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Insight in the Conspiracist's Mind

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Abstract

Academic Abstract

The motto of the conspiracist, "Do your own research," may seem ludicrous to scientists. Indeed, it is often dismissed as a mere rhetorical device that conspiracists use to give themselves the semblance of science. In this perspective paper, we explore the information-seeking activities ("research") that conspiracists *do* engage in. Drawing on the experimental psychology of aha experiences, we explain how these activities, as well as the epistemic experiences that precede (curiosity) or follow (insight or "aha" experiences) them, may play a crucial role in the appeal and development of conspiracy beliefs. Aha moments have properties that can be exploited by conspiracy theories, such as the potential for false but seemingly grounded conclusions. Finally, we hypothesize that the need for autonomous epistemic agency and discovery is universal but increases as people experience more uncertainty and/or feel epistemically excluded in society, hence linking it to existing literature on explaining conspiracy theories.

Public Abstract

Recent events have made it painfully clear that conspiracy beliefs can tear deep rifts in society and that we still have not found an adequate, de-escalating response to this. To understand the appeal of conspiracy theories and find new, humanizing ways to talk about them, we propose in this perspective paper to start from the universal human need to autonomously make discoveries through personal knowledge-generating actions. Indeed, psychological research shows that the aha experiences that accompany subjective discoveries create confidence in and perceived ownership of ideas that may be exploited by conspiracy theories. We hypothesize that people experiencing more uncertainty and/or epistemic exclusion in society will especially feel the need to re-establish autonomous epistemic agency and discovery. While this explanation starts from shared human experiences and practices, it also illustrates the potential of those processes to lead to a narrowed world and ossified cognition.

Keywords

individual differences, aha experience, persuasion, social cognition, processing fluency, conspiracy theories, insight, metacognition, trust, curiosity

We can learn only what we already almost know.

—Patrick Winston

Introduction

Believers of conspiracy theories are regularly depicted either as passive, gullible victims of their (social media) echo chambers or as "wishful thinkers" who just believe what makes them feel good or what allows them to belong to a social group (Cassam, 2018; Cinelli et al., 2022; Douglas et al., 2017; Sunstein & Vermeule, 2009). The rest of us, it is often assumed, are largely led by "pure" epistemic motivations (Pronin, 2007): *We* stick to evidence when forming our beliefs and actively seek additional information whenever we are not sure about them. Scientists would be forgiven for going along with this portrayal, since they, as epistemic authorities, are often the epitome of what the conspiracist distrusts and rejects. Add to that the utter weirdness of some conspiracy beliefs (Williams, 2021), and it is perhaps understandable that we, as scientists, often focus on the errors in conspiracy theories, be it the factual, the moral, or the cognitive ones (such as irrational biases; Adam-Troian, & Caroti, 2019; Brotherton & French, 2015; Cassam, 2018; Douglas

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et al., 2016; Georgiou et al., 2019, 2021b; Rizeq et al., 2021; Stasielowicz, 2022; van Prooijen & van Vugt, 2018).

Stumped by the attraction that conspiracy theories can have on people, it is easy for us to slip into a discourse about the "mentally ill" or "cognitively deficient" conspiracists, still common in the media and even in parts of the scientific literature (Bratich, 2008; Groh, 1987; Robins et al., 1997; Stasielowicz, 2022). Jumping to such conclusions can easily lead us into the so-called Enlightenment trap (Gray et al., 2022), where we paint ourselves as the ones with intellectual modesty, while they have the "foreclosed mind" (but where the "humble ones" may turn out to be the more prejudiced ones; see Colombo et al., 2021). This *othering* of people who believe in conspiracy theories can be especially harmful because research shows that conspiracy beliefs are more prevalent, as we will see, in already disadvantaged or epistemically excluded communities.

Such othering is also scientifically problematic because to do good research as social scientists, we need to be able to rely on a minimum of trust in our research subject (that goes both ways). Trust is required even if we are not interested in *changing* conspiracists' minds but merely want to *study* their minds, whether by inviting them to the lab for experimental studies or by engaging with them in ethnographic fieldwork, surveys, or in-depth interviews.

It is why we welcome the growing calls to shift away from a sole focus on the errors of conspiracists in recent years (Alper, 2022; Alper & Imhoff, 2022; Douglas & Sutton, 2022; Harambam & Aupers, 2015; Hornsey et al., 2022). There is an increasing realization that this focus is both a nonstarter when trying to reconnect conspiracists to society and a simplification of the conspiracist's actual psychology. It leads to a one-sided emphasis on how to debunk isolated, pernicious beliefs (Cook & Lewandowsky, 2012; Ecker et al., 2022) rather than on how those beliefs are actively acquired and shaped through the believers' epistemic, information-seeking practices. Indeed, it is clear that while conspiracy believers do tend to believe in more than one conspiracy theory (Lewandowsky et al., 2013), they will not simply believe anything (Douglas et al., 2019; Klein et al., 2018). In fact, in informal self-reports, conspiracy believers usually show a high need to be cognitively stimulated and are extremely curious about exploring their domains of interest (McDonald-Gibson, 2022). In modern times, this need is expressed through active participation in online discussion forums, where conspiracists collect and weigh the evidence for their theories (de Wildt & Aupers, 2023; Klein et al., 2018, 2019; Levy, 2022). Correlational, questionnaire-based evidence, too, suggests they pride themselves on their independent, analytical, and discerning thinking (Georgiou et al., 2021c; Tomas et al., 2022) and on their openness to experience (Swami et al.,2010, 2013).

Instead of readily dismissing these reports as empty posing or as rhetorical tricks to give themselves the semblance of scientists, we start in this perspective paper from the position that there is more to the conspiracist's frequent call to just "Do your own research" (Carrion, 2018; Levy, 2022). As we will see, looking at their epistemic motivations (curiosity), epistemic practices, and epistemic experiences (such as discovery or aha experiences), reveals more sophisticated epistemic processes in conspiracists than traditionally assumed. Many previous works have reserved a role for epistemic needs in the adoption of conspiracy beliefs, but the focus has almost exclusively been on establishing that conspiracists have a closed-minded, "self-sealing" thinking style characterized by an avoidance of uncertainty and a craving for immediate closure or order (Biddlestone et al., 2022; Goertzel, 1994; Hornsey et al., 2022). Little attention has been given to applying to conspiracists what we know about actual epistemic, uncertainty-driven processes from basic experimental psychology. Our hope is that doing so will add experimental, mechanistic ideas to a predominantly correlational literature.

In what follows, we aim to lay the theoretical groundwork for such a new perspective on conspiracy theories. In the next part, we survey the conspiracists' epistemic (re)searches to show that a theoretical account focused on epistemic practices and experiences is called for. Indeed, we end this part by discussing why those practices and experiences are hard to fit with popular ideas—from the public sphere and scientific literature—on conspiracy belief formation. The section on "The nature of discovery" contains the core of our proposition and applies findings from the experimental psychology of epistemic experiences (curiosity and aha experience) to conspiracy theories. Next, we give an overview of the new, empirically tractable hypotheses that our analysis offers. In the subsequent section, we consider what implications our proposal has concerning the deeper, societal roots of conspiracy thinking. Here, we hypothesize that the need for autonomous epistemic agency and discovery and so the attraction of conspiracy theorizing builds up in people experiencing rising uncertainties and/or perceived epistemic exclusion. With the latter, we mean the sense that one's own knowledge-gathering and insights have no place in society. Before concluding, we rebut possible objections one could muster against our proposition. Along the way, we illustrate how epistemic needs are connected to existential needs (need to have some control over the world) and social needs (need to belong to and be recognized by a social group) as they contribute to conspiracy beliefs.

With this, we hope to show that epistemic processes of curiosity and aha are promising but overlooked elements in explaining conspiracy thinking. It is an effort to bring out the inner logic of the formation of conspiracy belief systems. One that starts from a commonality in human experience—the need for autonomous epistemic action and discovery—but that also clarifies the potential of those very processes to lead to a narrowed world and an ossified mind. It redirects the focus from detecting (and targeting) cognitive or personality profiles that cause people to "fall for" conspiracy

theories to identify the *conditions* under which conspiracy-like beliefs—characterized by what we will call *short epistemic arcs*—tend to be proactively adopted.

Charting the Conspiracist's (Re)Searches

Conspiracy theories are commonly defined as beliefs "that certain events or situations are secretly manipulated behind the scenes by powerful forces with negative intent" (European Commission, 2020). Based on large-scale surveys, it is estimated that about one in four US adults endorses at least some conspiracy ideas (Freeman & Bentall, 2017; Mitchell et al., 2020). One conspiracy theory that has recently gained a lot of disciples is QAnon, sometimes called an "Ur-conspiracy theory" because it integrates so many older, more scattered conspiracy theories. However, informal observers (Hon, 2020) have remarked that QAnon is not just a conspiracy theory but also a true knowledge-generating and problem-solving community. Cryptic messages and "mysteries" (known as "Q drops") launched by Q and others in the QAnon conspiracy network spur individuals to "do their research," to go hunting for clues, connections, and explanations. Conspiracy theories become game-like in this sense (Hacker, 2021; Hon, 2020), applying a clever, non-patronizing way of recruiting and engaging members.

The starting cue is a challenge, a question, an expectation violation, or something that does not fit one's model of the world (yet). It incites curiosity, which can be described as a perceived gap or uncertainty (Loewenstein, 1994), but a gap for which one also has the feeling or expectation that it is resolvable (Van de Cruys, Damiano, et al., 2021). Curiosity is thought to be driven by expected learning (or information) gains (Gottlieb & Oudeyer, 2018). It is the feeling that it is possible, with some effort, to unearth the regular pattern underlying this challenge. Indeed, empirical work shows that curiosity is intrinsically associated with agency, that is, the need to actively search for the answer *oneself* (Metcalfe et al., 2021), as opposed to just wanting to receive the solution.

But what are those actions? There is a lot of speculation, but not much is known yet about how conspiracists seek information and research their problems. Although Google, Youtube, and the like certainly can lead people down dangerous rabbit holes (Hosseinmardi et al., 2021; Roose, 2019), the internet has greatly democratized our capacity to do our own research. Crucially, we hypothesize that online search is experienced by the internaut as a largely autonomous epistemic practice that can lead to real personal discoveries, especially if it takes some effort and trial-and-error. Support for this comes from a study with non-conspiracist participants finding that the very act of making internet searches leads to an illusion of knowledge (overconfidence), compared to just passively being presented with the same knowledge (Fisher et al., 2015 experiments 4a-c). Search results seem to be experienced as pieces of "knowledge" that you have uncovered through your knowledge-seeking activities. The fact that online search is actually, to a large extent, governed by algorithms and other sources of bias (Johnson, 2021; Narayanan & De Cremer, 2022) does not seem to matter much (or is too opaque) in one's experience of this research activity. Indeed, Fisher et al. (2015) showed that even if you explicitly and specifically direct people what to search for, the overconfidence effect of the act of searching holds.

Still, presumably, the conspiracist has a salient intuition that ease or "fluency" with which one found something is not a good guide here: Information gathered without some work ("your own research") done, seems untrustworthy, not unlike the scientist's attitude. This may explain the effort they go through in finding the "right" channels and alternative search engines and tactics (Golebiewski & Boyd, 2019; Urman et al., 2022), dismissing mainstream ones as biased and doctored for fluency. Official stories of events are suspect for them, presumably precisely because they are too easy to come by. Instead, perceived truth is attached to the results of a proactive information-seeking effort (see subsequently). Indeed, some real effort and creativity are needed to find and fit the same conspiracy-based explanatory "patterns" and "rules" with recurring central people, places, and events to new data or challenges. However baseless or bizarre their claims may be, conspiracists often have well-developed and sophisticated arguments for their theories (e.g., 9/11-Inside-Job believers; Clarke, 2002; Dentith, 2018; Meuer et al., 2022). Conspiracists build their own quasi-scientific methods and communication channels, complete with conferences (Fenster, 1999), publications (Garry et al., 2021), and tutorials on the proper epistemic practices, that is, how to properly collect and analyze data (Lee et al., 2021; Levy, 2022). Indeed, many conspiracists go to much greater lengths to collect and evaluate evidence to support their alternative explanation (and undermine the official story) than adherents of the official story do (Brashier, 2022; Harris, 2018).

As far as most of the information-seeking and inference activity of the conspiracist is expressed in the secluded activity of browsing and annotating the web, it is of course hard to track *in situ.* While the product of this activity is often posted on public, minable forums (Klein et al., 2019; Perry & DeDeo, 2021), personal web search patterns are not open but amassed and owned by Big Tech companies. Nonetheless, epistemic strategies on the internet are beginning to be examined empirically, at least in typical, non-conspiracist participants (Lydon-Staley et al., 2021; Robertson et al., 2021) with custom tracking software. Conspiracists may not be eager to have their web activity monitored by distrusted "establishment" scientists, but this initial resistance might be surmountable. Anthropologists and sociologists doing fieldwork in conspiracy communities have noticed that conspiracists are often pleasantly surprised that scientists show an interest in their thinking (Harambam & Aupers, 2015). There may be great scientific value in the study of their information-seeking

experiences and practices through qualitative, ethnographic methods (Franks et al., 2017; Lee et al., 2021) as well as through machine learning techniques to mine online search data for patterns of information-seeking. We could use the latter data to give some much-needed empirical substance to frequent speculations that conspiracists would show stronger perseverative behavior (i.e., dwelling or circling back on the same topics) and increased path-dependency (i.e., early information strongly biases later searches) compared to the average internaut (Molnar & Loewenstein, 2021). Although social media posts (e.g., on Reddit) have been mined already (Klein et al., 2019; Perry & DeDeo, 2021; Zannettou et al., 2017), actual internet search data, be it for "free-ranging" or task-dependent searches, has not been looked at yet.

Because our perspective-*taking* often fails when it comes to conspiracists, we must emphasize basic qualitative research as well, poignantly denoted as perspective-*getting* (see Eyal et al., 2018): Actually asking conspiracists about their experiences and practices when forming their beliefs. That is not because we assume they necessarily have good insight into the processes that produced their beliefs (people rarely do; Nisbett & Wilson, 1977) but because those experiences serve as our *explanandum*, constraining our theories. This obviously does not mean being blind to the potential harm of people's ideas, but it does require approaching them in a charitable, curious way, temporarily suspending judgments of truth and morality.

Metacognition and Information-Seeking Tasks in the Lab

Aside from naturalistic "search" studies, we also lack lab studies on information-seeking practices in conspiracists in neutral, non-conspiracy-related tasks. This is perhaps understandable given the hard-to-reach target population (Franks et al., 2017), but the increasing adoption of web experiments in the field provides a viable alternative (Frenken & Imhoff, 2022a, 2022b; Georgiou et al., 2021c; Meuer & Imhoff, 2021). There is a large literature attempting to characterize the cognitive processing profile of conspiracists using questionnaires (Biddlestone et al., 2022; Bruder et al., 2013; Crocker et al., 1999; Frenken & Imhoff, 2021; Georgiou et al., 2019, 2021c; Hornsey et al., 2022; Imhoff, 2015; Imhoff & Bruder, 2014), yet the information-seeking and metacognition tasks recently developed in typical participants still await to be applied with conspiracists. For example, questionnaire-based research suggests overconfidence, in the form of the illusion of explanatory depth, is prevalent among conspiracists (Vitriol & Marsh, 2018). Very recently, Pennycook et al. (2022) found that conspiracy believers are also overconfident in the sense of overestimating their performance on difficult numeracy and perception tasks. But this has not been tested with experimental, well-controlled metacognition tasks that could reveal whether conspiracists monitor their uncertainty less effectively (e.g., higher confidence bias or lower confidence sensitivity; Desender et al., 2018; Rollwage et al., 2018). Different from Pennycook et al. (2022), this would require a trial-by-trial design with controlled levels of uncertainty to measure how well actual trial uncertainty matched with perceived confidence.

