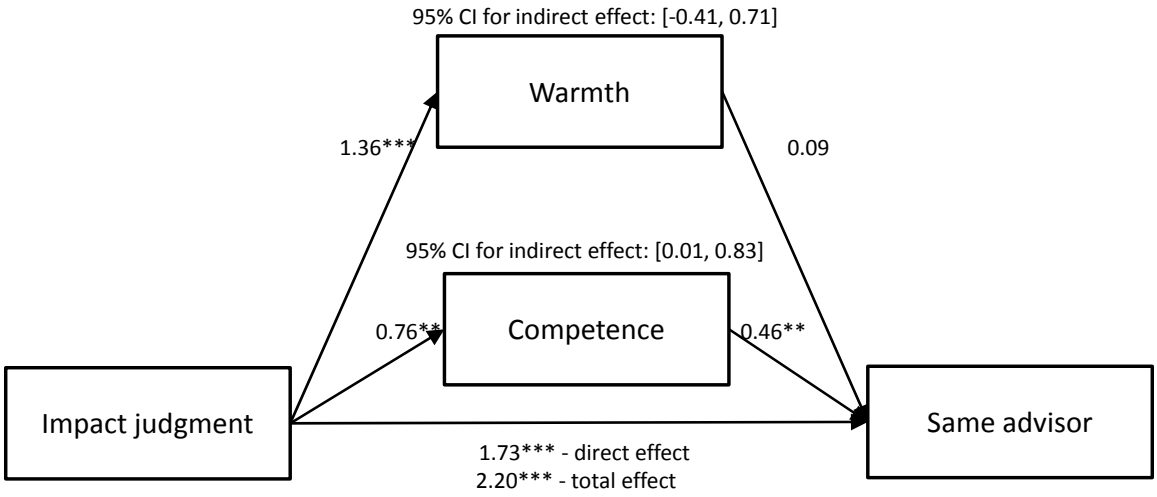


Figure 13: Study 3. Mediation analysis. Note: mediation paths are shown at mean level of impact judgments. All models in the mediation retain the same covariates and moderators as regression model 4 in Table 8. Following the method of Hayes and Preacher, 2010, impact judgments were modeled to have a quadratic relationship with preference for working again with the same advisor and with each of the mediators.

4.2.3. Discussion of Additional Analysis on Study 3

The results of the additional analyses on Study 3 largely corroborate those of Study 4. Impact judgments predicted downstream behavioral intentions, as in Study 4, although one difference is that the relationship was mediated by competence, but not by warmth. (This is not surprising given that warmth is likely to be of little importance to advisors in this online exchange who have neither rich contact nor an ongoing relationship.) Furthermore, the degree to which advisors relied on impact judgments for forming downstream behavior intentions was not different when they believed that they did not have enough information to form accurate impact judgments, even though many advisors correctly recognized the fact that they were missing information.

4.3. General Discussion of Chapter 4

Chapter 4 showed that impact judgments have downstream consequences: impact judgments predicted downstream behavioral intentions such as willingness to give advice to the advisee again or preference for working with the same advisee. These consequences were found both for real interactions between parties in a close relationship (Study 4) and for online advice-giving between strangers (Study 3). Additionally, the relationship between impact judgments and downstream consequences was mediated by warmth (Study 4) and competence (Study 3).

Studies 3 and 4 also found that advisors did not temper their downstream behaviors even when they recognized that they lacked information about the advisee's initial opinion. This was evidenced by the lack of a significant moderation effect of advisors' beliefs about whether they had enough information. Thus, advisors do not appear to be taking a seemingly logical step to deal with the lack of information needed for their impact judgment. It is worth noting, however, that these studies do not provide sufficient evidence to determine whether this pattern represents a bias: Even though advisors relied on their impact judgments to the same degree when they did not know the advisee's initial opinion, they could be planning to pursue the intended behaviors with more trepidation given the lack of information underpinning their decision. A design with a measure of advisors' confidence in their downstream behavioral intention or a pre- and post-measure of the behavior could help to resolve this. Additionally,

asking for behavioral intentions *after* asking whether advisors believed they had enough information (rather than before as in the studies reported here) would be a stronger test of whether a bias exists.

Taken as a whole, Studies 3 and 4 showed that advisors rely on their impact judgments to form downstream behavioral intentions even when they believe they lack information needed for accurate impact judgments. Given the results of Study 3 that lacking information does indeed lead to some impact judgments being inaccurate, this suggests that people may be forming behavioral intentions that are different than those they would form if they had accurate information. Furthermore, because advisors often did not recognize that they were missing information, they are probably unlikely to seek out the missing information, meaning that the erroneous judgments and their downstream effects could persist. This and other implications will be considered in the General Discussion of the dissertation that follows.

5. General Discussion

In this dissertation, I have taken the perspective of advisors in an advice-giving interaction and asked about their perceptions of the impact of their advice. Chapter 2 demonstrated that advisors failed to recognize when they were missing information necessary to form impact judgments, specifically, information on the advisee's initial opinion. This error could be debiased however, by having advisors think carefully about whether they knew the advisee's initial opinion and why knowing that would be useful for forming impact judgments, which led to fewer advisors saying that they had enough information to form impact judgments. Chapter 3 showed that advisors were less accurate in their impact judgments when they were lacking information on the advisee's initial opinion, but their impact judgments were not biased overall upward or downward. Chapter 4 found that advisors relied on their impact judgments for forming downstream behavioral intentions such as the willingness to give advice again. They did not, however, temper their reliance on impact judgments when they believed that they lacked sufficient information to form impact judgments.

In this chapter, I discuss the implications of this work, revisit the definition and importance of impact judgments more generally, and outline areas for future research.

5.1. Implications

Several implications derive from the findings that advisors fail to recognize when they are lacking information necessary to form accurate impact judgments and

then rely on those judgments to form downstream behaviors. Here, I discus implications for critical moments for impact judgment accuracy, ways to improve impact judgments, and implications for organizations.

