

When Knowledge Knows No Bounds: Self-Perceived Expertise Predicts Claims of Impossible Knowledge



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Abstract

People overestimate their knowledge, at times claiming knowledge of concepts, events, and people that do not exist and cannot be known, a phenomenon called *overclaiming*. What underlies assertions of such impossible knowledge? We found that people overclaim to the extent that they perceive their personal expertise favorably. Studies 1a and 1b showed that self-perceived financial knowledge positively predicts claiming knowledge of nonexistent financial concepts, independent of actual knowledge. Study 2 demonstrated that self-perceived knowledge within specific domains (e.g., biology) is associated specifically with overclaiming within those domains. In Study 3, warning participants that some of the concepts they saw were fictitious did not reduce the relationship between self-perceived knowledge and overclaiming, which suggests that this relationship is not driven by impression management. In Study 4, boosting self-perceived expertise in geography prompted assertions of familiarity with nonexistent places, which supports a causal role for self-perceived expertise in claiming impossible knowledge.

Keywords

knowledge level, judgment, inference, thinking, open data

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The menace to understanding [is] not so much ignorance as the illusion of knowledge.

—Daniel J. Boorstin (1987; p. 53),
American historian, 1914–2004

Can people differentiate what they know from what they do not? Several lines of research suggest that people are not always accurate judges of their knowledge and often overestimate how much they know (Dunning, 2011; Kruger & Dunning, 1999). Research on overconfidence finds that people commonly judge the accuracy of their judgments too favorably (Fischhoff, Slovic, & Lichtenstein, 1977; Lichtenstein, Fischhoff, & Phillips, 1982; Moore & Healy, 2008) and typically overestimate how well they perform everyday tasks relative to other people (Alicke & Govorun, 2005; Dunning, Heath, & Suls, 2004). Work on the *illusion of explanatory depth* demonstrates that participants tend to think they have a better understanding of how objects work (e.g., a ballpoint pen) than they can demonstrate when that understanding is put to the test (Rozenblit & Keil, 2002).

At times, people even claim knowledge they cannot possibly have, because the object of their knowledge does not exist, a phenomenon known as *overclaiming*. For example, in the late 1970s, nearly a third of American respondents expressed an opinion about the “1975 Public Affairs Act” when asked about it directly, even though the act was a complete fiction (Bishop, Oldendick, Tuchfarber, & Bennet, 1980). Approximately a fifth of consumers report having used products that are actually nonexistent (Phillips & Clancy, 1972). More recent research has asked participants to rate their familiarity with a mix of real and nonexistent concepts, names, and events in domains such as philosophy, life sciences, physical sciences, and literature. Participants reported being familiar with the real items but also, to a lesser degree, with the nonexistent ones. (e.g., Paulhus, Harms, Bruce, & Lysy, 2003).

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Although these and other studies document a tendency to claim nonexistent knowledge, little work has explored when or why people are likely to exhibit this tendency. Herein, we focus on the role of self-perceived domain knowledge. For example, if Janet believes her biology knowledge is excellent and Brad believes his is shaky, we suspect that Janet will be more likely than Brad to overclaim knowledge about biology terms. This should also apply within subjects: If Janet considers herself highly knowledgeable in biology but thinks her philosophy knowledge is poor, she will be more likely to overclaim knowledge of biological concepts than of philosophical ones.

A sizable body of work on how people evaluate their own knowledge suggests that they rely not only on a direct examination of their mental contents but also on a *feeling of knowing* (for a review, see Nelson & Narens, 1990; Reder & Ritter, 1992). Notably, a feeling of knowing is often only weakly predictive of actual knowledge (Nelson, 1984) and appears to be informed, at least in part, by top-down inferences about what should be or probably is known (e.g., Costermans, Lories, & Ansay, 1992; Koriat, 1995; but see Hart, 1965, and see Yaniv & Meyer, 1987, for a noninferential account). We theorized that such inferences are drawn from people's preconceived notions about their expertise, inducing a feeling of knowing that then prompts overclaiming.

Several findings suggest that preformed impressions of expertise might influence overclaiming. People judge their quiz performance more favorably when it is framed as testing an ability they think they have (e.g., abstract reasoning) rather than one they think they lack (e.g., computer programming; Ehrlinger & Dunning, 2003), at least partially because their self-perceptions alter the way they experience the task (e.g., whether they answer questions quickly or slowly; Critcher & Dunning, 2009). In addition, level of self-perceived expertise is positively correlated with providing answers to exceedingly difficult questions and with feelings of certainty but not with answering such questions correctly (Bradley, 1981).

