Original Article

Paradoxical Knowing

A Shortcut to Knowledge and Its Antisocial Correlates

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Abstract: To avoid uncertainty, people may take a shortcut to knowledge. They recognize something as unknowable, but claim to know it nonetheless (e.g., whether I will find true love is unknowable, but I know I will). In Study-set 1, such paradoxical knowledge was common and spanned across valence and content. Study-set 2 revealed an antecedent of paradoxical knowing. High (vs. low) goal-incentives incited paradoxical knowledge – participants felt certain about attaining important future life goals despite acknowledging such goal attainment as unknowable. As a shortcut to knowledge, however, paradoxical knowing may have its costs. In Study-set 3, paradoxical knowing related to aggression (fight), determined ignorance (flight), and a willingness to join and adhere to extreme groups (befriend).

Keywords: paradoxical knowing, shortcut to knowledge, doubt, antisocial, goal attainment

From scientific achievements to explorers casting off into the unknown, people are motivated to make the unknowable knowable. Acquiring knowledge is laborious, however, and this difficulty, combined with people's aversion toward uncertainty (e.g., Hofstede, 1991; Kruglanski & Orehek, 2012), may lead people to take psychological shortcuts to knowledge. One such shortcut, which we term *paradoxical knowing*, entails recognizing a feature of the world as unknowable but claiming to know it nonetheless. For instance, someone may recognize that whether God exists or not is unknowable, but claim to know that God exists anyway. Or someone may recognize that the future is unknowable, but feel certain that good things are in store nonetheless.

Already in the ancient world, paradoxical knowing existed in the form of oracles. The oracles, by speaking to the Gods, "knew" what was unknowable to humankind. For instance, oracles claimed to know what would happen in the future and claimed to know others' intentions and desires (Burkert, 1985). And, in line with paradoxical knowing reducing uncertainty, "knowledge" held by oracles was attractive to people plagued by doubt (Broad, 2007).

In the modern world, paradoxical knowing may be reflected in endorsing conspiracy theories (Douglas, Sutton, & Cichocka, 2017; Lantian, Muller, Nurra, & Douglas, 2017). People exhibit paradoxical knowing when they recognize a conspiracy theory as unknowable given its secrecy and concealed nature, but nonetheless claim to be certain of this theory. More generally, people's creation of facts in their mind that disregard reality (alternative facts, Strong, 2017) may also qualify as paradoxical knowing. And again, in line with paradoxical knowing artificially reducing uncertainty, adopting conspiracy theories incites subjective power (Uscinski & Parent, 2014), and alternative facts form self-serving narratives that heighten political power (Barrera Rodriguez, Guriev, Henry, & Zhuravskaya, 2018).

Paradoxical knowing is not specific to the political domain, however. People's desire for knowledge exists across domains (e.g., professional, interpersonal, health). For instance, an employee may claim to know that they will eventually become CEO despite recognizing this as unknowable. Or a forlorn lover may claim to know that their partner will eventually return despite recognizing a lack of evidence.

Notably, paradoxical knowledge is not actual knowledge or objective truth (e.g., DeRose, 2009; Lee, 2010; Moore, 1925; Wittgenstein, 1969). Instead, paradoxical knowing entails people's subjective claim to know something that they subjectively judge as unknowable or unsubstantiated. We examine subjective epistemological judgments because we are interested in how individuals situate knowledge in their mind, and further, because the objective knowability of a claim is difficult to quantify (if at all quantifiable, see fallibilism; Hetherington, 2017).

Paradoxical Knowing and Its Components

Knowing

The first component of paradoxical knowing is subjective knowledge. Subjective knowledge – claiming to know, holding complete or a high degree of certainty, or feeling sure of something – involves holding minimal or a complete lack of doubt (e.g., Burton, 2008). Aside from being the first

component of paradoxical knowledge, subjective knowledge is also entailed in overconfidence (e.g., Fischhoff, Slovic, & Lichtenstein, 1977), attitude certainty (see Petty & Krosnick, 1995), and mental rigidity and assertiveness (Altemeyer, 1981, 2002; Altemeyer & Hunsberger, 1992). Further, moral certainty – experiencing moral opinions as fundamental truths – involves holding subjective knowledge (Skitka, 2010; Skitka, Bauman, & Sargis, 2005). And, subjective knowledge is not necessarily positive; depressive certainty involves feeling certain that negative events will occur (Andersen, 1990).

Importantly, subjective knowledge is distinct from believing – subjective knowledge involves greater certainty than believing. Researchers have argued that beliefs convey less confidence than knowing (DeRose, 2009, p. 186) and are founded in perceived probabilities and expectancies (Bandura, 1977; Mischel, 1973). The difference between subjective knowledge and believing is what differentiates paradoxical knowing from another phenomenon – believing the unknowable (faith). Consider religious fundamentalism and religious faith. Religious fundamentalism involves holding greater certainty about something unknowable (paradoxical knowing: I know God exists) than religious faith does (believing the unknowable: I believe God exists; Boyd, 2013; Fowler, 1981; Miller-Perrin & Mancuso, 2015). Indeed, religious fundamentalists hold cognitive certainty (Hill & Williamson, 2005) and a closed belief system (Kirkpatrick, Hood, & Hartz, 1991; Rokeach, 1960).

Paradoxical knowing capturing greater certainty than believing the unknowable in part differentiates paradoxical knowing from illusory beliefs, for instance, illusory control (e.g., expecting dice to be in one's favor; Crocker, 1982; Fleming & Darley, 1986; Langer, 1975; Taylor & Brown, 1988), overclaiming (overestimating one's knowledge based on expertise; Atir, Rosenzweig, & Dunning, 2015), and illusory superiority (judging oneself as more skilled the less skilled one actually is; Kruger & Dunning, 1999). Unlike paradoxical knowing, illusions are not necessarily held with a high degree of certainty – illusions are defined as responsive to utility information (such as negative feedback; Taylor, Collins, Skokan, & Aspinwall, 1989). And illusions tend to be positive, which paradoxical knowing is not necessarily (see Study 1.1). Most importantly, illusions capture mistaken beliefs that people are *unaware* of, whereas paradoxical knowing captures people's subjective knowledge of something they *recognize* as unknowable.

The Unknowable

The second component of paradoxical knowing is perceiving one's subjective knowledge as unknowable – unsubstantiated or lacking evidence. People are likely to recognize things that refute temporal laws (one cannot *know* the future) and laws of social perception (one cannot *know* other people's thoughts) as unknowable. Ideologies and absolute truths (truths we will never know; James, 1907) are also likely to be judged as unknowable. More generally, propositions in which alternative scenarios exist (e.g., numerous possible future outcomes, numerous possible causes) should be perceived as unknowable (Vogel, 1990). Finally, moral truths may be judged as unknowable (e.g., whether abortion is right or wrong). If true, then moral convictions may qualify as paradoxical knowledge in the specific domain of morality because, as noted earlier, moral convictions are held with certainty (Skitka, 2010).

Researchers have examined people's judgments about the unknown, for instance, people's judgments about the future (forecasting; Mellers et al., 2015; Tetlock & Gardner, 2015), and endorsement of superstitions and extrasensory perception (magical thinking; see Subbotsky, 2010). Possibly, then, forecasting and magical thinking – when held with certainty and recognized as unknowable – may qualify as paradoxical knowledge.

The Paradox

Combining the two components of paradoxical knowing results in an epistemological paradox – feeling certain about something one recognizes as unknowable. This paradox has been alluded to by the philosopher Ludwig Wittgenstein (1969). Wittgenstein noted the importance of embracing doubt when deciding whether or not to adopt a proposition as knowledge. Paradoxical knowing fails to heed Wittgenstein's advice. It involves adopting certainty (abandoning doubt) toward a proposition that one acknowledges as unknowable.