5.1.1. Critical Moments for Impact Judgment Accuracy

There are likely to be certain moments when the accuracy of impact judgments is particularly important. The first moment is when advisors are giving advice for the first time to new advisees. If advisors erroneously conclude that their advice was not used and decide not to provide more advice, they will be effectively censoring any future learning about the advisee's openness to advice, preventing the advisee from receiving the potential benefits of receiving advice. Note that this effect may be asymmetrical: advisors who erroneously conclude that advisees are very open to advice (when in fact they are not) will likely provide advice again and may receive corrective feedback (similar to Larrick & Wu, 2007).

Another moment where accuracy of impact judgments may be particularly important is in the case of organizations that have built a culture against speaking up – a culture of silence (Morrison & Millikien, 2000). In such organizations, those members who dare to speak up and erroneously conclude that their advice made no difference may be especially likely to refrain from speaking up in the future.

Finally, there may be times when accurate impact judgments are in fact damaging. If an advisee did not rely on the advisor's advice but wants to continue to

receive advice from the advisor, the advisee may wish to distort the advisor's perceptions toward a belief that the advice was impactful. To do this, advisees may use cues unrelated to the actual use of advice, such as nodding, smiling, or making comments about the usefulness of advice (see, e.g. Curhan, Elfenbein, & Xu, 2006, for an example in the context of negotiations). Advisees may be particularly likely to try to convey that the advice was useful in tasks where the advisor has to expend concerted effort to create useful advice.

5.1.2. Improving Impact Judgments

One of the brightest spots in this research is the result in Study 2 that advisors could be debiased to recognize that they were lacking information about the advisee's initial opinion. Here I discuss the implications for debiasing impact judgments.

5.1.2.1. Getting information about advisees' initial opinions

If advisors are debiased to recognize that they are lacking information on the advisee's initial opinions, then they may be more likely to attempt to acquire that information. It is important, therefore, to consider how advisors might gain such information once they are aware that they are lacking it. One choice the advisor must make is the timing of when they ask about the initial opinion. Based on research on opinion aggregation (Clemen & Winkler, 1985; Hogarth, 1978) I recommend that advisors wait to request the advisee's initial opinion until after forming the advice: otherwise advisors risk losing independence of their advice and may generate advice

that does not allow the advisee to take advantage of the cognitive diversity provided by their independent opinion. It is unclear, however, whether it is best to request the initial opinion before or after advisees arrive at their final opinions. Requesting the initial opinion before the advisees arrive at their final opinions may open more dialogue between advisors and advisees, but it may also lead advisees to focus more on their initial opinions and weight the advice less. On the other hand, requesting the initial opinion afterwards may lead to some distortion in the initial opinion if the advisee attempts to be polite. The advisee may suggest that he or she shared the same opinion initially even if that is untrue (e.g. Fay et al., 2012), or the advisee may suggest that the advisor was influential even if the advice matched the advisee's initial opinion.

5.1.2.2. Reliance on impact judgments

If advisors recognize that they are lacking information necessary for impact judgments but it is unavailable to them, a problem remains: Studies 3 and 4 showed that advisors did not temper their reliance on impact judgments in forming downstream behavioral intentions even when they believed they lacked sufficient information. Thus, this is an area ripe for further debiasing. This could take the form of asking people to consider how strongly they should rely on their impact judgments given that they believe they are lacking information, or asking them to think about the intentions they would have if they had not formed impact judgments (as a way to try to get them to consider their "base rate" for behavioral intentions).

5.1.2.3. Other blind spots

This dissertation has focused on one main blind spot to accurate impact judgments: failure to recognize the need to know the advisee's initial opinion. There are, however, many other factors that can act as blind spots for advisors trying to determine the impact of their advice. For example, advisees may get advice from many other people. If the others give different advice than the advisor in question and the advisee still moves toward the advice, it would be fair to consider that a larger impact than if everyone gave the same advice. Very few participants in Study 1 mentioned needing to know this information, however (only 14%). Another blind spot could be changes in the advisee's situation since the advice was given, which make the original advice harder to use. Addressing these additional blind spots could help further improve impact judgments.

5.1.3. Implications for Organizations

While this dissertation has focused on misjudging the impact of advice to peers, this could logically extend to advice provided to superiors in an organization, a behavior that has been researched extensively in the literature on employee voice. Similar to the findings in this dissertation for peers and the willingness to give advice again in the future, the voice research has found that employees' perceptions of whether they will be influential determine whether they speak up with suggestions for improvement and

information about potential problems (Ashford et al., 1998; Morrison, 2011, 2014; Saunders et al., 1992).

Scholars have recently emphasized the need to understand the process over time that results in employees' perceptions of the influence of their voice – something that this dissertation has attempted to do in the advisor-peer relationship. For example, Ashford and colleagues argued that voice should be viewed as a process where "individuals' beliefs are shaped over time, presumably through a process in which they observe leaders and the extent to which leaders act upon the information they receive" (Ashford, Sutcliffe, & Christianson, 2009, p. 196). Furthermore, Morrison (2014, p. 189) stated: "...one cannot draw conclusions about the effects of voice and silence, particularly for the employee, without taking into consideration… how the recipient interpreted the behavior and responded to the message." I argue here that we must understand speaking up and advice giving and taking not simply as a path from perceptions of efficacy to a choice to speak up, but as a feedback model that includes a feedback loop from the recipient's reaction back into perceptions of the efficacy of speaking up (e.g. Tangirala & Ramanujam, 2012), which then forms the basis for future speaking up, as illustrated in Figure 14.

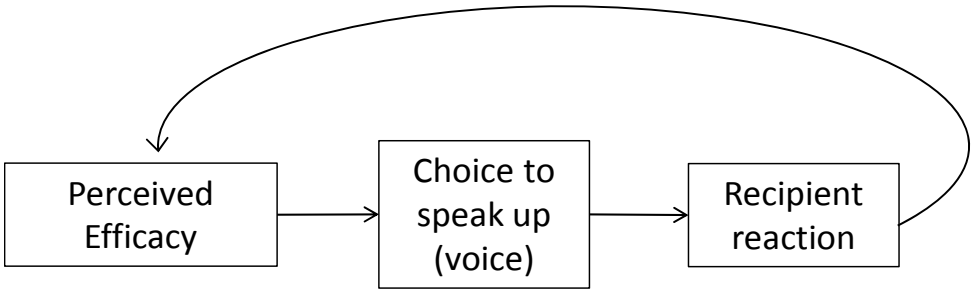


Figure 14: A feedback model of speaking up behavior.