The current investigation tested the relationship between self-perception of domain knowledge and overclaiming knowledge of nonexistent concepts within that domain. We measured overclaiming by asking participants about their familiarity with and knowledge about both real and nonexistent concepts, names, and places (Paulhus et al., 2003), which allowed us to make a clear inference of inappropriate claims of knowledge and to control for claimed knowledge of real items.

After an initial examination of the relationship between self-perceived knowledge and overclaiming in the domain of personal finance (Studies 1a and 1b), we

tested the domain specificity of this effect. For example, does self-perceived knowledge in one domain (e.g., biology) predict overclaiming in that domain over and above self-perceived knowledge in other domains (Study 2)? Next, we tested whether overclaiming prompted by self-perceived knowledge was "honest" or was driven by impression-management concerns (Study 3). Finally, to assess whether self-perceived knowledge plays a causal role in overclaiming, we manipulated self-perceived knowledge in geography and measured reported familiarity with nonexistent places (Study 4). In all studies, we assessed overclaiming using a modified version of the signal-detection method recommended by Paulhus et al. (2003).¹

Studies 1a and 1b

In Study 1a, we tested whether individuals who perceive themselves as more knowledgeable in personal finance would be more likely to claim knowledge of nonexistent financial terms. In the realm of finance, failure to recognize or admit one's knowledge gaps could lead to uninformed financial decisions with devastating consequences (Lusardi & Mitchell, 2014). Do self-proclaimed financial experts claim more financial knowledge than they can possibly have?

If so, note that self-perceived knowledge may predict overclaiming independently, or because it is confounded with genuine knowledge. To address the latter possibility, we also asked participants in Study 1b to complete a standard financial-literacy quiz, which allowed us to test whether self-perceived knowledge predicted overclaiming over and above any potential relationship between genuine knowledge and overclaiming.

Method

Participants. Study 1a had 100 participants (33 women, 66 men; mean age = 31 years, $SD = 9.7$; 1 participant did not report demographic information). Two additional participants failed to complete the entire study and were excluded from all analyses. Study 1b had 202 participants (85 women, 115 men, 2 whose gender was not reported; mean age = 33.5 years, $SD = 10.1$). Twelve additional participants failed to complete the entire study and were excluded from all analyses. Both samples were recruited through Amazon's Mechanical Turk and were restricted to respondents within the United States. The sample size for Study 1a allowed an 80% probability of identifying a significant effect if the true correlation was .30; the sample was doubled in Study 1b to account for the possibly smaller correlations (.20) after genuine knowledge was controlled for.

Procedure. After providing informed consent, participants rated their general knowledge of personal finance and completed the overclaiming task in counterbalanced order. The questions on personal finance were “In general, how knowledgeable would you say you are about personal finance?” (1 = *not knowledgeable at all*, 7 = *extremely knowledgeable*) and “How would you rate your general knowledge of personal finance compared to the average American?” (1 = *much less knowledgeable*, 7 = *much more knowledgeable*).

The overclaiming task was modeled after the Overclaiming Questionnaire (Paulhus et al., 2003). Participants were asked to rate their knowledge of various personal-finance-related terms:

We are interested in common knowledge about personal finance. You will see 15 terms related to personal finance. Please rate your knowledge about each term by choosing the appropriate number from 1 (*never heard of it*) to 7 (*very knowledgeable*).

The 15 items were presented one at a time in random order. Twelve of the 15 were real terms (*tax bracket*, *fixed-rate mortgage*, *home equity*, *revolving credit*, *vesting*, *retirement*, *stock options*, *inflation*, *private equity fund*, *interest rate*, *Roth IRA*, *whole life insurance*) collected from various finance Web sites, and 3 were nonexistent foils invented by the researchers (*pre-rated stocks*, *fixed-rate deduction*, *annualized credit*). Finally, participants filled out a demographic questionnaire and provided information for payment.

The procedure in Study 1b was identical to that in Study 1a, except that participants also completed a widely used financial-literacy quiz (FINRA Investor Education Foundation, 2009; Lusardi & Mitchell, 2011) after completing the other two tasks. The quiz included five questions assessing financial capability (e.g., “A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less”; response options: “true,” “false,” and “don’t know”).

Results

Overclaiming was measured by calculating the false alarm rate, which is the proportion of nonexistent foils about which a participant claimed knowledge. We averaged the false alarm rates for each of the six potential knowledge cutoff points (i.e., we computed the proportion of foils rated as 2 or higher, the proportion of foils rated as 3 or higher, and so on for 4, 5, 6, and 7, and then averaged these proportions), which resulted in an overclaiming value ranging from 0 to 1. In Study 1a, mean overclaiming was 0.29 ($SD = 0.20$), and 93% of

participants claimed at least some knowledge of at least one foil (i.e., they rated at least one foil as 2 or higher). In Study 1b, mean overclaiming was 0.31 ($SD = 0.23$), and 91% of participants claimed at least some knowledge of at least one foil.

