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‘What we should do is...’: Are we More Willing to Defer to Experts who Provide Descriptive Facts Than Those who Offer Prescriptive Advice?

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Abstract

A considerable amount of cognition is, in some way, social. Here we consider one example: our reliance upon experts for information about phenomenon within a particular domain. Novices and experts share some knowledge within a domain in question which is crucial for knowing when to seek expert advice and how to evaluate that advice. Just when we decide to relinquish our own knowledge or skill in deference to an expertise remains an important question for cognitive scientists. Here we explored some conditions that might influence when we choose to defer to experts. In two experiments (N=570) we demonstrated that participants have a greater willingness to defer when experts have provide descriptive information (i.e., facts) about their domain of expertise, than when they provide prescriptive advice about what we ought to do with those facts. We interpret these results from the perspective that individuals exercise greater vigilance when given prescriptive advice in the form of normative statements. From this perspective individuals feel threatened, and therefore are less deferential, when experts tell them what to do, rather than share knowledge with them.

Keywords: Trust; Expert testimony; Deference; Communities of knowledge

Introduction

Although cognition is often conceptualized as occurring within the minds of single individuals, there is considerable evidence to suggest that many aspects of cognition are well understood as distributed across individuals (Hutchins, 1995; Rabb et al., 2019). Consider the distribution of knowledge that exists across experts and novices. You might be capable of completing small repairs to your vehicle, yet you defer to a mechanic when there is a problem beyond your skill set. But when do we seek help from experts, and how do we determine their recommendations are trustworthy?

Our willingness to defer to experts rests on two aspects of social cognition; that we place our trust in the knowledge and skills of others and that in doing so we maintain a certain level of vigilance so as to not be deceived or misinformed. Several areas of research indicate that we have a strong disposition to trust others. Trust is a fundamental component of communication; individuals expect that a person has uttered a statement in order to provide relevant information (Grice, 1975; Sperber & Wilson, 1995). We might challenge the truth of a statement, but for the most part we trust that individuals intend to provide relevant information. This tendency to trust

the statements made by others is so strong that it can cause us to disregard our own sensory experience (e.g., Gilbert & Jones, 1986).

The disposition to trust others is inflated when communication comes from experts. For example, research in social psychology has shown that the expertise of a communicator increases the persuasiveness of the message, particularly when the expertise is relevant to the domain from which the message comes (Petty & Wegener, 1998). Within the field of cognitive science deference to experts has been shown to play a central role in theories of concepts; the belief that concepts have essential properties that determine their observable features is held together by the assumption that those essential properties are discoverable by appealing to domain experts (Kalish, 2002; Medin & Ortony, 1989; Murphy & Medin, 1985; see Sloman & Rabb, 2016 for similar arguments).

Yet humans are not so gullible as to place their trust in just any informant or message. Rather, we exhibit a suite of early-emerging and persistent cognitive mechanisms to maintain a level of epistemic vigilance (Sperber *et al.*, 2010; see also Harris *et al.*, 2018; Mills, 2013). For example, by the time they have reached 5 years of age children consider numerous factors to determine whether to place their trust in the testimony of an individual, such as the informants past reliability (Birch *et al.*, 2008; Jaswal & Neely, 2006), their identity or status (Lawson, 2018; Rhodes, *et al.*, 2010), and their level of expertise within a particular domain (Lutz & Keil, 2002). Just as young humans are equipped to place their trust in others (e.g., Csibra & Gergely, 2009), they are equally prepared to exercise caution in determining the constraints of that trust.

This early vigilance extends into adulthood. In their seminal work on pragmatic reasoning schemas Cheng and Holyoak (1986) showed that in contrast to performance on symbolic reasoning tasks (e.g., Wason 1968), adults obeyed rules of deductive inference when doing so allowed them to determine whether an individual had broken a social convention. Drawing from these and related findings, Cosmides and Tooby (1992) argued that humans evolved a set of cognitive skills to be able to detect cheaters and freeloaders. At least when it comes to evaluating social rules,

adults exhibit a keen attention to whether the behaviors and actions of others are in accordance with the rules. Finally, Mercier and Sperber (2011) provided a framework for understanding human reasoning as a state of constant vigilance in which we aim to defend, and perhaps revise, our beliefs in the face of new information (i.e., counter arguments).