In addition, we know from the work in typical participants that common research paradigms used to measure performance overestimation confound overestimation and overprecision (understood as excessive certainty about the accuracy of their beliefs; Hoffrage, 2004; Moore & Healy, 2008). At least in the broader population, the latter form of overconfidence is a more widespread and reliable finding than an overestimation of one's actual performance (Hoffrage, 2004; Moore & Healy, 2008). It remains to be seen whether (over) confidence, as measured in that more specific and controlled way, is really greater in conspiracy believers.

Decreased information sampling ("jumping-to-conclusions" behavior) has also been found in people with higher conspiracy beliefs and in dogmatic people (Hattersley et al., 2022; Pytlik et al., 2020; Sanchez & Dunning, 2021; Schulz et al., 2020), also suggestive of a form of overconfidence, but studies are scarce, and it is unclear whether conspiracists really sample less information and under which conditions they would do so. Indeed, questionnaire studies find that people with firmer conspiracy beliefs report higher levels of information seeking (Georgiou et al., 2021a, 2021c), so more behavioral evidence is needed to resolve this issue. Crucially, trial-by-trial behavioral tasks that allow subjects to seek more information before making their decision (Desender et al., 2018) are able to say whether conspiracists sample information less adaptively (i.e., less tuned to the currently perceived uncertainty or confidence) than the general population, which would shed more light on their (meta)cognitive profile than merely knowing whether they search for more or less information as such. Tasks that manipulate statistical regularities in the environment can also induce different types of uncertainty to see which ones (if any) are differently tracked in conspiracy believers. For example, a recent study found that participants with more conspiracy beliefs struggle to adapt their learning rate in volatile environments, where uncertainty is due to actual changes in the regularities (rules) causing perceptual inputs (Zhang et al., 2022). Being able to disentangle uncertainty due to non-repeating variability (noise) versus due to actual, learnable changes in the environment is important to be able to direct information-seeking efficiently to those inputs that could improve one's mental model, and hence require a new explanation (A. J. Yu & Dayan, 2005).

Finally, while Georgiou et al. (2021b) showed that people prone to conspiracy beliefs have a bias against disconfirmatory evidence, typical participants are also known to selectively sample evidence in support of their prior beliefs (Harris, 2018; Kaanders et al., 2022). Importantly, this confirmation bias specifically arises when people "did their own research," so when the information sampling is under their own control (Kaanders et al., 2022).

In sum, whether the conspiracist's way of doing research qualitatively differs is thus still an open question. Aside from metacognition tasks discussed earlier, promising paradigms developed in the field known as "optimal experiment design" or "active learning" can be exploited to look at how conspiracy believers intuitively formulate questions (hypotheses), how they probe their environment, or how they evaluate the answers they receive (Coenen et al., 2019; Nelson, 2005).

Beyond Processing Fluency

The discrepancy between the earlier mentioned active epistemic practices of conspiracy thinkers and the usual scientific and media discourse on the passive echo chamber model is evident (Quattrociocchi et al., 2016; Thi Nguyen, 2020). The naïve assumption is often that belief adoption is a simple matter of passive "knowledge transfer" or absorption. Mere repetition of an idea is supposed to lead to formation (and perceived truth of) the belief. This account of how we come to acquire beliefs is heavily rooted in *mere exposure* and *processing fluency* ideas. The conventional reasoning is that the ease with which conspiracy ideas are processed is boosted through the use of patterns that align with our intuitive, familiar ways of interpreting the world, namely centered on agents with intentions and emotions (Douglas et al., 2016). More specifically, it is easier to deal (cognitively and practically) with an agent with a single motivation—a single-mindedly evil agent or alliance—than with messy but more true-to-life and situation-bound *mixed* motivations. All situation-specific elements can be set aside as noise in a black-and-white world. Moreover, these are patterns that one is exposed to *over and over*. The idea is that if people are just presented often enough with some (deviant) idea (i.e., the echo chamber), they will see it as true and valuable (*mere exposure*). There is little doubt that processing fluency, often by mere repetition, *can* create a subjective sense of truth (Béna et al., 2022; Fazio et al., 2015, 2022; Hasher et al., 1977; Stump et al., 2022), but, as we will argue next, there is more to (conspiracy) belief formation than this.

One also sees this model of passive absorption of beliefs in the literature on misinformation, where the model of misinformation as "viruses" causing an "infodemic" is widely used to indicate the spread of misbeliefs through passive exposure (van der Linden, 2022). The evidence on epistemic practices speaks against this idea that people have little agency in adopting their beliefs (see also Altay, Berriche, & Acerbi, 2023). More importantly, it impairs our efforts to counter misinformation by focusing on debunking or cognitive "inoculation" ("pre-bunking"), while the epistemic need to proactively seek alternative, counter-official answers are not addressed (see the fifth section).

If we can take the conspiracist's reports seriously, the way they were pulled into conspiracies is not through absorbing misinformation that is engineered for fluency. Instead, they were presented with questions or challenges and were encouraged to "do their own research" and "find their own enlightenment" (Garry et al., 2021). As Garry et al. (2021) found, this call for "own research" is how many people claim they were "awakened by QAnon." Indeed, it is a smart strategy to use challenges or partial clues instead of statements or facts for an audience that is already distrustful of authoritative voices and sensitive to attempts at manipulation.

Challenges or ("merely raising") questions are not just effective at dismantling someone's initial defenses; they also seem crucial for the actual belief formation. These cues are the initiators of curiosity and active information seeking that can culminate in a subjective sense of insight or understanding, sometimes called the *Aha Erlebnis*. Those experiences seem to require at least a momentary *dis*fluency, an obstacle that is subsequently overcome through one's own agency. Given the mantra of "do your own research," one might ask whether the subjective feelings of interest and insight are not as much a motivator and guiding experience for conspiracists as it is for scientists. We have little reason to doubt conspiracists when they report that they genuinely have those experiences of discovery and insight during their inquisitive explorations.

At least in the sense that conspiracists seek out optimal or resolvable disfluencies, it would be wrong to say (as is often proclaimed, e.g., McDonald-Gibson, 2022) that conspiracy believers cling to conspiracy theories because they provide them with "easy answers" about their world. When the literature on conspiracy theories acknowledges that these ideas are successful in part because they respond to epistemic needs, this is too often immediately reduced to the conspiracist's tendency to avoid uncertainty and to see patterns where there are none (Biddlestone et al., 2022; Brotherton & French, 2014; Hartmann & Müller, 2023; van Prooijen, Douglas, & De Inocencio, 2018). The role of an optimal level of uncertainty or disfluency in epistemic experiences suggests this cannot be the complete story. It urges us to turn to the psychology of discovery and insight, to better understand processes of belief formation, and apply it to conspiracy theories. This is what we do next.

The Nature of Discovery

A great visual and visceral illustration of our sense of insight or "aha" can be found in so-called Mooney (or "two-tone") images. These are distorted images that are created by grayscaling, blurring, and thresholding photographs such that only irregular, disconnected patches of black and white seem to remain (see Figure 1). The content is completely obscured or "camouflaged," until, often with some help, the actual object can be discovered and organized or segmented from the background. At that point, people often have a positive insight or "aha experience" (a "click" of understanding). Usually, they cannot unsee the object; phenomenally, they cannot return to the original disorganized percept of the same

Figure 1. Two-tone or so-called mooney images are created by blurring and thresholding grayscale photographs (see the source photograph on the next page). They are examples of one-shot learning: Once you find or are confronted with the solution you cannot unsee it. "Discovery" of the familiar structure in the image, usually gives a positive feeling of insight or Aha-Erlebnis. If unsuccessful, take a look at the solution/source in Figure 2 and return to this one to (hopefully) experience the Aha.

input (and will remember the solution when later shown the image).

From the literature on the topic (Danek et al., 2013; Kounios & Beeman, 2009; Topolinski & Reber, 2010; Van de Cruys, Damiano, et al., 2021; Van de Cruys et al., 2018), we know that an Aha-Erlebnis is an acute positive *feeling* associated with an epistemic experience ("pieces of a puzzle clicking together"). Hence, aha experiences have also been invoked as a key factor in aesthetic appreciation of stimuli (Muth & Carbon, 2013). In psycho-aesthetics (Graf & Landwehr, 2015; Van de Cruys, Bervoets, & Moors, 2021; Wänke & Hansen, 2015), it has become apparent that disfluencies are important contributors to subjective appreciation: What counts is not so much the momentary or overall fluency of a work of art (i.e., its symmetry, familiarity, or predictability), but rather the relative processing fluency. So an initial *increase* in uncertainty, experienced as disfluency, non-comprehension, or effort, is a necessary element in the generation of an aha or insight experience (Auble et al., 1979) that explains the inverted U-shaped curve relating complexity/unpredictability and liking (Walker, 1981).

The aha experience is empirically shown not only to increase liking but also the perceived truth of a stimulus (Laukkonen et al., 2020). In aha experiences or discoveries, new beliefs are formed—new regularities discovered in the world—but not just by making ideas or materials as fluent as possible to process. Discovery implies an initial obstacle to understanding, that is, disfluencies instead of mere fluency, that is subsequently overcome. It is an expectation violation, surprise, or conflict that is subsequently subsumed in one's mental model again (possibly by integration of a new model). This renders the conflict or disparate inputs predictable again, by application of the right "frame," usually in the form of a sparse explanation of the data (Gaver & Mandler, 1987). Since the early work on ahas by the Gestalt psychologists, this mental shift has been called *restructuring* (Duncker, 1945; Wertheimer, 1943). The stimuli or problems used to induce ahas in the lab are diverse (Sprugnoli et al., 2017), going from classical object-based puzzles (Duncker's candle problem, matchstick problems, etc.; e.g., Duncker, 1945) to image-based puzzles (e.g., Mooney images illustrated earlier) to word-based problems, such as the remote associate's task (searching for a fourth word that links three given words; e.g., Stuyck et al., 2021), anagrams, or sentence-based problems (e.g., "The breakfast was excellent because the thread was sticky." The solution is spider web here; Auble et al., 1979).

Evidently, a subjective sense of discovery or insight, for instance during the conspiracist's online research, does not necessarily equal truth. For example, in research with Mooney images (Van de Cruys, Damiano, et al., 2021; Van de Cruys et al., 2018), one finds that people at times are very convinced of some illusory content or pattern they discovered in an image. Of course, we have the ground truth for a Mooney image (its source photograph), but after distortion, the image might have just as well come from another object. Indeed, participants usually also have specific ideas about how their perceived object is constructed (coincidentally, of course) from cues in the Mooney image. Similarly, in ahas induced by (purportedly) solving a magic trick, Danek and Wiley (2016) found that false insights regularly happen. Experimentally, it is also relatively easy to induce false ahas, for example, when semantic priming leads to ahas for inaccurate solutions of anagrams (Grimmer et al., 2022). Indeed, anyone will be able to relate, somewhat begrudgingly, to the visceral rushes of insights that later turn out to be inaccurate (Keil, 2006). An aha can be had, but rigorous follow-up research may not be able to validate it.

The Cognitive Mechanism of Aha

Although insights can be deceptive, there is no reason to doubt the genuineness of those experiences, nor even to question that those feelings track actual, albeit subjective, progress in understanding. Our cognitive system has to deal with a world ridden with uncertainties from many different sources, such as a limited and noisy sensory apparatus, incomplete knowledge of the world, indeterministic or volatile regularities in the world, etc. It does so by inferring the latent causes that have generated our sensory inputs (e.g., clouds causing the patterns of light on our retina) and by proactively predicting events based on learned environmental regularities (Clark, 2013; Friston et al., 2012; Hohwy, 2020).

Figure 2. The source (Solution) image for Figure 1.

However, our experienced version of our environment—our current best prediction or hypothesis—is always provisional, contingent upon the sparse, biased, and indirect data we can gather to speak to and constrain our models or beliefs. In our perception (as in science), we meet the world only in our failures—our prediction errors—not in any absolute sense, but relative to the constructs with which we probe our world (Gershman, 2021; Jost, 2004; von Glasersfeld, 1995).

When navigating through our world, we only have this feedback to go on. But what we *can* do is track these prediction errors and how they evolve over time. We can also form meta-expectations on the rates with which we expect to reduce prediction errors for a given type of activity, goal, or context. This information can be used to evaluate how well we (our models) are doing in predicting our environment, to monitor our progress in solving tasks (MacGregor et al., 2001), and to decide when we need to take action to return to a more expected, positive rate of prediction error reduction (McReynolds, 1971; Van de Cruys, Bervoets, & Moors, 2021). These actions can be information-seeking actions (i.e., exploration) or mental actions to switch attention to a different (more predictable) environment. Interestingly, aha experiences are thought to be more prevalent for problems for which one has reached an impasse, where further information-seeking behavior was to no avail, and one is on the verge of giving up. In terms of metacognitive monitoring, we have a low implicit expectation of solving the task and reducing the uncertainty (prediction errors). This sets the stage for reducing uncertainty at a rate that is much faster than expected, which we hypothesize causes the aha experience.

Indeed, recent findings suggest aha is a result of making epistemic or predictive progress (technically information gain or uncertainty reduction; Van de Cruys, Damiano, et al., 2021), especially when this reduction of uncertainty comes sudden or unexpected. For example, Dubey et al. (2021) found that the strength of the aha experience when solving jumbled words was causally linked to solving the anagram faster than expected. The initial disfluency or uncertainty (the jumbled word) is necessary for the aha experience because it allows people to reduce uncertainty (solve the problem) at a rate that is faster than expected.

This mechanism also explains why the experience of insight is not necessarily truth-tracking. Which prediction errors or uncertainties we will be confronted with will depend on the actual predictions or constructs that we implicitly formulate. It follows that the dynamics in uncertainty (e.g., relative reductions) also crucially depend on the prior constructs that we overlay on our sensory inputs. Hence, given certain predictions or premises, different things may generate insights for different people at different times. If one represents cognition as a gradual increase in fit between model and mind as measured by minimization of prediction errors, one can think of aha as a sudden, unexpected descent in the prediction error landscape, with no guarantee that one has reached the global minimum ("the truth") rather than a mere local minimum (illusory or temporary insight). While the dynamics in prediction errors under consideration could be very multimodal and pooled, the aha remains a very contextual and "local" indicator of one's cognitive processing and capacity to cope with the environment. Correspondingly, our feeling of insight will be limited to the mental models and data one('s cognitive system) brings to bear. Indeed, a particular set of fictitious prior knowledge structures may in turn afford particular deceptive insights, which recursively reinforce those worldviews (Laukkonen et al., 2018). This phenomenon is particularly relevant in conspiracy theories, as we will see next.

Ahas as Tools in Conspiracy Thinking

The potential for false insights that have all the characteristics of real ones—increased confidence or perceived truth and a sense of beauty or positive affect—already indicates how useful aha experiences can be as tools for changing minds, for example, in the context of conspiracy theories. But there are three additional features of aha that make it extremely suited for belief formation.