Following the operationalization in previous work on overclaiming (e.g., Paulhus et al., 2003), we looked at overclaiming while controlling for accuracy. Accuracy was obtained by subtracting the averaged false alarm rate from the averaged hit rate (i.e., the proportion of real items about which each participant claimed knowledge, averaged across all six potential cutoff points).

In Study 1a, to test whether self-perceived knowledge predicted overclaiming, we averaged the responses to the two questions measuring self-perceived knowledge in personal finance ($\alpha = .91$). We next entered self-perceived knowledge of personal finance ($M = 4.23$, $SD = 1.22$) and accuracy into a regression model predicting overclaiming. Self-perceived knowledge positively predicted overclaiming, $b = 0.09$, $t(97) = 9.17$, $p < .001$. The more participants viewed themselves as knowledgeable about personal finance, the more they claimed knowledge of nonexistent personal finance terms.

Likewise, in Study 1b, self-perceived knowledge of personal finance ($M = 4.43$, $SD = 1.17$) positively predicted overclaiming, $b = 0.10$, $t(199) = 13.07$, $p < .001$. In addition, an unanticipated order effect emerged in Study 1b (but not in Study 1a), such that overclaiming was higher when self-perceived knowledge was assessed first ($M = 0.34$, $SD = 0.24$) rather than second ($M = 0.27$, $SD = 0.21$), $t(200) = 2.21$, $p < .05$. However, self-perceived knowledge significantly predicted overclaiming regardless of whether it was assessed before the overclaiming task, $b = 0.12$, $t(98) = 9.83$, $p < .001$, or after it, $b = 0.09$, $t(98) = 8.47$, $p < .001$. Thus, the order of the tasks was fixed for Studies 2 to 4. Genuine knowledge, as assessed by the financial literacy quiz, also positively predicted overclaiming, $b = 0.05$, $t(199) = 4.92$, $p < .001$. Self-perceived knowledge was positively correlated with genuine knowledge, $r(200) = .32$, $p < .001$.

Finally, we tested whether self-perceived knowledge predicted overclaiming while controlling for genuine knowledge. Scores on the financial literacy quiz could range from 0 to 5. On average, participants answered 3.7 ($SD = 1.9$) questions correctly. By comparison, a nationally representative U.S. sample had average scores of 3.0 and 2.9 in 2009 and 2012, respectively (FINRA Investor Education Foundation, 2013). When genuine knowledge was entered into the model with self-perceived knowledge, self-perceived knowledge remained a highly significant predictor of overclaiming, $b = 0.09$, $t(198) = 11.73$, $p < .001$. Interestingly, genuine knowledge also remained a positive predictor of overclaiming, $b = 0.02$, $t(198) = 2.14$, $p = .033$, which provides preliminary

evidence of an independent effect of genuine knowledge on overclaiming.

Study 2

Studies 1a and 1b provided initial evidence that self-perceived knowledge in a particular domain is positively associated with overclaiming within that domain. An alternative interpretation of the result is that it captures only an association between two more general individual differences; people who generally perceive themselves as more knowledgeable are also generally more likely to overclaim in any domain. If that is the case, self-perceived knowledge in a particular domain should predict overclaiming equally well within that domain and within unrelated ones. In contrast, we hypothesized that self-perceived knowledge has a domain-specific effect on overclaiming.

In Study 2, we explored the question of generality versus specificity by measuring self-perceived knowledge and overclaiming in several domains. We also varied whether the overclaiming questionnaire asked participants about their familiarity with items (as in the original overclaiming questionnaire; Paulhus et al., 2003) or their knowledge of them (as in Studies 1a and 1b).

Method

Participants. One hundred twenty-four people² (52 women, 71 men; mean age = 33 years, $SD = 12.7$; 1 participant did not report age or gender) participated online through Amazon's Mechanical Turk. Participation was restricted to respondents within the United States. Four additional participants failed to complete the entire study and were excluded from all analyses. Pretesting showed that a sample size of 100 participants would provide sufficient power to detect the relevant relationship (a correlation of roughly .30).

Procedure. After providing informed consent, participants were asked to rate their general knowledge in various domains: "Please rate your knowledge of the following topics using the following scale: 0 = *no knowledge*; 1 = *limited knowledge*; 2 = *moderate knowledge*; 3 = *substantial knowledge*; 4 = *extensive knowledge*." Participants were asked about three domains of interest (biology, philosophy, and literature) as well as four filler domains (mathematics, architecture, computer programming, and 20th-century art), presented in random order.