Overall the findings from a broad range of disciplines present the image of a deliberate set of processes used by young and old humans to assess the merits of an informant and the information they have presented to decide whether to concede or defer to their advice. Most of this work has focused on our ability to assess the *content* of the information presented by the informant. In the present study we explored whether the *form* in which the information is shared by experts will impact our willingness to defer. In particular, we assessed if participants' willingness to defer to experts would be different depending on whether the expert has simply presented factual information about a domain or if they have told participants what they ought to do with that information. For example, compare a doctor who merely provides information about the potential risks relative to the benefits of a vaccine (descriptive facts) to one who suggests their patients ought to get vaccinated to reap benefits of vaccinations, relative to the risks (prescriptive advice). We expected that participants would be *less* willing to defer to experts when they were given prescriptive advice than when provided descriptive facts.

This prediction may seem counterintuitive – it would seem that experts would know best how to act on the information specific to their domain of expertise and that deference to their advice would be warranted (though see Fisher & Keil, 2015; Sloman & Rabb, 2016). However, there are several reasons to think people may be less willing to defer when experts provide prescriptive advice. In many cases prescriptive advice is presented as deontic or normative (i.e., ought-is) statements and therefore is likely to be interpreted in a unique way. Deontic statements are likely to elicit greater vigilance in assessing the veracity of claims because such claims bring to the foreground the intentions of the communicator (Sperber *et al.*, 2010; Sperber & Wilson, 1995). Simply being told “what to do” might cause individuals to be more skeptical about whether or not to defer.

Descriptive facts and prescriptive advice also differ in their relevance to individual behaviors or actions. For example, descriptive facts tend to appeal to general information about relationships within a domain (e.g., vaccinations carry risks and benefits) that imply action or behaviors that are relatively distal to a participant. In other words, the information does not explicitly carry with it the expectation that an individual should act in a particular way. In contrast, most prescriptive statements highlight a relevant relationship within a domain that has direct implications for an individual's actions or

behaviors (e.g., considering the benefits *you* should become vaccinated). Thus, it is possible that prescriptive advice warrants greater vigilance because it has greater personal relevance. We explored this possibility in Experiment 2 by testing the degree to which participants were willing to defer to expert advice would be affected by whether the advice appealed to the actions of an individual participant (e.g., “what you should do is...”) or collective actions (e.g., “what we should do is...”).

Experiment 1

The main goal of this experiment was to test the prediction that the way expert testimony is framed, as descriptive facts or prescriptive advice, would impact a range of judgments that involve granting deference to experts, such as the decision to change one's own behaviors or beliefs, or to trust the advice given by the expert. Overall, we expected that participants would be less deferential when experts provided advice about what people *should do* than when experts presented descriptive facts about something within their area of expertise.

Method

Participants. Three hundred participants were recruited from Mechanical Turk and were given \$2 upon completion of the task. All participants were over 18 years of age and had obtained, at minimum, a US high school diploma or equivalent. The data from 17 participants were dropped from the study because these participants failed to complete all the items (7) or the time in which they took to complete the study was at least two standard deviations below the average (10). There were an approximately equal number of females (151) and males (132) in the final sample.

Design, Materials & Procedure. Participants responded to 16 items each of which included information about an expert and some additional information (i.e., advice) provided by the expert. The information about the expert was intended to establish that the individual was credentialed, had extensive experience in the discipline, and/or was respected within their domain (e.g., “Dr. Riley is a well-known expert physician”). An approximately equal number of participants were randomly assigned to one of two *Expert Advice* conditions ($N_{\text{Descriptive}}=140$; $N_{\text{Prescriptive}}=143$) which were designed to manipulate the format of the information presented by the expert. In the *Descriptive condition* the information provided by the expert was presented as a simple statement of facts in a format such as “She (Dr. Riley) stated that...”. In the *Prescriptive condition* the additional information provided by the expert was presented as normative advice in a format such as “She (Dr. Riley) recommends that we should...”. For each item participants were asked three questions that gauged their

willingness to defer to the advice provided by the expert. The first question assessed whether participants would support the advice provided by the expert. The second question asked if the advice changed participants' knowledge of the topic. The final question asked participants to judge how much they trust the expert. Below is a sample item.

Descriptive: Dr. Riley is the head of the experimental research division at St. Christopher's Hospital. She is a well-known expert physician. Dr. Riley claims that the latest research shows that the use of MDMA as a treatment for depression and anxiety will reduce symptoms by 40% after just six treatments.