Other psychological constructs also capture paradox. For instance, high self-efficacy (Bandura, 1977) not backed by past performance entails a "paradox" between performance expectations and actual performance. Further paradoxes include cognitive dissonance (Festinger, 1962), unstable self-esteem (e.g., Kernis & Goldman, 2003), and acquiescence to superstitious beliefs and intuitions (Risen, 2016). These paradoxes entail ambivalence – holding two generally opposing feelings or attitudes at the same time (e.g., Reich & Wheeler, 2016; Thompson, Zanna, & Griffin, 1995). Paradoxical knowing captures a specific type of ambivalence – knowledge ambivalence – ambivalence between claiming to know something and perceiving this thing as unknowable in the world.

The epistemological paradox captured by paradoxical knowing differentiates paradoxical knowing from a different mode of knowing, one that also involves certainty – concordant knowing. Concordant knowing entails claiming to know something that one perceives as *knowable* ("I know the knowable"). This structure of knowledge is not paradoxical and is thus justified (at least in the mind of the individual; Wittgenstein, 1969).

The Present Research

In Study-set 1, we examined the prevalence, valence, and content of paradoxical knowing. Further, we differentiated paradoxical knowing from believing the unknowable (faith) and concordant knowing. Study-set 2 examined whether high goal-incentives – holding pressing, important goals – is an antecedent of paradoxical knowing. Specifically, we examined whether high goal-incentives lead people to feel certain of future goal attainment despite recognizing such attainment as unknowable. In Study-set 3, we examined whether paradoxical knowing predicts anti-sociality and established the convergent, discriminant, and unique predictive validity of paradoxical knowing.

Study-Set 1: Exploring Paradoxical Knowing

Study-set 1 (k = 3, N = 466) examined the prevalence, valence, and content of paradoxical knowing. Supporting the potential prevalence of paradoxical knowing, people desire certainty (e.g., Hofstede, 1991), assume mental representations as true by default (prima facie; Gilbert, 1991), and retain mental models even when acknowledging these models as false (Johnson & Seifert, 1994). We also examined whether paradoxical knowing differs from believing the unknowable (Study 1.2) and concordant knowing (Study 1.3).

Study 1.1

We asked participants to report a paradoxical knowledge they hold and examined its valence and content.

Methods

Participants

We recruited 164 participants (90 female; age: M = 35.37; SD = 12.15) on Mechanical Turk (MTurk). Two participants were excluded for failing an attention check.

Materials and Procedure

We first described paradoxical knowing: "Sometimes in life there are things we know, even though one cannot actually know them," and provided broad examples (claiming to know the future, claiming to know others' thoughts). Second, we described the difference between believing and subjective knowledge; we told participants that knowing entails certainty while believing includes doubt and provided examples (see Electronic Supplementary Material, ESM 1A for full materials). Participants were then asked to report a paradoxical knowledge they hold.[1]

Attention Check

Participants completed an attention check (see ESM 1B). This item was included in all the reported studies.

Content Analysis: Prevalence

Participants' responses were coded as (1) paradoxical knowledge, (2) explicitly claiming to not hold paradoxical knowledge, (3) belief in the unknowable, or (4) irrelevant/random responding (see ESM 1C).

Content Analysis: Valence

The valence of participants' paradoxical knowledge was coded as something commonly considered to be negative, neutral, or positive. Participants did not have to explicitly say it was positive or negative (ESM 1C).

Content Analysis: Content

Participants' paradoxical knowledge was sorted into seven content categories:[2]

(1) *Illness, health, life, and death* (e.g., "Recently a doctor has wanted to do tests on my daughter because there is a small possibility something is wrong with her. I KNOW there is nothing wrong and am prolonging the tests"),
(2) *Interpersonal life and relationships* (e.g., "I know that one day I will marry a beautiful girl who I love. Haven't met her yet, but I have no doubt that I will"),
(3) *Achievement, academics, professional life, finances, housing, travel, and hobbies* (e.g., "I know I'll be uber-successful one day. I just feel it"),
(4) *Religion* (e.g., "I have no doubt that there is a God and that he is the creator of all things"),
(5) *Politics and society* (e.g., "I know that Donald Trump will not complete his 4-year term as president"),
(6) *Metaphysical phenomena and paranormal activity* (e.g., "I know that we are not alone in the Universe"), and
(7) *Statistical events* (e.g., "I know the Astros will make it to the world series this year but will choke like all Houston teams do and lose"). See ESM 1C.

Results

Frequency

Almost all participants, 92.6%, reported paradoxical knowledge, 0.6% reported not holding paradoxical knowledge,

[1] The prompts of Study 1.1 may have communicated to participants that it is actually possible to know the unknowable (i.e., that clairvoyance exists). This was not our intention and was addressed in Study 1.3.
[2] All examples of paradoxical knowledge presented here are participants' actual responses.

Table 1. Study-set 1: Content analyses of Studies 1.1–1.3

	Paradoxical knowledge (Study 1.1)	Paradoxical knowledge (Study 1.2)	Belief in the unknowable (Study 1.2)	Paradoxical knowledge (Study 1.3)	Concordant knowledge (Study 1.3)
	n = 150	*n* = 80	*n* = 90	*n* = 120	*n* = 118
	MTurk	MTurk		Undergraduate students	
Valence					
Inter-rater reliability	*r* = .85	*r* = .80	*r* = .81	*r* = .87	*r* = .86
Negative	19.3%	26.3%	10.0%	7.5%	9.3%
Neutral	30.7%	30.0%	38.9%	40.8%	50.0%
Positive	50.0%	43.8%	51.1%	51.7%	40.7%
Significance test (chi-square)	–	$\chi^2(2, N = 170) = 7.78, p = .020$		$\chi^2(2, N = 238) = 2.89, p = .236$	
Content category					
Inter-rater reliability	κ = .90	κ = .84	κ = .82	κ = .89	κ = .76
Illness, health, death, and life	14.0%	11.3%	11.1%	8.3%	6.8%
Interpersonal life and relationships	33.3%	42.5%	24.4%	41.7%	29.7%
Achievement, academics, professional life, finances, housing, travel, and hobbies.	19.3%	22.5%	11.1%	15.8%	20.3%
Religion	13.3%	5.0%	22.2%	7.5%	3.4%
Politics and society	3.3%	5.0%	4.4%	4.2%	3.4%
Metaphysical phenomena and paranormal activity	7.3%	7.5%	22.2%	14.2%	9.3%
Statistical events (e.g., weather, gambling)	9.3%	6.3%	4.4%	3.3%	6.8%
Self and identity	–	–	–	5.0%	20.3%
Significance test (chi-square)	–	$\chi^2(6, N = 170) = 22.72, p = .001$		$\chi^2(7, N = 238) = 18.89, p = .009$	

Notes. κ = Cohen's Kappa. *n* refers to the number of people who responded with paradoxical knowledge, belief in the unknowable, and concordant knowledge in the paradoxical knowing, believing the unknowable, and concordant knowing conditions, respectively.

3.7% reported a belief in the unknowable ("I believe"), and 3.1% of responses were irrelevant/random. The two raters resolved six responses by discussion.

Valence

Participants' paradoxical knowledge spanned across valence and leaned positive (Table 1).

Content

Participants' paradoxical knowledge spanned across the seven content categories, but predominantly fell under the categories of (1) *Interpersonal life and relationships* and (2) *Achievement, academics, professional life, finances, housing, travel, and hobbies* (Table 1).