Participants then completed an overclaiming questionnaire for the domains of interest (items borrowed from Paulhus et al., 2003). For each of these domains, they saw 15 items, presented in random order on the same page. Twelve items were real (e.g., in biology: *mammal*, *adrenal gland*, *sciatica*) and three were foils (e.g., in biology:

meta-toxins, *bio-sexual*, *retroplex*). Approximately half of the participants ($n = 61$) were asked to rate their knowledge of each item, and the rest ($n = 63$) were asked to rate their familiarity with each item (1 = *never heard of it*, 7 = *very knowledgeable* or *very familiar*). Finally, participants filled out a demographic questionnaire and provided information for payment.

Results

The majority of participants claimed at least some familiarity with (92%) or knowledge of (87%) at least one foil. Our results replicated the positive relationship between self-perceived knowledge (biology: $M = 2.70$, $SD = 0.92$; philosophy: $M = 2.34$, $SD = 0.83$; literature: $M = 2.80$, $SD = 0.99$) and overclaiming (familiarity—biology: $M = 0.26$, $SD = 0.24$; philosophy: $M = 0.20$, $SD = 0.20$; literature: $M = 0.09$, $SD = 0.18$; knowledge—biology: $M = 0.21$, $SD = 0.22$; philosophy: $M = 0.19$, $SD = 0.22$; literature: $M = 0.09$, $SD = 0.19$). In each domain, self-perceived knowledge positively predicted overclaiming when we controlled for accuracy. Table 1 shows that this relationship emerged both for participants rating their familiarity with items and for participants rating their knowledge of the same items.

Next, we tested whether domain-specific self-perceived knowledge remained a significant positive predictor of overclaiming within that domain after controlling for self-perceived knowledge in other domains. As Table 1 shows, when we predicted overclaiming in a specific domain (e.g., biology) from self-perceived knowledge in all three domains simultaneously, we found that self-perceived knowledge in the relevant domain continued to significantly predict overclaiming (within-domain bs ranged from 0.05 to 0.12), all $ps < .05$. Of the 12 cross-domain correlations created by this analysis, only 2 proved to be significant at $p < .05$ (bs ranged from -0.04 to 0.065). Thus, general individual differences may account for some of the association between self-perceived knowledge and overclaiming. However, these results suggest that, beyond the effect of individual differences, there is a distinct positive association between self-perceived knowledge in a particular domain and the likelihood of overclaiming within that domain. Note that these results hold whether knowledge or familiarity is used as the measure of overclaiming.

Study 3

We hypothesized earlier that self-perceived knowledge prompts a top-down inference of familiarity that arises when reading and processing the items (Cricher & Dunning, 2009). An alternative explanation is that self-perceived knowledge increases the pretense of knowledge—a phenomenon driven by impression-management

Table 1. Results of Regression Analyses: Domain-Related Self-Perceived Knowledge (SPK) as a Predictor of Overclaiming Before and After Controlling for SPK in Other Domains

Domain	Familiarity		Knowledge	
	Domain SPK only	Controlling for SPK in other domains	Domain SPK only	Controlling for SPK in other domains
Biology	0.10***	0.10***	0.15***	0.12***
Philosophy	0.11***	0.09*	0.16***	0.10***
Literature	0.08***	0.05*	0.10***	0.06**

Note: The first two columns use overclaiming familiarity as the dependent variable; the last two columns use overclaiming knowledge as the dependent variable. The table presents unstandardized coefficients. We controlled for accuracy in all analyses.

* $p < .05$. ** $p < .01$. *** $p < .001$.

goals. Individuals with higher self-perceived knowledge might not experience bogus items as more familiar but may instead simply alter their ratings to portray themselves as knowledgeable.

To test this possibility, we modified our procedure by adding a warning manipulation, which in previous research has been shown to decrease overclaiming overall (Paulhus et al., 2003). Half of participants were warned that some of the items they would be shown did not exist. If individuals with high self-perceived knowledge are only feigning, this warning should serve as a counterincentive, as claiming nonexistent knowledge would be detrimental to the impression of expertise they might wish to put forth. Thus, the warning should reduce overclaiming and diminish the relationship between self-perceived knowledge and overclaiming. However, if people with greater self-perceived expertise truly experience the foils as more familiar, they should still be more likely to overclaim. We therefore predicted that warning participants that some items do not exist would reduce overclaiming overall but would not alter the relationship between self-perceived knowledge and overclaiming.

Method

Participants. Ninety-seven individuals (47 women, 50 men; mean age = 34 years, $SD = 11$) participated online through Amazon's Mechanical Turk. Participation was restricted to respondents within the United States. Two additional participants failed the attention check and were excluded from all analyses. We had determined that a sample size of 100 participants would provide an 80% probability of identifying a difference between conditions if the true effect size (d) was 0.5.

