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Knowing what you know: Intellectual humility and judgments of recognition memory☆

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ABSTRACT

This study examined the relationship between recognition memory and intellectual humility, the degree to which people recognize that their personal beliefs are fallible. Participants completed the General Intellectual Humility Scale, an incidental old/new recognition task, and a task that assessed the tendency to over-claim one's knowledge. Signal detection analyses showed that higher intellectual humility was associated with higher discriminability between old and new items, regardless of whether the items were congruent or incongruent with participants' own beliefs. However, intellectual humility was not related to response bias, indicating that intellectually arrogant people were not biased to claim that they knew everything. Together, the findings support a relationship between intellectual humility and performance on memory tasks, indicating that individual differences in intellectual humility may partly reflect how people process information and judge what they do and do not know.

1. Introduction

"It's not what he doesn't know that bothers me; it's what he knows for sure that just ain't so."

–Vice-president Walter Mondale during a Presidential debate with Ronald Reagan.

People are not always good judges of the accuracy of their beliefs, knowledge, and memories, and like Ronald Reagan, sometimes "know" things to be true that are demonstrably incorrect (Harvey, 1997; Hoffrage, 2004). The meta-cognitive bias to have greater faith in one's beliefs than is warranted obviously compromises the quality of people's decisions and leads to misguided actions that are based on incorrect assumptions. Although the tendency to overestimate the accuracy of one's beliefs is widespread (Dunning, Johnson, Ehrlinger, & Kruger, 2003; Fischhoff, Slovic, & Lichtenstein, 1977), people differ in the degree to which they recognize that what they believe to be true might be incorrect. For example, people who are less knowledgeable in a domain are less able to assess the limits of their understanding than those who are more knowledgeable (Kruger & Dunning, 1999).

Our interest in this project was in the relationship between intellectual humility and people's judgments of their own knowledge? Intellectual humility involves the recognition that one's beliefs are fallible and, thus, the degree to which people acknowledge that that which they believe to be true may, in fact, be incorrect. People who are high in intellectual humility are attentive to limitations in the evidence for their beliefs and are aware that their ability to obtain and evaluate relevant information is limited. Holding such an epistemic stance may lead intellectually humble people to avoid unfounded confidence in their beliefs (McElroy et al., 2014). Indeed, intellectual humility has been characterized as an epistemic virtue that is needed for effective learning and endeavors in which people aspire to seek the truth, such as science (Baehr, 2011; Roberts & Wood, 2007). Along these lines, Elder and Paul (2012) listed intellectual humility among a small set of intellectual competencies that should be fostered in educational settings.

Most discussions of intellectual humility assume, often implicitly, that these differences arise primarily from motivational factors. For example, people high in intellectual humility are higher in epistemic curiosity, openness, and need for cognition (Leary et al., 2016), characteristics that are associated with the motivation to seek information and think deeply about topics. Such an epistemic approach should expose intellectually humble people to information that demonstrates the complexity and ambiguity of many issues and encourage them to question the veracity of their beliefs. In contrast, people who are low in intellectual humility have a lower tolerance for ambiguity (Leary et al., 2016), which may motivate them to avoid information that might raise questions about their existing viewpoints. Low intellectual humility is also associated with the tendency to be threatened by what one doesn't know (Krumrei-Mancuso & Rouse, 2016) and with the motive to defend one's ego in the face of ignorance, errors, disagreements, and other signs of one's intellectual shortcomings (Gregg, Sedikides, & Gebauer, 2011; Sedikides & Gregg, 2008). In contrast, people high in intellectual humility indicate that they enjoy finding out new

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information that differs from what they already think is true (Leary et al., 2016).

Although individual differences in intellectual humility may indeed have motivational underpinnings, our interest was in the possibility that these differences might also reflect differences in the metacognitive capacity to recognize what one does and does not know. People higher in intellectual humility are assumed to be better at recognizing what they do and do not know than people who are lower in intellectual humility (Elder & Paul, 2012). However, such ability could reflect one or both of two distinct attributes—a higher ability to discriminate correct from incorrect information or a lower tendency, or bias, to assume that one knows things.

The present study tested these two possible explanations using two distinct procedures. The first involved an incidental old/new recognition task in which participants read statements about controversial issues that were congruent or incongruent with their beliefs and were later tested on their memory for these statements. By presenting statements that they had seen earlier with statements that had not been presented, we were able to examine participants' ability to recognize items that they had seen before. Using analyses based on signal detection theory (Snodgrass & Corwin, 1988), we tested whether intellectual humility is related to either detection sensitivity or recognition bias.

Sensitivity (sometimes called discriminability) refers to the difficulty of distinguishing old (known) from new (unknown) items. Bias refers to the degree to which one response is more likely than another–the extent to which participants believe they did or did not see items regardless of their actual status. People high versus low in intellectual humility might differ on either or both of these parameters. That is, compared to people low in intellectual humility, highly humble people might more accurately distinguish what they know from what they don't, or be less likely to consistently think that they had seen all items.

