CAU SUMMER 2024 WEEK 1, JULY 7-13
COURSE: The Truth About Fake News
FACULTY: Alexandra Cirone, Assistant Professor in Government, Faculty Fellow in Democratic Innovations at Yale University
LOCATION: Lincoln Hall, Room 149

Schedule of Readings

Read for Thursday's class:

- Mason, 2021: How Politics Got So Polarized, The New Yorker: https://www.newyorker.com/magazine/2022/01/03/how-politics-got-so-polarized
- Pennycook and Rand, 2021: The Psychology of Fake News (see pdf)

BOOKS · ESSAYS · THE BIDEN ERA

HOW POLITICS GOT SO POLARIZED

In a sea of bipartisan identities, are anything thing "red" and "blue" together?

By Elizabeth Kolbert
December 27, 2021

Three days, forty-two, forty-seven and two PTA meeting before we all retreated. Illustration by Lucia Liu Chen

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In June 19, 2014, thirteen-year-boy Oklahoma City baseball a high school for Robbins Core Team Pub, about a hundred and ten miles to the southeast. The team had never met before, and it had just completed fifth grade and came from middle income neighborhoods in the Oklahoma City area. Most of the players, at this point, the boys were assigned to a cabin at an empty Boy Scout camp. They dubbed themselves the Rattlers.

The following day, a second group of boys—also all white, Protestant, and middle-class—arrived at the camp. They were assigned to a cabin that could not be seen from the first. They decided to call themselves the Eagles.

For a week, the two groups went about their activities—swimming, tossing a football, sitting around a campfire—unaware of the other. Then, one morning, the Eagles woke up to find their cabin surrounded, swagged, or they called it, stuck in the mud. Soft, dry ash, pigeon, and twaddl, each load developed its own social hierarchy and hence, its own concern. The Rattlers, for instance, tended to cursing. The Eagles frowned on profanity.

Toward the end of the week, the two groups learned about each other. The reaction was swift. Each group wanted to challenge the other to a contest, and their counselors scheduled a tournament.

On the first day, the Rattlers won at both baseball and tug-of-war. The Eagles won third. One of their decisive blows for the Rattlers was big. They confided to little galoots about their bad to be other. The Eagles, meanwhile, had a hard time with the Rattlers. Some of their crisis had attached a mean flag to the backstop of their ball field. They tore it down and set it on fire. The next morning, the two groups met over a dodgeball which had to be broken up by the counselors.

Then day five, propaby protestors arrived. The Eagles were the baseball game, a development they attributed to their prayers for victory and the Rattlers attributed to the fact that they had lost. The Rattlers attributed to their setback to cursing the Eagles. Later, after the Eagles had gone to sleep, The Eagles staged a ceremonial strike from advocacy were at breakfast. Finding that the Rattlers ceremonial, the Rattlers accused the Eagles of being "communists."

As tensions mounted, both groups became increasingly aggressive and left spoiling. The Rattlers decided that they'd lost at baseball because the Eagles had cursed. The Eagles decided that they had lost tug-of-war because the Rattlers had cheated. Each group blamed the Eagles accused the Rattlers of comradeo, for being stupid their cold at night. Their ecological tricks for use in a time of extreme insecture. When the Eagles wrote the tournament, each boy received a medal and a certificate. The Rattlers immediately stole them.

At this point, members of both groups concerned that their twisted behavior was being noticed. The Rattlers, who had arrived in cars with small, stickers, were just getting ready to leave. They brought the heads together for another contest of the sort that only a social scientist could love. Hundreds of boxes were strewn in the dirt, and each boy was given a minute to collect as many to be could in a paper bag. The Rattlers won, by a margin of two. The Eagles had gathered a bag hideously proportion were a score. In the aftermath, it was clear that the bags were strewn spread, the same boxes were projected onto the screen over and over, in different arrangements. The Rattlers were what they wanted to, and so did the Eagles. By the former's reckoning, the Eagles had gathered twice as many boxes as the Rattlers boxes than the Eagles. By the latter's, the Eagles had gotten twice pickpocket boxes as a magnet of twenty-one.

The whole elaborate experiment is now regarded as a classic of social psychology. The participants had been chosen because they were so like fellow. All were from the same to a battle over another were a different totem animal and a contest for some production. So the Rattlers and the Second World War, about under were interesting. Then odd.

A question today seems to be divided into two camps: the Dividuists and the Unipluribus. According to a YouGov survey, Dividuists outnumber Unipluribus by a margin of two to one. Dividuist is the United States. Not Republicans, that figure approaches seventy-per-cent. A Pew survey found that more than half of Republicans and nearly half of Democrats believe that political opponents to be "immoral." Another Pew survey, taken a few months later, found that Republicans and Democrats, when asked to describe their main feelings for a relationship wouldn't date a Dividuist Young voter, and almost five out of ten Republicans wouldn't date someone who supported Hillary Clinton.

SPECIAL FROM THE NEW YORKER

A Lethal Whitewash Fight for Analysts in Jonestice

Even infectious diseases are now subject to partisan conflict. In a Marquette University Law School poll from November, seventy-per-cent of Democrats said they had received a vaccine against Covid-19, but only about half of Republicans. Vaccination rates in Democratic-dominated Oneiota, a "volcano of concern," Representative Rosna Jackson, Texas Republican, labelled the newly detected strain a Democratic trick to sanitize elections voting. Meanwhile, the MRI—the Midwestern Elections Variant, Jackson refer, noted as Physician to President under Trump and also another Rosna's Dreams, instead.