The first is the carryover effect. Consider a typical study of aha's effects on appreciation or perceived truth. In such an experiment, people are presented with statements that contain a jumbled word (aha-inducer; Laukkonen et al., 2020), for example, "ithlium is the lightest of all metals." People will rate the accuracy of those statements as higher when they contain such an aha compared to control conditions with a non-jumbled word without an aha (or with only a delay in the appearance of the word). Note that induction of aha is done orthogonal to the object that is evaluated. In the lithium example, for example, solving an anagram of a single word in a statement influences the perceived truth value of a statement unrelated to this puzzle-solving. The aha generalizes beyond the concrete materials used to induce it to materials

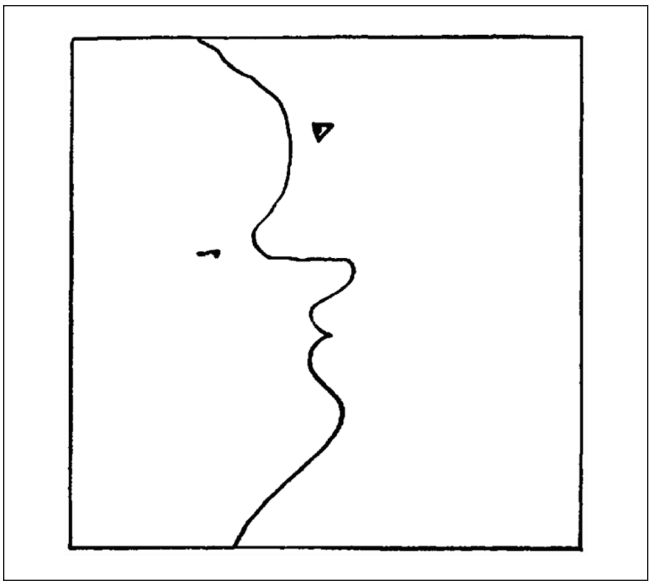

Figure 3. Ambiguous figure from hebb (1949). Why do figures like this appeal? Absences become meaningful (as obstacles or prediction errors) as they allow you to contribute something and complete the figure. In a matter of milliseconds, your curiosity is piqued by the squiggly line, which deviates (prediction error) from what you expect an average/randomly drawn line looks like. This invites you to make additional saccades (a mental resolving effort), which is followed by the aha upon discovery of the two faces

contiguous with them. While the spatiotemporal extent of this carryover effect has not been examined yet, the potential for suspicious beliefs to piggyback on innocuous ahas at least seems there.

The second feature of aha that is relevant to conspiracy thinking is connected to the so-called *generation effect* in classical memory studies (Slamecka & Graf, 1978). The idea here, confirmed by empirical studies, is that people remember things better if they have been able to infer or (re)construct them themselves. The principle is used from art to advertising, when a stimulus is actually rendered in a distorted or incomplete way—made *less* instead of more fluent—in order for people to contribute something while trying to capture the regularities embedded in it. There is a telling convergence here, in that an artwork, an idea, or a brand is made to be experienced as more pleasing, more truthful, and more memorable. The principle can again be illustrated with a perceptual example (Figure 3), although it applies to cognitive processing in general.

This of course relates to the conspiracy theory's potential to easily apply to new data, that is, new challenges or disfluencies. The generative potential of conspiracy ideas, also called their cognitive fertility (Thi Nguyen, 2021), is a central subjective marker that we have understood something. Again, it implies that understanding is not about passively absorbing information but about active and creative (re)construction of information (Elgin, 2002; Thi Nguyen, 2021). Being able to construct your own "pieces of knowledge" using a self-devised variation of the conspiracy theory seems to be a key mechanism in the adoption of conspiracy theories (Brashier, 2022; Garry et al., 2021). It gives you a sense of cognitive labor fulfilled and so of trustable knowledge, even if the active involvement or effort is a "mere" mental action with minimal overt action (e.g., eye movement to resolve an image or get a "clue"). It is the resulting *sense of ownership* of the beliefs formed that is the secret weapon of conspiracy theories and it suggests conspiracy theories are not engineered for clarity or fluency, but for discovery.

This reasoning also aligns with the empirical finding that people "often discount or dismiss the opinions of others too much, and give credence to a belief when it is attributed to themselves" (Dunning, 2019; Morin et al., 2021; Trouche et al., 2018). Make people discover it themselves, make them actively fill in the blanks, and they will reliably incorporate it into their core belief structures, as "part of themselves," as it were. The boosting of value and ownership by one's own effort is also reminiscent of the so-called Ikea-effect: We seem to attach more value to something we constructed ourselves (Norton et al., 2012; Stafford, 2021; Tiehen, 2022).

In attaching a new sense of truth to things, discovery experiences seem to inevitably come with a strong *mind projection fallacy* (James, 1910; Jaynes, 1990), in the sense that what we discover seems to be immediately projected unto the world itself. It is seen as a "fact about reality," rather than merely to our subjective judgments or experience. Mooney images illustrate this as well because once people have discovered the solution—illusory or not—they seem to situate the content in the image itself, rather than just in their experience of it. Even though just seconds ago, the object was not there for them, ahas seem to firmly anchor ideas or viewpoints "out there" in reality. It is this strong combination of belief projection and belief ownership that characterizes real belief adoption ushered in by aha experiences.

The third and related feature of ahas that may be exploited in conspiracy theories is that they have what Thi Nguyen (2021) has called thought-terminating properties. The discovery experience subjectively marks that some cognitive work has been carried out to completion or closure, and so it receives a mark of understanding or (new) clarity, which tends to stop the need for any further thinking or cognitive elaboration. For example, experiments with Mooney images suggest that this closure after aha is associated with a narrowing or reduced dispersion of the pattern of eye movements (Król & Król, 2018), indicative of reduced information seeking. This raises the (as yet untested) hypothesis that the aha causes a stronger reliance on one's top-down expectations and schemata, as opposed to new sensory information. The logic here is that the discovery just made validates one's mental models because substantial information gain was made. This validation increases confidence in one's models. A confidence that then generalizes or carries over to parts of one's models that were not specifically at stake in the particular aha.

In sum, these "darker sides" of ahas may be (implicitly) instrumentalized in conspiracy thinking. This list suggests that epistemic experiences using curiosity-based prompts or challenges do more than just pull new people into conspiracy thinking. They are also what makes people stay for the longer term—using aha experiences to consolidate conspiracy beliefs and fulfill people's sense-making needs. This idea is consistent with Perry and DeDeo's (2021), who used machine learning to analyze the content of conspiracy-related posts on social media and found that long-term engagement is predicted by posts that provide "synthetic and systematic explanations for the way things are. . .[and] show how a number of distinct pieces of evidence connect together." Relatedly, in a content analysis of a series of real-world online conspiracy articles, in this case coded by humans instead of machines, Meuer et al. (2022) found, contrary to their expectations, that those articles did *not* provide less argumentation or less detail on underlying explanatory processes for events or standpoints, suggesting that the epistemic or sense-making experiences are indeed crucial.

Toward Testable Hypotheses

We are now equipped to more precisely formulate the new hypotheses afforded by our account and how they can be subjected to empirical tests. At the core of our account is the role of *epistemic arcs* in explaining the pull of conspiracy thinking, where an epistemic arc can be described as a sequence of an experience of curiosity followed by an epistemic act (covert internal search or overt information-seeking), and subjective insight. The epistemic act could be minimal, as in the example of the web searches discussed earlier (Fisher et al., 2015). More concretely, the mechanism relies on the creation and resolution of uncertainty. In typical participants, Ruan et al. (2018) found that people liked stimuli like trivia texts more when uncertainty was first created by teasing people with missing information or questions (curiosity). It is well-established that curiosity raised by teasing people also induces better learning (Fandakova & Gruber, 2021; Wade & Kidd, 2019). Hence, an obvious question is whether these processes play out differently in conspiracy thinkers: Do they tend to get curious or get positive feelings associated with uncertainty resolution more easily than typical participants (for non-conspiracy-related materials)?

More crucially, one could look at whether epistemic acts, like internet searches, as Fisher et al. (2015) discussed earlier, increase belief confidence more in individuals with stronger conspiracy beliefs than in typical subjects. Of course, we could also introduce a complete epistemic arc. This would entail explicitly adapting conspiracy (vs. non-conspiracy) texts so as to contain solvable disfluencies (e.g., a few solvable jumbled words) orthogonal to the content of the stories (see also Laukkonen et al., 2020). According to our account, the epistemic act and experience elicited by those challenges should lead to increased plausibility or belief of the story, particularly in conspiracy-prone individuals. As the aha-eliciting process would, in principle, be orthogonal to the plausibility of the content, this procedure would also test the carryover effect discussed previously.

In-depth content analysis of existing online conspiracy texts also has the potential to provide more targeted empirical tests of our hypothesis that conspiracy theories are implicitly engineered for discovery (epistemic emotions) or resolvable disfluencies. For example, one could focus a content analysis on forms of disfluencies such as expectation violations in these narratives compared to non-conspiracy news articles. A recent study by van Prooijen et al. (2022) reports that people find conspiracy narratives more entertaining than non-conspiracy control stories, as rated with an "entertainment" scale composed mostly from dimensions of curiosity (i.e., items about epistemic emotions such as How interesting was this article? How captivating was it? How boring? How engaging? How attention-grabbing?). Given that such epistemic emotions are traditionally connected to uncertainty creation and subsequent resolution—like in the structure of a whodunit story—it would be worth analyzing conspiracy narratives in this way.

We may be able to scale said analysis of the temporal dynamics in uncertainty by automatizing it via natural language processing, given that manual annotation of the unpredictabilities in text segments would be time-intensive (given a large enough corpus of written conspiracy vs. non-conspiracy narratives) and subjective (requiring multiple raters). Recently developed Large Language Models can compute the predicted probability distribution of the next word, at each point in the narrative, and hence can be used to derive a time series of prediction errors for a text (Kumar et al., 2022). Our hypothesis would be that conspiracy narratives would show more variability in predictability, leading to more epistemic emotions across texts, than non-conspiracy control texts.

A second possible way of exploiting online conspiracy-related data to test this account would be looking at the use of internet memes in conspiracy circles. It is well-known that memes are popular, witty, or ironic communication devices of online culture, also prevalent in conspiracy networks (Hernandez Aguilar, 2023). Interestingly, they exemplify aha experiences because, like many forms of humor, they often include an expectation violation (so-called pattern with variation) that is easily overcome by minimal but non-negligible cognitive effort, often resulting in an aha experience and humor. Hence, memes share the generation effect—eliciting your "own" contribution—with other aha experiences. Memes, like other insights, do not spell out the specific ways by which people may reach the "insight," but the discovery is prepackaged in the sense that with the right starting conditions and minimal cues, the meme creator controls the outcomes (Rao, 2022). The active contribution ("doing your research") is real, but the autonomy ("own" research) is illusory. A meme can incite a brief insight, but it is not a real explanation. It piques and satisfies curiosity and brings

momentary closure, potentially helping to conceal gaps in conspiracy explanations (cf. illusion of explanatory depth).

As vehicles of minimal discovery, memes seem to have naturally evolved as tools of conspiracy theories, to successfully communicate ideas and change minds on social media. In the way they compress ideas and make them easily consumable (Fiadotava et al., 2023; Hernandez Aguilar, 2023), they can of course be exploited for both emancipatory and more nefarious purposes. But as tools for the adoption or radicalization of particular beliefs, they may provide a tractable way to test our ideas in online media, currently the naturalistic context for conspiracy theories. We predict that exposure to conspiracy-related memes can be identified as entry or radicalization points in the process of embracing a conspiracy world.

Beyond memes, one could examine whether conspiracists are more captivated by counterintuitive ideas. Research on the spread of misinformation on social media shows that novel and counterintuitive messages are shared more frequently (Berger & Milkman, 2012; Thorson, 2008). We would hypothesize that this is because people have the feeling they made a discovery and that conspiracists might be especially sensitive to this.

In the previous one, we have consistently referred to the internet as the naturalistic setting for conspiracy theories. But of course conspiracy theories predate the internet. As the epistemic processes we describe generalize beyond the internet, an interesting avenue of research might be to perform historical research, into media use (newspapers, radio, libraries, archives, etc.) by pre-Internet conspiracists, to get a sense of their epistemic needs and practices. That said, the internet undeniably amplified both the cues and the means of doing research (e.g., 9/11 truthers). It is already widely considered to drive conspiracy theories by (a) making exposure to misinformation simpler and (b) facilitating the gathering of like-minded people with unusual views, but we are introducing a new angle: the internet facilitates epistemic arcs. This seems especially obvious in the case of QAnon, which instrumentalized the internet in unprecedented ways to activate people and escalate its effects on society.

Epistemic Progress and Epistemic Exclusion

Where does this discovery-based account of conspiracy thinking lead us when we want to track the deeper origins of conspiracy thinking? Given the hypothesized centrality of having one's own epistemic experiences in the development of conspiracy thinking, it seems very plausible that this type of thinking is rooted in a deep sense of *epistemic exclusion*. This urges us to look at both sides of the epistemic divide in society. As many scholars have observed, conspiracy theories are only the symptoms of wider problems in society (Hacker, 2021). It turns the problem of conspiracy theorists or "pirate scientists," into a challenge for science and other authoritative epistemic voices in society. People feel epistemically excluded when they feel their explanations, stories, or experiences are marginalized, rejected, or even inexpressible in the language of the dominant discourse in a society (Barkun, 2015; Fricker, 2017; Harambam, 2021). They feel that their individual and social knowledge-creating capacities have no place in society. One can predict that communities or people that are relatively epistemically excluded would tend to search for their own forms of knowledge creation and discovery, even if it is in "epistemic aberrations" such as conspiracy theories. Surveys have shown that the adoption of conspiracy belief is indeed more prevalent in epistemically disadvantaged communities. This can be due to being economically or ethnically marginalized (Crocker et al., 1999; Goertzel, 1994; Imhoff, 2015; Imhoff et al., 2022; Parsons et al., 1999; van Prooijen, Staman, & Krouwel, 2018), but can have other causes as well. The important element here is that one feels excluded, not that one is actually excluded, although of course the two often coincide. Here, we sidestep the sociological discussions on whether or not such feelings are merited or not.

For example, with technological advancement in our information society, more and more areas of our lives are dependent on technical expertise—be it scientific, political, juridical, or financial—and on technological interventions, automation, and, increasingly, artificial intelligence (Fischhoff, 2013). While the benefits of these evolutions are well-touted and clear beyond the example, they also threaten to create a democratic deficit. They introduce a lack of insight into what governs our lives and the society we live in, with, paradoxically, a concomitant decrease in perceived agency or control. These evolutions render more and more parts of life partly or completely opaque for a growing number of people.

One notable example of this concerns anti-vax sentiments in mothers of newborns. A recent study shows that mothers often feel that their maternal instinct and knowledge creation ("maternal epistemology") are rejected in the technical and medical sphere and dominant in society (Carrion, 2018). Many of these women seem to have had one or more bad experiences in the medical world, with complaints or symptoms that were not taken seriously or even altogether denied to exist (Carrion, 2018; Castel, 2022). This history of rejection and ensuing distrust can be the seed for radicalization in conspiracy thinking and the rejection of conventional medicine (e.g., in antivax sentiments) in favor of spirituality ideas (or "conspirituality"; Ward & Voas, 2011). Similar links between negative medical experiences, distrust in medical services, and conspiracy beliefs have been reported in other socially disadvantaged groups (Benkert et al., 2019; Bogart et al., 2021; Jaiswal & Halkitis, 2019). In interviews, these people often are careful *not* to claim that they have all the evidence to consider their deviating beliefs as the truth; they only claim the right to engage in their own truth-seeking activities (Carrion, 2018; Harambam & Aupers, 2015; Stewart, 1999).