Study 1.2

We examined whether paradoxical knowing and believing the unknowable differ in valence and content. We also tested whether, as hypothesized, people are more certain in their paradoxical knowledge than in their beliefs in the unknowable.

Methods

Participants

Sample size was based on 90% power to detect a medium effect size (Cohen's $d = .50$; ~172 participants). A total of 193 participants (MTurk; 126 female; $M_{age} = 33.65$; $SD_{age} = 11.54$) completed the study.[3] Thirteen participants were excluded for failing the attention check or taking the study twice. The study entailed a between-subjects design (paradoxical knowing vs. believing the unknowable) with certainty as the dependent variable.

Materials and Procedure

To elicit paradoxical knowledge, we used the prompt of Study 1.1 ("Sometimes in life there are things we know, even though one cannot actually know them"). However, because we later assessed participants' certainty regarding their paradoxical knowledge versus belief in the unknowable, we

[3] No differences in attrition were found depending on condition; 36 participants in each condition failed to complete the study.

removed the explicit description of knowing entailing more certainty than believing. Participants in the believing the unknowable condition saw the identical prompt as in the paradoxical knowing condition, except that the first "know" in the prompt was changed to "believe" ("Sometimes in life there are things we *believe*"; see ESM 1D for materials). Finally, we assessed participants' certainty regarding their response: "I am certain that it is correct," "There is no doubt about it being accurate – it is definitely right," and "There is a possibility that it is wrong" (reverse-coded). Likert scale: 1 = *Not at all agree* to 7 = *Strongly agree*.

Content Analysis

We conducted the content analysis from Study 1.1 on participants' expressed paradoxical knowledge and belief in the unknowable.

Results

Prevalence

Paradoxical Knowing Condition

Again, almost all participants in the paradoxical knowing condition reported paradoxical knowledge (92.0%; n = 80), 2.3% reported not holding paradoxical knowledge, 0% reported a belief in the unknowable, and 5.7% of responses were irrelevant/random. The raters resolved five responses by discussion.[4]

Believing the Unknowable Condition

Almost all participants in the believing the unknowable condition reported a belief in the unknowable (98.9%; n = 90), 0% reported not holding a belief in the unknowable, 0% reported paradoxical knowledge ("I know"), and 1.1% of responses were irrelevant/random. One response was resolved by discussion.

Valence

The valence of paradoxical knowledge was similar to Study 1.1. Beliefs in the unknowable were more positive than paradoxical knowledge (Table 1).

Content

Unlike paradoxical knowing, believing the unknowable tended to fall under *Religion* and *Metaphysical phenomena and paranormal activity* (Table 1).

Certainty

As predicted, participants in the paradoxical knowing condition exhibited more certainty regarding their specified knowledge, M = 5.58, SD = 1.32, than participants in the believing the unknowable condition did regarding their specified belief, M = 5.01, SD = 1.59, α = .78, $t(178)$ = 2.61, p = .010, d = .40. This effect remained when controlling for valence and content, $F(1, 161)$ = 10.48, p = .001, η_p^2 = .06.

Study 1.3

We next examined whether paradoxical knowing and concordant knowing differ in terms of valence, content, and epistemological paradox. Study 1.3 also addressed one limitation of Studies 1.1 and 1.2. MTurk samples have high attrition rates (overall attrition in Study 1.1: 40% and Study 1.2: 35%). Possibly, participants who did not hold paradoxical knowledge exited our studies, thus inflating the prevalence of paradoxical knowing (Zhou & Fishbach, 2016). Thus, Study 1.3 was conducted with undergraduate students.

Methods

Participants

Sample size was limited to students taking a specific class at a northeastern university in the U.S. (149 participants; 92 female; M_{age} = 18.96; SD_{age} = 1.58). Fifteen participants responded to neither the paradoxical nor concordant knowing prompt. Of the total participants, 18 did not respond to the paradoxical knowing prompt, and 25 did not respond to the concordant knowing prompt. Six participants were excluded for responding identically to the two prompts. The study entailed a within-subjects design (paradoxical knowing and concordant knowing) with epistemological paradox as the dependent variable.

Materials and Procedure

We first elicited participants' paradoxical knowledge via a shortened version of the Study 1.2 prompt.[5] We also changed "something you know" to "something you *feel* like you know." That is, we asked: "There are things we *feel* like we know even though these things are actually unknowable." We did so because the prompts in Studies 1.1 and 1.2 may have communicated that it is actually possible to know the unknowable, which was not our intention. To elicit participants' concordant knowledge, we replaced "unknowable" in the paradoxical knowing prompt with "knowable" (ESM 1E).

Thereafter, we assessed participants' certainty and the perceived unknowability of their reported paradoxical and concordant knowledges. Certainty: "I feel certain that it is true," "I'm very confident that it is correct," and "I feel sure that I am right about it." Unknowability: "Technically it may be unknowable," "It may actually be unknowable," and "It cannot technically be proven." Likert scale: 1 = *Not at all agree* to 7 = *Strongly agree*.

[4] Two participants were not included in these analyses because they left the paradoxical knowing response text-box blank.

[5] Randomizing the order of condition was not possible due to the software used. Paradoxical knowing was assessed before concordant knowing.

Content Analysis

Some participants' concordant knowledge could not be sorted into a content category because it referred to the self (20%; e.g., "I know that I am a selfish person"). We thus added a further category: *Self and identity*.

Results

Prevalence

Attrition was lower than in the MTurk samples (~15%). Of participants who responded to the paradoxical knowing prompt (n = 125), 96.0% reported paradoxical knowledge, 0.8% reported holding no paradoxical knowledge, 2.4% reported a belief in the unknowable, and 0.8% of responses were irrelevant/random. All participants who responded to the concordant knowing prompt (n = 118) reported concordant knowledge.

Valence

Paradoxical knowledge and concordant knowledge did not differ in valence. The paradoxical knowledge of undergraduate students appeared more positive than that of MTurk participants (Table 1).

Content

The content of paradoxical knowing and concordant knowing differed. Concordant knowing contained comparatively more *Self and identity* content (Table 1).

Epistemological Paradox

Participants who reported being certain in their knowledge despite reporting their knowledge as unknowable were scored as holding a high degree of epistemological paradox. To quantify this paradox, we applied analysis methods used to calculate ambivalence scores: (certainty + unknowability)/2 − absolute value of (certainty − unknowability) (Reich & Wheeler, 2016; Thompson et al., 1995). Participants exhibited greater epistemological paradox with regard to their paradoxical knowledge, M = 3.92, SD = 1.99, than their concordant knowledge, M = 1.18, SD = 2.48, $t(108) = 9.19$, $p < .001$, $d = 0.88$. This effect remained when controlling for valence and content, $F(1, 208) = 65.94$, $p < .001$.[6]

Discussion: Study-Set 1

In Study-set 1, paradoxical knowledge was prevalent and spanned across valence and contents. Further, Studies 1.2 and 1.3 confirmed that paradoxical knowing is distinct from believing the unknowable and concordant knowing. In Study 1.2, participants expressed more certainty in their paradoxical knowledge than in their beliefs in the unknowable. Beliefs in the unknowable were also more positive than paradoxical knowledge and loaded onto religious and metaphysical, supernatural content. These results align with believing the unknowable, unlike paradoxical knowing, capturing religious faith (e.g., Hill & Williamson, 2005), hope (Oettingen & Chromik, 2017), and potentially magical thinking (Subbotsky, 2010).