How did America get this way? Partisans have a simple answer: the other side. Democrats blame Republicans for the rise of Trump, who broke a woman presidential Dividuist's twelve-year-long hold on the White House. Republicans point to Hillary Clinton's "Deplorables" speech, in which she described a quarter of the Trump voters as "racist, sexist, homophobic, Islamophobic and xenophobic." Democrats defended Oneiota's "volcano of concern," Representative Rosna Jackson, Texas Republican, labelled the newly detected strain a Democratic trick to sanitize elections voting. Meanwhile, the MRI—the Midwestern Elections Variant, Jackson refer, noted as Physician to President under Trump and also another Rosna's Dreams, instead.

Other Dividuists are quick to point out that Trump's victory was not the first time a Republican lost the popular vote but still managed to win the Presidency. Perhaps the most famous example is the Hayes-Tilden election, in which the Republican Rutherford B. Hayes was declared the winner by a margin of one electoral vote, despite having lost the popular vote to the Democrat Samuel J. Tilden. Hayes was a Dividuist, and he was elected in 1876, the year of the Centennial Exposition, which was meant to celebrate the unity of the Union. Hayes's election was marred by charges of fraud and intimidation, and it was followed by the withdrawal of Federal troops from the South, which had been occupied since the end of the Civil War. The Hayes-Tilden contest is now regarded as the nadir of American democracy.

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Lillian Hearst is a political scientist at Johns Hopkins. In "Elected Agreement Over Politics Because Our Identity," she notes that not only are people in the United States sorted by party, demographically and ideologically, by the early nineteen-fifties, Blacks were quite more or less evenly between the two parties, and so were others. The same held for women, Catholics, and various minorities. The partisan preferences, nonetheless, were so similar that the American Political Science Association could issue a report lamenting that Republicans made sense of an effective distinguish themselves "Alternative between the parties as defined so badly that it is often difficult to determine what the declare best interests of the voters are."

The Hiten, Hiten notes, were "not a time of social peace." Americans fought, either in ugly wars, even among most other Democratic-dominated Republicans. Hearst's conclusion is that the parties were much mingle, though, that these battles didn't break down along partisan lines. American, Mason writes, could "engage in social prejudice and vitriol free from the disrupted from their political chores."

Then came what she calls the great "sorting." In the wake of the civil rights movement, the moment mentioned, Richard Nixon's Southern Strategy, the parties, Hearst writes, "Democrats became more discharging, and more male than its counterpart. These differences, already significant by the early nineteen-sixties, had become even more pronounced by the mean time.

"We have gone from two parties that are a little bit different to a lot of ways to two parties that are very different in a few powerful ways," Mason says. In the two parties sorted socially, they also drifted apart ideologically. Hearst's study of congressional voting, for instance, shows that in the nineteen-sixties, Democrats and Republicans were almost equally conservative. Today, the sorting has moved far on the dispersion of "Blacks, Hispanics, Jews, Muslims, and Southerners, and Non-Christians" voted for Democrats, "by contrast, and wagging his finger at Garland.

If thoughtful and mainstream Irish people to get Amazon out of its way, what is According to Stephen Marche, a novelist and a literary columnist for Esquire, the answer is obvious. "The United States is coming to an end," he declares at the start of "The Mass Civil War: Dispatches from the American Future" (Knopf Reader). Indeed, he writes, the United States is already in a state of disintegration, with attempting to kidnap sitting presidents and Congress passed the peaceful transition of power—making about them to another country you would think a civil war had already begun.

Marche is Canadian, and he sees this as key. Americans have become so immersed in their dwelling ourselves that they can't acknowledge the obvious; it takes an outsider to reveal it to them. "We unfriendly Canadians have observed the American Dividuists for decades," Marche writes. He describes Canada as Dividuists to the US's Unipluribus "a slow and sympathetic and morally intolerant mirror" to the dramatic smart aches.

"The New Civil War" might be called a work of speculative non-fiction, some parts are repeated, others intended. The book is structured as a series of possible disasters, each of which sends the country further down the road to ruin. The first disaster is a contested election under a surprise ruling by a Quisling Court. In a second, a Russian dummy the U.S. Capitol by a blind, a collection of white supremacist militias groups converge on a Capitol building that the government has closed for repairs. The U.S. Army is called in, eventually, many of the standard, it blows the militia members to smithereens.

Marche is fond of emerging claims. "No American president of either party ever and for the formulation Irish, can be an icon of unity," he writes. "Lincoln, Roosevelt, Kennedy, Reagan, Obama, Trump, Biden: everyone, dangerous, it's, power." He declares latter is the one disagree. Unfortunately, too many of his pronouncements ring true, such as "When the crisis comes, the institutions must be there."

Each of Marche's scenarios results in a different form of social breakdown. The coverage of the bridge is followed by a concerning insurgency, the Capitol building by government repression, and the Supreme Court by a constitutional crisis. In the last of the book, Marche envisions the possibility that the U.S. will fracture into four separate countries, roughly corresponding to the Northeast, the West Coast, the Midwest plus the Southeast, and Texas. "Dissolution could be liberation," he writes.

The Robbers Cave experiment suggests another way out. After having realized the Eagles and the Rattlers termed conflicts the tournaments, the counselors, in the Boy Scout camp, brought the boys together for a course of peaceable activities. One day for example, they arranged for the two groups to team up to the mess hall to fetch. The result was a food fight. Since "common situations" would resolving, the researchers moved on to what they called "superordinate goals." Some of the goals involved overcoming sabotage, a supply truck breakdown—that could be solved only if the boys cooperated. Dealing with these manufactured emergencies made the groups a lot friendlier toward each another, to the point where, on the trip back to Oklahoma City the Rattlers and the Eagles shared a ride from the bus-collecting station to meet the Eagle's redoubt.

Could "superordinate goals" help stabilize America? There would seem to be an attempt of cure for the two parties to work together. The latch, of course, is that they'd first need to get on the same page.