Procedure. After providing informed consent, participants were asked to rate their general knowledge in various domains (1 = *not knowledgeable at all*, 7 = *extremely knowledgeable*), including three domains of interest

(biology, philosophy, and history) and four filler domains (American literature, mathematics, computer programming, and 20th-century art), presented in random order.

Participants were then randomly assigned to one of two conditions: warning ($n = 49$) and no warning ($n = 48$). All participants read the same instructions explaining that they would see items in three different categories and would be asked to rate their familiarity with each item. These instructions were followed by either a warning or a control sentence, bolded and underlined: "Note that some of the items in this inventory do not exist [are very difficult]" (Paulhus et al., 2003). To check that participants read the warning, we presented them with an instructions comprehension check, which constituted the statement "Some of these items do not exist" (response options were "true," "false," and "I'm not sure") and two general-attention filler questions: "In this part of the study, you will see items from how many categories?" (response options were "1," "2," "3," "4," and "I'm not sure") and "You will be asked to rate your familiarity with different items" (response options were "true," "false," and "I'm not sure").

Participants then completed an overclaiming questionnaire for the domains of interest (i.e., biology, philosophy, and history; items borrowed from Paulhus et al., 2003). For each of these, they used a 7-point scale to rate their familiarity with 15 domain-related items, presented in random order, with each item on a separate page. Twelve of the 15 items were real, and 3 were foils. Finally, participants filled out a demographic questionnaire and provided information for payment.

Results

Two participants whose overclaiming rate was more than 3 SD s above the mean were excluded from all analyses. Participants in the warning condition were more likely to indicate that the statement "Some of these items do not exist" was true than those in the no-warning condition ($M = 81.3\%$ vs. $M = 6.4\%$), $\chi^2(1, N = 95) = 61.8, p < .001$,

which confirms that participants read the warning. Eighty-five percent of participants claimed at least some familiarity with at least one foil. To increase our power to detect any relationship between the warning condition and perceived knowledge, we used a linear mixed model, which included a fixed effect for the warning condition and fixed indicator variables for domain. We also included a random intercept for participant to control for within-subject variance in overclaiming and for the nonindependence of each participant's responses. As found previously (Paulhus et al., 2003), participants who were warned overclaimed less (history: $M = 0.07$, $SD = 0.12$; philosophy: $M = 0.21$, $SD = 0.22$; biology: $M = 0.17$, $SD = 0.12$) than those who were not warned (history: $M = 0.11$, $SD = 0.13$; philosophy: $M = 0.30$, $SD = 0.24$; biology: $M = 0.26$, $SD = 0.21$), $t(93) = -2.20$, $p = .030$, $d = 0.45$. This relationship was in the same direction but nonsignificant when accuracy was entered into the model, $t(93.55) = -1.5$, $p = .128$.

We then tested whether the relationship between self-perceived knowledge and overclaiming interacted with the warning condition. We added accuracy, self-perceived knowledge, and the interaction between self-perceived knowledge and warning to the model. As we found previously, self-perceived knowledge (history: $M = 3.98$, $SD = 1.47$; philosophy: $M = 3.08$, $SD = 1.54$; biology: $M = 3.34$, $SD = 1.46$) positively predicted overclaiming, $b = 0.05$, $t(262.57) = 7.44$, $p < .001$. Moreover, the effect of self-perceived knowledge did not interact with the warning condition, $b = -0.005$, $t(260.89) = -0.52$. Thus, warning people that some of the items do not exist reduced overclaiming as a whole but neither eliminated nor attenuated the positive relationship between self-perceived knowledge and overclaiming.

Study 4

In Study 4, we tested the causal role of self-perception by manipulating self-perceived knowledge to determine whether it influenced overclaiming. Manipulating self-perceived knowledge also allowed us to provide additional evidence that self-perceived knowledge influences overclaiming independently of genuine knowledge. We shifted participants' perceptions of their U.S. geography knowledge by giving them an easy or difficult U.S. geography quiz before the overclaiming questionnaire (method taken from Ehrlinger & Dunning, 2003).

Method

Participants. One hundred forty-eight individuals (55 women, 94 men; mean age = 28 years, $SD = 9$) participated online through Amazon's Mechanical Turk. Participation was restricted to respondents within the United States. One additional participant who participated twice

was excluded from all analyses. Pretesting showed that a sample size of 150 participants would provide an 80% probability of identifying a difference between conditions if the true effect size (d) was 0.5.