Understanding the feedback loop is important, because failure to speak up can have major consequences (Greenberg & Edwards, 2009). For example, the Columbia Space Shuttle disintegration has been linked to failure to communicate critical information about technical problems (NASA, 2003). In another example, one of the major causes of the fatal crash of United flight 173 was the failure of two crew members to tell the captain that they were concerned about critically low fuel levels (NTSB, 1979). Finally, the faulty intelligence in the Iraq war may have occurred because some analysts withheld their doubts about the reliability of intelligence reports (Tenet & Harlow, 2007). The intervention developed in this dissertation might stop people from overconfidently concluding that their advice is not used, instead recognizing that they do not have sufficient information to draw such a conclusion, thus leaving them open to continuing to voice their opinion and help avert organizational disasters.

5.2. A General Framework for Impact Judgments

Through this dissertation, I have demonstrated a blind spot in advisors' impact judgments and consequences of those blind spots for accuracy and willingness to give

advice again, with implications for individual advisors, advisees, and their organizations. These demonstrations were based on a specific definition of impact – as a change in the advisee's opinion relative to the advisee's initial, pre-advice opinion – as well as a presupposition that advisors cared about their impact. Here, I consider other possible definitions of impact judgments as well as alternatives to the presupposition that advisors care about impact by asking two questions: What is impact? Do advisors attend to their impact without being prompted as in our experiments – do they care about their impact?

5.2.1. What is Impact?

In this dissertation, the impact of advice has been defined somewhat narrowly, focusing on the change in the decision that people make based on the advice. However, advice could influence people in a multitude of ways: making them consider other options or other possible outcomes of their choice, or increasing or decreasing the confidence with which they make their choice. All of these are ways that someone could be impacted but aren't measured by the simple woa metric or my concept of impact. Additionally, lay people may think about the terms "influence" and "advice-taking" differently: they may think that they influenced someone even if the advisee didn't follow the advice. Or, put another way, taking advice may be conceived as dichotomous (either you took my advice or you didn't) whereas influence may imply more of a continuum and a greater range of variables on which to exercise influence. Finally,

impact may be harder to quantify depending on the nature of the decision task. For example, impact is clearer for a decision made on a continuous scale (like how much money to spend) than a multiattribute choice or dichotomous choice, where understanding the impact on the advisee's decision process may be more important.

5.2.2. Do Advisors Attend to Impact?

This dissertation is partly based on the presupposition that advisors care about their impact, and in the experiments detailed herein, advisors do appear to attend to impact, given that it determined downstream behaviors. However, it is a legitimate question to ask whether advisors attend to impact more generally in other situations. There may be some situations where advisors give advice without much concern for whether it is taken. For example, some colleagues have related to me the case of giving advice to students who request it. These colleagues view it as part of their job to give advice but don't concern themselves terribly with whether the advice is taken. Also, the amount of effort an advisor puts in to creating the advice may change how much they care about impact. Some advice takes more effort to create (such as commenting on a 40-page draft for a colleague) than other advice (such as commenting on an abstract). Furthermore, some people may give advice as a matter of identity and not attend to whether it is relied upon – who they are is someone who helps others by giving advice, or who they are is someone who cares about a particular issue and affirms that by speaking up about it (Ashford & Barton, 2007; Morrison, 2014). Additionally, in certain

organizations, the existing routines (Cyert & March, 1963; Nelson & Winter, 1982) may include giving advice, and as long as nothing dramatic occurs to suggest that the routine requires changing, people will continue giving advice and will not attend to impact. Considering these more social and organizational drivers of advice-giving behavior, in addition to the rational calculus considered here, could be a valuable area for future research.

However, in many situations advisors are likely to care about whether their advice is taken: either because they want to be respected and influential (e.g. Baumeister, 1998), or because they are genuinely curious about whether their advice is helpful to others and therefore want to know whether it was taken, along with the result of taking the advice (Guntzviler & MacGeorge, 2013). This may be part of the reason that so many people in Study 1 listed needing to know the outcome of the advice: perhaps they wanted to know whether their advice was effective, and that question occurred to them along with the information they needed to know if their advice was relied upon.

On the other hand, sometimes advisors give advice or are otherwise influential without being aware of it. For example, a person might make a statement about their view of the world with no intent to influence others, but simply as an observation. Listeners, however, can have their view of the world changed and remember the event

distinctly, even though the speaker never saw themselves as giving advice nor noticed the impact of his or her "advice."

Finally, there may be cases where it is not impact that matters, but rather the appearance of impact. It is possible that some advisors really care about the appearance of impact, either for the sake of how others perceive them or how they perceive themselves, rather than actual impact. In this case, advisors might try to anticipate what the advisee may say, so that they can appear to have been influential. Or, in the instance where advisors suspected they may have had low actual influence, they might avoid learning information needed for impact judgments so that they can protect their ego. Thus, while advisors in the studies in this dissertation did appear to care about their actual impact, this may not always be the case for all advisors.

5.3. Future Directions

In this dissertation, I have proposed that people are subject to blind spots in their perceptions of how much their advice is used. These blind spots derive from the fact that people often cannot see all of the inputs that go into someone else's decision, such as the decision maker's own independent opinion. This can lead to erroneous and overconfident conclusions about how much advice was used and, importantly, about whether to provide advice again in the future. In this section, I speculate on next steps to follow up this work. I focus on bringing more dynamic study to advice giving and advice taking. Building on existing work that has successfully manipulated a variety of

factors in the laboratory, I suggest relaxing some of the constraints that were necessary in earlier work, to allow for more dynamic studies of advice giving and advice taking. First, future studies could capitalize on the dyadic nature of advice giving and consider the perspective of both parties to an interaction, rather than focusing on one party's perspective, and consider factors that are likely to have their perceptions of impact diverge. Furthermore, future studies could include rich interaction between the advice giver and advice taker, and allow this to occur over time across multiple advice-giving events. Finally, the interventions of the type contemplated here could be tested in a workplace setting. Here, I detail how expanding inquiry in these ways could uncover further blind spots in perceptions of advice taking.