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Elizabeth Kolbert, a staff writer at The New Yorker since 1999, won the 2015 Pulitzer Prize for "The Sixth Extinction." Her latest book is "Under a White Sky: The Nature of the Future."

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Trends in
Cognitive Sciences

Review

The Psychology of Fake News

Gordon Pennycook[1,2,*] and David G. Rand[3,4,5,*]

We synthesize a burgeoning literature investigating why people believe and share false or highly misleading news online. Contrary to a common narrative whereby politics drives susceptibility to fake news, people are 'better' at discerning truth from falsehood (despite greater overall belief) when evaluating politically concordant news. Instead, poor truth discernment is associated with lack of careful reasoning and relevant knowledge, and the use of heuristics such as familiarity. Furthermore, there is a substantial disconnect between what people believe and what they share on social media. This dissociation is largely driven by inattention, more so than by purposeful sharing of misinformation. Thus, interventions can successfully nudge social media users to focus more on accuracy. Crowdsourced veracity ratings can also be leveraged to improve social media ranking algorithms.

Highlights

Recent evidence contradicts the common narrative that partisanship and politically motivated reasoning explain why people fall for 'fake news'.

Poor truth discernment is linked to a lack of careful reasoning and relevant knowledge, as well as to the use of familiarity and source heuristics.

There is also a large disconnect between what people believe and what they will share on social media, and this is largely driven by inattention rather than by purposeful sharing of misinformation.

Effective interventions can nudge social media users to think about accuracy, and can leverage crowdsourced veracity ratings to improve social media ranking algorithms.

Toward a Psychology of False and Misleading Online News

Fabricated news is nothing new. For example, in 1835 *The Sun* newspaper in New York published six articles about purported life on the moon which came to be known as the 'Great Moon Hoax'. During the 2016 US Presidential Election and UK Brexit Referendum, however, a different form of **fake news** (see Glossary) rose to prominence (Box 1): false or highly misleading political 'news' stories, primarily originating on social media [1]. Concern about fake news was redoubled in 2020 in the face of widespread **misinformation** and **disinformation** [2] on social media about the coronavirus disease 2019 (COVID-19) pandemic [3] and the 2020 US Presidential Election [4]. Misleading **hyperpartisan news**, as well as **yellow journalism** [5], are related forms of problematic news content that are likely sources of political polarization [6]. What is it about human psychology – and its interaction with social media [7,8] – that explains the failure to distinguish between accurate and inaccurate content online? Apart from being of theoretical interest, this question has practical consequences: developing effective interventions against misinformation depends on understanding the underlying psychology.

We focus here primarily on online content that is presented in the form of news articles. However, false and misleading claims come in many forms, and there are several literatures that are clearly related, but outside the scope of our review (although we will draw some connections throughout). These include work on conspiracy belief [9], superstition [10], rumors [11], bullshit receptivity [12], and misperceptions [13], among others. Furthermore, our focus is on individual examples of misinformation, and not on organized disinformation campaigns (e.g., by the Russian Internet Research Agency, or campaigns relating to global warming or fraud in the 2020 US Presidential Election).

Why Do People Fall for Fake News?

When considering the factors that may influence what people believe, it is essential to distinguish between two fundamentally different ways to conceptualize belief in true and false news. One common approach is to focus on truth 'discernment', or the extent to which misinformation is believed 'relative' to accurate content. Discernment, typically calculated as belief in true news minus belief in false news (akin to 'sensitivity' or d' in signal detection theory [14]) captures the 'overall' accuracy of one's beliefs – and thus gives insight into failures to distinguish between true and false content ('falling for fake news').

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Box 1. Prevalence of Fake News

Various analyses of social media and web browsing data have been used in an attempt to determine the prevalence of fake news, often with a focus on the 2016 US Presidential Election. For example, using web browsing data, archives of fact-checking websites, and a survey, Allcott and Gentzkow [19] estimated that a particular set of news stories that are known to be false were shared on Facebook at least 38 million times in the 3 months leading up to the 2016 election (30 million of which were for news favoring Donald Trump). This estimate represents a lower bound since it only reflects that specific set of known false news.

Other analyses have focused on fake news publishers (i.e., websites) rather than on individual articles. Based on data from Twitter [117], Facebook [77,118], and web browsing [89], these studies concluded that content from known fake news sites represents a small proportion of most people's media diets, and that the average social media user was exposed to little fake news during the 2016 election.

These analyses have important limitations, however, because the only available data concern what people are sharing and what they visit when they click through to visit news sites off-platform. But, of course, the vast majority of the time that people are exposed to news on social media, they simply read the post without sharing it or clicking on the link to visit the actual source website. Furthermore, so-called 'fake news' only represents one category of misinformation, and misleading content from sources such as hyperpartisan news websites likely represents a much larger proportion of people's media diets [6,119]. Thus, the actual on-platform exposure of the average user to misinformation remains an open question [120]. We feel it is premature to conclude that exposure rates are minimal, and thus that false and misleading news online is not a problem (also [7,8]). This is especially true when looking beyond the 2016 election because new misinformation threats – such as false claims about COVID-19 [3,44] and fraud in the 2020 US Presidential Election [4] – have gained widespread traction through amplification by (mostly Republican) political elites.

Accordingly, exposure to fake news (and misinformation more broadly) is not equally distributed across all users. In particular, political conservatives and older adults were far more likely to visit fake news websites or share fake news articles during the 2016 Presidential Election [19,89,117,118]. Studies have also found associations between political conservatism and belief in misinformation in the USA [20,44], Chile [121], and Germany [122], but not in Hungary [24], and users who engage in less reasoning have been found to share content from lower-quality news sites on Twitter [71]. Thus, even if it was true that the average social media user was not exposed to that much misinformation, exposures rates are substantially higher in subpopulations that may be particularly vulnerable to believing inaccurate content. Finally, misinformation that originates on social media sometimes transitions to much larger audiences when it is picked up by traditional media outlets – either via direct repetition or debunking (which may result in inadvertent amplification).