Because we thought that intellectual humility might be related to the degree to which people process information with which they do versus do not agree differently, participants read some items that were consistent with their beliefs and other items that were contrary to their beliefs. That is, people who are high in intellectual humility may be more likely to think about sentiments that disagree with their own views than people who are low, which could contribute to their ability to discriminate new from old information.

In a second task, participants were asked to rate their familiarity with a number of people, historical events, and scientific concepts, some of which were real and some of which were bogus (Paulhus, Harms, Bruce, & Lysy, 2003). As in the first task, we calculated both the sensitivity and bias of participants' claims, showing us the degree to which they accurately distinguished real from bogus targets and the degree to which they are biased to over-claim knowledge across the board. Intellectually arrogant people, who view their own knowledge as infallible, may show a response bias to claim that they know something, even when that information is bogus.

2. Method

2.1. Participants

The study was advertised in the local community via fliers and in the independent weekly magazine as part of a set of "studies on personality, opinions, and relationships" for which participants would be paid $40 for 2.5 h of participation ($10 was paid for this study). The sample included 157 participants (51.6% female), ranging in age from 21 to 61 ($M = 31.5$, $SD = 8.12$). Most participants were White (54.8%), Black (21.9%), or Asian (13.5%). The sample was relatively well-educated, with 70.3% having obtained at least a Bachelor's degree. Two participants' data were removed before analysis; one was distracted during the task, and the other had difficulty comprehending instructions.

2.2. Materials and measures

2.2.1. General Intellectual Humility Scale

The General Intellectual Humility Scale is a 6-item measure of the degree to which people recognize that their personal beliefs might be wrong (Leary et al., 2016). Sample items include "I accept that my beliefs and attitudes may be wrong" and "In the face of conflicting evidence, I am open to changing my opinions," answered on 5-point scales anchored by *not at all like me* and *very much like me*. The General Intellectual Humility Scale has high inter-item reliability and strong construct and criterion-related validity. Scores from this study were sufficiently reliable ($\alpha = .80$). Scores ranged from 13 to 30, with a mean of 22.64 ($SD = 3.98$). Scores are associated with characteristics that involve cognitive openness, such as low dogmatism, trait openness, epistemic curiosity, need for cognition, and tolerance of ambiguity. High scores are also related to more positive responses to people who hold different views and to people who change their positions (Leary et al., 2016).

2.2.2. Beliefs about controversial topics

Four controversial topics were selected: legalization of same sex marriage (the study was conducted 3 months before the U. S. Supreme Court's decision legalizing same-sex marriage on 6/26/2015), use of drones, legalization of marijuana, and implementation of the common core curriculum. Twenty attitude statements were written about each of these topics—10 sentences that argued in favor of each topic and 10 sentences that argued against each topic—based on Internet searches for pro and con viewpoints about each issue. Each sentence began with a clause indicating both the topic and the position being advocated, followed by a reason or explanation for the position. For example, a statement supporting same sex marriage would begin with the stem "Same sex marriage should be legalized…," followed by a reason such as "… because it would allow both parents to be legally recognized as parents of their children." From these sentences, four counterbalanced stimulus sets containing these sentences were created by random sorting. Each participant viewed one of the four sets of statements, which contained 40 of the 80 sentences. Of the sentences not presented with a set during study, half were used as "new" items in a subsequent recognition task.

2.2.3. Over-claiming task

The Over-claiming Questionnaire (Paulhus et al., 2003) measures participants' claims of knowledge regarding bogus topics (e.g., Jacques Worthington, Hamrick's Rebellion) relative to their claims of real-world knowledge (e.g., Susan B. Anthony, Mount Rushmore) to provide an index of their tendency to over-claim that they know things that they don't actually know. Here, participants rated 64 items, 40 of which were real and 24 of which were foils on a Likert scale from 1 (*never heard of it*) to 5 (*very familiar with it*).

2.3. Procedure

Before beginning the study, participants completed a battery of questionnaires that included the General Intellectual Humility Scale, indicated the highest level of education that they had attained (some high school, high school degree or GED, Associate's degree, Bachelor's degree [4 year college], Graduate or professional degree) and rated their views on four controversial topics (legalization of same sex marriage, use of drones, legalization of marijuana, and implementation of the common core curriculum) from 1 (*strongly disagree*) to 6 (*strongly agree*).

Participants were seated at a computer and told that they would read a list of beliefs about controversial topics. They were instructed to think about each sentence and to proceed at their own pace. Forty sentences (5 pro and 5 con statements for each topic) that reflected a subset of the 10 pro and 10 con statements for each of the four topics described earlier were presented one at a time in a random order. The time