Prescriptive: Dr. Riley is the head of the experimental research division at St. Christopher's Hospital. he is a well-known expert physician. Dr. Riley recommends that we should decriminalize the drug MDMA because the latest research shows that doing so will reduce symptoms of depression and anxiety by 40% after just six treatments.

Question #1: Based on this information, how likely is it that you would support the use of MDMA in treatment for depression and anxiety?

Extremely unlikely 0 ----- 100 Extremely likely

Question #2: Does this change what you know about psychiatric treatment?

Not at all A moderate amount A great deal
0 ----- 100

Question #3: To what extent do you trust this expert?

Not at all A moderate amount A great deal
0 ----- 100

We generated items to cover a range of domains of expertise. In particular we created items that fall within either the physical domain (e.g., decision to vaccinate based on advice from certified medical professionals), the social domain (e.g., use of police cameras to decrease crime rates based on advice from tenured police detectives), or the environmental domain (e.g., use of genetically-modified plants to increase crop yields based on advice from a certified

farmer). There was an approximately equal number of items from each of these three domains.

All items were presented in random order and the procedure lasted approximately 10 minutes.

Results and Discussion

Although there were two different question scales (both of which ranged from 0-100) we viewed the responses to all questions as a reflection of participants' willingness to defer to the information presented by the experts. Thus, the average responses for each question were submitted to the same mixed ANOVA with Expert Advice condition as the between-subjects variable and Question type treated as the within-subjects variable. The analysis provided mixed support for the main hypothesis. Although the effect of Condition was not significant ($F < 1.68, p = .20$), there was a significant Expert advice by Question type interaction, $F(2, 562) = 22.84, p < .001, \eta^2 = .14$.

As suggested by Figure 1, and supported by follow-up analyses, participants exhibited the predicted pattern (i.e., Descriptive > Prescriptive) for the support advice question $F(1, 281) = 4.21, p = .04$, and the knowledge change question, $F(1, 281) = 9.49, p = .002$, but did not show an effect for the Trust question. Exploratory analyses revealed that these patterns were consistent in each of three domains of expertise (physical, social, and environmental).

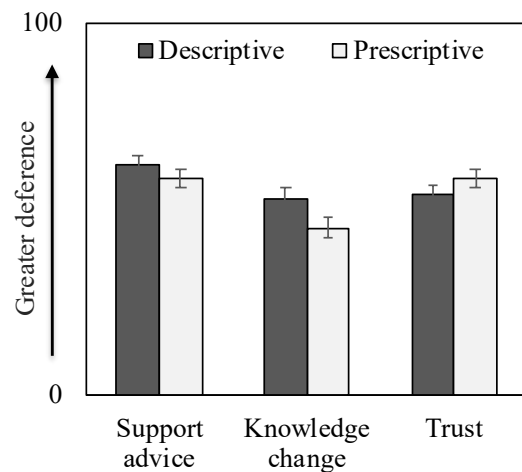


Figure 1. Average responses for each question type in both information framing conditions. Note that greater deference refers to higher judgements (closer to 100) for each of the questions. Bars represent 1 +/- SE.

Overall, the results provided support for the prediction that descriptive information provided by an expert would have a greater (positive) impact on participants' willingness to defer to experts than prescriptive advice. The one exception was

trust judgements for which participants showed no difference in their willingness to trust experts whether they provided descriptive or prescriptive advice. It is important to note that unlike the other two questions which referred to the content of the expert testimony, the trust question solicited a judgment about the expert. This result suggests that how an expert frames information has less of an impact on judgements of the expert and more of an impact on how we judge the advice. One of the goals of Experiment 2 was to further explore this possibility.

Experiment 2

We conducted Experiment 2 with three goals in mind. The first was to provide a replication of the results from Experiment 1. The second goal was to further explore the impact on the descriptive versus prescriptive framing on trust judgments. In particular we changed the trust question to solicit judgments about the information provided by the expert, rather than the expert themselves. Finally, we manipulated whether the information provided by the expert appealed to the participant personally or if the information had more of a social appeal.

It is possible there will be no difference between the social and personal framing; participants might be less willing to defer to experts that provide prescriptive advice regardless of whether the advice appeals to them or to other people. It is also possible that the personal appeal will be seen as more of a threat to participants and will therefore be especially likely to elicit the pattern of decreased deference when experts are prescribing what the participants *ought* to do.

Method

Participants. Three hundred participants were recruited from MTurk and were compensated \$2 at the completion of the study. All participants were over 18 years of age and had obtained (at least) a US high school diploma or equivalent. The data from 10 participants was dropped from the study because the time in which they completed the study was less than two standard deviations from the average.