5.3.1. The Dyadic Nature of Advice Giving and Taking

This dissertation, like much other work on advice giving and taking, has focused on the perspective of just one party to the advice giving event (for exceptions, see for example, Brooks et al., forthcoming). However, recognizing the dyadic nature of advice giving and taking could help illuminate instances where advisors and advisees are likely to disagree about the impact of the advice.

One avenue for future research would be to understand how advisees and advisors might differentially weight an intention to use advice versus actual implementation of the advice when determining the impact of advice. Advisees can face many roadblocks to the implementation of advice, but these roadblocks may be a blind

spot for advisors. Given that people tend to give more credit to themselves for intentions than they give to others (Kruger & Gilovich, 2004), it is likely that advisees faced with roadblocks will credit themselves with having used the advice if they attempted to implement it but failed to, whereas advisors might focus on successful implementation of the advice. Another interesting question is whether advisors, when providing advice at their own discretion, also provide advice on how to implement their proposed course of action. Following the construal level-theory of psychological distance (Trope & Liberman, 2003; Trope & Liberman, 2010), people have been shown to advocate more idealistic options and less pragmatic options when they are advisors than when they are advisees, because they are more psychologically distant (Danziger et al., 2012). Similarly, I suggest that in explaining their advice, advisors may devote more attention to why it is the ideal course of action and less attention to the pragmatics of how to take the recommended course of action, whereas advisees may need more attention given to how to actually take the recommended actions. These differences could add to the blind spots already uncovered in this research.

Additionally, members of the dyad could have differing perspectives not only on how much advice was actually used, but also on how much the advice *should* have been used. For example, in organizations, leaders receiving advice face a dilemma: people want their leaders to be open to input, but they also want them to be commanding and discerning, and therefore it is not clear that seeking and taking a lot of advice is

necessarily the best approach. Taking too little advice risks having the decision be rejected by followers (Vroom & Yetton, 1973), whereas taking too much advice may undermine the leader's credibility as a strong, autonomous person. Future research could explore the "right" amount of advice taking as perceived by leaders and followers. This could also be compared to perceptions and objective measures of the actual amount of advice taking.

5.3.2. Rich Interaction Between Advisor and Advisee, Over Time

Another avenue for future study would be to open the context up to include rich interaction between advisors and advisees, and allowing this interaction to occur over time, in repeated advice giving events, rather than the one-shot interactions involving a small piece of advice that are currently common in the judgment and decision making literature. Studying rich interactions between the advisor and the advisee could help answer questions about when the advisor and advisee's impact judgments might give different weight to different aspects of the advice giving interaction, such as (a) the interpersonal interactions of the advice giving event, versus (b) the soundness of the advisee's decision process for integrating the advice with other inputs, versus (c) how much the advisee's final decision resembles the advice. These differences in attention could contribute to divergent perspectives in advisors' assessments of how influential they were and advisee's assessments of how much they used advice. Additionally, this could be studied in light of the rich literature on distributive versus procedural justice

(Colquitt, 2001; Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Greenberg & Colquitt, 2005; Lind, Kanfer, & Earley, 1990). In the advice giving and taking relationship, distributive justice would be represented by how much the advisee's final decisions resemble the advice, and procedural justice would be represented by the interpersonal interactions of the advice giving event and the soundness of the advisee's decision process.

Additionally, I have proposed here that advice giving interactions consist of a series of feedback loops, where impact judgments feed into the decision to give advice again, and giving advice again will result in another impact judgment and conclusion about giving advice again. Given these feedback loops, it is important to understand advice giving and impact judgments over time. Specifically, does an early sense that one was successful in giving advice lead to lasting perceptions of the efficacy of giving advice (primacy) or does the last interaction dominate perceptions of efficacy (recency)? Does primacy or recency dominate for advice recipients' perceptions of their own openness to advice? Mismatches between advisors' and advisees' emphasis on primacy versus recency could lead to divergent perceptions of openness to advice.

Combining the idea of allowing rich interactions with how perceptions change over time leads to one of my favorite research questions coming out of this work: Over time, when advisors and advisees are assessing the impact of advice, do they change the weight they give to the interpersonal processes in the advice taking event versus the

degree to which the advisee's final decision reflects the advice? For example, early on in an advice giving relationship, some version of the fair process effect (Lind et al., 1990) is likely to apply, making advisors who are treated with respect and appreciation more likely to want to give advice again in the future even when their advice is not taken. After repeated interactions where their advice is not taken, advisors might start to put more weight on whether their advice is actually used, particularly in relationships that are more transactional in nature. The question is whether that does occur, and if so, when?

5.3.3. Workplace Interventions

Finally, the study of impact judgments could be expanded to include workplace interventions. The intervention tested here involved a scenario study, but it could be adapted to be included in workplace training. A particularly interesting circumstance in which to test the intervention would be with new hires and recent transfers who are new to their department and therefore have not yet made conclusions (possibly erroneous ones) about their degree of influence with that particular group of people. The intervention could take the form of a weekly email where participants are asked to consider times they gave advice, with half of the participants also asked whether they had enough information to determine the impact of their advice, to see if this makes advisors more likely to recognize when they are lacking information needed for impact judgments.

Additionally, the workplace intervention could address how to seek information on the advisee's initial decision when it is not already known and how much to rely on impact judgments for downstream behaviors when information is missing, all of which would first be piloted through laboratory studies. For example, laboratory studies could test whether certain methods of inquiring about the advisee's initial opinion lead to more accurate reports of the initial opinion, better outcomes for the advisee/advisor relationship, and more optimal use of advice. Specifically, initial opinions could be solicited in a variety of ways: by asking advisees about their opinions after giving advice but before they gave their final answers, or asking advisees after they gave their final answers, or asking advisees to write down their opinions before receiving advice. Additionally, interventions could be tested in the laboratory to help advisors rely less on impact judgments when information is missing. One such intervention could ask participants to speculate about their base rate for giving advice in similar situations and to consider why it would make sense to adjust only slightly from that rate. Once implemented, the ultimate effectiveness of this set of interventions could be tested by comparing advisors' impact judgments with those of the advisee. Through such interventions, I hope this research can help organizational members at all levels avoid the negative consequences of not speaking up and not using advice, so that organizations capitalize not only on their members' efforts, but also their ideas.