Times of increased change and uncertainties in life[1]—such as during a pandemic, a first pregnancy, in illness, or old age—may raise the need for autonomous discovery and insight experiences because those experiences provide renewed clarity on how to think and act. So conspiracy theories do not just "fill a gap" in their will-less victims. Times with unexpected increases in uncertainty in how to go about one's life and the anxiety that comes with it create a need to redress this by one's *own* epistemic practices: Information-seeking actions that create knowledge and cause a reduction of uncertainty. Indeed, personal discoveries point to new regularities that allow us to regain a modicum of predictability and control in our life. It is this feeling of epistemic progress that is sufficient, irrespective of whether this progress holds true in the final reckoning; see the earlier discussion on ahas and false feelings of truth.

Frantic checking of the news (also epistemic actions) during pandemics or terrorist attacks, is unlikely to provide the strong insights that people long for in these times (Head et al., 2020). Conspiracy theories, however, might do so, by setting up quests—epistemic arcs as we called them—that do run to their aha-completion. While from the outside, conspiracy theories may seem far-fetched and complex, from the inside, they seem to evoke a sense of manageable knowledge, a domain that can be understood using one's own epistemic actions. In this way, it may protect you from depression by reinforcing your epistemic agency. Since, in these epistemic quests, your actions are clearly shown to have reliable, satisfying effects, your perceived lack of control or helplessness does not generalize, as it often does in depression (cf. learned helplessness; Lieder et al., 2013). There is correlational data as well as anecdotal self-reports consistent with this protective effect of conspiracy theories for distress or depression (Fountoulakis et al., 2021; Garry et al., 2021), but those findings did not look at causality, nor at the crucial epistemic agency that we propose is behind the effect.

However, note that there is longitudinal evidence that conspiracy theories sometimes *decrease* well-being in the longer term (Liekefett et al., 2021). This does not need to be at odds with an immediate distress-reducing effect of conspiracy theories (and so possibly epistemic agency), as has been noted before (Douglas et al., 2017). Conspiracy theories provide a sense of control by discovering *yourself* explanations for things you *cannot* control. There may be comfort in being able to work out the predictable principles of evil or experienced opposition in the world, even if that evil is unavoidable so does not allow for control. When evil is quasi-unavoidable, we seem to prefer an unjust, *structured* world with clearly (predictably) localized evil—one that we can get insight into—over a random world (Janoff-Bulman & Yopyk, 2004; Skinner, 2000; Stroeken, 2004; Sutton & Douglas, 2014). Indeed, long-standing experiments show that animals in general prefer and are less distressed by predictable aversive stimuli like electroshocks over unpredictable ones, even if those stimuli are inescapable (Badia et al., 1979; Weiss, 1970). Our preference for predictable evil probably stems from both our capacity to (somatically) prepare for and so soften the blow of negative events and our experience that in the vast majority of everyday contexts, insight into the underlying structure does provide a handle for control as well, even if only in future encounters. This is why epistemic needs or experiences and existential ones cannot be neatly separated from everyday experience.

By enabling epistemic agency in people, conspiracy theories might function as a kind of proximal promise (proxy) for broader agency with respect to adversity. This testable hypothesis would align with the recent finding that solving problems with an aha creates a greater tolerance for uncertainty immediately after the experience, as measured by increased risky choice-making (Y. Yu et al., 2022). We would predict that, while people with conspiracy beliefs may often have a higher intolerance of uncertainty by default (Larsen et al., 2021; Marchlewska et al., 2018, but see, Molding et al., 2016), engagement with conspiracy materials, especially if they appeal to their epistemic agency as described here, would indeed lead to a short-lived lowering of their intolerance of uncertainty as well as a more optimistic outlook. However, in the long-term, conspiracy adoption may, at least in some cases (Liekefett et al., 2021), raise or sustain distress for a number of reasons, such as the full realization of the bleak contents of the discovered worldview, harmful decisions made on the basis of this view (Douglas, 2021), or scorn from family or friends because of these ideas. In addition, getting habituated to shorter epistemic arcs may be the information equivalent of temporal discounting in reward learning (i.e., rewards are perceived to be less valuable the more distant in the future). Expecting the act (effort) of information-seeking to pay off and resolve quickly (at a certain rate) is detrimental to any epistemic quests that span longer arcs, which most undertakings in life require. This may explain why conspiracists seem to escape life to find solace in their conspiracy world and its (online) world-discovering practices (Stewart, 1999).

Objections

Before discussing some implications and future directions, we briefly highlight four possible objections to the view we present.

Many Flavors of Conspiracists

The first objection is that we have not made a distinction between conspiracy "developers" and more casual believers, or those who share a conspiracy-like thinking style. It is still possible that our analysis applies primarily to the former, and that the conventional theories about gullibility, motivated cognition, and cognitive biases better capture how the more casual and less "systemic" believers get their conspiracy beliefs. But we cannot say until in-depth research about the

epistemic processes of conspiracy thinkers has been done. Moreover, we probably need to differentiate even more: the most vocal, media-dominating proponents of conspiracy theories are often the ones that propound the most extreme or aberrant beliefs and usually have vested (non-epistemic) interests (Callison & Slobodian, 2021), but they may not be representative of conspiracy developers or casual believers.

All too often, the reflex in us, the people outside of conspiracy worlds, is still: Conspiracists must know better; they cannot genuinely *believe* these things. They must have other motivations to *say* they believe things, but in their heart of hearts, they know those ideas cannot be literally true. We do not want to deny that such duplicity aptly describes some conspiracists. But research shows most conspiracists genuinely believe the things they claim to believe (Morosoli et al., 2022). Moreover, an ambiguous attitude in their reports is not evidence of deceptiveness. For example, anthropologists recorded conspiracists saying: "It's not true but I believe it" (Parmigiani, 2021), similar to how indigenous people with witchcraft traditions would say: "I don't believe in witchcraft, but it exists" (Stroeken, 2004). Anthropologists and philosophers have noted that "believing in" is a very Western concept that does not always capture the phenomenology of intuitive epistemological stances (Luhrmann, 2018; Van Leeuwen, 2014; Van Leeuwen et al., 2021). Insight experiences may help explain the ambiguity in these intuitive stances because, as we saw, insights are part emotional-existential—discovered structure that renews agency in the world—and part epistemic—a sensitivity to evidence, albeit always evaluated on the local, model-dependent level of the individual.

The link between epistemic acts and existential or spiritual experience might seem counterintuitive, again, for Western eyes. But religious people show more epistemic instability or doubt than often recognized. They may say they believe that god or spirits are real and yet have to make great efforts (e.g., in rituals) to sustain this belief (Luhrmann, 2018). Indeed, rituals can be viewed as actions to self-produce evidence for one's beliefs (i.e., epistemic acts). For example, Heylighen et al. (2018) remark: "the undeniable act of praying to God can only be safeguarded from cognitive dissonance by denying any doubts you may have about the existence of God." In a sense, the research by conspiracists may be considered to fulfill a similar function, as a form of rationalized ritual. The advent of the internet has supercharged this ritual because it provided a source of arguments for almost any conceivable belief. One can say scientific epistemic practices have much less of this ritualistic character, but they are clearly not free from it (e.g., Gigerenzer et al., 2004).

Individual Versus Social Explanations of Conspiracy Thinking

The second objection is linked to our emphasis on the *individual*'s autonomous experiences. Other researchers emphasize that social, rather than individual, factors are responsible for conspiracy theories (Levy, 2021a; Ren et al., 2023; Williams, 2021). We certainly do not want to claim that social influences have no role in driving beliefs. Indeed, we usually defer to the ingroup to form beliefs (especially in situations of uncertainty), although we often have the *impression* that we came up with them ourselves. Although wrong in the strict sense, there may be an element of truth in this, as well: The beliefs passed on by a social partner provide hidden causes that are reconstructed in the receiver's own mind. Specifically, social beliefs usually come with a social, common base of experiences (evidence) that a believer will need to connect to the communicated explanatory causes (belief). A belief will not "click" without this. This is why statements of beliefs ("facts") from experts—as social partners—may have little influence on layman's beliefs: The shared evidence bases and intermediate hidden causes (for instance technical concepts) are missing.

In this sense, we think it is warranted to say that we are intuitive *epistemic individualists*, that is, we attach more value to the products of our own epistemic activity than those of the collective (Levy, 2019). Specifically, we underestimate the benefits of group deliberation (Mercier, 2017; Mercier et al., 2015, 2016), and we give individual information more weight than warranted (*egocentric discounting*; Altay, Nera, et al., 2023; Morin et al., 2021). Aha's may explain this bias and the greater perceived clarity of individually derived knowledge.

Still, epistemic practices are usually embedded in communities of insight miners, who may even grow epistemic trust and authority by conferring ahas to others. We can hypothesize that, just as with beliefs, epistemic trust is built up not just by mere presentation with facts (however reliable they are as such) but by "social ahas." Such social ahas will have to rely on interactions in which one party provides targeted queries and clues—interactive information-seeking—to induce disfluencies and resolutions, adapted to the current level of understanding and thinking of the listening party. So even though we did not focus on the social dynamics of aha here, our account makes room for the importance of social needs and mechanisms as part of an explanation for the spread of conspiracy theories (Biddlestone et al., 2022; Douglas & Sutton, 2022; Hornsey et al., 2022).

For example, one influential evolutionarily inspired "social" account of conspiracy belief systems states that the mere outlandishness of conspiracy beliefs has an important social role. According to this *strategic absurdity hypothesis*, "it is precisely because absurd group beliefs are viewed as absurd by outgroup members that their sincere and conspicuous endorsement functions as a credible display of ingroup commitment" (Williams, 2021). However, our emphasis on discovery and knowledge creation through active research suggests that there is much more to conspiracy theories than passive shows of allegiance to the group and costly social signaling. An impassioned epistemic community does not

come about from the mere passive, top-down absorption of impenetrable beliefs.

The Epistemic Appeal of (Popular) Science Versus Conspiracy Theory

Third, one might raise the objection that our account does not explain why people specifically turn to conspiracy theories and not to (popular) science for their epistemic quests and insights. The boundaries may get blurry, especially because conspiracy theories are not necessarily factually wrong. Indeed, historical sciences document a plethora of actual conspiracies that are accepted as evidence-based explanations of events (Pigden, 2007). Still, several features may make conspiracy theories about current-day events more attractive than science in terms of epistemic emotions. First, science is less accessible, even in its popular translations. As we saw, the potential for discoveries relies on the induction of optimal, reducible uncertainty. But what disfluencies will still be subjectively manageable depends on prior beliefs and existing mental models (what one has already been exposed to). Uncertainty is model-dependent. This may be where the intuitive and repeated explanatory patterns of conspiracy theories may bring them to just the right level of disfluencies to appeal to the background of a broad group of people. The boring complexity of scientific explanations might make personal epistemic progress difficult, especially on personally relevant questions (cf. Why me? Why do bad things happen to good people?). So scientific progress relies on more specialized knowledge and longer epistemic arcs, which requires staying with the uncertainty for much longer before resolution (if any).

The case of anti-vax sentiments illustrates that, as scientists, we contribute, often by necessity, to the epistemic exclusion of certain groups in society. Science is an epistemically exclusive undertaking by its nature and requirements (extensive training, credentials, institutions, formal language, methodically collected data, etc.). And, together with technology, it greatly increased our control as a species, but the expectation of control it comes with is a mixed blessing, for example, in dealing with things we do not know yet and hence cannot control yet in medicine (cf. frustration in individuals with medically unexplained symptoms). The fact that science is part of the network of powerful, mainstream institutions in society and is taught at scale may also create the perception that it just propounds what the ruling class wants you to discover (see also Imhoff et al., 2018). However, such distrust driven by "guilt by association" is probably limited to people who already feel economically or epistemically excluded by part of this societal system or who already have existing conspiracy ideas.

A more comprehensive survey of contrasts and similarities in the epistemic practices and experiences of scientists versus conspiracists is beyond our scope (see also Harris, 2018). We just note that we should grant that the feeling of discovery is basically the same for conspiracists and scientists. We both use these experiences as crude indicators because we do not have full insight into the regularities of the world, nor into our own belief-forming processes. But for scientists, these aha experiences are (ideally) used as starting points, rather than as the thought-terminators they intuitively are. To quip, conspiracists may engage in research but not research.

Re-searching or looking at phenomena from different starting points and angles is a way to circumvent the path-dependency of belief formation (Hahn et al., 2018; Levy, 2021b): The fact that later beliefs are influenced by earlier ones. People get stuck in bad beliefs such as conspiracy theories, not necessarily because they update their beliefs insufficiently or irrationally, but because we update beliefs sequentially and we also do our information-foraging sequentially: The very gathering of evidence is directed (biased) by the sequence of past beliefs. Therefore, science attempts to vary starting positions—partly using its social organization—to look for convergence to the same global minimum; see the previous discussion on local versus global minima.

To conclude this point, even though several differences between conspiracy theory and science would readily explain a different kind of epistemic appeal, our account does predict some (to our knowledge untested) degree of overlap in interest for (popular) science and for conspiracy theories, other pseudo- or fringe science (as one might see in adolescents).

Conspiracy Mentality vs Conspiracy Thinking

As the fourth and last objection, one may wonder how to reconcile the ubiquitous idea that conspiracists have a fixed, closed mind, with the dynamic practices of world-building and discovering that we identified as a core feature and attraction of conspiracy thinking. Our account implies that there is much more fluidity to conspiracy theories than recognized up till now (but see Franks et al., 2017). This is primarily inspired by what we see in recent conspiracy theories linked to QAnon and anti-vax movements, which clearly have some fluidity linked to their explicit calls to "do your own research" and to come up with new explanations for clues. But it raises the question of whether QAnon and the like are really unique in this—implying that internet culture may have changed the nature of conspiracy theories—or that the intensive online development of QAnon just made very apparent an epistemic process and associated fluidity that also played a role in prior conspiracy theories. At the very least, we hope we have made this notion of conspiracy theory not as a prefabricated ideology but as an epistemic practice (Stewart, 1999) plausible enough to merit more research.

Still, the idea of conspiracy theories as a static, ossified, self-sealing ("monological") set of beliefs caused by a highly stable "conspiracy mentality" is not without evidence (Douglas & Sutton, 2022; Frenken & Imhoff, 2021; Goertzel,

1994; Imhoff & Bruder, 2014; Sutton & Douglas, 2022). It is important to be able to explain this ossification and narrowing of one's worldviews. Our epistemic agency approach is not powerless here. First, note that there can be puzzle-solving within a fixed or stable paradigm, similar to how scientists can work within the confines of a given Kuhnian paradigm (Kuhn, 2012). So, epistemic activity does not need to imply great fluidity in worldviews (the Kuhnian paradigm shifts).

Second, it is precisely because humans can self-select their data and construct their own epistemic niche to reduce their uncertainty that they can end up in a reciprocal cycle in which a narrow world model leads to a narrow environment, which in turn further narrows cognition, which further narrows of the environments one tends to seek out (Lewis, 2018). Our account urges us to examine which contextual factors determine whether people deploy their epistemic agency to dig their own tunnels instead of broadening their horizons. Both are clearly part of being human (not just conspiracist)—even scientists can end up in degenerative scientific research programs (Lakatos, 1976). As we have seen, a "greedy" minimization of uncertainty using short epistemic arcs is probably driven by existing levels of uncertainty about the key questions in life (health, subsistence, safety, social status, etc.). It is in these circumstances that one may be unable to just let some (extra) uncertainty be, so one tries to concoct a theory (a "pattern") even for the accidental, non-repeating variability (the noise) in the data (technically known as overfitting, see e.g., Hattersley et al., 2022). We are reminded of the classic example from anthropologist Evans-Pritchard (Benussi, 2019; Evans-Pritchard & Gillies, 1976), who noticed during his fieldwork that witchcraft—evil agents similar to those in conspiracy theories—was invoked to explain why a building collapsed, fully acknowledging that the structure had been weakened by termites. The natural explanation falls short of explaining why this particular house was struck at this particular time (Why me? Why now?). The explanatory drive is very rational, and the epistemic actions to gather the evidence are cheaper: discovering ill-intentioned ancestors or tribe members versus keeping track of the interaction of a multitude of variables such as stability of housing, termite population, and the condition of their proliferation, etc.