Glossary

Algorithm: steps or calculations performed by a computer (given a set of rules) to solve a problem or complete a task. In the context of social media, algorithms are used to determine what content users see.
Disinformation: information that is false or inaccurate, and that was created with a deliberate intention to mislead people.
Fake news: news content published on the internet that aesthetically resembles actual legitimate mainstream news content, but that is fabricated or extremely inaccurate. Also referred to as false, junk, or fabricated news.
Hyperpartisan news: news content that is not entirely fabricated, but which covers events that actually occurred with a strong partisan bias. As a result, hyperpartisan news is typically misleading, and we therefore include it as a form of misinformation.
Misinformation: information that is false, inaccurate, or misleading. Unlike disinformation, misinformation does not necessarily need to be created deliberately to mislead. Misinformation is sometimes used to refer exclusively to inaccuracies that are accidental; however, because it is difficult to ascertain the intentions of the unknown individuals who create falsehoods that spread on the internet, we use misinformation as a broader umbrella term here (i.e., much of the content used in the studies we discuss could be classified as disinformation and/or hyperpartisan news and/or propaganda, etc.).
Yellow journalism: content from newspapers, magazines, or websites that is poorly researched and sensationalist, and that is created with the goal of increasing sales or, on the internet, clicks. Roughly equivalent to tabloid journalism.

Another approach is to focus on overall belief, or the extent to which news – regardless of its accuracy – is believed (calculated as the average or sum of belief in true news and belief in false news, akin to calculating 'bias' in signal detection theory [14]). Critically, factors that alter overall belief need not impact people's ability to tell truth from falsehood [15]: increasing or decreasing belief in true and false headlines to an equivalent extent has no effect on the overall accuracy of one's beliefs (i.e., does not affect truth discernment).

Political Motivations

A popular narrative is that the failure to discern between true and false news is rooted in political motivations. For example, it has been argued that people are motivated consumers of (mis)information [16] – that they engage in 'identity-protective cognition' when faced with politically valenced content, and this leads them to be overly believing of content that is consistent with their partisan identity and overly skeptical of content that is inconsistent with their partisan identity [17]. A related theory argues that people place loyalty to their political identities above the truth – and thus fail to discern truth from falsehood in favor of simply believing ideologically concordant information [18]. These accounts contend that a strong causal influence of political motivation on belief is thus the dominant factor explaining why people fall for fake news.

It is clearly true that partisanship is associated with overall belief: People are more likely to believe news content that is concordant (versus discordant) with their political partisanship [19–25] (Figure 1B). It is important to note, however, that the effect of political concordance is typically much smaller than that of the actual veracity of the news [20,21,26]. In other words, true but