5.4. Conclusion

Advisors have blind spots in their perceptions of how much their advice is used – they fail to recognize when information needed to form impact judgments is missing, especially information about the advisee's initial, pre-advice decision. This leads advisors to have inaccurate judgments about the impact of their advice. Furthermore, advisors rely on their impact judgments to form downstream behavioral intentions like willingness to give advice again, and they rely on those judgments to form behavioral intentions even when they recognize that they are missing needed information.

The good news is that these blind spots can be remedied: Simply asking advisors to consider why they might need information about the advisee's initial opinion led advisors to correctly recognize when they were lacking that needed information. Future research into how advisors should best gain that needed information, as well as how to adjust and weight their judgments when such information cannot be obtained, can help advisors learn to accurately assess their impact. In turn, this gives advisors the feedback they need to evaluate their success at their goals, whether their goals are to improve the advisee's life, to steer the advisee towards the advisor's preferred direction, or to be affirmed by the advisee as a liked and capable person (e.g. Baumeister, 1998; Brown & Levinson, 1987). By putting this feedback to use, advisors can become not only more accurate in their impact judgments, but also, more importantly, better advisors.

Appendix A. Study 2 Materials

Job description

Administrative Assistant

Qualifications

- Excellent written and verbal communication skills
- Self-starter, must be results oriented
- Ability to work well with others in a team oriented environment
- Proficiency with MS Office programs (Word, Excel, Outlook)
- Previous experience working as an Admin Assistant a MUST

Profile for ideal candidates

- Professionalism, dependability & ability to arrive at work on time
- Willingness to be flexible in light of changing requirements demanded by clients
- Positive “can-do” attitude!

Pay will range from $12-14/hr to start, depending on qualifications.

Resume

Annabel M. Cook

Objective: To obtain an administrative assistant position that will allow me to develop and hone skills necessary to grow as a professional

WORK EXPERIENCE

Administrative Assistant
Queens Moving and Storage Company – Queens, NY – June 2008 to November 2013
Handled multifaceted clerical tasks (e.g. data entry, filing, records management and billing) as the assistant to the manager. Coordinates travel arrangements, maintains data and ensures the delivery of premium service to Military Members. Have become a trusted assistant know for "can-do" attitude, flexibility and high-quality work.

Resident Assistant
Frostburg State University – Forstburg, MD- August 2006 to March 2007
Help the Resident Manager to maintain the dorm, help with check in and check out process. Came up with activities for the residents, answer front desk phone, and answer questions that the resident may have.

Office Assistant
Queens Moving and Storage Company – Queens, NY - June 2006 to August 2006
2006-Summer
Typed, filed papers, answer telephones. Help with processing applications, schedule appointments and presurvey appointments, help with billing.

Senior Teacher Assistant
Children's Day Center - Queens, NY - June 2005 to August 2005
2005-Summer
Second in charge in the classroom, came up with lesions plans to teach the students when the teacher was not present, worked in the office, and help supervised trips.

EDUCATION
B.A. in Sociology at Frostburg State University, Frostburg, MD - 2003 to 2007

High School Diploma Franklin D Roosevelt High School - Brooklyn, NY -1999 to 2003

University of Phoenix - Business administration courses (online) - 2013 to present

SKILLS
MicroSoft Word (Expert), Excel (Begining), detail-oriented

Recommendation Letter **[shown only to advisors]**

November 13, 2013

To whom it may concern:

I am pleased to recommend Annabel Cook as an administrative assistant at your company. She worked for me for 5 years at Queens Moving and Storage. She was a great employee – she always had a positive attitude and was very dependable. In addition to typing and filing, she interacted a lot with of our customers, and I frequently got compliments on her demeanor and efficiency.

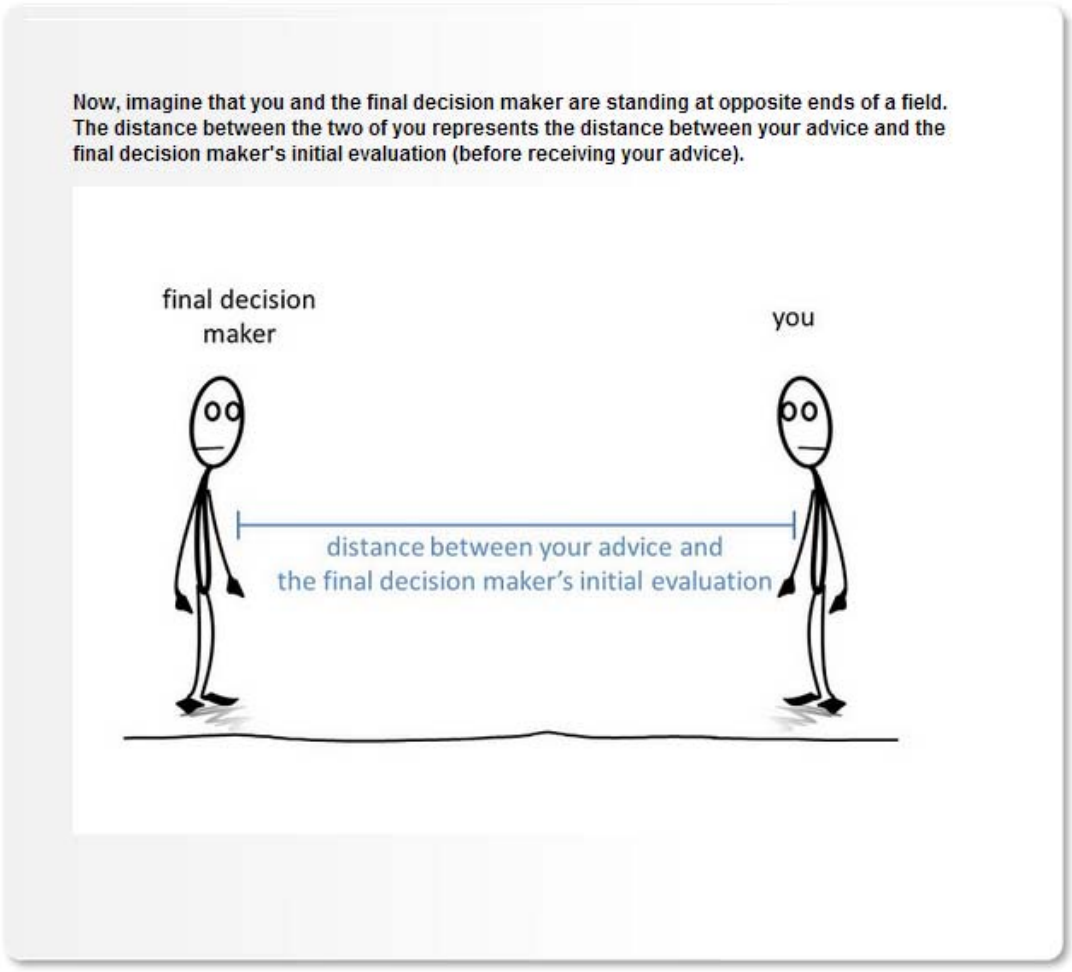
Again, I strongly recommend Annabel Cook for the position of Administrative assistant. If you would like additional information, please feel free to contact me.