Procedure. After providing informed consent, participants were randomly assigned to one of three conditions: easy quiz ($n = 49$), difficult quiz ($n = 50$), or no quiz ($n = 49$). The quiz included questions about North American travel and geography. The questions in the easy condition were meant to give participants the sense that they were relatively well traveled and well versed in U.S. geography because these participants were likely to answer "yes" (e.g., "Have you ever been to New York? Yes/No") or to choose a high-numbered answer (e.g., "How many state capitals can you name?" Responses were "1–2," "3–4," and "5 or more"). Questions in the difficult condition were similar but meant to induce the opposite feeling because participants were likely to answer "no" (e.g., "Have you ever been to North Dakota? Y/N") or to choose a low-numbered answer (e.g., "How many state capitals can you name?" Responses were "1–10," "11–30," and "31 or more"). As a manipulation check, all participants then rated their knowledge of U.S. geography (1 = *my geography knowledge is very weak*, 10 = *my geography knowledge is very strong*).

Participants then completed an overclaiming questionnaire in which they were presented with 15 randomly ordered places in the U.S. Twelve of these places were real (e.g., *Philadelphia, Pennsylvania; the National Mall; Acadia National Park*) and 3 were foils (*Monroe, Montana; Lake Othello, Wisconsin; Cashmere, Oregon*). Participants were asked to rate their familiarity with each (0 = *never heard of it*, 6 = *very familiar*). Finally, participants filled out a demographic questionnaire and provided information for payment.³

Results

Compared with participants in the difficult-quiz condition, participants in the easy-quiz condition reported having visited more of the places about which they were asked ($M = 2.61$, $SD = 1.56$, vs. $M = 0.94$, $SD = 1.17$), $t(97) = 6.0$, $p < .001$, and they chose higher-numbered answers to geography knowledge questions ($M = 2.32$, $SD = 0.38$, vs. $M = 1.51$, $SD = 0.37$), $t(97) = 10.8$, $p < .001$. Thus, as expected, participants who completed the easy quiz rated their knowledge of U.S. geography higher ($M = 6.37$, $SD = 2.28$) than did those who completed the difficult quiz ($M = 5.40$, $SD = 2.30$), $t(97) = 2.10$, $p = .038$, $d = 0.42$. The ratings of the participants who completed no quiz fell in between the ratings from participants in the difficult- and easy-quiz conditions ($M = 5.9$, $SD = 2.3$) but did not differ significantly from either, $ts < 1.07$.

Forty-three percent of participants claimed at least some familiarity with at least one foil. To test whether manipulating self-perceived knowledge influenced overclaiming, we entered accuracy and quiz condition (easy, difficult, none) into a regression model to predict overclaiming in U.S. geography. We found a significant effect of condition, $F(2, 144) = 6.73$, $p = .002$, $\eta^2 = .09$. Participants in the easy-quiz condition overclaimed more ($M = 0.16$, $SD = 0.20$) than did those in the difficult-quiz condition ($M = 0.05$, $SD = 0.10$), $t(96) = 2.78$, $p = .007$, $d = 0.57$, and those in the no-quiz condition ($M = 0.07$, $SD = 0.13$), $t(95) = 2.92$, $p = .004$, $d = 0.60$. Participants in the difficult- and no-quiz conditions did not differ significantly, $t(96) = 0.10$. Thus, participants induced to feel more knowledgeable about North American geography were more likely to claim familiarity with nonexistent places in the United States, which is consistent with a causal account of the role of self-perceived knowledge in overclaiming.

Discussion

Our work suggests that the seemingly straightforward task of judging one's knowledge may not be so simple, particularly for individuals who believe they have a relatively high level of knowledge to begin with. In Study 1a, we found that self-perceived knowledge of personal finance positively predicted claiming knowledge of nonexistent domain-related terms. The results of Study 1b indicated that this effect was not driven by genuine domain knowledge; self-perceived knowledge remained a significant predictor of overclaiming when we controlled for genuine knowledge of personal finance. In Study 2, we found that self-perceived knowledge had domain-specific effects on overclaiming. Study 3 revealed that warning participants that some of the items they would encounter were bogus did not alter the relationship between self-perceived knowledge and overclaiming, suggesting that self-perceptions were prompting mistaken but honest claims of knowledge. Finally, Study 4 demonstrated a causal influence of self-perceived knowledge on overclaiming. Experimentally enhancing self-perceived knowledge in geography increased overclaiming knowledge of nonexistent places. These results converge to demonstrate that the more individuals believe they know about a domain, the more likely they are to claim knowledge in that domain that they cannot possibly possess.

These findings add to the body of work on how individuals assess their own knowledge. Our results suggest that people do not simply consult a "mental index" that catalogues their knowledge but instead draw on preexisting self-perceptions of knowledge to make inferences about what they should or probably do know (e.g., Koriati, 1995). For domains of high self-perceived

expertise, these inferences may induce a sense of familiarity with terms that sound plausibly real but are not.