Subjectively, the witchcraft explanation is not too complex to be undiscoverable, and it answers the "why now"-question. More objectively, the "conspiratorial" witchcraft explanation is overly complex (e.g., as added to the termites explanation) or overfitted, as it may be very well tuned to this particular event but does not generalize to (predict) new, similar events. Notably, the perceived complexity of a new explanation is dependent on existing mental models for events, as well as on the pattern of data one brings to bear (e.g., mere timing of the home collapse versus specific measurements of termite population). If conspiracists indeed weigh explanatory virtues, like complexity/parsimony, explanatory power, predictive power, unification, etc., differently from scientists to evaluate their theories, this reasoning illustrates the difficulty in establishing this difference (Wojtowicz & DeDeo, 2020).

In sum, it seems important not to prematurely think in essentialist terms about conspiracists—a vice *we* accuse *them* of. If this invites uncertainty about what "conspiracists" really are, we can let it be. Hence, whenever possible, we prefer to use the term "conspiracy thinking," not because we deny contributions of personality or cognitive styles, but because we want to allow for a degree of fluidity of conspiracy ideas as well as the possibility that each of us or people close to us, in our full cognitive and moral capacities, can feel the draw of conspiracy-like thinking at times in our lives. Indeed, there are plenty of examples of people moving into or out of a conspiracy world throughout their lives (Castel, 2022; Garry et al., 2021; McDonald-Gibson, 2022). This does not mean that we need to police the use of "conspiracist" (indeed, we used it ourselves throughout this paper) or "conspiracy mentality," but we need to be aware that the evidence for such an (immutable) mental constitution is not there yet, despite intense research efforts.

Add to this the fact that the label "conspiracy theory" or "conspiracist" is necessarily in part relational or political: A conspiracy theory is what journalists, policymakers, and scientists label a conspiracy theory. This introduces a role of power into the definition, that is, which social actors are able to declare particular ideas as conspiracy theories (Harambam, 2020). Interestingly, several proposals as to what the central "conspiracy mentality" could be, identify the conspiracists' systematic epistemic distrust of those in power as the core of their mindset (hence also "Do your *own* research"; Douglas & Sutton, 2022; Imhoff & Bruder, 2014). If so, it is easy to see that this leads us into a "looping" stalemate, where conspiracists are defined as such by the powerful, in part because they refuse to abide by the very categorizing by those powerful parties. We try to defuse this dynamic by focusing on universal epistemic practices and needs. What is important is that even epistemic distrust toward more powerful parties is not an innate essence—as is clear in children—but something with a hopefully reversible development.

We hope it is clear from these rejoinders to the objections that our analysis is *not* intended to replace existing accounts of conspiracy theories based on social dynamics, cognitive biases, personality, or epistemic distrust toward the powerful, but merely to show that we miss something if we stop there. Our "epistemic arc" approach does not imply that conspiracists always do the right kind or amount of epistemic work for their beliefs. Conspiracists, like all of us, do sometimes accept ideas upon just hearing or reading them repeatedly, but only if they have epistemic trust in the communication channel. Trust that, as we hypothesized, comes about in part from the (social) information-seeking activities and personal aha experiences described here. In other words, echo chambers do exist—and are even part of functional, rational forms of belief formation (see Levy, 2021b)—but we tried to bring

out some underestimated ways by which conspiracists end up in echo chambers in the first place.

The Role of Diversity

We assume that the processes described here do not differ across cultures or ethnicities, but our paper is of course based on research in (experimental) psychology, conducted primarily with Western individuals in affluent, Western societies, where conspiracy theories are most apparent and investigated. While the need for autonomous epistemic processes is presumably universal across cultures, this need may not necessarily be expressed in the form of conspiracy theories. As we describe in the fifth section, there are reasons to think that particularly modern, highly specialized, and technological Western societies create the sense of epistemic exclusion that we deem important for the emergence of conspiracy thinking. Hence, we would caution against hasty generalization to non-Western societies.

We ourselves are a neurodiverse and multidisciplinary team, but we all come from and are working in a Western cultural context. We relied on crucial insights from female scholars and from studies done with minority participants when developing our view, extending our scope beyond the usual studies considered in the field, and incorporating elements of standpoint epistemology (Carrion, 2018; Fricker, 2017; S. Harding, 1991). Nonetheless, our paper cannot escape the well-documented underrepresentation of women and minority scholars in citations (Dworkin et al., 2020). For the topic at hand, it is all the more important that the field, in both its researchers and the populations it studies, comes to better reflect the diverse stories of epistemically disadvantaged communities.

Conclusion

We proposed that at the core of the conspiracist's urge to do their own research is a universal human need for autonomous discovery, for making epistemic progress, using one's own epistemic actions spurred by the visceral cues that we see in curiosity and discovery (or aha) experiences. If the aha experience indeed comprises a confluence of positive value, perceived truth, and agency—a suddenly increased grip on one's world—we may want to describe the epistemic arc as a building block of sense-making. Susceptible to deception, yes, but nonetheless essential. It is the experience of overcoming disfluencies through one's active epistemic foraging, which in turn validates the resulting pieces of knowledge. The fruits of one's search (the final beliefs) are not even the main point here; rather, the attraction is in having the *agency* to be able to engage in these quests.

If making subjective epistemic progress is indeed a vital need and not just a researcher's odd inclination, it may even compensate for actual hardship or lack of control in life. Using conspiracy theories as a response to increased uncertainty or lack of control may sound absurd, given that these worldviews give little actual added grip on your environment. But that is precisely why a focus on *epistemic* agency and aha experiences makes so much sense. We call for more research into the mechanisms of the aha experience and how they play out in the conspiracist's information-seeking and belief formation.

If our perspective is borne out empirically, scientific knowledge may need to be sufficiently validated by knowledge creation (discovery) at the individual and the social level to make it "lived" and actionable. This may seem a misplaced statement to a scientist who will insist that the validity of knowledge does not depend on any individual or social psychological processes. But it may be what true adoption of beliefs entails—to feel it as true instead of "just" to know it to be true. Further research will be necessary to see whether, by providing people with accessible science-based aha experiences (e.g., of the kind carefully constructed in the best popular science YouTube channels), we can increase and generalize trust in science and skepticism toward conspiracy ideas.

Keeping would-be conspiracists on board in our shared knowledge-producing systems is sure to remain an enormous challenge for science and society. If our account is on track, the key is then to reduce the perceived epistemic exclusion and to give people a sense of autonomous discovery as well as community-based problem-solving, so they do not need to chase "insights" through conspiracy theories, esotericism, and the like (Parmigiani, 2021). If we manage this, there is great potential for decentralized, community-based problem-solving, a kind of epistemic crowd-sourcing that can be redirected toward issues of great societal relevance. For example, citizen science projects are addressing environmental health issues (English et al., 2018), and amateur researchers in the "open source intelligence" movement (known as OSINT) have documented Russian troop movements during the 2022 Russian invasion of Ukraine (Schwartz, 2022).

The centrality of epistemic progress tells us that such forms of decentralized knowledge creation will always be present in a society, something that is well-understood by, for instance, anthropologists working in traditional communities (Stroeken, 2004) but underestimated in modern society. This may be linked to what some have called the meaning crisis in Western civilization (Vervaeke et al., 2017). Decentralized knowledge creation is also the lifeblood of science of course, so let us not smother it in society, even if it gets a little weird. Let us study how people do their research, capitalize on this hunger, and try to lift their practices by sharing much more than just the products of our own scientific research (Ballantyne et al., 2022).

From afar or close by, most of us know people that have been "sucked into" spiraling systems of questionable beliefs. Despite the ring of this metaphor, the fundamental cognitive capacities of these people did not suddenly break down as they became conspiracy believers. Our curious, questioning

nature is also what can pull us out of a conspiracy tunnel, as examples show (Castel, 2022; Garry et al., 2021; McDonald-Gibson, 2022). Ultimately, the view on offer is an optimistic one: The "tunneling drive" is the exception if we only give people the mental space to enact their explorative, sense-making drives.

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Note

1. As an aside, our account also makes room for a significant role of boredom, another epistemic emotion (caused by too little relevant uncertainty or challenge), in spurring conspiracy thinking, yet we will not explore it further here.

References

Adam-Troian, J., & Caroti, D. (2019). Unfounded beliefs among teachers: The interactive role of rationality priming and cognitive ability. *Applied Cognitive Psychology*, *33*(4), 720–727. https://onlinelibrary.wiley.com/doi/abs/10.1002/acp.3547?casa_token=cN4KUynlQ1AAAAAA:e2XsKczjAv8y6XCEUyhrSAN2iqIEAk576Iz_N24rHk_wKDGqVI7B5wyqtGGEOmrjfN5DKgmZzZs24ZX

Alper, S. (2022). There are higher levels of conspiracy beliefs in more corrupt countries. *European Journal of Social Psychology*, *53*(3), 503–517. https://doi.org/10.1002/ejsp.2919

Alper, S., & Imhoff, R. (2022). Suspecting foul play when it is objectively there: The association of political orientation with general and partisan conspiracy beliefs as a function of corruption levels. *Social Psychological and Personality Science*, *14*(5), 610–620. https://doi.org/10.1177/19485506221113965

Altay, S., Berriche, M., & Acerbi, A. (2023). Misinformation on misinformation: Conceptual and methodological challenges. *Social Media + Society*, *9*(1), 20563051221150412. https://doi.org/10.1177/20563051221150412

Altay, S., Nera, K., Ejaz, W., Schöpfer, C., & Tomas, F. (2023). Conspiracy believers claim to be free thinkers but (under) use advice like everyone else. *The British Journal of Social Psychology*. Advance online publication. https://doi.org/10.1111/bjso.12655

Auble, P. M., Franks, J. J., Soraci, S. A., Soraci, S. A., & Soraci, S. A. (1979). Effort toward comprehension: Elaboration or "aha"? *Memory & Cognition*, *7*(6), 426–434. https://doi.org/10.3758/BF03198259

Badia, P., Harsh, J., & Abbott, B. (1979). Choosing between predictable and unpredictable shock conditions: Data and theory. *Psychological Bulletin*, *86*(5), 1107–1131. https://doi.org/10.1037/0033-2909.86.5.1107

Ballantyne, N., Celniker, J. B., & Dunning, D. (2022). Do your own research. *Social Epistemology*. Advance online publication. https://doi.org/10.1080/02691728.2022.2146469

Barkun, M. (2015). Conspiracy theories as stigmatized knowledge. *Diogenes*, *62*(3–4), 114–120. https://doi.org/10.1177/0392192116669288

Béna, J., Rihet, M., Carreras, O., & Terrier, P. (2022). *Repetition could increase the perceived truth of conspiracy theories*. https://doi.org/10.31234/osf.io/3gc6k

Benkert, R., Cuevas, A., Thompson, H. S., Dove-Meadows, E., & Knuckles, D. (2019). Ubiquitous yet unclear: A systematic review of medical mistrust. *Behavioral Medicine*, *45*(2), 86–101. https://doi.org/10.1080/08964289.2019.1588220

Benussi, M. (2019). *Magic*. Cambridge Encyclopedia of Anthropology. https://www.anthroencyclopedia.com/entry/magic

Berger, J., & Milkman, K. L. (2012). What makes online content viral? *Journal of Marketing Research*, *49*(2), 192–205. https://doi.org/10.1509/jmr.10.0353

Biddlestone, M., Green, R., Cichocka, A., Douglas, K., & Sutton, R. M. (2022). *A systematic review and meta-analytic synthesis of the motives associated with conspiracy beliefs*. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/rxjqc

Bogart, L. M., Ojikutu, B. O., Tyagi, K., Klein, D. J., Mutchler, M. G., Dong, L., Lawrence, S. J., Thomas, D. R., & Kellman, S. (2021). COVID-19 related medical mistrust, health impacts, and potential vaccine hesitancy among Black Americans living with HIV. *Journal of Acquired Immune Deficiency Syndromes*, *86*(2), 200–207. https://doi.org/10.1097/QAI.0000000000002570

Brashier, N. M. (2022). Do conspiracy theorists think too much or too little? *Current Opinion in Psychology*, *49*, 101504. https://doi.org/10.1016/j.copsyc.2022.101504

Bratich, J. Z. (2008). *Conspiracy panics: Political rationality and popular culture*. State University of New York Press. https://play.google.com/store/books/details?id=OrLcx8EbBCgC

Brotherton, R., & French, C. C. (2014). Belief in conspiracy theories and susceptibility to the conjunction fallacy. *Applied Cognitive Psychology*, *28*(2), 238–248. https://doi.org/10.1002/acp.2995

Brotherton, R., & French, C. C. (2015). Intention seekers: Conspiracist ideation and biased attributions of intentionality. *PLOS ONE*, *10*(5), e0124125. https://doi.org/10.1371/journal.pone.0124125

Bruder, M., Haffke, P., Neave, N., Nouripanah, N., & Imhoff, R. (2013). Measuring individual differences in generic beliefs in conspiracy theories across cultures: Conspiracy mentality questionnaire. *Frontiers in Psychology*, *4*, 225. https://doi.org/10.3389/fpsyg.2013.00225

Callison, W., & Slobodian, Q. (2021, January 12). Coronapolitics from the Reichstag to the Capitol. *Boston Review*. https://bostonreview.net/articles/quinn-slobodian-toxic-politics-coron-akspeticism/

Carrion, M. L. (2018). "You need to do your research": Vaccines, contestable science, and maternal epistemology. *Public Understanding of Science*, *27*(3), 310–324. https://doi.org/10.1177/0963662517728024

Cassam, Q. (2018). *Vices of the mind: From the intellectual to the political*. Oxford University Press. https://play.google.com/store/books/details?id=tpSBDwAAQBAJ

Castel, B. (2022). Monoloog van een ex-complotdenker: "Ik schaam me dat ik zo naïef ben geweest." [Monologue by an ex-conspiracy theorist: "I'm ashamed that I was so naive.] *Knack*. https://www.knack.be/nieuws/belgie/monoloog-van-een-ex-complotdenker-ik-schaam-me-dat-ik-zo-naief-ben-geweest/article-longread-1832279.html

Cinelli, M., Etta, G., Avalle, M., Quattrociocchi, A., Di Marco, N., Valensise, C., Galeazzi, A., & Quattrociocchi, W. (2022). Conspiracy theories and social media platforms. *Current Opinion in Psychology*, *47*, 101407. https://doi.org/10.1016/j.copsyc.2022.101407

Clark, A. (2013). Whatever next? Predictive brains, situated agents, and the future of cognitive science. *The Behavioral and Brain Sciences*, *36*(03), 181–204. https://doi.org/10.1017/S0140525X12000477

Clarke, S. (2002). Conspiracy theories and conspiracy theorizing. *Philosophy of the Social Sciences*, *32*(2), 131–150. https://doi.org/10.1177/004931032002001

Coenen, A., Nelson, J. D., & Gureckis, T. M. (2019). Asking the right questions about the psychology of human inquiry: Nine open challenges. *Psychonomic Bulletin & Review*, *26*(5), 1548–1587. https://doi.org/10.3758/s13423-018-1470-5

Colombo, M., Strangmann, K., Houkes, L., Kostadinova, Z., & Brandt, M. J. (2021). Intellectually humble, but prejudiced people. A paradox of intellectual virtue. *Review of Philosophy and Psychology*, *12*(2), 353–371. https://doi.org/10.1007/s13164-020-00496-4

Cook, J., & Lewandowsky, S. (2012). *The debunking handbook*. The University of Queensland St. Lucia, Australia.