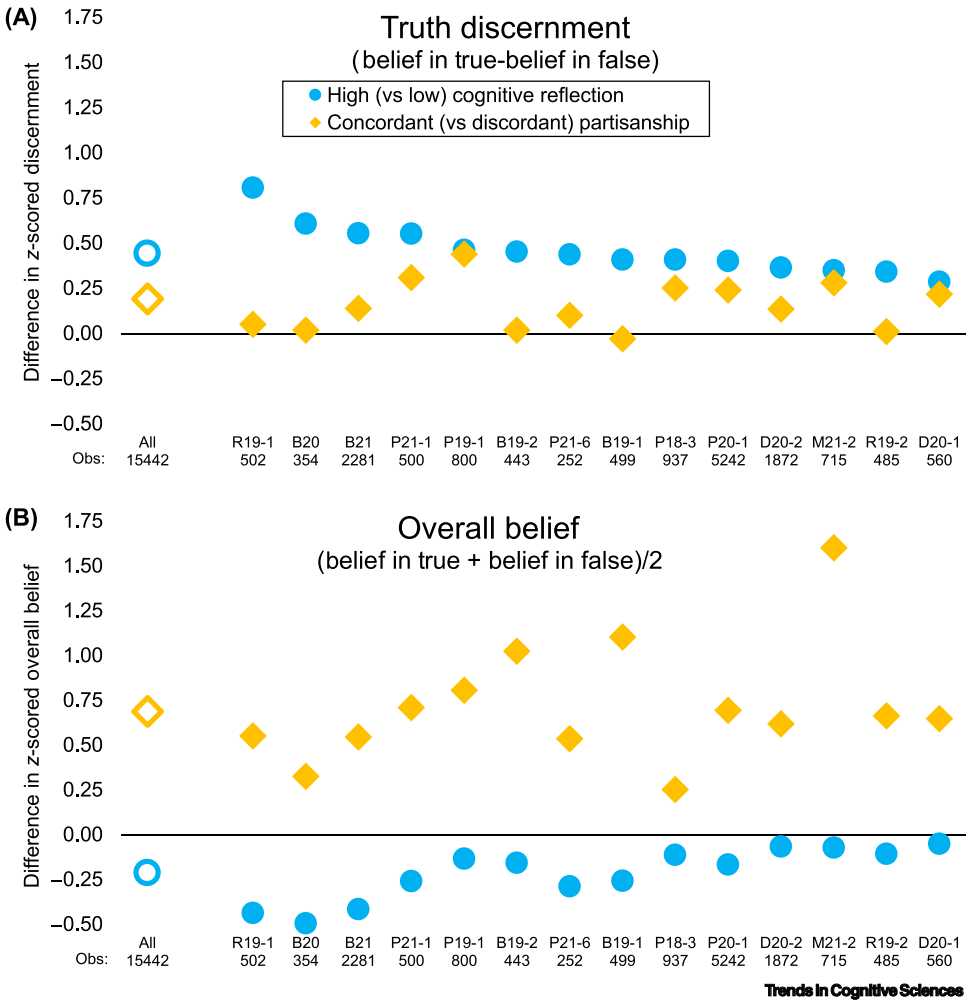


Figure 1. Political Concordance and Cognitive Reflection Have Divergent Relationships with Belief. Reasoning (or lack thereof) is much more strongly related to truth discernment than is political concordance, whereas political concordance is much more strongly related to overall belief than is reasoning. Data from 14 studies [20,21,26,34,35,41,49,61,84,93] in which US participants were asked to rate the accuracy of actual news posts from social media (headlines equally balanced true versus false, as well as Democrat-consistent versus Republican-consistent). Study names are indicated by the first author's last initial and publication date, followed by a dash and study number for multistudy papers; the number of participants in each study is indicated under the name. Data from all 14 studies are pooled to calculate the 'All' values. (A) Difference in truth discernment (belief in true news minus belief in false news) between participants who scored higher on the Cognitive Reflection Test relative to those who scored lower (median split; collapsing over headline political concordance) and between headlines that were politically concordant relative to politically discordant (collapsing over participant cognitive reflection). More-reflective participants were more discerning than less-reflective participants, and discernment was higher for politically concordant headlines than for politically discordant headlines. Critically, the difference based on reasoning was roughly twice as large as the difference based on partisanship. (B) Difference in overall belief (average of belief in true news and belief in false news) between participants who scored higher on the Cognitive Reflection Test relative to those who scored lower (median split; collapsing over headline political concordance), and between headlines that were politically concordant relative to politically discordant (collapsing over participant cognitive reflection). More-reflective participants had a somewhat lower overall belief than less-reflective participants, whereas overall belief was higher for politically concordant headlines than for politically discordant headlines. Abbreviation: Obs., observed.

politically discordant news is typically believed much more than false but politically concordant news – politics does not trump truth. Furthermore, greater overall belief in politically consistent news does not necessarily indicate politically motivated reasoning. Such differences could even arise from unbiased rational (e.g., Bayesian) inference built on prior factual beliefs that

differ across party lines (e.g., owing to exposure to different information environments) [27–33] (Box 2 for details).

We now turn to the impact of political concordance on truth discernment. Greater overall belief in politically concordant news might seem to suggest that people are more inaccurate when assessing politically concordant news – in other words, that political concordance (and the associated motivations) interferes with truth discernment. In fact, the data reveal the opposite pattern: People are somewhat better at discerning truth from falsehood when judging politically concordant news compared with politically discordant news (Figure 1A). Taken together, the evidence therefore suggests that political identity and politically motivated reasoning are not the primary factors driving the inability to tell truth from falsehood in online news.

Reasoning

Another perspective on the (in)ability to differentiate between truth and falsehood comes from the field of reasoning. Work in this vein has a particular focus on dual-process theories stipulating that analytic thinking can override automatic, intuitive responses (Box 3 for details). The key question this perspective asks is – what is the role of reflective reasoning in the ability to discern fake news from truth?

One potential answer, which follows from the earlier-referenced work on political identity, argues that deliberative ('System 2') reasoning is often motivated by political identity, and that people

Box 2. Challenges in Identifying Politically Motivated Reasoning

The observation that people are more likely to believe information that is consistent with their political ideology/partisanship (and are less likely to believe information that is inconsistent with their ideology/partisanship) is often taken as evidence for politically motivated reasoning [22,123,124]. Critically, however, this pattern does not actually provide clear evidence of politically motivated reasoning because partisan identity is likely confounded with other relevant variables [27,125]. Most notably, partisans differ in what they believe about the world, even when it comes to so-called 'factual beliefs' – beliefs that relate to facts or empirical evidence [28], such as in the case of global warming [126]. This is critical because a large body of evidence from entirely nonpolitical contexts shows that what people believe to be true about the world influences their reasoning (a phenomenon known as belief bias [127]). Indeed, once prior beliefs are accounted for, the apparent impact of political concordance on processes of belief formation is typically greatly reduced or eliminated [28,29,128]. Thus, observing a difference across ideological lines is not sufficient evidence to conclude that partisan identity or political motivations are themselves responsible for the difference [27,125].

To clearly disentangle the impact of partisan identity or motivations versus prior beliefs, further experimental work is needed – for example, studies that manipulate prior factual beliefs and/or political motivations [27,30]. Relatedly, understanding the origins of partisan differences in prior factual beliefs is also of the utmost importance. Exposure to different information streams is a promising candidate: entirely rational (e.g., Bayesian) and truth-seeking (i.e., nonpolitically motivated) people who obtain their information from conservative (e.g., Fox News) versus liberal (e.g., MSNBC) news sources would naturally wind up with very different factual beliefs about the world. Evaluating new information in light of how well it aligns with one's priors – although often referred to as 'confirmation bias' – is not, in fact, necessarily evidence of bias in a normative sense. When there is uncertainty about the reliability of information sources or data-generating processes, it can be entirely consistent with Bayesian inference to be skeptical of information that is inconsistent with one's prior factual beliefs [30,129]. In such cases, Bayesian agents may infer that the source or the data-generating process is unreliable rather than that their prior belief was incorrect – and doing so would not be evidence of bias *per se* (where bias is defined as deviating from some normative, e.g., Bayesian, benchmark) [130].