In Study 1.3, participants exhibited a higher degree of epistemological paradox regarding paradoxical knowledge than concordant knowledge. Further, the content of concordant knowledge loaded onto *Self and identity* more so than paradoxical knowledge. We conclude that paradoxical knowing is distinct from believing the unknowable and concordant knowing.

Study-Set 2: Antecedents of Paradoxical Knowing

In Study-set 2 (k = 2, N = 307), we examined a potential antecedent of paradoxical knowing. In line with the proposed function of paradoxical knowing – reducing uncertainty – individuals may adopt paradoxical knowledge to eliminate the uncertainty surrounding goal attainment. Specifically, people may claim to be certain that they will attain important goals in the future despite recognizing such goal attainment as unknowable.

Study 2.1

We first prompted participants to recognize the unknowability of goal attainment (the second component of paradoxical knowing). Thereafter, participants imagined holding three different goals (e.g., finding a romantic partner) which, depending on condition (between-subjects), were each described as the most important goal (high goal-incentive condition) or *not* the most important goal in their life (low goal-incentive condition). Participants then reported how certain they felt about achieving these goals (paradoxical knowledge; e.g., "I feel certain I will find a romantic partner"). To ensure that goal-incentives specifically heighten paradoxical knowing, we controlled for participants' belief in goal attainment (e.g., "I feel that it is likely that I will find a romantic partner, but I have some doubts"). Further, to ensure that manipulating goal-incentives did not impact the unknowability of goal attainment, we assessed and controlled for participants' unknowability judgments regarding each goal (e.g., "It is technically unknowable whether I will find a romantic partner").

[6] We excluded participants who did not respond with paradoxical knowledge to the paradoxical knowing prompt and concordant knowledge to the concordant knowing prompt. Including these participants did not change the results.

Methods

Participants

We needed to recruit 210 participants to observe a moderate effect (95% power). We recruited 250 participants (MTurk; 114 female; M_{age} = 36.48; SD_{age} = 11.40) to account for participant exclusion. Eighty-one participants were excluded for failing attention checks. Attrition did not differ depending on condition (also true of Study 2.2; see ESM 1F). The experiment entailed a between-subjects design (high vs. low goal-incentive) with paradoxical knowing as the dependent variable and believing the unknowable and unknowability judgments as the control variables.

Introduction

At the start of the study, participants were told that they would be asked to imagine holding several goals and that they should ignore whether they had accomplished or hold these goals in real life. We also explained that it is unknowable whether one's goals will be attained in the future or not (see ESM 1F).

Goal-Incentive Condition

Participants imagined holding three goals (finding a romantic partner, being promoted, having a meaningful life) that were either described as the most important (high goal-incentive condition) or *not* the most important in their life (low goal-incentive condition). Participants across conditions were reminded, with respect to each of these goals, that it is unknowable whether they would accomplish the specific goal or not (ESM 1F).

Dependent Variable: Paradoxical Knowing

In response to each of the three goals, participants responded to two paradoxical knowing items (6 total items; e.g., finding a romantic partner: "I feel certain that I will find a romantic partner"). Likert scale: 1 = *Not at all agree* to 7 = *Strongly agree* (see ESM 1F).

Control Variable: Believing the Unknowable

In response to each of the three goals, participants responded to two believing the unknowable items (e.g., finding a romantic partner: "I feel that it is probable that I will find a romantic partner, but I'm not sure that I will"). 1 = *Not at all agree* to 7 = *Strongly agree*.

Control Variable: Unknowability

In response to each of the three goals, participants responded to one unknowable item (e.g., finding a romantic partner: "It is technically unknowable whether I will find a romantic partner or not"). 1 = *Not at all agree* to 7 = *Strongly agree*.

Attention Check

Aside from the attention check of Study-set 1, participants reported whether they were told to imagine important or unimportant goals (high vs. low goal-incentive; ESM 1F).

Results

Participants acknowledged the unknowability of future goal attainment – they judged attaining the three presented goals as highly unknowable, M = 6.12, SD = 1.26, $t(168)$ = 21.83, $p < .001$, d = 1.68 (one-sample t-test). The effect of goal-incentive condition on paradoxical knowing did not differ depending on the specific goal, p = .978; thus, we collapsed across the three goals. As predicted, participants in the high goal-incentive condition exhibited higher paradoxical knowing than those in the low goal-incentive condition, p = .002. These results remained when controlling for participants' beliefs in the unknowable and unknowability judgments. And further, beliefs in the unknowable and unknowability judgments did not differ depending on condition (Table 2). Finally, paradoxical knowing and believing the unknowable exhibited convergent as well as discriminant validity – they overlapped to a moderate extent, $r(167)$ = .25, p = .001.

Discussion

In Study 2.1, high (vs. low) goal-incentive induced paradoxical knowing. Despite participants across condition acknowledging goal attainment as unknowable, participants in the high goal-incentive condition felt more certain that they would attain their goals than participants in the low goal-incentive condition. And this effect was constrained to paradoxical knowing; goal-incentive did not influence participants' beliefs regarding whether they will attain these goals.[7]

Study 2.2

Study 2.2 sought to replicate and extend Study 2.1. We investigated whether people adopt paradoxical knowledge to defend and uphold their goals of high (vs. low) incentive in the face of negative feedback. For instance, a political candidate who desperately wanted to win an election (vs. cared somewhat), but lost, may create the reality in their mind that irregularities must have occurred in the vote

[7] Unlike Study-sets 1 and 3 which used the term "know," Study 2.1 used the term "certainty" and "sure" to capture the first component of paradoxical knowing (e.g., "I feel certain that…"). In a supplemental study, Study S1 (N = 187), we replicated Study 2.1 while measuring paradoxical knowing via "I feel like I know…" rather than "I feel certain…" The same results were observed (see ESM 1G).

Table 2. Means, *SD*s, and results of the goal-incentive manipulation in Studies 2.1 and 2.2

	Low goal-incentive	High goal-incentive	Significance test
Study 2.1	*n* = 78	*n* = 91	
Paradoxical knowing	4.19, 1.26	4.88, 1.50	$F(1, 167) = 10.03$, $p = .002$, $\eta_p^2 = .057$
Paradoxical knowing[a]	4.22, 1.25	4.86, 1.24	$F(1, 165) = 11.08$, $p = .001$, $\eta_p^2 = .063$
Believing in the unknowable	4.81, 1.25	4.69, 1.40	$F(1, 167) = 0.35$, $p = .554$, $\eta_p^2 = .002$
Unknowability	6.24, 1.19	6.03, 1.33	$F(1, 167) = 1.15$, $p = .284$, $\eta_p^2 = .007$
Study 2.2	*n* = 69	*n* = 69	
Paradoxical knowing	2.93, 1.17	3.50, 1.11	$F(1, 136) = 8.66$, $p = .004$, $\eta_p^2 = .060$
Paradoxical knowing[b]	3.03, 1.01	3.40, 1.01	$F(1, 135) = 4.56$, $p = .035$, $\eta_p^2 = .033$
Believing in the unknowable	3.27, 1.08	3.67, 1.12	$F(1, 136) = 4.51$, $p = .036$, $\eta_p^2 = .032$
Believing in the unknowable[c]	3.41, 0.97	3.53, 0.97	$F(1, 135) = 0.55$, $p = .458$, $\eta_p^2 = .004$

Note. [a]controlling for believing the unknowable and unknowability, [b]controlling for believing the unknowable, [c]controlling for paradoxical knowing.

(e.g., "Though it is technically unknowable, I feel certain that there were some irregularities in the vote").