Crocker, J., Luhtanen, R., Broadnax, S., & Blaine, B. E. (1999). Belief in U.S. government conspiracies against Blacks among Black and White college students: Powerlessness or system blame? *Personality & Social Psychology Bulletin*, *25*(8), 941–953. https://doi.org/10.1177/01461672992511003

Danek, A. H., Fraps, T., von Müller, A., Grothe, B., & Ollinger, M. (2013). Aha! Experiences leave a mark: Facilitated recall of insight solutions. *Psychological Research*, *77*(5), 659–669. https://doi.org/10.1007/s00426-012-0454-8

Danek, A. H., & Wiley, J. (2016). What about false insights? Deconstructing the Aha! Experience along its multiple dimensions for correct and incorrect solutions separately. *Frontiers in Psychology*, *7*, 2077. https://doi.org/10.3389/fpsyg.2016.02077

Dentith, M. R. X. (2018). The problem of conspiracism. *Argumenta*, *3*(2), 327–343. https://philpapers.org/rec/DENTPO-30

Desender, K., Boldt, A., & Yeung, N. (2018). Subjective confidence predicts information seeking in decision making. *Psychological Science*, *29*(5), 761–778. https://doi.org/10.1177/0956797617744771

de Wildt, L., & Aupers, S. (2023). Participatory conspiracy culture: Believing, doubting and playing with conspiracy theories on Reddit. *Convergence*. Advance online publication. https://doi.org/10.1177/13548565231178914

Douglas, K. M. (2021). Are conspiracy theories harmless? *The Spanish Journal of Psychology*, *24*, e13. https://doi.org/10.1017/SJP.2021.10

Douglas, K. M., & Sutton, R. M. (2022). What are conspiracy theories? A definitional approach to their correlates, consequences, and communication. *Annual Review of Psychology*, *74*, 271–298. https://doi.org/10.1146/annurev-psych-032420-031329

Douglas, K. M., Sutton, R. M., Callan, M. J., Dawtry, R. J., & Harvey, A. J. (2016). Someone is pulling the strings: Hypersensitive agency detection and belief in conspiracy theories. *Thinking & Reasoning*, *22*(1), 57–77. https://doi.org/10.1080/13546783.2015.1051586

Douglas, K. M., Sutton, R. M., & Cichocka, A. (2017). The psychology of conspiracy theories. *Current Directions in Psychological Science*, *26*(6), 538–542. https://doi.org/10.1177/0963721417718261

Douglas, K. M., Sutton, R. M., & Cichocka, A. (2019). Belief in conspiracy theories: Looking beyond gullibility. In J. P. Forgas & R. Baumeister (Eds.), *The social psychology of gullibility* (pp. 61–76). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780429203787-4/belief-conspiracy-theories-karen-douglas-robbie-sutton-aleksandra-cichocka

Dubey, R., Ho, M. K., Mehta, H., & Griffiths, T. (2021). *Aha! Moments correspond to meta-cognitive prediction errors*. PsyArXiv. https://psyarxiv.com/c5v42/download/?format=pdf

Duncker, K. (1945). On problem-solving. Psychological *Monographs*, *58*(5), i–113. https://doi.org/10.1037/h0093599

Dunning, D. (2019). Gullible to ourselves. In J. P. Forgas & R. Baumeister (Eds.), *The social psychology of gullibility* (pp. 217–233). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780429203787-12/gullible-david-dunning

Dworkin, J. D., Linn, K. A., Teich, E. G., Zurn, P., Shinohara, R. T., & Bassett, D. S. (2020). The extent and drivers of gender imbalance in neuroscience reference lists. *Nature Neuroscience*, *23*(8), 918–926. https://doi.org/10.1038/s41593-020-0658-y

Ecker, U. K. H., Lewandowsky, S., Cook, J., Schmid, P., Fazio, L. K., Brashier, N., Kendeou, P., Vraga, E. K., & Amazeen, M. A. (2022). The psychological drivers of misinformation belief and its resistance to correction. *Nature Reviews Psychology*, *1*(1), 13–29. https://doi.org/10.1038/s44159-021-00006-y

Elgin, C. Z. (2002). Creation as reconfiguration: Art in the advancement of science. *International Studies in the Philosophy of Science*, *16*(1), 13–25. https://doi.org/10.1080/02698590120118792

English, P. B., Richardson, M. J., & Garzón-Galvis, C. (2018). From crowdsourcing to extreme citizen science: Participatory research for environmental health. *Annual Review of Public Health*, *39*, 335–350. https://doi.org/10.1146/annurev-publhealth-040617-013702

European Commission. (2020, July 31). *Identifying conspiracy theories*. https://ec.europa.eu/info/live-work-travel-eu/coronavirus-response/fighting-disinformation/identifying-conspiracy-theories_en?s=09

Evans-Pritchard, E. E., & Gillies, E. (1976). *Witchcraft, Oracles, and Magic among the Azande*. Oxford University Press. https://play.google.com/store/books/details?id=z7dFEAAAQBAJ

Eyal, T., Steffel, M., & Epley, N. (2018). Perspective mistaking: Accurately understanding the mind of another requires getting perspective, not taking perspective. *Journal of Personality and Social Psychology*, *114*(4), 547–571. https://doi.org/10.1037/pspa0000115

Fandakova, Y., & Gruber, M. J. (2021). States of curiosity and interest enhance memory differently in adolescents and in children. *Developmental Science*, *24*(1), e13005. https://doi.org/10.1111/desc.13005

Fazio, L. K., Brashier, N. M., Payne, B. K., & Marsh, E. J. (2015). Knowledge does not protect against illusory truth. *Journal of Experimental Psychology*, *144*(5), 993–1002. https://doi.org/10.1037/xge0000098

Fazio, L. K., Pillai, R. M., & Patel, D. (2022). The effects of repetition on belief in naturalistic settings. *Journal of Experimental Psychology*, *151*(10), 2604–2613. https://doi.org/10.1037/xge0001211

Fenster, M. (1999). *Conspiracy theories: Secrecy and power in American culture*. University of Minnesota Press. https://play.google.com/store/books/details?id=SR-mmN746KQC

Fiadotava, A., Astapova, A., Hendershott, R., McKinnon, M., & Jürgens, A.-S. (2023). Injecting fun? Humour, conspiracy theory and (anti)vaccination discourse in popular media. *Public Understanding of Science*, *32*(5), 622–640. https://doi.org/10.1177/09636625221147019

Fischhoff, B. (2013). The sciences of science communication. *Proceedings of the National Academy of Sciences of the United States of America*, *110*(Suppl. 3), 14033–14039. https://doi.org/10.1073/pnas.1213273110

Fisher, M., Goddu, M. K., & Keil, F. C. (2015). Searching for explanations: How the Internet inflates estimates of internal knowledge. *Journal of Experimental Psychology*, *144*(3), 674–687. https://doi.org/10.1037/xge0000070

Fountoulakis, K. N., Apostolidou, M. K., Atsiova, M. B., Filippidou, A. K., Florou, A. K., Gousiou, D. S., Katsara, A. R., Mantzari, S. N., Padouva-Markoulaki, M., Papatriantafyllou, E. I., Sacharidi, P. I., Tonia, A. I., Tsagalidou, E. G., Zymara, V. P., Prezerakos, P. E., Koupidis, S. A., Fountoulakis, N. K., & Chrousos, G. P. (2021). Self-reported changes in anxiety, depression and suicidality during the COVID-19 lockdown in Greece. *Journal of Affective Disorders*, *279*, 624–629. https://doi.org/10.1016/j.jad.2020.10.061

Franks, B., Bangerter, A., Bauer, M. W., Hall, M., & Noort, M. C. (2017). Beyond "monologicality"? Exploring conspiracist worldviews. *Frontiers in Psychology*, *8*, 861. https://doi.org/10.3389/fpsyg.2017.00861

Freeman, D., & Bentall, R. P. (2017). The concomitants of conspiracy concerns. *Social Psychiatry and Psychiatric Epidemiology*, *52*(5), 595–604. https://doi.org/10.1007/s00127-017-1354-4

Frenken, M., & Imhoff, R. (2021). A uniform conspiracy mindset or differentiated reactions to specific conspiracy beliefs? Evidence from latent profile analyses. *International Review of Social Psychology*, *34*(1), 27. https://doi.org/10.5334/irsp.590

Frenken, M., & Imhoff, R. (2022a). Don't trust anybody: Conspiracy mentality and the detection of facial trustworthiness cues. *Applied Cognitive Psychology*, *37*(2), 256–265. https://doi.org/10.1002/acp.3955

Frenken, M., & Imhoff, R. (2022b). Malevolent intentions and secret coordination. Dissecting cognitive processes in conspiracy beliefs via diffusion modeling. *Journal of Experimental Social Psychology*, *103*, 104383. https://doi.org/10.1016/j.jesp.2022.104383

Fricker, M. (2017). Evolving concepts of epistemic injustice. In I. J. Kidd, J. Medina, & G. Pohlhaus, Jr. (Eds.), *The Routledge handbook of epistemic injustice* (pp. 53–60). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315212043-5/evolving-concepts-epistemic-injustice-miranda-fricker

Friston, K. J., Adams, R. A., Perrinet, L., & Breakspear, M. (2012). Perceptions as hypotheses: Saccades as experiments. *Frontiers in Psychology*, *3*, 151. https://doi.org/10.3389/fpsyg.2012.00151

Garry, A., Walther, S., Rukaya, R., & Mohammed, A. (2021). QAnon conspiracy theory: Examining its evolution and mechanisms of radicalization. *Journal for Deradicalization*, *26*, 152–216. https://journals.sfu.ca/jd/index.php/jd/article/view/437

Gaver, W., & Mandler, G. (1987). Play it again, Sam: On liking music. *Cognition and Emotion*, *1*(3), 259–282. https://doi.org/10.1080/02699938708408051

Georgiou, N., Delfabbro, P., & Balzan, R. (2019). Conspiracy beliefs in the general population: The importance of psychopathology, cognitive style and educational attainment. *Personality and Individual Differences*, *151*, 109521. https://doi.org/10.1016/j.paid.2019.109521

Georgiou, N., Delfabbro, P., & Balzan, R. (2021a). Autistic traits as a potential confounding factor in the relationship between schizotypy and conspiracy beliefs. *Cognitive Neuropsychiatry*, *26*(4), 273–292. https://doi.org/10.1080/13546805.2021.1924650

Georgiou, N., Delfabbro, P., & Balzan, R. (2021b). Conspiracy-beliefs and receptivity to disconfirmatory information: A study using the BADE task. *SAGE Open*, *11*(1), 21582440211006131. https://doi.org/10.1177/21582440211006131

Georgiou, N., Delfabbro, P., & Balzan, R. (2021c). Conspiracy theory beliefs, scientific reasoning and the analytical thinking paradox. *Applied Cognitive Psychology*, *35*(6), 1523–1534. https://doi.org/10.1002/acp.3885

Gershman, S. J. (2021). Just looking: The innocent eye in neuroscience. *Neuron*, *109*(14), 2220–2223. https://doi.org/10.1016/j.neuron.2021.05.022

Gigerenzer, G., Krauss, S., & Vitouch, O. (2004). The null ritual. What you always wanted to know about significance testing but were afraid to ask. In D. Kaplan (Ed.), *The Sage handbook of quantitative methodology for the social sciences* (pp. 391–408). Sage.

Goertzel, T. (1994). Belief in conspiracy theories. *Political Psychology*, *15*(4), 731–742. https://doi.org/10.2307/3791630

Golebiewski, M., & Boyd, D. (2019). *Data voids: Where missing data can easily be exploited*. Data & Society Research Institute. https://apo.org.au/node/265631

Gottlieb, J., & Oudeyer, P.-Y. (2018). Towards a neuroscience of active sampling and curiosity. *Nature Reviews. Neuroscience*, *19*(12), 758–770. https://doi.org/10.1038/s41583-018-0078-0

Graf, L. K. M., & Landwehr, J. R. (2015). A dual-process perspective on fluency-based aesthetics: The pleasure-interest model of aesthetic liking. *Personality and Social Psychology Review*, *19*(4), 395–410. https://doi.org/10.1177/1088868315574978

Gray, K., Blakey, W., & Hartmann, R. (2022). *The enlightenment trap*. Moral Understanding. https://moralunderstanding.substack.com/p/the-enlightenment-trap-047

Grimmer, H., Laukkonen, R., Tangen, J., & von Hippel, W. (2022). Eliciting false insights with semantic priming. *Psychonomic*

Bulletin & Review, *29*, 954–970. https://doi.org/10.3758/s13423-021-02049-x

Groh, D. (1987). The temptation of conspiracy theory, or: Why do bad things happen to good people? Part I: Preliminary draft of a theory of conspiracy theories. In C. F. Graumann & S. Moscovici (Eds.), *Changing conceptions of conspiracy* (pp. 1–13). Springer New York. https://doi.org/10.1007/978-1-4612-4618-3_1

Hacker, E. (2021). *The Socio-psychological dynamics of conspiracy theories: Is "Q" a warning sign for the future?* (p. 25). https://www.ssoar.info/ssoar/handle/document/75876

Hahn, U., Merdes, C., & von Sydow, M. (2018). How good is your evidence and how would you know? *Topics in Cognitive Science*, *10*(4), 660–678. https://doi.org/10.1111/tops.12374

Harambam, J. (2020). *Contemporary conspiracy culture: Truth and knowledge in an era of epistemic instability*. Routledge. https://play.google.com/store/books/details?id=qureDwAAQBAJ

Harambam, J. (2021). Against modernist illusions: Why we need more democratic and constructivist alternatives to debunking conspiracy theories. *Journal for Cultural Research*, *25*(1), 104–122. https://doi.org/10.1080/14797585.2021.1886424

Harambam, J., & Aupers, S. (2015). Contesting epistemic authority: Conspiracy theories on the boundaries of science. *Public Understanding of Science*, *24*(4), 466–480. https://doi.org/10.1177/0963662514559891

Harding, S. (1991). *Whose science? Whose knowledge? Thinking from women's lives*. Cornell University Press. https://play.google.com/store/books/details?id=eSmPEH7-u2oC

Harris, K. (2018). What's epistemically wrong with conspiracy theorising? *Royal Institute of Philosophy Supplements*, *84*, 235–257. https://doi.org/10.1017/S1358246118000619

Hartmann, M., & Müller, P. (2023). Illusory perception of visual patterns in pure noise is associated with COVID-19 conspiracy beliefs. *I-Perception*, *14*(1), 20416695221144732. https://doi.org/10.1177/20416695221144732

Hasher, L., Goldstein, D., & Toppino, T. (1977). Frequency and the conference of referential validity. *Journal of Verbal Learning and Verbal Behavior*, *16*(1), 107–112. https://doi.org/10.1016/S0022-5371(77)80012-1

Hattersley, M., Brown, G. D. A., Michael, J., & Ludvig, E. A. (2022). Of tinfoil hats and thinking caps: Reasoning is more strongly related to implausible than plausible conspiracy beliefs. *Cognition*, *218*, 104956. https://doi.org/10.1016/j.cognition.2021.104956

Head, A. J., Braun, S., MacMillan, M., Yurkofsky, J., & Bull, A. C. (2020). *The shape of the coronavirus news story. COVID-19: The first 100 days of US news coverage*. Project Information Literacy. https://eric.ed.gov/?id=ED613497

Hebb, D. O. (1949). *The organization of behavior*. Wiley.