Finally, the critique described in this box also applies to inferring 'motivated System 2 reasoning' from the observation that cognitive sophistication is sometimes (but not always or even frequently [131–133]) associated with polarization rather than accuracy [17]. The association between cognitive sophistication and polarization (e.g., in the context of climate change) disappears entirely once prior factual beliefs are accounted for [28]. Instead, it appears that more cognitively sophisticated individuals may place more weight on their prior factual beliefs when evaluating new evidence, instead of placing more weight on concordance with their political identities. Of course, people's prior factual beliefs may themselves be caused by politically motivated reasoning – but they need not be, and most study designs cannot determine (but must assume) a causal connection.

Box 3. Dual-Process Models of Reasoning and the Consequences of Deliberation

Dual-process theories are a core component of research on the cognitive science of reasoning. These theories argue that human cognition can be partitioned into two fundamentally different types of processes that differ in terms of their characteristics [40,134,135]: Type 1 (or System 1) processing that is characterized primarily by automaticity such that Type 1 outputs ('intuitions') come to mind directly as a response to the stimulus, and Type 2 (or System 2) processing that is characterized by the deliberation that may or may not arise given a particular intuitive output (or set of outputs).

Consider the following problem from the Cognitive Reflection Test [136]: 'A bat and ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?' The incorrect intuitive answer – 10 cents – comes to mind intuitively for most people, whereas the correct answer – 5 cents – emerges (for most) only with an additional deliberation process [137]. Performance on tasks such as the Cognitive Reflection Test are associated with a wide range of beliefs and behaviors [138], including actual social media behaviors observed on Twitter ([71]; also [109]), as well as conspiracy ideation [139], politics [140], bullshit receptivity [12], and endorsement of a variety of epistemically suspect beliefs [138]. Importantly, although dual-process theories typically emphasize the importance of overriding incorrect intuitions via analytic thinking, this should not be taken to imply that intuitions are always incorrect or that analytic thinking is always accurate [135].

engage in 'identity protective cognition' [16]. This account predicts that engaging in more deliberation should lead to more politically polarized beliefs – and, most importantly, to greater belief in politically concordant but false claims. Thus, more deliberation should be associated with worse truth discernment.

By contrast, more 'classical' reasoning accounts (i.e., accounts that are more consistent with work on dual-process reasoning in other domains) portray System 2 reasoning as being responsible for correcting faulty intuitions (Box 3). This perspective therefore predicts that people who deliberate more will simply be less likely to believe false content – and are better able to discern between true and false content – regardless of the political concordance of the news that they are evaluating.

Across numerous recent studies, the evidence supports the classical reasoning account over the motivated System 2 reasoning account. People who are more reflective (Box 3) are less likely to believe false news content – and are better at discerning between truth and falsehood – regardless of whether the news is consistent or inconsistent with their partisanship [20,26,34,35] (Figure 1A). The same pattern is evident with respect to discernment between biased and misleading hyperpartisan news and true (mainstream) news [35] and when judging full news stories as opposed to just headlines [36], and using measures beyond the Cognitive Reflection Test (Figure 1), such as thinking disposition questionnaires [34] and the Berlin Numeracy Test [35]. Belief in fake news is also associated with delusionality [34], dogmatism [34], religious fundamentalism [34], bullshit receptivity [37], and overclaiming [37] (all factors associated with analytic thinking; Box 3). Furthermore, experimentally manipulating participants' level of deliberation demonstrates a causal effect whereby deliberation reduces belief in false (but not true) news, regardless of partisan alignment (and has no effect on polarization) [26]. Research also shows that overconfidence may contribute to susceptibility to false information [38], perhaps because it stops people from slowing down and engaging in reflective reasoning [39,40].

How, then, do people determine news veracity? The correlation between cognitive reflection and disbelief in fake news is stronger in cases where the content is more obviously implausible (and vice versa for true news) [20]. This suggests that, in cases where people actually do stop and think, relevant prior knowledge is likely to be a critical factor. Indeed, political knowledge is positively associated truth discernment for political news content [23,41], as is media literacy [42] and general information literacy [43]. Similarly, basic science knowledge is positively associated with truth discernment for (mis)information about COVID-19 [44]. This implies, unfortunately, that reasoning may not improve accuracy in contexts where prior knowledge is heavily

distorted (e.g., by partisan media consumption or misinformation campaigns by political elites – climate change being a prime example) [28] (Box 2).

Thus, when it comes to the role of reasoning, it seems that people fail to discern truth from falsehood because they do not stop to reflect sufficiently on their prior knowledge (or have insufficient or inaccurate prior knowledge) – and not because their reasoning abilities are hijacked by political motivations.

Heuristics

Prior work in judgment and decision making [45] indicates that people are likely to use heuristics or mental shortcuts when judging news headlines. What, then, are the specific features of fake news that influence people's intuitions or cause them to make mistakes when reasoning?

One key route to intuitive belief in news is familiarity [37]. The influence of prior exposure on judgments of truth – sometimes referred to as the illusory truth effect – is well documented [46,47]. Indeed, wartime rumors during WWII that were more familiar were more likely to be believed [48]. Consistent with this, a single prior exposure to a fake news headline increases later belief in the headline [49,50]. Remarkably, this is evident even if the headline is extremely implausible (also [51]) and inconsistent with one's political partisanship [49]. Thus, feelings of familiarity and, possibly, processing fluency *per se* ([52,53]; (but see [54]) likely contributes to increased belief in false claims.

The source is another important cue that may be used when evaluating news. Participants are more likely to believe information provided by people whom they view as being credible (reviewed in [55]), and a large literature from political science has robustly demonstrated the impact of elite messaging, in particular, on public opinion [56]. For example, attributing a false claim to President Trump increased Trump supporters' belief in the claim while reducing Democrats' belief in the claim [57]. Furthermore, social feedback provided by social media platforms (e.g., 'likes') also increases belief in news content, particularly for misinformation [58] – a factor that is likely to covary with elite messaging (given that political elites, such as Presidents and people in Congress or the media, often have many social media followers).