Design, Materials & Procedure. With two exceptions the method was identical to Experiment 1. First, we modified the Trust question to solicit a judgement about the information provided by the expert. In this case the Trust question was, "To what extent do you trust the information provided by this expert?" Second, we included an *Appeal* condition for which we manipulated (within-subjects) whether the information appealed to the decision of individuals reading the items (personal framing) or to the decisions of community members (social framing). For this manipulation we randomly assigned half the items to be phrased as advice about personal

decisions that "you" should/can make or social decisions that "we" should/can make as a society.

The *Expert Advice* conditions were manipulated in the same manner as in Experiment 1 and, as was the case in that experiment, there were an approximately equal number of participants in each of the conditions ($N_{\text{Descriptive}}=144$; $N_{\text{Prescriptive}}=146$).

Results and Discussion

As was the case in the first set of analyses, we submitted the average responses to each of the three questions to a single ANOVA with Expert advice as the between-subjects variable and Question type and Appeal (personal, social) as the within subjects variables. As was the case in Experiment 1, the overall main effect of Expert advice was not significant $F < 1.50$. However, the Expert advice by Appeal interaction was significant $F(1,289)=11.36$, $p=.001$, $\eta^2=.07$. Moreover, the analysis yielded a significant three-way interaction between Question type, Appeal, and Expert advice, $F(2,288)=4.01$, $p=.007$, $\eta^2=.05$.

We explored this 3-way interaction by conducting separate analyses for each question type. As suggested by Figure 2 these analyses revealed there was a common pattern of responses for two of the questions. Participants exhibited the predicted pattern (greater deference in the Descriptive condition than the Prescriptive condition) when judging whether they would support the advice provided by the expert and whether they trusted the expert, participants exhibited the predicted pattern (greater deference in the Descriptive condition than the Prescriptive condition) under social appeal (Support advice; $F(1,289)=5.15$, $p=.02$, $\eta^2=.06$, and Trust: $F(1,289)=6.29$, $p=.01$, $\eta^2=.07$, but not under the personal appeal. In contrast, the Knowledge question elicited an overall Condition effect $F(1,289)=5.41$, $p=.02$, $\eta^2=.06$ due to higher deference judgments in the Social context and the Personal context.

Additional comparisons across Appeal conditions indicated that participants showed higher deference for prescriptive advice under personal framing than social framing when judging whether they would support the advice and whether they would trust the expert, both $F_s > 6.20$, $p_s < .01$ $\eta^2_s > .09$.

Overall these results were partially consistent with the results from Experiment 1. When the framing of expert advice influenced participants' decisions to defer, the pattern was in the predicted direction; participants were less deferential when the advice was prescriptive than when it was descriptive. There were no cases in which participants favored the descriptive advice. However, in contrast to our hypothesis, participants showed a pattern of lower deference

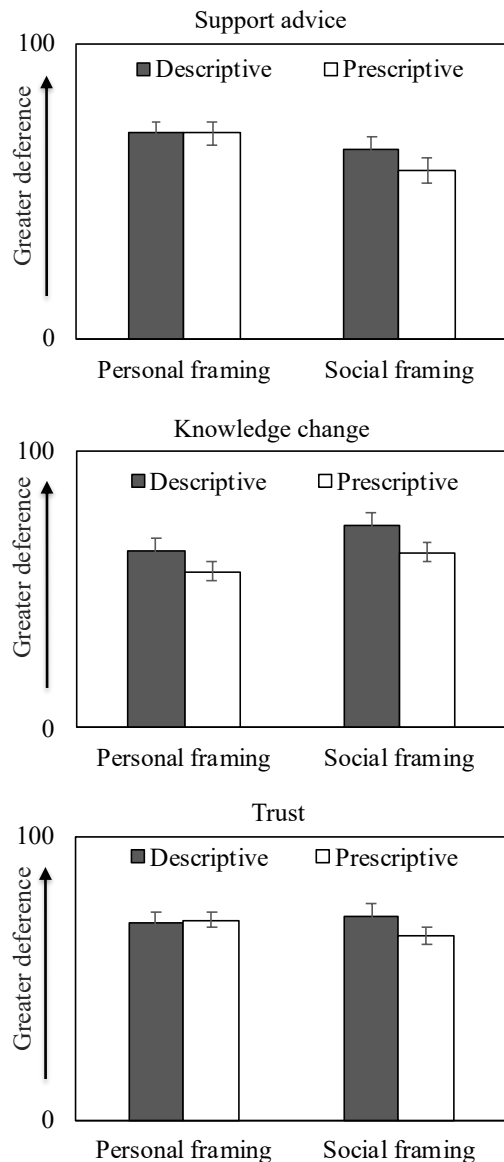


Figure 2. Average responses to each question type in both framing conditions for the Personal and Social scope conditions. Bars represents 1 +/- SE.

when prescriptive advice appealed to the decisions that should be made by members of society, rather than when it appealed to the decisions that the individual participant should make. Below we describe some potential explanations for why participants might have responded in this way.