Hernandez Aguilar, L. M. (2023). Memeing a conspiracy theory: On the biopolitical compression of the great replacement conspiracy theories. *Ethnography*. Advance online publication. https://doi.org/10.1177/14661381221146983

Heylighen, F., Kingsbury, K., Lenartowicz, M., Harmsen, T., & Beigi, S. (2018). Social systems programming: Behavioral and emotional mechanisms co-opted for social control [Unpublished Manuscript]. http://pespmc1.vub.ac.be/Papers/SSP2mechanisms.pdf

Hoffrage, U. (2004). Overconfidence. In R. F. Pohi (Ed.), *Cognitive illusions: A handbook on fallacies and biases in thinking, judgement and memory* (pp. 235–254). Psychology Press. https://books.google.be/books?hl=en&lr=&id=MS5Fr8safgEC&oi=fnd&pg=PA235&dq=hoffrage+overconfidence&ots=9PmyNDiHPc&sig=n5-uoHWoT31P47H3Jb7CO5qydzM

Hohwy, J. (2020). New directions in predictive processing. *Mind & Language*, *35*(2), 209–223. https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12281

Hon, A. (2020, August 2). *What ARGs can teach us about QAnon*. https://mssv.net/2020/08/02/what-args-can-teach-us-about-qanon/

Hornsey, M. J., Bierwiaczonek, K., Sassenberg, K., & Douglas, K. M. (2022). Individual, intergroup and nation-level influences on belief in conspiracy theories. *Nature Reviews Psychology*, *2*, 85–97. https://doi.org/10.1038/s44159-022-00133-0

Hosseinmardi, H., Ghasemian, A., Clauset, A., Mobius, M., Rothschild, D. M., & Watts, D. J. (2021). Examining the consumption of radical content on YouTube. *Proceedings of the National Academy of Sciences of the United States of America*, *118*(32), e2101967118. https://doi.org/10.1073/pnas.2101967118

Imhoff, R. (2015). Beyond (right-wing) authoritarianism: Conspiracy mentality as an incremental predictor of prejudice. In M. Bilewicz, A. Cichocka, & W. Soral (Eds.), *The psychology of conspiracy* (pp. 122–141). Routledge. https://doi.org/10.4324/9781315746838-14/beyond-right-wing-authoritarianism-conspiracy-mentality-incremental-predictor-prejudice-roland-imhoff

Imhoff, R., & Bruder, M. (2014). Speaking (un–)truth to power: Conspiracy mentality as a generalised political attitude. *European Journal of Personality*, *28*(1), 25–43. https://doi.org/10.1002/per.1930

Imhoff, R., Lamberty, P., & Klein, O. (2018). Using power as a negative cue: How conspiracy mentality affects epistemic trust in sources of historical knowledge. *Personality and Social Psychology Bulletin*, *44*(9), 1364–1379. https://doi.org/10.1177/0146167218768779

Imhoff, R., Zimmer, F., Klein, O., António, J. H. C., Babinska, M., Bangerter, A., Bilewicz, M., Blanuša, N., Bovan, K., Bužarovska, R., Cichocka, A., Delouvée, S., Douglas, K. M., Dyrendal, A., Etienne, T., Gjoneska, B., Graf, S., Gualda, E., Hirschberger, G., . . . van Prooijen, J.-W. (2022). Conspiracy mentality and political orientation across 26 countries. *Nature Human Behaviour*, *6*(3), 392–403. https://doi.org/10.1038/s41562-021-01258-7

Jaiswal, J., & Halkitis, P. N. (2019). Towards a more inclusive and dynamic understanding of medical mistrust informed by science. *Behavioral Medicine*, *45*(2), 79–85. https://doi.org/10.1080/08964289.2019.1619511

James, W. (1910). *The principles of psychology / by William James*. https://doi.org/10.5962/bhl.title.47583

Janoff-Bulman, R., & Yopyk, D. J. (2004). Random outcomes and valued commitments: Existential dilemmas and the paradox of meaning. In J. Greenberg (Ed.), *Handbook of experimental existential psychology* (*Vol. 528*, pp. 122–138). The Guilford Press. https://psycnet.apa.org/fulltext/2004-21900-008.pdf

Jaynes, E. T. (1990). Probability theory as logic. In P. F. Fougère (Ed.), *Maximum entropy and Bayesian methods* (pp. 1–16). Springer Netherlands. https://doi.org/10.1007/978-94-009-0683-9_1

Johnson, G. M. (2021). Algorithmic bias: On the implicit biases of social technology. *Synthese*, *198*(10), 9941–9961. https://doi.org/10.1007/s11229-020-02696-y

Jost, J. (2004). External and internal complexity of complex adaptive systems. *Theory in Biosciences = Theorie in Den*

Biowissenschaften, *123*(1), 69–88. https://doi.org/10.1016/j.thbio.2003.10.001

Kaanders, P., Sepulveda, P., Folke, T., Ortoleva, P., & De Martino, B. (2022). Humans actively sample evidence to support prior beliefs. *eLife*, *11*, e71768. https://doi.org/10.7554/eLife.71768

Keil, F. C. (2006). Explanation and understanding. *Annual Review of Psychology*, *57*, 227–254. https://doi.org/10.1146/annurev.psych.57.102904.190100

Klein, C., Clutton, P., & Dunn, A. G. (2019). Pathways to conspiracy: The social and linguistic precursors of involvement in Reddit's conspiracy theory forum. *PLOS ONE*, *14*(11), e0225098. https://doi.org/10.1371/journal.pone.0225098

Klein, C., Clutton, P., & Polito, V. (2018). Topic modeling reveals distinct interests within an online conspiracy forum. *Frontiers in Psychology*, *9*, 189. https://doi.org/10.3389/fpsyg.2018.00189

Kounios, J., & Beeman, M. (2009). The Aha! Moment: The cognitive neuroscience of insight. *Current Directions in Psychological Science*, *18*(4), 210–216. https://doi.org/10.1111/j.1467-8721.2009.01638.x

Król, M. E., & Król, M. (2018). "Economies of experience"—Disambiguation of degraded stimuli leads to a decreased dispersion of eye-movement patterns. *Cognitive Science*, *42*(S3), 728–756. https://onlinelibrary.wiley.com/doi/abs/10.1111/cogs.12566

Kuhn, T. S. (2012). *The structure of scientific revolutions*. University of Chicago Press. https://play.google.com/store/books/details?id=3eP5Y_OOuzwC

Kumar, M., Goldstein, A., Michelmann, S., Zacks, J. M., Hasson, U., & Norman, K. A. (2022). *Bayesian surprise predicts human event segmentation in story listening*. PsyArXiv preprint. https://doi.org/10.31234/osf.io/qd2ra

Lakatos, I. (1976). Falsification and the methodology of scientific research programmes. In S. G. Harding (Ed.), *Can theories be refuted? Essays on the Duhem-Quine thesis* (pp. 205–259). Springer Netherlands. https://doi.org/10.1007/978-94-010-1863-0_14

Larsen, E. M., Donaldson, K. R., Liew, M., & Mohanty, A. (2021). Conspiratorial thinking during COVID-19: The roles of paranoia, delusion-proneness, and intolerance of uncertainty. *Frontiers in Psychiatry / Frontiers Research Foundation*, *12*, 698147. https://doi.org/10.3389/fpsyt.2021.698147

Laukkonen, R. E., Kaveladze, B. T., Tangen, J. M., & Schooler, J. W. (2020). The dark side of Eureka: Artificially induced Aha moments make facts feel true. *Cognition*, *196*, 104122. https://doi.org/10.1016/j.cognition.2019.104122

Laukkonen, R. E., Schooler, J. W., & Tangen, J. M. (2018). *The Eureka heuristic: Relying on insight to appraise the quality of ideas*. https://labs.psych.ucsb.edu/schooler/jonathan/sites/labs.psych.ucsb.edu.schooler.jonathan/files/pubs/eurekaheuristic_preprint_laukkonenschoolertangen_2018-2.pdf

Lee, C., Yang, T., Inchoco, G. D., Jones, G. M., & Satyanarayan, A. (2021, May). *Viral visualizations: How coronavirus skeptics use orthodox data practices to promote unorthodox science online* [Conference session]. 2021 CHI Conference on Human Factors in Computing Systems, Article 607. https://doi.org/10.1145/3411764.3445211

Levy, N. (2019). Due deference to denialism: Explaining ordinary people's rejection of established scientific findings. *Synthese*, *196*(1), 313–327. https://doi.org/10.1007/s11229-017-1477-x

Levy, N. (2021a). *Bad beliefs: Why they happen to good people*. Oxford University Press. https://play.google.com/store/books/details?id=C_ZQEAAAQBAJ

Levy, N. (2021b). Echoes of covid misinformation. *Philosophical Psychology*, *36*(5), 931–948. https://doi.org/10.1080/09515089.2021.2009452

Levy, N. (2022). Do your own research! *Synthese*, *200*(5), 356. https://doi.org/10.1007/s11229-022-03793-w

Lewandowsky, S., Oberauer, K., & Gignac, G. E. (2013). NASA faked the moon landing—Therefore, (climate) science is a hoax: An anatomy of the motivated rejection of science. *Psychological Science*, *24*(5), 622–633. https://doi.org/10.1177/0956797612457686

Lewis, M. (2018). Brain change in addiction as learning, not disease. *The New England Journal of Medicine*, *379*(16), 1551–1560. https://doi.org/10.1056/NEJMra1602872

Lieder, F., Goodman, N. D., & Huys, Q. J. M. (2013). *Learned helplessness and generalization* [Conference session]. Cognitive Science Conference. http://csjarchive.cogsci.rpi.edu/Proceedings/2013/papers/0181/paper.pdf

Liekefett, L., Christ, O., & Becker, J. C. (2021). Can conspiracy beliefs be beneficial? Longitudinal linkages between conspiracy beliefs, anxiety, uncertainty aversion, and existential threat. *Personality & Social Psychology Bulletin*, *49*(2), 167–179. https://doi.org/10.1177/01461672211060965

Loewenstein, G. (1994). The psychology of curiosity: A review and reinterpretation. *Psychological Bulletin*, *116*(1), 75–98. http://psycnet.apa.org/record/1994-41058-001

Luhrmann, T. M. (2018). The faith frame: Or, belief is easy, faith is hard. *Contemporary Pragmatism*, *15*(3), 302–318. https://doi.org/10.1163/18758185-01503003

Lydon-Staley, D. M., Zhou, D., Blevins, A. S., Zurn, P., & Bassett, D. S. (2021). Hunters, busybodies and the knowledge network building associated with deprivation curiosity. *Nature Human Behaviour*, *5*(3), 327–336. https://doi.org/10.1038/s41562-020-00985-7

MacGregor, J. N., Ormerod, T. C., & Chronicle, E. P. (2001). Information processing and insight: A process model of performance on the nine-dot and related problems. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *27*(1), 176–201. https://www.ncbi.nlm.nih.gov/pubmed/11204097

Marchlewska, M., Cichocka, A., & Kossowska, M. (2018). Addicted to answers: Need for cognitive closure and the endorsement of conspiracy beliefs. *European Journal of Social Psychology*, *48*(2), 109–117. https://doi.org/10.1002/ejsp.2308

McDonald-Gibson, C. (2022). *Far out: Encounters with extremists*. Granta Books.

McReynolds, P. (1971). The three faces of cognitive motivation. In H. I. Day, D. E. Berlyne, & D. E. Hunt (Eds.), *Intrinsic motivation: A new direction in education* (pp. 33–45). Holt, Rinehart and Winston of Canada.

Mercier, H. (2017). How gullible are we? A review of the evidence from psychology and social science. *Review of General Psychology*, *12*(2), 103–122. https://doi.org/10.1037/gpr0000111

Mercier, H., Deguchi, M., Van der Henst, J.-B., & Yama, H. (2016). The benefits of argumentation are cross-culturally robust: The case of Japan. *Thinking & Reasoning*, *22*(1), 1–15. https://doi.org/10.1080/13546783.2014.1002534

Mercier, H., Trouche, E., Yama, H., Heintz, C., & Girotto, V. (2015). Experts and laymen grossly underestimate the benefits of argumentation for reasoning. *Thinking & Reasoning*, *21*(3), 341–355. https://doi.org/10.1080/13546783.2014.981582

Metcalfe, J., Kennedy-Pyers, T., & Vuorre, M. (2021). Curiosity and the desire for agency: Wait, wait . . . don't tell me! *Cognitive Research: Principles and Implications*, *6*(1), 69. https://doi.org/10.1186/s41235-021-00330-0

Meuer, M., & Imhoff, R. (2021). Believing in hidden plots is associated with decreased behavioral trust: Conspiracy belief as greater sensitivity to social threat or insensitivity towards its absence? *Journal of Experimental Social Psychology*, *93*, 104081. https://doi.org/10.1016/j.jesp.2020.104081

Meuer, M., Oeberst, A., & Imhoff, R. (2022). How do conspiratorial explanations differ from non-conspiratorial explanations? A content analysis of real-world online articles. *European Journal of Social Psychology*, *53*(2), 288–306. https://doi.org/10.1002/ejsp.2903

Mitchell, A., Jurkowitz, M., Oliphant, J. B., & Shearer, E. (2020, June 29). Three months in, many Americans see exaggeration, conspiracy theories and partisanship in COVID-19 News. *Pew Research Center*. https://www.pewresearch.org/journalism/2020/06/29/three-months-in-many-americans-see-exaggeration-conspiracy-theories-and-partisanship-in-covid-19-news/

Molnar, A., & Loewenstein, G. (2021). Ideologies are like possessions. *Psychological Inquiry*, *33*(2), 84–87. https://www.researchgate.net/profile/Andras-Molnar-4/publication/356221785_Ideologies_Are_Like_Possessions/links/6192abcbd7d1af224bf21575/Ideologies-Are-Like-Possessions.pdf

Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. *Psychological Review*, *115*(2), 502–517. https://doi.org/10.1037/0033-295X.115.2.502

Morin, O., Jacquet, P. O., Vaesen, K., & Acerbi, A. (2021). Social information use and social information waste. *Philosophical Transactions of the Royal Society of London: Series B*, *376*(1828), 20200052. https://doi.org/10.1098/rstb.2020.0052

Morosoli, S., Van Aelst, P., & van Erkel, P. (2022). To convince, to provoke or to entertain? A study on individual motivations behind engaging with conspiracy theories online. *Convergence*, *28*(4), 1030–1059. https://doi.org/10.1177/13548565221105792

Moulding, R., Nix-Carnell, S., Schnabel, A., Nedeljkovic, M., Burnside, E. E., Lentini, A. F., & Mehzabin, N. (2016). Better the devil you know than a world you don't? Intolerance of uncertainty and worldview explanations for belief in conspiracy theories. *Personality and Individual Differences*, *98*, 345–354. https://doi.org/10.1016/j.paid.2016.04.060

Muth, C., & Carbon, C.-C. (2013). The aesthetic Aha: On the pleasure of having insights into Gestalt. *Acta Psychologica*, *144*(1), 25–30. https://doi.org/10.1016/j.actpsy.2013.05.001

Narayanan, D., & De Cremer, D. (2022). "Google told me so!" On the bent testimony of search engine algorithms. *Philosophy & Technology*, *35*(2), Article 22. https://doi.org/10.1007/s13347-022-00521-7

Nelson, J. D. (2005). Finding useful questions: On Bayesian diagnosticity, probability, impact, and information gain. *Psychological Review*, *112*(4), 979–999. https://doi.org/10.1037/0033-295X.112.4.979

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, *84*(3), 231–259. https://doi.org/10.1037/0033-295X.84.3.231