Sincerely,

Daniel P. Russo
General Manager
Queens Moving and Storage

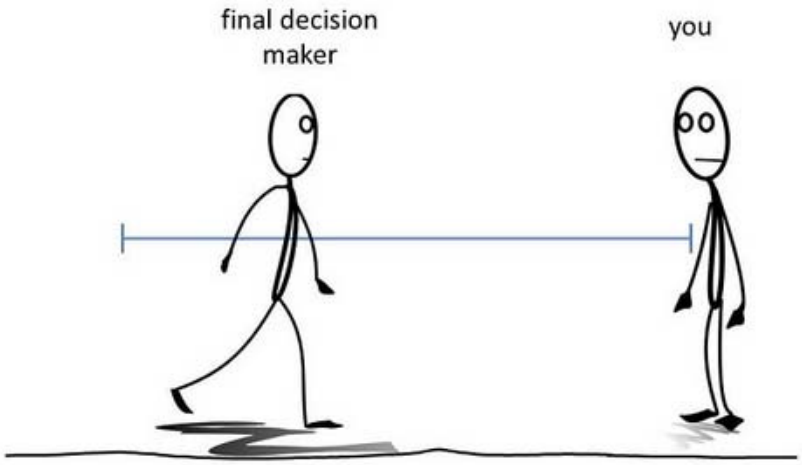
Appendix B. Study 2 Weight of Advice Pictorial Measure

Screen 1:



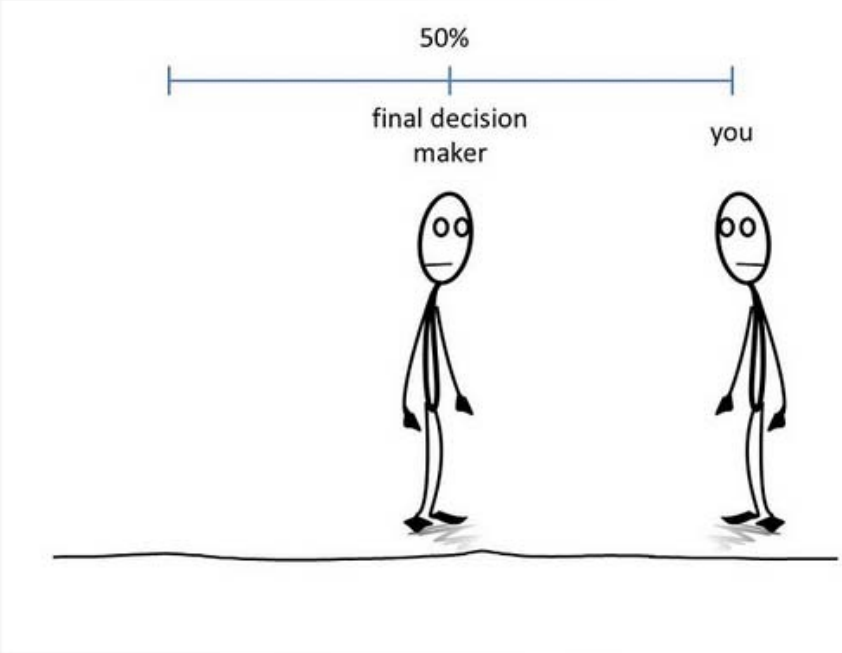
Screen 2:

Next, imagine that the final decision maker walked toward you the distance that represents how much he or she adjusted his or her opinion after seeing your advice.