Methods

Participants

Based on the findings of Study 2.1 ($f \sim .25$; 90% power), we needed to recruit 176 participants. We recruited 198 participants (MTurk; 100 female; $M_{age} = 37.89$; $SD_{age} = 12.58$). Sixty participants were excluded for failing attention checks (ESM 1F). The experiment entailed a between-subjects design (high vs. low goal-incentive) with paradoxical knowing in response to negative feedback as the dependent variable and believing the unknowable as the control variable. The materials and procedure were as in Study 2.1, except for the following changes.

Entitlement

Before the manipulation, we assessed participants' entitlement (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004). Entitlement may relate to adopting paradoxical knowledge in response to negative feedback because entitlement is associated with feeling inherently deserving of goal attainment.

Goal-Incentive Condition

Participants imagined holding three goals: professional success, being liked by one's best friend, and winning an election. These goals were described as extremely important (high goal-incentive condition) or somewhat important (low goal-incentive condition). Negative feedback was provided for each of these goals (e.g., professional success: "Your boss tells you that you are performing very poorly"; ESM 1F).

Dependent Variable: Paradoxical Knowing

In response to each of the three goals, we presented two paradoxical knowing items deflecting the provided negative feedback (6 total items; e.g., professional success: "Though the emotions of other people are technically unknowable, I feel certain that my boss is jealous of my abilities"; ESM 1E for all items). 1 = *Not at all agree* to 7 = *Strongly agree*.

Control Variable: Believing the Unknowable

Participants also responded to believing the unknowable versions of the paradoxical knowing items (e.g., "Though the emotions of other people are technically unknowable, I feel *like it is likely* that my boss is jealous of my abilities, *but I have some doubts about this*"). 1 = *Not at all agree* to 7 = *Strongly agree*. We removed the unknowability item of Study 2.1 because unknowability was built into the items of Study 2.2 ("Though one cannot technically know…").

Attention Check

The attention check from Study 2.1 was altered according to the new manipulation (ESM 1F).

Results

The effect of goal-incentive on paradoxical knowing did not differ depending on the specific goal, $p = .167$; thus, we collapsed across the three goals. As predicted, participants in the high (vs. low) goal-incentive condition exhibited greater paradoxical knowing, $p = .004$. These results remained when controlling for participants' beliefs in the unknowable. Unlike Study 2.1, goal-incentive heightened believing the unknowable; however, this effect disappeared when controlling for paradoxical knowing (Table 2). As in Study 2.1, paradoxical knowing and believing the unknowable exhibited convergent but also discriminant validity, $r(136) = .52$, $p < .001$.

Entitlement did not moderate the effect of condition on paradoxical knowing, $p = .588$. Entitlement related to higher paradoxical knowing across conditions, however, $r(136) = .47$, $p < .001$. This relationship remained when controlling for believing the unknowable, $r(135) = .40$, $p < .001$.

Discussion

In Study 2.2, negative feedback in response to high (vs. low) incentive goals heightened paradoxical knowing. Importantly, these results remained when controlling for beliefs in the unknowable. That is, negative feedback toward people's important goals heightened certainty (about something unknowable) rather than belief (about something unknowable). Finally, entitlement predicted higher paradoxical knowing across high and low goal-incentive conditions; entitled people seem more likely to bend reality in their minds to deflect negative feedback regarding goal attainment.

Our findings should be considered in the context of previously documented "shortcuts" to goal attainment, for instance, indulging in positive thoughts and fantasies about the future (Oettingen, 2014; Oettingen & Mayer, 2002; Oettingen, Pak, & Schnetter, 2001). Phenomenologically, indulging entails "dreaming" of goal attainment, while paradoxical knowing entails a "head-through-the-wall" approach to goal attainment – it incites certainty regarding the future attainment of one's goals. Future research should examine which factors lead high goal-incentives to induce indulging or paradoxical knowing or other actions that are *not* shortcuts to goal attainment (e.g., effortful attainment, Bandura, 1986; Wright, 2016).

Potential Consequences of Paradoxical Knowing

To delineate potential consequences of paradoxical knowing, we considered that paradoxical knowing entails a shortcut to knowledge. In line with other psychological shortcuts, such as indulging (Oettingen, 2014) and creating fake realities to achieve political power (e.g., Barrera Rodriguez et al., 2018), paradoxical knowing may have its costs.

The cost of paradoxical knowledge arises from it being ripe for the taking. Like a house of cards, knowledge built on a flimsy foundation can topple. And people engaging in paradoxical knowing are aware of this. They acknowledge that what they claim to know is actually unknowable – it contradicts reality in their minds. People thus likely consider their paradoxical knowledge as imminently threatened. And this threat should be experienced as substantial: Knowing can be thought of as a form of possession (a "possession" of truth; Abelson, 1986), and people are particularly averse to losing possessions (Tversky & Kahneman, 1991).

In response to this threat, individuals engaging in paradoxical knowing may adopt a hypervigilant defensive stance toward perceived skeptics and opposing information. In line with responses to threat (Cannon, 1929), people holding paradoxical knowledge can either fight or take flight. That is, they can aggress against perceived skeptics and opposing information (fight), or they can determinately ignore perceived skeptics and opposing information (take flight). In Study-set 3, we examined whether paradoxical knowing relates to these specific antisocial threat responses.

Paradoxical knowing may also relate to a further threat response, befriending others (Taylor et al., 2000). That is, paradoxical knowing may lead individuals to seek out groups supporting their paradoxical knowledge. For instance, individuals may join chambers of dialogue supporting their paradoxical knowledge (encourages echo-chambers; Conover, Gonçalves, Flammini, & Menczer, 2012). And further, social verification should, by creating "shared realities" that reinforce individuals' claimed knowledge, also support one's paradoxical knowledge (Festinger, 1950, 1954; Hardin & Higgins, 1996).

Paradoxical knowing may also encourage adopting extreme ideas. Knowing the unknowable, as it creates psychological distance between the individual and the outside world, should promote extreme ideas. Indeed, oracles were described as abandoning earthly norms (Broad, 2007, p. 63). And, William James (1890) noted that unfounded propositions held with certainty can fuel extreme mass movements (p. 309). Thus, in Study-set 3, we tested whether paradoxical knowing relates to a willingness to join and adhere to extreme groups and movements.

We also examined whether paradoxical knowing relates to intuitive, impulsive thinking. Researchers have argued that two routes to subjective knowledge exist, an intuitive and an analytical one (Bagehot, 1871; Burton, 2008). If paradoxical knowing is a shortcut to knowledge – one that does not require careful reflection – it should relate to intuitive rather than analytical thinking. Supporting this possibility, holding conspiracy theories, which may qualify as one form of paradoxical knowing, relates to decreased analytical thinking (Swami, Voracek, Stieger, Tran, & Furnham, 2014).

Study-Set 3: Paradoxical Knowing Relates to Antisocial Variables

In seven correlational studies (N = 1,034), we examined whether paradoxical knowing relates to (1) aggression and determined ignorance toward skeptics and opposing information, (2) a willingness to join and adhere to extreme groups and movements, and (3) intuitive thinking. Further, we investigated the convergent, discriminant, and unique predictive validity of paradoxical knowing in terms of: (1) believing the unknowable, (2) concordant knowing, (3) mental rigidity (e.g., self-righteousness, dogmatism), (4) desiring certainty (e.g., need for closure), (5) magical thinking, and (6) potential response bias (social desirability). We also assessed and controlled for participants'

inflated sense of self because paradoxical knowledge may imbue individuals with a "super-human" status, and further, because entitlement related to paradoxical knowing in Study 2.2.