Norton, M. I., Mochon, D., & Ariely, D. (2012). The IKEA effect: When labor leads to love. *Journal of Consumer Psychology*, *22*(3), 453–460. https://doi.org/10.1016/j.jcps.2011.08.002

Parmigiani, G. (2021). Magic and politics: Conspirituality and COVID-19. *Journal of the American Academy of Religion*, *89*(2), 506–529. https://doi.org/10.1093/jaarel/lfab053

Parsons, S., Simmons, W., Shinhoster, F., & Kilburn, J. (1999). A test of the grapevine: An empirical examination of conspiracy theories among African Americans. *Sociological Spectrum*, *19*(2), 201–222. https://doi.org/10.1080/027321799280235

Pennycook, G., Binnendyk, J., & Rand, D. G. (2022). *Overconfidently conspiratorial: Conspiracy believers are dispositionally overconfident and massively overestimate how much others agree with them*. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/d5fz2

Perry, C., & DeDeo, S. (2021). *The cognitive science of extremist ideologies online*. arXiv [cs.SI]. arXiv. http://arxiv.org/abs/2110.00626

Pigden, C. (2007). Conspiracy theories and the conventional wisdom. *Episteme*, *4*(2), 219–232. https://doi.org/10.3366/epi.2007.4.2.219

Pronin, E. (2007). Perception and misperception of bias in human judgment. *Trends in Cognitive Sciences*, *11*(1), 37–43. https://doi.org/10.1016/j.tics.2006.11.001

Pytlik, N., Soll, D., & Mehl, S. (2020). Thinking preferences and conspiracy belief: Intuitive thinking and the jumping to conclusions-bias as a basis for the belief in conspiracy theories. *Frontiers in Psychiatry / Frontiers Research Foundation*, *11*, 568942. https://doi.org/10.3389/fpsyt.2020.568942

Quattrociocchi, W., Scala, A., & Sunstein, C. R. (2016, June 13). Echo chambers on Facebook. *SSRN*. https://doi.org/10.2139/ssrn.2795110

Rao, V. (2022, April 9). Dark, gray, and light lore. *Ribbonfarm Studio*. https://studio.ribbonfarm.com/p/dark-gray-and-light-lore?s=r

Ren, Z. (bella), Dimant, E., & Schweitzer, M. (2023). Beyond belief: How social engagement motives influence the spread of conspiracy theories. *Journal of Experimental Social Psychology*, *104*, 104421. https://doi.org/10.1016/j.jesp.2022.104421

Rizeq, J., Flora, D. B., & Toplak, M. E. (2021). An examination of the underlying dimensional structure of three domains of contaminated mindware: Paranormal beliefs, conspiracy beliefs, and anti-science attitudes. *Thinking & Reasoning*, *27*(2), 187–211. https://doi.org/10.1080/13546783.2020.1759688

Robertson, R. E., Green, J., Ruck, D., Ognyanova, K., Wilson, C., & Lazer, D. (2021). *Engagement outweighs exposure to partisan and unreliable news within Google Search*. arXiv [cs.SI]. arXiv. http://arxiv.org/abs/2201.00074

Robins, R. S., Robins, R. S. R., Robins, R. S., & Post, J. M. (1997). *Political paranoia: The psychopolitics of hatred*. Yale University Press.

Rollwage, M., Dolan, R. J., & Fleming, S. M. (2018). Metacognitive failure as a feature of those holding radical beliefs. *Current Biology*, *28*(24), 4014–4021.e8. https://doi.org/10.1016/j.cub.2018.10.053

Roose, K. (2019, June 9). The making of a YouTube radical. *New York Times*. https://www.proquest.com/docview/2237004846?parentSessionId=QQyAzKilj6RMrOsc9uroBv0vRvkGdy6MuNnJ87t4MVs%3D&pq-origsite=primo&accountid=17215

Ruan, B., Hsee, C. K., & Lu, Z. Y. (2018). The teasing effect: An underappreciated benefit of creating and resolving an uncertainty. *Journal of Marketing Research*, *55*(4), 556–570. https://doi.org/10.1509/jmr.15.0346

Sanchez, C., & Dunning, D. (2021). Jumping to conclusions: Implications for reasoning errors, false belief, knowledge corruption, and impeded learning. *Journal of Personality and Social Psychology*, *120*(3), 789–815. https://doi.org/10.1037/pspp0000375

Schulz, L., Rollwage, M., Dolan, R. J., & Fleming, S. M. (2020). Dogmatism manifests in lowered information search under uncertainty. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(49), 31527–31534. https://doi.org/10.1073/pnas.2009641117

Schwartz, L. (2022, March 7). Amateur open-source researchers went viral unpacking the war in Ukraine. *Rest of World*. https://restofworld.org/2022/osint-viral-ukraine/

Skinner, J. (2000). Taking conspiracy seriously: Fantastic narratives and Mr Grey the Pan-Afrikanist on Montserrat. *The Sociological Review*, *48*(2_suppl), 93–111. https://doi.org/10.1111/j.1467-954X.2000.tb03522.x

Slamecka, N. J., & Graf, P. (1978). The generation effect: Delineation of a phenomenon. *Journal of Experimental Psychology. Human Learning and Memory*, *4*(6), 592–604. https://doi.org/10.1037/0278-7393.4.6.592

Sprugnoli, G., Rossi, S., Emmendorfer, A., Rossi, A., Liew, S.-L., Tatti, E., di Lorenzo, G., Pascual-Leone, A., & Santarnecchi, E. (2017). Neural correlates of Eureka moment. *Intelligence*, *62*, 99–118. https://doi.org/10.1016/j.intell.2017.03.004

Stafford, T. (2021, January 6). The epistemic IKEA effect. *Reasonable People*. https://tomstafford.substack.com/p/the-epistemic-ikea-effect

Stasielowicz, L. (2022). Who believes in conspiracy theories? A meta-analysis on personality correlates. *Journal of Research in Personality*, *98*, 104229. https://doi.org/10.1016/j.jrp.2022.104229

Stewart, K. (1999). Conspiracy theory's worlds. In G. E. Marcus (Ed.), *Paranoia within reason: A casebook on conspiracy as explanation* (pp. 3–17). University of Chicago Press.

Stroeken, K. (2004). In search of the real. In M. Winkelman & P. Peek (Eds.), *Divination and healing: Potent vision* (pp. 29–54). University of Arizona Press.

Stump, A., Rummel, J., & Voss, A. (2022). Is it all about the feeling? Affective and (meta-)cognitive mechanisms underlying the truth effect. *Psychological Research*, *86*(1), 12–36. https://doi.org/10.1007/s00426-020-01459-1

Stuyck, H., Aben, B., Cleeremans, A., & Van den Bussche, E. (2021). The Aha! Moment: Is insight a different form of problem solving? *Consciousness and Cognition*, *90*, 103055. https://doi.org/10.1016/j.concog.2020.103055

Sunstein, C. R., & Vermeule, A. (2009). Conspiracy theories: Causes and cures. *The Journal of Political Philosophy*, *17*(2), 202–227. https://doi.org/10.1111/j.1467-9760.2008.00325.x

Sutton, R. M., & Douglas, K. M. (2014). 14 Examining the monological nature of conspiracy theories. *Power Politics, Paranoia. Why People Are Suspicious Their Lead*, *29*, 254–272. https://books.google.be/books?hl=en&lr=&id=nRlvAwAAQBAJ&oi=fnd&pg=PA254&dq=sutton+douglas+monological+conspiracy&ots=wAyJZ9HiYv&sig=gVCNV19_JAxcIr_ULq6yFpaOf1M

Sutton, R. M., & Douglas, K. M. (2022). Rabbit hole syndrome: Inadvertent, accelerating, and entrenched commitment to conspiracy beliefs. *Current Opinion in Psychology*, *48*, 101462. https://doi.org/10.1016/j.copsyc.2022.101462

Swami, V., Chamorro-Premuzic, T., & Furnham, A. (2010). Unanswered questions: A preliminary investigation of personality and individual difference predictors of 9/11 conspiracist beliefs. *Applied Cognitive Psychology*, *24*(6), 749–761. https://doi.org/10.1002/acp.1583

Swami, V., Pietschnig, J., Tran, U. S., Nader, I. W., Stieger, S., & Voracek, M. (2013). Lunar lies: The impact of informational framing and individual differences in shaping conspiracist beliefs about the moon landings. *Applied Cognitive Psychology*, *27*(1), 71–80. https://doi.org/10.1002/acp.2873

Thi Nguyen, C. (2020). Echo chambers and epistemic bubbles. *Episteme*, *17*(2), 141–161. https://doi.org/10.1017/epi.2018.32

Thi Nguyen, C. (2021). The seductions of clarity. *Royal Institute of Philosophy Supplements*, *89*, 227–255. https://doi.org/10.1017/S1358246121000035

Thorson, E. (2008). Changing patterns of news consumption and participation. *Information, Communication and Society*, *11*(4), 473–489. https://doi.org/10.1080/13691180801999027

Tiehen, J. (2022). The IKEA effect and the production of epistemic goods. *Philosophical Studies*, *179*(11), 3401–3420. https://doi.org/10.1007/s11098-022-01840-3

Tomas, F., Nera, K., & Schöpfer, C. (2022). *"Think for yourself, or others will think for you": Predicting belief in conspiracy theories with epistemic individualism and critical thinking dispositions*. OSF Preprints. https://doi.org/10.31219/osf.io/qgtzb

Topolinski, S., & Reber, R. (2010). Gaining insight into the "Aha" experience. *Current Directions in Psychological Science*, *19*(6), 402–405. https://doi.org/10.1177/0963721410388803

Trouche, E., Johansson, P., Hall, L., & Mercier, H. (2018). Vigilant conservatism in evaluating communicated information. *PLOS ONE*, *13*(1), e0188825. https://doi.org/10.1371/journal.pone.0188825

Urman, A., Makhortykh, M., Ulloa, R., & Kulshrestha, J. (2022). Where the earth is flat and 9/11 is an inside job: A comparative algorithm audit of conspiratorial information in web search results. *Telematics and Informatics*, *72*, 101860. https://doi.org/10.1016/j.tele.2022.101860

Van de Cruys, S., Bervoets, J., & Moors, A. (2021). *Preferences need inferences: Learning, valuation, and curiosity in aesthetic experience*. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/zh6nt

Van de Cruys, S., Damiano, C., Boddez, Y., Król, M., Goetschalckx, L., & Wagemans, J. (2021). Visual affects: Linking curiosity, Aha-Erlebnis, and memory through information gain. *Cognition*, *212*, 104698. https://doi.org/10.1016/j.cognition.2021.104698

Van de Cruys, S., Vanmarcke, S., Van de Put, I., & Wagemans, J. (2018). The use of prior knowledge for perceptual inference is preserved in ASD. *Clinical Psychological Science*, *6*(3), 382–393. https://doi.org/10.1177/2167702617740955

van der Linden, S. (2022). Misinformation: Susceptibility, spread, and interventions to immunize the public. *Nature Medicine*, *28*, 460–467. https://doi.org/10.1038/s41591-022-01713-6

Van Leeuwen, N. (2014). Religious credence is not factual belief. *Cognition*, *133*(3), 698–715. https://doi.org/10.1016/j.cognition.2014.08.015

Van Leeuwen, N., Weisman, K., & Luhrmann, T. M. (2021). To believe is not to think: A cross-cultural finding. *Open Mind*, *5*, 91–99. https://doi.org/10.1162/opmi_a_00044

van Prooijen, J.-W., Douglas, K. M., & De Inocencio, C. (2018). Connecting the dots: Illusory pattern perception predicts belief in conspiracies and the supernatural. *European Journal of Social Psychology*, *48*(3), 320–335. https://doi.org/10.1002/ejsp.2331

van Prooijen, J.-W., Ligthart, J., Rosema, S., & Xu, Y. (2022). The entertainment value of conspiracy theories. *British Journal of Psychology*, *113*(1), 25–48. https://doi.org/10.1111/bjop.12522

van Prooijen, J.-W., Staman, J., & Krouwel, A. P. M. (2018). Increased conspiracy beliefs among ethnic and Muslim minorities. *Applied Cognitive Psychology*, *32*(5), 661–667. https://doi.org/10.1002/acp.3442

van Prooijen, J.-W., & van Vugt, M. (2018). Conspiracy theories: Evolved functions and psychological mechanisms. *Perspectives on Psychological Science*, *13*(6), 770–788. https://doi.org/10.1177/1745691618774270

Vervaeke, J., Mastropietro, C., & Miscevic, F. (2017). 6. An introduction to the genealogy of the meaning crisis. In J. Vervaeke, F. Miscevic, & C. Mastropietro (Eds.), *Zombies in western culture: A twenty-first century crisis* (pp. 73–81). Open Book Publishers. https://doi.org/10.11647/obp.0113.06

Vitriol, J. A., & Marsh, J. K. (2018). The illusion of explanatory depth and endorsement of conspiracy beliefs. *European Journal of Social Psychology*, *48*(7), 955–969. https://doi.org/10.1002/ejsp.2504

von Glasersfeld, E. (1995). *Radical constructivism: A way of knowing and learning. Studies in mathematics education series: 6*. Falmer Press, Taylor & Francis. http://eric.ed.gov/?id=ED381352

Wade, S., & Kidd, C. (2019). The role of prior knowledge and curiosity in learning. *Psychonomic Bulletin & Review*, *26*(4), 1377–1387. https://doi.org/10.3758/s13423-019-01598-6

Walker, E. L. (1981). The quest for the inverted U. In H. Y. Day (Ed.), *Advances in intrinsic motivation and aesthetics* (pp. 39–70). Springer. https://link.springer.com/chapter/10.1007/978-1-4613-3195-7_3

Wänke, M., & Hansen, J. (2015). Relative processing fluency. *Current Directions in Psychological Science*, *24*(3), 195–199. https://doi.org/10.1177/0963721414561766

Ward, C., & Voas, D. (2011). The emergence of conspirituality. *Journal of Contemporary Religion*, *26*(1), 103–121. https://doi.org/10.1080/13537903.2011.539846

Weiss, J. M. (1970). Somatic effects of predictable and unpredictable shock. *Psychosomatic Medicine*, *32*(4), 397–408. http://www.ncbi.nlm.nih.gov/pubmed/5535207

Wertheimer, M. (1943). *Productive thinking*. Harper & Brothers.

Williams, D. (2021). Signalling, commitment, and strategic absurdities. *Mind & Language*, *37*(3), 1011–1029. https://doi.org/10.1111/mila.12392

Wojtowicz, Z., & DeDeo, S. (2020). From probability to consilience: How explanatory values implement Bayesian reasoning. *Trends in Cognitive Sciences*, *24*(12), 981–993. https://doi.org/10.1016/j.tics.2020.09.013

Yu, A. J., & Dayan, P. (2005). Uncertainty, neuromodulation, and attention. *Neuron*, *46*(4), 681–692. https://doi.org/10.1016/j.neuron.2005.04.026

Yu, Y., Becker, M., Salvi, C., & Beeman, M. (2022). *Solving problems with an Aha! Increases uncertainty tolerance*. OSF Preprints. https://doi.org/10.31219/osf.io/z3ng5

Zannettou, S., Caulfield, T., De Cristofaro, E., Kourtellis, N., Leontiadis, I., Sirivianos, M., Stringhini, G., & Blackburn, J. (2017). *The web centipede: Understanding how web communities influence each other through the lens of mainstream and alternative news sources*. arXiv [cs.SI]. arXiv. http://arxiv.org/abs/1705.06947

Zhang, L., Ward, T., Vashisht, H., & Boyle, D. O. (2022). *Belief in conspiracy theories is associated with decreased adaptive learning to contingency volatility*. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/nrqb8