An alternative explanation, which does not exclude the first, is that greater self-perceived knowledge leads people to be more motivated to search their memories for relevant knowledge. Individuals who perceive themselves as more knowledgeable in biology, for example, may be more motivated to construct a plausible notion of what "bio-sexual" means. Independent of differences in people's initial sense of familiarity, high self-perceived domain expertise may lead to a confirmation-biased memory search (e.g., Kunda, 1990) for some way that the nonexistent term might indeed be familiar.

It is easy to imagine how a tendency to overclaim, especially in self-perceived experts, could have adverse consequences. Self-perceived experts may give bad counsel when they should give none. For instance, an individual considering a financial decision may consult a friend who expresses confidence in her financial knowledge (Zarnoth & Snizek, 1997). That friend may provide inappropriate advice because she fails to recognize her insufficient familiarity with the question. Further, a tendency to overclaim may discourage individuals from educating themselves in precisely those areas in which they consider themselves knowledgeable and that may be important to them (Metcalfe, 2009). In other words, overclaiming may hinder people from truly achieving a valuable level of genuine knowledge.

Future research should investigate these and other potential consequences of overclaiming. Another area to explore is the relationship between overclaiming and genuine expertise. In Study 1b, self-perceived knowledge predicted overclaiming over and above genuine knowledge, which suggests that the observed relationship between self-perceived knowledge and overclaiming is not the result of a confound with genuine knowledge. However, genuine knowledge also emerged as an independent predictor of overclaiming, albeit a weaker one than self-perceived knowledge. Future research should explore this relationship. Potentially, individuals with more domain knowledge overclaim more because they have a larger knowledge base from which to draw when assessing familiarity with plausible-sounding foils in that domain. Education may unwittingly aid and abet that phenomenon. Continuing to explore when and why individuals overclaim may prove important in battling that great menace—not ignorance, but the illusion of knowledge.

Author Contributions

S. Atir developed the study concept under the supervision of D. Dunning. All authors contributed to the study design. Data collection and analysis were performed by S. Atir. All authors contributed to the interpretation of the data. S. Atir drafted the manuscript, and D. Dunning and E. Rosenzweig provided

critical revisions. All authors approved the final version of the manuscript for submission.

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Open Practices



All data and the materials used in Studies 1 and 4 have been made publicly available via Open Science Framework and can be accessed at <https://osf.io/2m8cu>. The materials used in Studies 2 and 3 were taken from the Over Claiming Questionnaire (specifically, life sciences, philosophy, books and poems, and historical names and events). These materials have not been posted in an open-access repository so as not to compromise future use of the measure. More information about these materials is available at <http://neuron4.psych.ubc.ca/~dpaulhus/research/index.htm>. The complete Open Practices Disclosure for this article can be found at <http://pss.sagepub.com/content/by/supplemental-data>. This article has received the badge for Open Data. More information about the Open Practices badges can be found at <https://osf.io/tvyxz/wiki/1.%20View%20the%20Badges/> and <http://pss.sagepub.com/content/25/1/3.full>.

Notes

1. Paulhus et al. (2003) recommended using bias (false alarm rate + hit rate) controlling for accuracy (false alarm rate – hit rate). We used the false alarm rate in place of bias, because hit rate is related to self-perceived knowledge and its inclusion in the dependent variable might inflate our results. We performed the analyses using the recommended method as well, and all results were essentially unchanged.
2. An additional 27 participants completed a version of the study that did not include the perceived knowledge questions. They were not included in the analyses.
3. Participants then completed an unrelated study not discussed here.