Method

Participants

Study-set 3 included seven studies (N = 1,034; N = 100–226; age: 33.67–37.44; female: 44%–60%). We did not assess all variables in one study because long studies on MTurk are unreliable (Buhrmester, Kwang, & Gosling, 2011). See ESM 1H for the variables in each specific study. Power analyses were not conducted because our analyses were meta-analytic. Depending on the study, between 2 and 17 participants were excluded for failing the attention check or completing the study multiple times (9.19% of participants). All studies of Study-set 3 were correlational.

Predictor Variable: Paradoxical Knowing

Paradoxical knowing was assessed via three items (randomized): "I know things that one can't actually know," "I know things that can't be known," and "I know things that are unknowable." Likert scale: 1 = *Not at all agree* to 7 = *Strongly agree*.

Outcome Variables: Antisocial Variables

Aggression

We assessed aggression against skeptics using a validated 5-item scale (e.g., "I believe that aggression [e.g., verbal or physical] is the only way of dealing with people whose beliefs and values differ strongly from mine"; Crowson, 2009, p. 283). 1 = *Strongly disagree* to 7 = *Strongly agree*.

Determination to Ignore

A 5-item questionnaire measured determination to ignore opposing information (e.g., "You don't need to listen to things that stand against your opinions"; see ESM 1I). 1 = *Not at all agree* to 7 = *Strongly agree*.[8]

Willingness to Join Extreme Groups and Movements

Three items assessed participants' willingness to join extreme groups and movements: "I have thought about joining a cult," "I have thought about joining an organization that is considered 'extreme'," and "I have thought about joining a movement that is considered 'extreme'." 1 = *Not at all agree* to 7 = *Strongly agree*.

Adhering to Extreme Groups and Movements

A validated 8-item scale assessed adherence to extreme groups and movements (e.g., "It would be better to destroy our people than to give up our principles"; Saucier, Akers, Shen-Miller, Knežević, & Stankov, 2009; Stankov, Higgins, Saucier, & Knežević, 2010). 1 = *Disagree* to 5 = *Agree*.

Outcome Variables: Intuitive Versus Analytical Thinking

Faith in intuition (Epstein, Pacini, Denes-Raj, & Heier, 1996), need for cognition (Petty, Cacioppo, & Kao, 1984), and cognitive reflection (CRT; Frederick, 2005) assessed intuitive versus analytical thinking.

Control Variables

Believing the Unknowable

We adapted the paradoxical knowing scale by changing the word "know" to "believe."[9] Before responding, participants read: "The following items ask about what you *believe*." In the study in which we assessed believing the unknowable (Study 3.5), a matching prompt was presented before the paradoxical knowing scale: "The following items ask about what you *know*."

Concordant Knowing

To assess concordant knowing, we adapted the paradoxical knowing scale: "I know things that one can know," "I know things that can be known," and "I know things that are knowable."

Other Control Variables

We assessed variables associated with (1) mental rigidity: self-righteousness (Falbo & Shepperd, 1986), dogmatism (Altemeyer, 2002), moral vitalism (Bastian et al., 2015), right-wing authoritarianism (Altemeyer, 1981; Altemeyer & Hunsberger, 1992); (2) desiring certainty: need for closure (Webster & Kruglanski, 1994), intolerance for ambiguity (Budner, 1962); (3) endorsing the unknown: magical thinking (Eckblad & Chapman, 1983); (4) inflated sense of self: narcissism (e.g., NPI-16; Ames, Rose, & Anderson, 2006), entitlement (Campbell et al., 2004); and (5) response bias: social desirability (Haghighat, 2007).[10]

Procedure

In each study, we assessed paradoxical knowing first. The outcome and control variables were assessed thereafter.

[8] In Study 3.5, the Determination to Ignore Scale included an additional item. This item was removed from the scale in the remaining studies due to low inter-item reliability.

[9] In Study 3.5, the scale used to assess paradoxical knowing and believing the unknowable was a frequency scale. The scale was 1 = *Never* to 7 = *Always* and the prompt was "How often are the following statements true of you?"

[10] We assessed additional variables. These variables were exploratory and are discussed in ESM 1L.

Table 3. Study-set 3: Paradoxical knowing relates to the hypothesized antisocial variables

Paradoxical knowing	Number of studies	Total *N*	Meta-analytic *r* estimates
Antisocial variables			
Aggression	6	878	$r = .42$, $p < .001$
Determination to ignore	6	878	$r = .29$, $p < .001$
Joining extreme groups	5	783	$r = .31$, $p < .001$
Adherence to extreme groups	5	727	$r = .40$, $p < .001$

Results

Paradoxical Knowing Predicts Antisocial Variables

We tested the individual hypotheses by calculating weighted fixed-effect meta-analytic estimates (see Goh, Hall, & Rosenthal, 2016, for methods). Fixed-effect instead of random-effects models were calculated because the seven studies closely resembled one another (Borenstein, Hedges, Higgins, & Rothstein, 2010). As predicted, paradoxical knowing, $k = 7$, $M = 2.33$, $SD = 1.70$, $\alpha = .94$, related to aggression and determined ignorance toward skeptics and opposing information, and a willingness to join and adhere to extreme groups and movements. These meta-analytic estimates ranged from $r = .29$ to $r = .42$, all ps < .001 (Table 3). See ESM 1J for individual correlations.

Paradoxical Knowing Predicts Intuitive Thinking

Paradoxical knowing related to intuitive, non-reflective thinking. Specifically, it correlated negatively with CRT performance and need for cognition. It did not, however, relate to faith in intuition, though the relationship was in the predicted direction (Table 4). Importantly, in a supplemental study (Study S2), we confirmed that the relationship between paradoxical knowing and intuitive thinking (assessed via CRT performance) remained when controlling for believing the unknowable, $r(236) = -.21$, $p = .001$ (ESM 1K).[11] These results support paradoxical knowing as a shortcut to knowledge; such subjective knowledge is likely acquired via a more intuitive than analytical pathway (Bagehot, 1871; Burton, 2008).

Antisocial Correlates After Controlling for Relevant Variables

We examined whether paradoxical knowing still predicts the assessed antisocial variables after controlling for relevant variables.

Controlling for Believing the Unknowable

Supporting our hypotheses, paradoxical knowing still predicted anti-sociality when controlling for believing the unknowable, ps < .011, while believing the unknowable did not relate to anti-sociality when controlling for paradoxical knowing, ps > .172 (Table 5). As in Study-set 2, paradoxical knowing and believing the unknowable overlapped, $r(98) = .54$, $p < .001$.

Controlling for Concordant Knowing

Paradoxical knowing still predicted anti-sociality when controlling for concordant knowing (Table 6). Paradoxical knowing and concordant knowing, $k = 7$, $M = 6.03$, $SD = 1.22$, $\alpha = .93$, correlated negatively, $k = 7$, $r_{\text{meta-analytic estimate}} = -.24$, $p < .001$.

Additional Control Variables

Paradoxical knowing still predicted anti-sociality when controlling for mental rigidity, desiring certainty, magical thinking, inflated sense of self, and response bias (Table 6).

Convergent and Discriminant Validity of Paradoxical Knowing

Small to moderate correlations (rs = .05–.43) supported the convergent and discriminant validity of paradoxical knowing (Table 7). Paradoxical knowing related to mental rigidity, magical thinking, and inflated sense of self, but not to a desire for certainty.

Discussion

In a meta-analysis of seven studies (Study-set 3), paradoxical knowing moderately to strongly predicted aggression, determined ignorance, and a willingness to join and adhere to extreme groups and movements. Paradoxical knowing also related to intuitive, impulsive thinking. These results support paradoxical knowing as a shortcut to knowledge with potential antisocial costs.