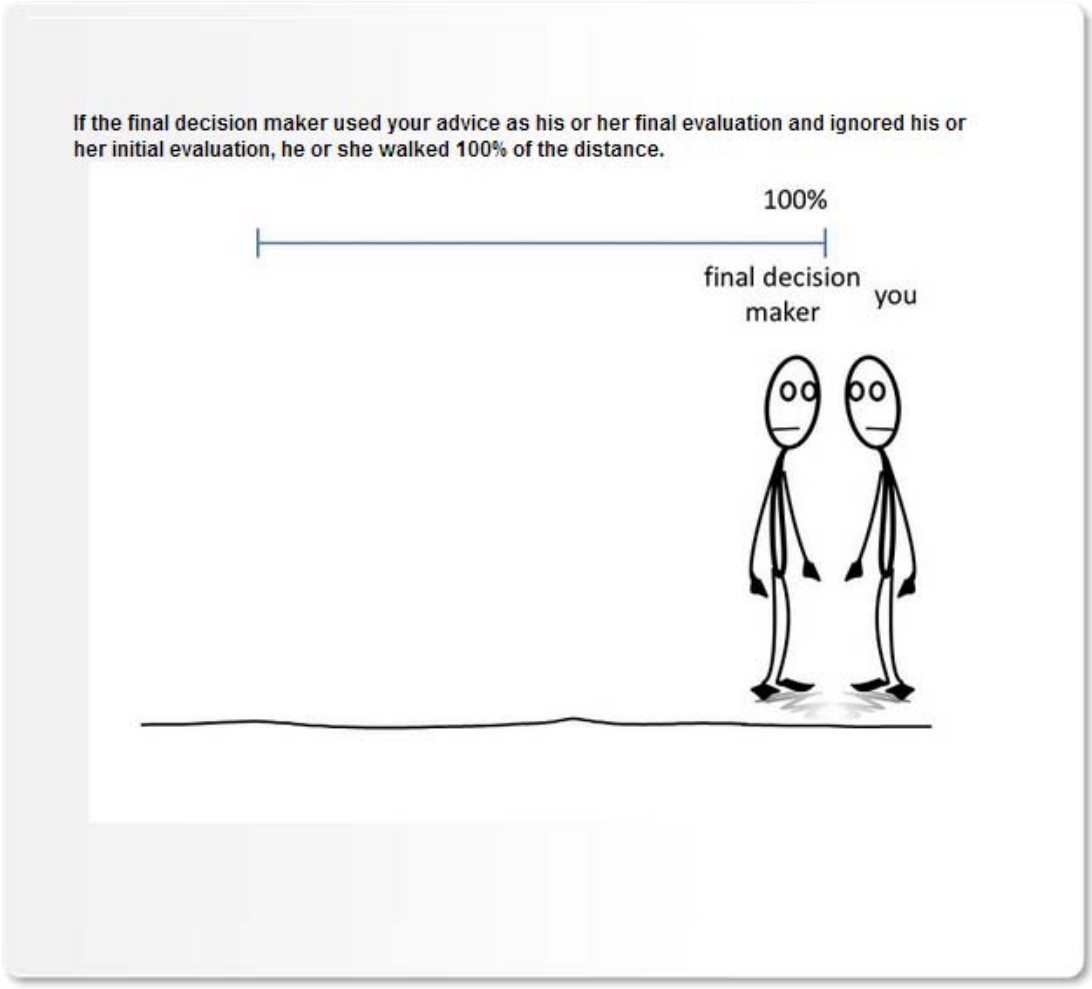


Screen 3:

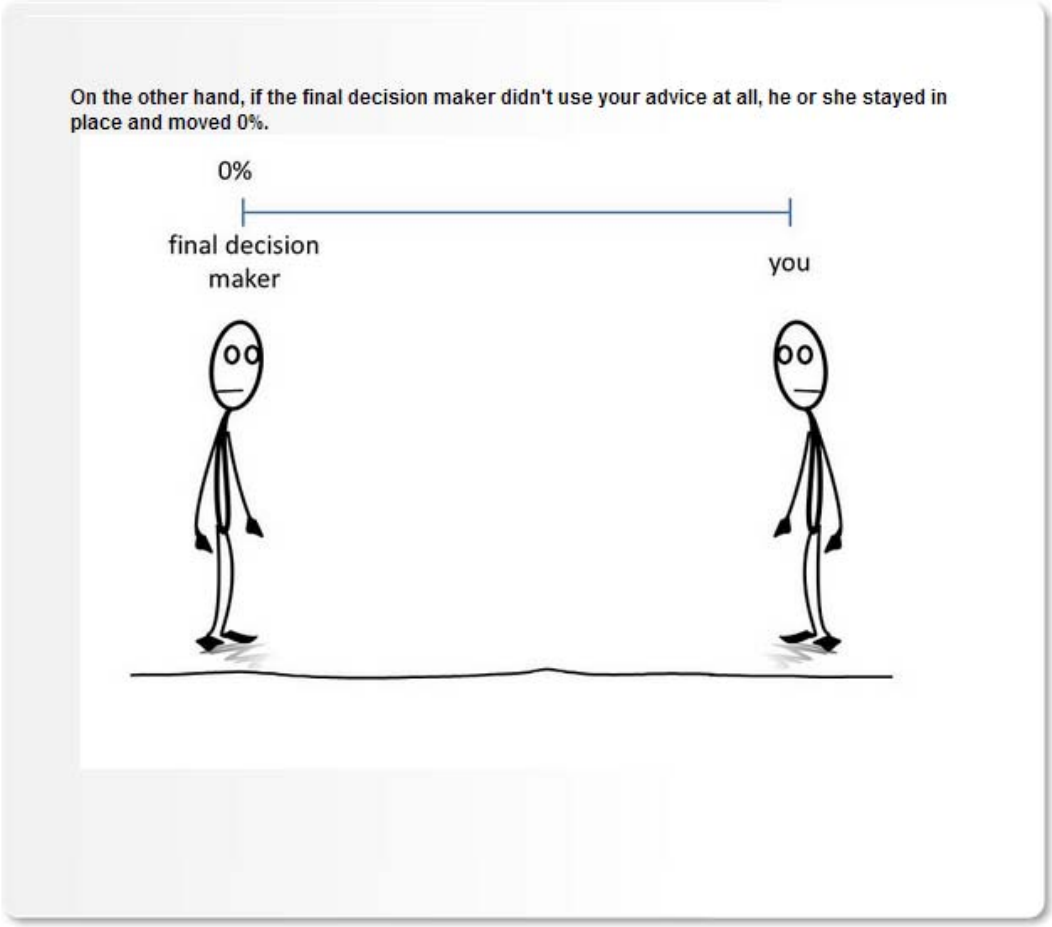
For example, if the final decision maker took the average of his or her initial evaluation and yours, he or she moved halfway, or 50% of the distance.



Screen 4:


If the final decision maker used your advice as his or her final evaluation and ignored his or her initial evaluation, he or she walked 100% of the distance.
100%
final decision maker
you

Screen 5:


On the other hand, if the final decision maker didn't use your advice at all, he or she stayed in place and moved 0%.
0%
final decision maker
you