References

- Alicke, M. D., & Govorun, O. (2005). The better-than-average effect. In M. D. Alicke, D. Dunning, & J. Kruger (Eds.), *The self in social judgment* (pp. 85–106). New York, NY: Psychology Press.
- Bishop, G. F., Oldendick, R. W., Tuchfarber, A. J., & Bennett, S. E. (1980). Pseudo-opinions on public affairs. *Public Opinion Quarterly*, 44, 198–209.
- Boorstin, D. J. (1987). *Hidden history: Exploring our secret past*. New York: Harper and Row.
- Bradley, J. V. (1981). Overconfidence in ignorant experts. *Bulletin of the Psychonomic Society*, 17, 82–84. doi:10.3758/BF03333674
- Costermans, J., Lories, G., & Ansay, C. (1992). Confidence level and feeling of knowing in question answering: The weight of inferential processes. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 18, 142–150. doi:10.1037/0278-7393.18.1.142
- Critcher, C. R., & Dunning, D. (2009). How chronic self-views influence (and mislead) self-assessments of task performance: Self-views shape bottom-up experiences with the task. *Journal of Personality and Social Psychology*, 97, 931–945. doi:10.1037/a0017452
- Dunning, D. (2011). The Dunning-Kruger effect: On being ignorant of one's own ignorance. In J. Olson & M. P. Zanna (Eds.), *Advances in experimental social psychology* (Vol. 44, pp. 247–296). New York, NY: Elsevier.
- Dunning, D., Heath, C., & Suls, J. M. (2004). Flawed self-assessment: Implications for health, education, and the workplace. *Psychological Science in the Public Interest*, 5, 69–106. doi:10.1111/j.1529-1006.2004.00018.x
- Ehrlinger, J., & Dunning, D. (2003). How chronic self-views influence (and potentially mislead) estimates of performance. *Journal of Personality and Social Psychology*, 84, 5–17. doi:10.1037/0022-3514.84.1.5
- FINRA Investor Education Foundation. (2009). *National Financial Capability Study: 2009 national survey questionnaire*. Retrieved from http://www.usfinancialcapability.org/downloads/NFCS_2009_Natl_Qre_Eng.pdf
- FINRA Investor Education Foundation. (2013). *Financial capability in the United States: Report of findings from the 2012 National Financial Capability Study*. Retrieved from http://www.usfinancialcapability.org/downloads/NFCS_2012_Report_Natl_Findings.pdf
- Fischhoff, B., Slovic, P., & Lichtenstein, S. (1977). Knowing with certainty: The appropriateness of extreme confidence. *Journal of Experimental Psychology: Human Perception and Performance*, 3, 552–564. doi:10.1037/0096-1523.3.4.552
- Hart, J. T. (1965). Memory and the feeling-of-knowing experience. *Journal of Educational Psychology*, 56, 208–216. doi:10.1037/h0022263
- Koriat, A. (1995). Dissociating knowing and the feeling of knowing: Further evidence for the accessibility model. *Journal of Experimental Psychology: General*, 124, 311–333. doi:10.1037/0096-3445.124.3.311
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, 77, 1121–1134. doi:10.1037/0022-3514.77.6.1121
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108, 480–498. doi:10.1037/0033-2909.108.3.480
- Lichtenstein, S., Fischhoff, B., & Phillips, L. D. (1982). Calibration of probabilities: The state of the art to 1980. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases* (pp. 306–334). Cambridge, England: Cambridge University Press.

- Lusardi, A., & Mitchell, O. S. (2011). Financial literacy and planning: Implications for retirement wellbeing. In O. S. Mitchell & A. Lusardi (Eds.), *Financial literacy: Implications for retirement security and the financial marketplace* (pp. 17–39). Oxford, England: Oxford University Press.
- Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52, 5–44. doi:10.1257/jel.52.1.5
- Metcalf, J. (2009). Metacognitive judgments and control of study. *Current Directions in Psychological Science*, 18, 159–163. doi:10.1111/j.1467-8721.2009.01628.x
- Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. *Psychological Review*, 115, 502–517. doi:10.1037/0033-295X.115.2.502
- Nelson, T. O. (1984). A comparison of current measures of the accuracy of feeling-of-knowing predictions. *Psychological Bulletin*, 95, 109–133. doi:10.1037/0033-2909.95.1.109
- Nelson, T. O., & Narens, L. (1990). Metamemory: A theoretical framework and new findings. In G. H. Bower (Ed.), *The psychology of learning and motivation* (Vol. 26, pp. 125–141). New York, NY: Academic Press.
- Paulhus, D. L., Harms, P. D., Bruce, M. N., & Lysy, D. C. (2003). The over-claiming technique: Measuring self-enhancement independent of ability. *Journal of Personality and Social Psychology*, 84, 890–904. doi:10.1037/0022-3514.84.4.890
- Phillips, D. L., & Clancy, K. J. (1972). Some effects of “social desirability” in survey studies. *American Journal of Sociology*, 77, 921–940. doi:10.1086/225231
- Reder, L. M., & Ritter, F. E. (1992). What determines initial feeling of knowing? Familiarity with question terms, not with the answer. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 18, 435–451. doi:10.1037/0278-7393.18.3.435
- Rozenblit, L., & Keil, F. C. (2002). The misunderstood limits of folk science: An illusion of explanatory depth. *Cognitive Science*, 26, 521–562. doi:10.1016/S0364-0213(02)00073-3
- Yaniv, I., & Meyer, D. E. (1987). Activation and metacognition of inaccessible stored information: Potential bases for incubation effects in problem solving. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 13, 187–205. doi:10.1037/0278-7393.13.2.187
- Zarnoth, P., & Snizek, J. A. (1997). The social influence of confidence in group decision making. *Journal of Experimental Social Psychology*, 33, 345–366. doi:10.1006/jesp.1997.1326