Importantly, paradoxical knowing predicted anti-sociality even when controlling for third variables, including believing the unknowable, concordant knowing, mental rigidity, desiring certainty, magical thinking, inflated sense of self, and response bias. Finally, suggesting that paradoxical knowing supplies certainty, paradoxical knowing related to mental rigidity, that is, to variables associated with holding certainty (e.g., dogmatism), but did not relate to desiring certainty (e.g., need for closure).

General Discussion

In three study-sets ($k = 12$; $N = 1{,}807$), we investigated a potential shortcut to knowledge – paradoxical knowing. Paradoxical knowing entails recognizing something as unknowable, but claiming to know it nonetheless. In Study-set 1, paradoxical knowing was prevalent, spanned

[11] Believing the unknowable did not relate to intuitive thinking when controlling for paradoxical knowing.

Table 4. Study-set 3: Paradoxical knowing relates to intuitive thinking

Paradoxical knowing	Number of studies	Number of participants	Meta-analytic *r* estimate or single correlations
Intuitive versus analytical thinking			
Need for cognition	1	134	$r = -.20$, $p = .022$
Faith in intuition	1	134	$r = .13$, $p = .139$
Cognitive reflection	3	444	$r = -.18$, $p < .001$

Table 5. Zero-order and partial correlations between paradoxical knowing, believing the unknowable, and the assessed anti-social variables (Study 3.5; $N = 100$)

	Paradoxical knowing	Paradoxical knowing controlling for believing the unknowable	Believing the unknowable	Believing the unknowable controlling for paradoxical knowing
Aggression	$r = .373$, $p < .001$	$r = .325$, $p = .001$	$r = .194$, $p = .053$	$r = -.009$, $p = .933$
Determination to ignore	$r = .367$, $p < .001$	$r = .260$, $p = .009$	$r = .294$, $p < .001$	$r = .124$, $p = .223$
Adherence to extreme groups	$r = .371$, $p < .001$	$r = .256$, $p = .011$	$r = .307$, $p = .018$	$r = .138$, $p = .172$

Table 6. Study-set 3: Relationships between paradoxical knowing and the assessed antisocial variables while controlling for relevant variables

	Paradoxical knowing				
Antisocial variables	Controlling for concordant knowing	Controlling for mental rigidity and desiring certainty	Controlling for magical thinking	Controlling for inflated sense of self	Controlling for response bias
Aggression	$N = 878$, $k = 6$, $r = .38$, $p < .001$	$N = 130$, $k = 1$, $r = .39$, $p < .001$	$N = 134$, $k = 1$, $r = .40$, $p < .001$	$N = 514$, $k = 3$, $r = .23$, $p < .001$	$N = 778$, $k = 5$, $r = .43$, $p < .001$
Determination to ignore	$N = 878$, $k = 6$, $r = .27$, $p < .001$	$N = 130$, $k = 1$, $r = .28$, $p = .001$	$N = 134$, $k = 1$, $r = .10$, $p = .260$	$N = 514$, $k = 3$, $r = .16$, $p < .001$	$N = 778$, $k = 5$, $r = .28$, $p < .001$
Joining extreme groups	$N = 783$, $k = 5$, $r = .27$, $p < .001$	$N = 130$, $k = 1$, $r = .42$, $p < .001$	$N = 134$, $k = 1$, $r = .23$, $p = .011$	$N = 363$, $k = 2$, $r = .21$, $p < .001$	$N = 783$, $k = 5$, $r = .31$, $p < .001$
Adherence to extreme groups	$N = 727$, $k = 5$, $r = .36$, $p < .001$	$N = 130$, $k = 1$, $r = .45$, $p < .001$	$N = 134$, $k = 1$, $r = .25$, $p = .003$	$N = 363$, $k = 2$, $r = .23$, $p < .001$	$N = 627$, $k = 4$, $r = .40$, $p < .001$

Notes. k = number of studies. (1) mental rigidity: dogmatism, moral vitalism, self-righteousness, right-wing authoritarianism. (2) desiring certainty: need for closure, and intolerance for ambiguity. (3) inflated sense of self: entitlement, narcissism. In Study 3.1, we controlled for entitlement. In Studies 3.2 and 3.4, we controlled for both narcissism and entitlement. (4) response bias: social desirability. To see which variables were controlled for in each study and sample sizes in each study, see ESM 1H. Desiring certainty was assessed in Studies 3.6 and 3.7 but was not controlled for in the latter study (this did not change the results).

Table 7. Study-set 3: Convergent and discriminant validity of paradoxical knowing

Paradoxical knowing	Number of studies	Number of participants	Meta-analytic *r* estimate or single correlations
Mental rigidity			
Self-righteousness	1	130	$r = .34$, $p < .001$
Dogmatism	1	130	$r = .43$, $p < .001$
Moral vitalism	1	130	$r = .22$, $p = .012$
Right-wing authoritarianism	1	130	$r = .38$, $p < .001$
Desire for certainty			
Intolerance for ambiguity	2	264	$r = .08$, $p = .177$
Need for closure	2	264	$r = .05$, $p = .459$
Magical Thinking			
Magical thinking	1	134	$r = .43$, $p < .001$
Inflated sense of self			
Entitlement	3	514	$r = .36$, $p < .001$
Narcissism	2	363	$r = .28$, $p < .001$

across valence (negative, neutral, positive) and contents (e.g., interpersonal, professional, religion), and was distinct from believing the unknowable (faith) and concordant knowing (claiming to know the knowable).

In Study-set 2, high goal-incentives heightened paradoxical knowing. Despite recognizing future goal attainment as unknowable, participants who were induced to imagine holding important (vs. less important goals) claimed to know (rather than believe) that they would accomplish these goals in the future (e.g., I feel certain I will find a romantic partner; Study 2.1). And, participants also adopted paradoxical knowledge to discount negative feedback standing against important life-goals (e.g., professional success: "Though the emotions of other people are technically unknowable, I feel certain that my boss is jealous of my abilities"; Study 2.2). People apparently adopt paradoxical knowledge to eliminate the uncertainty surrounding attaining important future goals.

In Study-set 3, in line with paradoxical knowing being easily threatened, paradoxical knowing related to aggression (fight) and determined ignorance (flight) toward skeptics and opposing information, as well as a willingness to join and adhere to extreme groups (befriend). These relationships were of moderate-to-large size and remained when controlling for numerous third variables. Paradoxical knowing also related to intuitive thinking rather than analytical thinking. Taken together, these findings indicate that paradoxical knowing is a shortcut to knowledge that can be momentarily induced (by high goal-incentives; Study-set 2) and, at least when measured dispositionally, predicts anti-sociality.

Subjective Knowledge and the Paradox

In Study 1.2, participants ascribed greater certainty to their paradoxical knowledge than their belief in the unknowable (the prompts differed only in terms of the word "know" vs. "believe"). These findings demonstrate that the term knowing confers greater certainty than believing (e.g., DeRose, 2009), and further, indicate that paradoxical knowing – as it entails certainty – contains a stronger epistemological contradiction than believing the unknowable. The epistemological contradiction entailed in paradoxical knowing also differentiates paradoxical knowing from concordant knowing. In Study 1.3, participants evaluated their paradoxical knowledge (compared to concordant knowledge) as entailing greater ambivalence between feeling certain about something and perceiving this thing as unknowable.