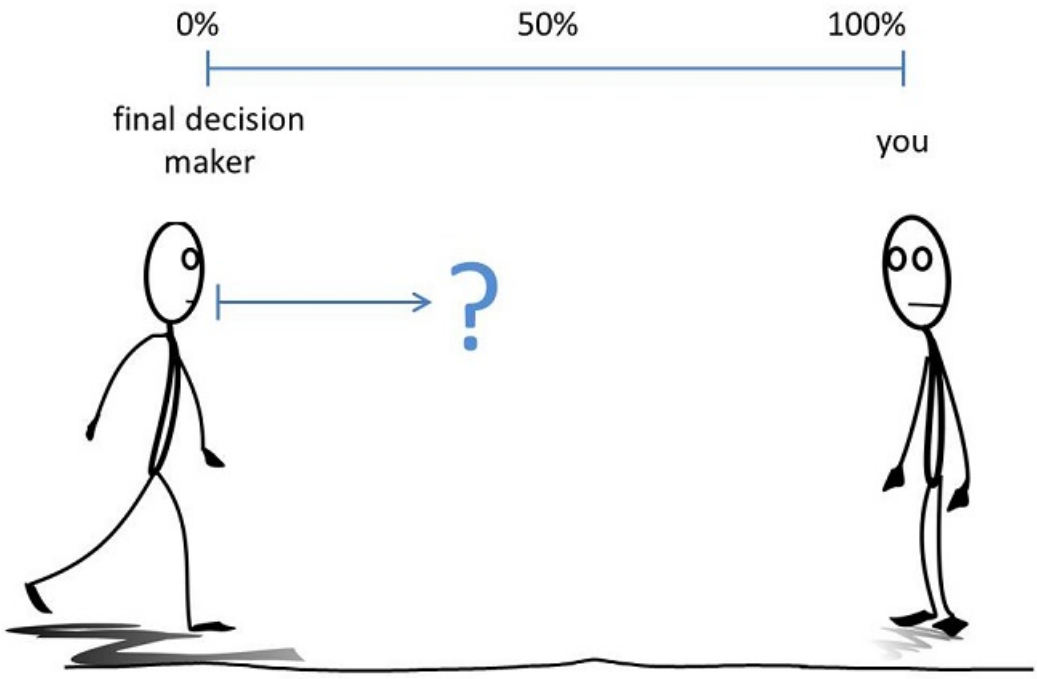
Screen 6:

Now, think about how much the final decision maker moved toward you.

Initial evaluation by the final decision maker (personal code) before seeing your advice: ##

Your advice: ##

Final evaluation by the final decision maker (personal code) after seeing your advice: ##



Appendix C. Additional Measures in Study 3

Study 3 also collected the following measures of downstream effects of impact judgments, in addition to those described in the main text. These were collected after advisors rated their confidence in their impact judgments and before they answered the question about whether they had enough information.

Opinion of advisee. Participants rated the advisee on warmth and competence using a 9-item adjective scale (Fiske et al., 2002) for how well the adjective described the person, where *1 = not at all* and *7 = extremely* (α = .93 for warmth; α = .77 for competence). They also answered how much they liked the final decision maker on a scale of *-5 = I dislike them very much, 0 = I neither like them nor dislike them, and 5 = I like them very much.*

Willingness to work with same advisee. Two measures of participants' willingness to work with the same advisee again were collected. First, participants read "We may invite you to do a similar study in the future. You would be assigned the advisor role again and we would pair you with a final decision maker. Would you prefer to have a different final decision maker than in this study, or the same final decision maker as in this study? (Note: None of the final decision makers have worked in an office before.)" They responded on a scale of *1 = Strongly prefer a <u>different</u> final decision maker, 2 = Prefer a <u>different</u> final decision maker, 3 = Slightly prefer a <u>different</u> final decision maker, 4 = No preference between a different or same final decision maker, 5 = Slightly prefer the <u>same</u> final decision maker, 6 = Prefer the <u>same</u> final*

decision maker, 7 = Strongly prefer the same final decision maker. Next participants were asked to think about giving advice again to the same final decision maker and how willing they were to give advice to them again, on a scale of *1 = not at all* to *7 = extremely*.

Potential moderators. Several potential moderators were measured, including the importance of the advisee taking the advice (α = .94) and advisors' confidence in their advice (α = .91). Also included were a series of four questions about how much the advisors cared about their interaction with the advisee (α = .91), as a way to know if people were taking the online interaction seriously. A sample item (reverse-coded) is "It doesn't matter to me what kind of person the final decision maker is."

Appendix D. Alternate Weight of Advice Metric

For Study 3, I calculated an alternate weight of advice metric that approximated the weight of advice that could be inferred without knowing the advisee's initial opinion. The calculation of alternate woa derives from the idea that knowing the advisee's final estimate and the advice that was given provides some information on the possible values for the advisee's initial estimate, given some assumptions. It is generally reasonable to assume that the advisee chose a final answer somewhere between their initial answer and the advice, inclusive. That is, in most cases, I expect the advisee did not overshoot the advice or move away from the advice. Therefore, the advisee's initial estimate is likely to fall on the opposite side of their final estimate from the advice. In other words, the pattern is likely to be one of initial ≤ final ≤ advice or advice ≤ final ≤ initial.

To calculate alternate woa I did the following. I took the independent estimates by the 166 advisees as the distribution of independent estimates. Then, for each advisor, I selected only those independent estimates that were on the opposite side of the advice from the final estimate or equal to the final estimate, following the logic described earlier. Next, for each of those independent estimates, I calculated the weight of advice using that independent estimate. As in other calculations of weight of advice, if the initial estimate and the advice were within two years of one another, a value of missing

was assigned. Finally, for each advisor I calculated the mean weight of advice across all eligible independent estimates, yielding alternate woa.

Results with alternate woa are largely consistent with those for true woa, as shown in Table 9 below.

Table 9: Study 3. Accuracy in bias in impact judments with alternate woa

	Didn't know initial		Knew initial	
	True woa	**Alternate woa**	**True woa**	**Alternate woa**
Accuracy measures				
Mean absolute deviation	0.26	0.25	0.12	0.19
95% confidence interval	[0.21, 0.30]	[0.20, 0.29]	[0.08, 0.16]	[0.14, 0.24]
Answers within .05 woa units	8%	13%	46%	27%
Bias measure				
Mean deviation	0.04	0.05	0.03	-0.05
95% confidence interval	[-0.04, 0.13]	[-0.02, 0.12]	[-0.02, 0.08]	[-0.11, 0.02]

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Biography

Christina Ann Rader was born in Honolulu, Hawaii on May 24, 1977. She received her BA in Economics, *summa cum laude*, from Carleton College in Northfield, Minnesota in 1999 and is a member of Phi Beta Kappa. Her research focuses on judgment and decision making, particularly as it relates to advice giving and advice taking. Her paper with Jack B. Soll and Richard P. Larrick, "Pushing Away From Representative Advice: Advice Taking, Anchoring, and Adjustment," has been conditionally accepted for publication in *Organizational Behavior and Human Decision Processes.* After graduation, she will begin an assistant professor position in the department of economics and business at Colorado College in Colorado Springs, Colorado.