Finally, a salient feature of fake news headlines also seems to be that they are often emotionally evocative. That is, fake news is often geared toward provoking shock, fear, anger [8,59], or (more broadly) moral outrage [60]. This is important because people who report experiencing more emotion (positive or negative) at the outset of the task are more likely to believe false (but not true) news; and instructing people to rely on emotion increases belief in false (but not true) headlines [61].

Believing versus Sharing Fake News

One might expect that people share news on social media because they believe it is true. Accordingly, the widespread sharing of false content is often taken as evidence of widespread false beliefs [62,63]. However, recent work has shown that social media sharing judgments can actually be quite divergent from judgments about accuracy [21,44]. For example, participants who were asked about the accuracy of a set of headlines rated true headlines as much more accurate than false headlines; but, when asked whether they would share the headlines, veracity had little impact on sharing intentions – both in the context of political headlines [21] (Figure 2A) and headlines about COVID-19 [44]. As a result, sharing intentions for false headlines were much higher than assessments of their truth (e.g., 91% higher in Figure 2A), indicating that many people were apparently willing to share content that they could have identified as being inaccurate.

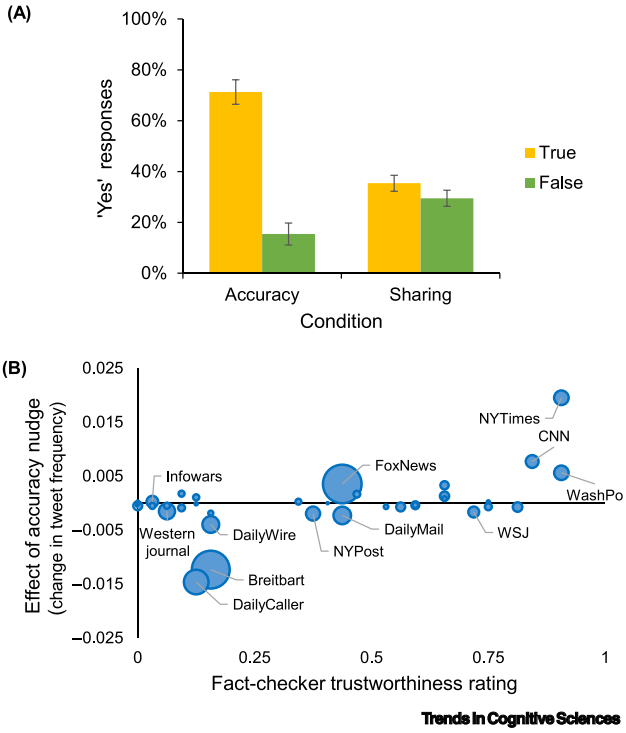


Figure 2. Social Media Sharing Does Not Necessarily Imply Belief, and Accuracy Prompts Improve the Quality of Content That People Share. (A) Data from study 1 in [21] where US participants (n = 1002) from Amazon Mechanical Turk (MTurk) judged political headlines. Participants were presented with a set of headlines and were either asked to indicate whether they thought the headlines were accurate (accuracy condition) or whether they would consider sharing them on social media (sharing condition). Although participants were much more likely to rate true headlines versus false headlines as being accurate in the accuracy condition, headline veracity had little impact on sharing intentions in the sharing condition (i.e., there was an interaction between condition and veracity, b = −0.50, t(18089) = −15.37, P = <0.001). Error bars indicate 95% confidence intervals. (B) Data from study 7 in [21] where Twitter users (n = 5379) who had recently shared links to websites that regularly produce misleading and hyperpartisan content were sent an unsolicited message asking them to rate the accuracy of a single nonpolitical headline. The news sites to which users retweeted links in the 24 h after receiving the message were compared with the links retweeted by participants who had not yet received the message (and the date of message delivery was randomized to allow causal inference). The x axis indicates the trust score given to each outlet by eight professional fact-checkers. The y axis indicates the fraction of rated links to each outlet in the 24 h after the intervention minus the fraction of links to each outlet among not-yet-messaged users. The size of each dot is proportional to the number of premessaging posts with links to that outlet. Domains with >500 premessaging posts are labeled. As can be seen, the message significantly improved the quality of new sources shared, with the change in relative tweet frequency being strongly related to fact-checker ratings (domains weighted by number of pretreatment posts; r(52) = 0.74, P = <0.001). News sources: Breitbart; CNN, Cable News Network; DailyCaller; DailyMail, *The Daily Mail*; DailyWire; FoxNews, Fox News Channel; Infowars; NYPost, *The New York Post*; NYTimes, *The New York Times*; WashPo, *The Washington Post*; Western Journal; WSJ, *The Wall Street Journal*.

To shed light on this disconnect between accuracy judgments and sharing intentions, a recent study examined the impact of asking participants to rate the perceived accuracy of each headline immediately before deciding whether they would be willing to share it on social media [21]. This experiment helps to distinguish between three distinct explanations for the accuracy–sharing dissociation. The confusion-based account posits that people genuinely (but mistakenly) believe that the false claims they share are probably true. Consistent with this proposal, of the false headlines that were shared in the baseline condition of [21], 33% were both believed and shared when participants were asked directly about accuracy – however, this leaves the remaining 67% of sharing unexplained by confusion.

The preference-based account is rooted in the idea that people place their preference for political identity (or related motives such as virtue signaling [64]) above the truth, and thus share politically consistent false content on social media despite recognizing that it is probably not true. This purposeful sharing could be motivated, for example, by an effort to further one's political agenda [18], to sow chaos [65], or to share news that would be interesting if it turned

out to be true [66]. Of the false headlines that were shared in the baseline condition of [21], 16% of the headlines were shared despite being identified as inaccurate. Thus, although purposeful sharing occurs, it seems unlikely to explain the bulk of false or misleading content that is shared online.