Functionality of Paradoxical Knowing

In Study-set 2, paradoxical knowledge was adopted in response to high goal-incentives and in response to negative feedback threatening the attainment of important goals. Potentially, then, paradoxical knowledge alleviates the uncertainties associated with the unknowability of attaining one's important goals. These findings align with the proposed functionality of paradoxical knowledge – eliminating the insecurities and doubts that vex one's heart and rob the sleep (e.g., Hofstede, 1991; Kruglanski & Orehek, 2012; Weary & Edwards, 1996).

And notably, paradoxical knowing may actually satiate one's need for certainty. In Study-set 3, paradoxical knowing did not relate to variables associated with desiring certainty (e.g., need for closure), but positively related to variables associated with holding certainty (e.g., self-righteousness). And such certainty may have interpersonal consequences, for instance, being able to more easily persuade others (Pulford, Colman, Buabang, & Krockow, 2018). Finally, paradoxical knowledge – by providing a shortcut to knowledge – should allow the individual to avoid the effortful discovery and observation usually required to make the unknowable knowable. Indeed, in Study-set 3, paradoxical knowing related *negatively* to need for cognition (a willingness to engage in complex thinking). To summarize, we believe the function of paradoxical knowing, similar to that of the oracles in ancient Greece (Broad, 2007), is to allow individuals to establish certainty and its benefits with little effort or reflection.

Paradoxical Knowing Predicts Antisocial Variables

By providing unsubstantiated and unjustified certainty, paradoxical knowing may have its costs. In Study-set 3, paradoxical knowing predicted aggression, determined ignorance, and a willingness to join and adhere to extreme groups. And we confirmed that specifically the epistemological paradox captured by paradoxical knowing predicts such anti-sociality. Controlling for believing the unknowable (a weaker paradox) and concordant knowing (subjective knowledge with no paradox) did not change our results. And further, controlling for variables associated with the two individual components of paradoxical knowing – (1) subjective knowledge (e.g., dogmatism) and (2) endorsing something unknowable (magical thinking) – also did not alter the results.

Our findings may help elucidate under which circumstances people act antisocially. Potentially, it is when people feel certain about things they perceive as unknowable that they embrace antisocial behavior. For instance, misconceptions that are held with high certainty (Hynd & Guzzetti, 1993; Otero, 1998; Vosniadou, 2001) *and* are acknowledged as unknowable – misconceptions that qualify as paradoxical knowledge – may be more likely to incite anti-sociality.

For example, feeling certain about a conspiracy despite perceiving the content of the conspiracy as unknowable may induce antisocial behaviors with respect to that conspiracy.

Interestingly, paradoxical knowing may reduce social tensions *within* a group. Paradoxical knowing, because it is likely linked to devotion to like-minded people and likely encourages echo-chambers (Conover et al., 2012), may reduce group tensions and heighten group cohesion. However, in Study-set 3, paradoxical knowing predicted joining and adhering to *extreme* groups; as such, these cohesive, unified groups likely propagate outgroup bias and societal tension.

Fanatical Thinking

Taken together, aggression, determined ignorance, and a willingness to join and adhere to extreme groups and movements can be thought of as fanatical thinking. In the words of the cultural anthropologist, Margaret Mead, fanatical thinking is "a willingness to destroy those who threaten the fanatically held belief" and "a closed mind, a refusal to entertain counter arguments" (Mead, 1977, p. 37). And further, as described by Hoffer (1951), fanatical thinking is expressed by "true believers" – individuals who take part in mass movements that can be considered extreme (Stankov et al., 2010). Potentially, then, paradoxical knowing plays a role in fanatical thinking.

Limitations and Caveats

In Studies 1.1 and 1.2, we asked participants to report something "you know that is unknowable." Thus, we may have communicated to participants that clairvoyance actually exists. In Study 1.3 and Study-set 2, however, we asked participants to report something you "*feel* like you know" and "*feel* certain about" and observed consistent results.

Relatedly, we did not examine whether there is a difference between holding paradoxical knowledge about something *objectively* knowable versus *objectively* unknowable. Future research should examine this potential difference.

Possibly, response bias played a role in our results (e.g., yea-saying or nay-saying). Discounting this possibility, the CRT included in Study-set 3 is a behavioral task, and paradoxical knowing related to CRT performance. Further, numerous of the assessed measures included reverse-coded items. Finally, paradoxical knowing still predicted antisociality when controlling for socially desirable responding (Study-set 3).

Though we largely treated subjective knowledge and believing as distinct constructs, belief and subjective knowledge can be conceptualized on a continuum with belief entailing less certainty than subjective knowledge. Such a conceptualization, though, would not discount our results. Even on a continuum, paradoxical knowing contains a greater epistemological contradiction than believing the unknowable because paradoxical knowing entails holding *greater* certainty about something perceived as unknowable (as shown in Study 1.2). Relatedly, we did not explicitly examine whether our findings differ depending on whether one feels *completely* certain versus feels *almost or close to* completely certain about something perceived as unknowable. It seems likely that our results hold true in both cases, however, because feeling close to completely certain about something unknowable still entails a high degree of epistemological paradox.

Further, we did not directly examine whether operationalizing the first component of paradoxical knowing in terms of claiming to be certain of something (Study-set 2) versus claiming to know something (Study-sets 1 and 3) leads to different results. However, a supplemental study (Study S1) replicated the findings of Study 2.1 when changing the paradoxical knowing items from "I feel certain…" to "I feel like I know…" tentatively suggesting that these terms can be used interchangeability when examining paradoxical knowledge.

Notably, we may have overestimated the prevalence of paradoxical knowing (~90% of participants). In Study-set 1, participants were told to report paradoxical knowledge but were not *explicitly* given the option to claim that they do not hold paradoxical knowledge or that their paradoxical knowledge more closely resembles a belief in the unknowable (i.e., contains significant doubt). Future research should more carefully examine the prevalence of paradoxical knowing.

Future research should also include behavioral and implicit measures of anti-sociality. Additionally, future research should examine how paradoxical knowing relates to other paradoxes (e.g., unstable self-esteem; senses paradox, such as "I hear things that cannot be heard"), and more generally, whether paradoxical knowing falls under a more abstract phenomenon of "holding a paradox." And finally, future research should examine whether paradoxical knowing causally heightens anti-sociality.

Intervening on Paradoxical Knowing

The proposed function of paradoxical knowing – gaining certainty and its benefits – raises the possibility of intervening on paradoxical knowing. For instance, increasing individuals' empowerment and resources could prevent paradoxical knowing from arising. Indeed, heightening feelings of control reduces people's endorsement of conspiracy theories (Prooijen & Acker, 2015) which, as noted earlier, may qualify as one form of paradoxical knowing. At the same time, however, intervening on paradoxical knowing is likely difficult. People are largely unable to discount "knowledge" they hold even when incentivized to do so

(e.g., Fischhoff, 1977) and even when such knowledge is discredited (e.g., Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012).

Conclusion

We observed that people adopt paradoxical knowing as a shortcut to knowledge. They escape uncertainty by simply claiming to be certain about something they recognize as unknowable. Though such paradoxical knowing may bestow the benefits of certainty on the individual, it has its costs. In line with supplying unsubstantiated, easily threatened certainty, paradoxical knowing has numerous defensive antisocial correlates (e.g., aggression, determined ignorance). These antisocial correlates suggest that paradoxical knowing, aside from impacting the individual, may contribute to divisiveness in society and hinder open communication and dialogue.

Electronic Supplementary Material

The electronic supplementary material is available with the online version of the article at https://doi.org/10.1027/1864-9335/a000368

ESM 1. Text and Tables (.docx)
Additional information and materials.

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