General Discussion

Research has indicated that humans are endowed with a set of skills to help them determine which advice is worth deferring to and which is not (Harris *et al.*, 2018; Sperber *et al.*, 2010). Employing these skills is complicated by the fact that knowledge and skills within a domain exists on a

spectrum such that there is a good deal that is shared between novices and experts (Fisher & Keil, 2015; Sloman & Rabb, 2016; Rabb *et al.*, 2019). Thus, deferring to experts often involves a concession, insofar as a reasoner must recognize that there are limits to their own beliefs or skills. This aspect of the cognitive division of labor highlights a potential vulnerability one faces when they must confront the limits of their own knowledge. We explored that vulnerability by examining whether the willingness to defer to experts would be impacted by the way the expert advice was delivered to individuals.

The results from the two studies reported here showed that participants were less willing to defer to the advice given by experts when that advice was presented as a prescription about what we ought to do (e.g., we should lobby for later start days for schools) rather than when the advice was presented as a descriptive fact (e.g., later start days lead to better learning outcomes in students). We expected participants would show this pattern of responses due to an increased level of vigilance elicited by prescriptive advice relative to descriptive facts. One reason we expected to find these is because deontic statements, in which participants are made to feel obliged to act, were expected to cause participants to place greater scrutiny on the information provided by the informant.

We also expected that participants would show greater vigilance when prescriptive advice was framed as a personal decision (i.e., something *they* should do) rather than a collective decision (i.e., something *we* should do). Our expectation was that the personal framing would elicit greater vigilance because the proposed actions were more relevant to the individual participants. This interpretation is at odds with the findings from Experiment 2, in which participants showed the opposite pattern - participants exhibited a greater willingness to defer to prescriptive advice when it was framed as a personal decision rather than a social decision.

One explanation for this apparent conflict is that the social framing in fact posed a *greater* personal threat than the personal framing. Consider that when prescriptions are framed toward a single individual the person retains the choice to disagree and stage their own counterarguments for why the prescribed advice is/not relevant to them (e.g., Mercier & Sperber, 2011). The same does not apply when the prescription applies to all members of the community. Group decisions are outside of the control of the individual and therefore pose an additional cause for concern. For example, modifying how one thinks about whether to get vaccinated costs them relatively little because they are in control of holding or revising that belief in the future. However, changes in how a community or society think of vaccines can become a potential threat to one's own beliefs. From this perspective, expertise that has the potential to change the

community of knowledge one exists within requires greater vigilance than changes in one's personal knowledge.

It is also possible that the social framing in Experiment 2 warrants greater vigilance because the advice is less compelling. The prescription that everyone ought to get vaccinations ignores a wide range of considerations that might challenge the degree to which that is in each individual's self-interest. Participants might recognize that the more broadly applied the rule the greater the likelihood there will be exceptions. Moreover, one would presumably want evidence from more than one individual expert while they deliberate on what an entire society ought to do. Whether responses in Experiment 2 underlie a greater sense of personal threat posed or greater doubt about the viability of advice being applicable to the community remains a matter for future study.

Overall, the findings reported here provide additional support for the conclusion that humans exercise considerable vigilance when assessing the information provided to them by others (e.g. Sperber *et al.*, 2010). Participants were sensitive to minor modifications to the materials that signaled that experts provided factual information rather than advice (Experiment 1) or that the information was made in reference to social rather than personal practices (Experiment 2). Thus, while these results might be useful for understanding the tendency of individuals to opt to distrust or ignore expert advice (e.g., anti-vaxxers) they also paint a positive picture about the careful effort we commit to deciding whether to trust experts. Humans are disposed to trust others and spend a considerable amount of effort to determine whether that trust is warranted. The challenge for research in cognitive science will be to determine how individuals maintain a level of vigilance that matches the level of humility necessary to defer to others.

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