Finally – and most consistent with the earlier focus on a lack of reflective thinking being a source of misjudgments – the inattention-based account argues that people have a strong preference to only share accurate content, but that the social media context distracts them from this preference. Consistent with this account, asking participants to rate the accuracy of each headline before deciding whether to share it decreased sharing of false headlines by 51% relative to the baseline condition [21] – suggesting that inattention to accuracy was responsible for roughly half of the misinformation sharing in the experiment.

In a similar vein, work on social media behavior often emphasizes the importance of the 'attention economy' where factors relating to engagement (likes, shares, comments, clicks, etc.) are selected for in social media environments [8,60,67–69]. Accordingly, sharing of low-quality news content on Facebook is associated with ideological extremity [70] and ideological concordance is a much stronger predictor of sharing than it is of belief [21]. Furthermore, analytic thinking is not only associated with more truth discernment, as described earlier, but is also associated with having more discerning sharing intentions in survey experiments (both in terms of false [35,44] and hyperpartisan content [35]) and with the actual sharing of more reliable news outlets on Twitter [71]. One striking possibility is that the social media context itself distracts people from prioritizing the truth when they decide what to share – and, in some cases, may actively promote antisocial behavior [72] and hamper the exercise of analytic and critical thinking. Social media may be both a cause and a consequence of increased political engagement, both good and bad [73].

What Can Be Done? Interventions To Fight Fake News

We now turn to the implications of these findings for interventions intended to decrease the spread and impact of online misinformation.

Current Approaches for Fighting Misinformation

As social media companies are, first and foremost, technology companies, a common approach is the automated detection of problematic news via machine learning, natural language processing, and network analysis [74–76]. Content classified as problematic is then down-ranked by the ranking **algorithm** such that users are less likely to see it. However, creating an effective misinformation classifier faces two fundamental challenges. First, truth is not a black-and-white, clearly defined property: even professional fact-checkers often disagree on how exactly to classify content [77,78]. Thus, it is difficult to decide what content and features should be included in training sets, and artificial intelligence approaches run the risk of false positives and, therefore, of unjustified censorship [79]. Second, there is the problem of nonstationarity: misinformation content tends to evolve rapidly, and therefore the features which are effective at identifying misinformation today may not be effective tomorrow. Consider, for example, the rise of COVID-19 misinformation in 2020 – classifiers trained to detect largely political content were likely unequipped to be effective for novel false and misleading claims relating to health.

Another commonly used approach involves attaching warnings to content that professional fact-checkers have found to be false (reviewed in [80,81]). A great deal of evidence indicates that corrections and warnings do successfully reduce misperceptions

[41,81–83] and sharing [49,84,85]. Despite some early evidence that correction checking could backfire and increase belief in false content [86], recent work has shown that these backfire effects are extremely uncommon and are not a cause for serious concern [87,88].

There are, however, other reasons to be cautious about the sufficiency of professional fact-checking. Most importantly, fact-checking is simply not scalable – it typically requires substantial time and effort to investigate whether a particular claim is false or misleading. Thus, many (if not most) false claims never get fact-checked. Even for those claims that do eventually get flagged, the process is often slow, such that warnings are likely to be absent during the claim's period of peak viral spreading. Furthermore, warnings are typically only attached to blatantly false news, and not to extremely misleading or biased coverage of events that actually occurred. In addition to straightforwardly undermining the reach of fact-checks, this sparse application of warnings could lead to an 'implied truth' effect where users may assume that (false or misleading) headlines without warnings have actually been verified [84]. Fact-checks often also fail to reach their intended audience [89], and may fade over time [90], provide incomplete protection against familiarity effects [49], and cause corrected users to subsequently share more low-quality and partisan content [91].

Another potential approach that is commonly referenced is emphasizing the publishers of news articles, seeking to leverage the reliance on source cues described earlier. This, in theory, could be effective because people (at least in the USA) are actually fairly good at distinguishing between low- and high-quality publishers [92]. However, experimental evidence on emphasizing news publishers is not very encouraging: Numerous studies find that making source information more salient (or removing it entirely) has little impact on whether people judge headlines to be accurate or inaccurate [37,93–97] (although see [98,99]).

New Approaches for Fighting Misinformation

One potentially promising alternative class of interventions involve a more proactive 'inoculation' or 'prebunking' against misinformation [8,100]. For example, the 'Bad News Game' uses a 10–20 minute interactive tutorial to teach people how to identify fake news in an engaging way [101]. An important limitation of such approaches is that they are 'opt in' – that is, people have to actively choose to engage with the inoculation technique (often for a fairly substantial amount of time – at least in terms of the internet attention span [102]). This is particularly problematic given that those most in need of 'inoculation' against misinformation (e.g., people who are low on cognitive reflection) may be the least likely to seek out and participate in lengthy inoculations. Lighter-touch forms of inoculation that simply present people with information that helps them to identify misinformation (e.g., in the context of climate change [103]) may be more scalable. For example, presenting a simple list of 12 digital media literacy tips improved people's capacity to discern between true and false news in the USA and India [104].

Both fact-checking and inoculation approaches are fundamentally directed toward improving people's underlying knowledge or skills. However, as noted earlier, recent evidence indicates that misinformation may spread on social media not only because people are confused or lack the competency to recognize fake news, but also (or even mostly) because people fail to consider accuracy at all when they make choices about what to share online [21,44]. In addition, as mentioned, people who are more intuitive tend to be worse at distinguishing between true and false news content, both in terms of belief (Figure 1A) and sharing [35,71]. This work suggests that interventions aimed at getting people to slow down and

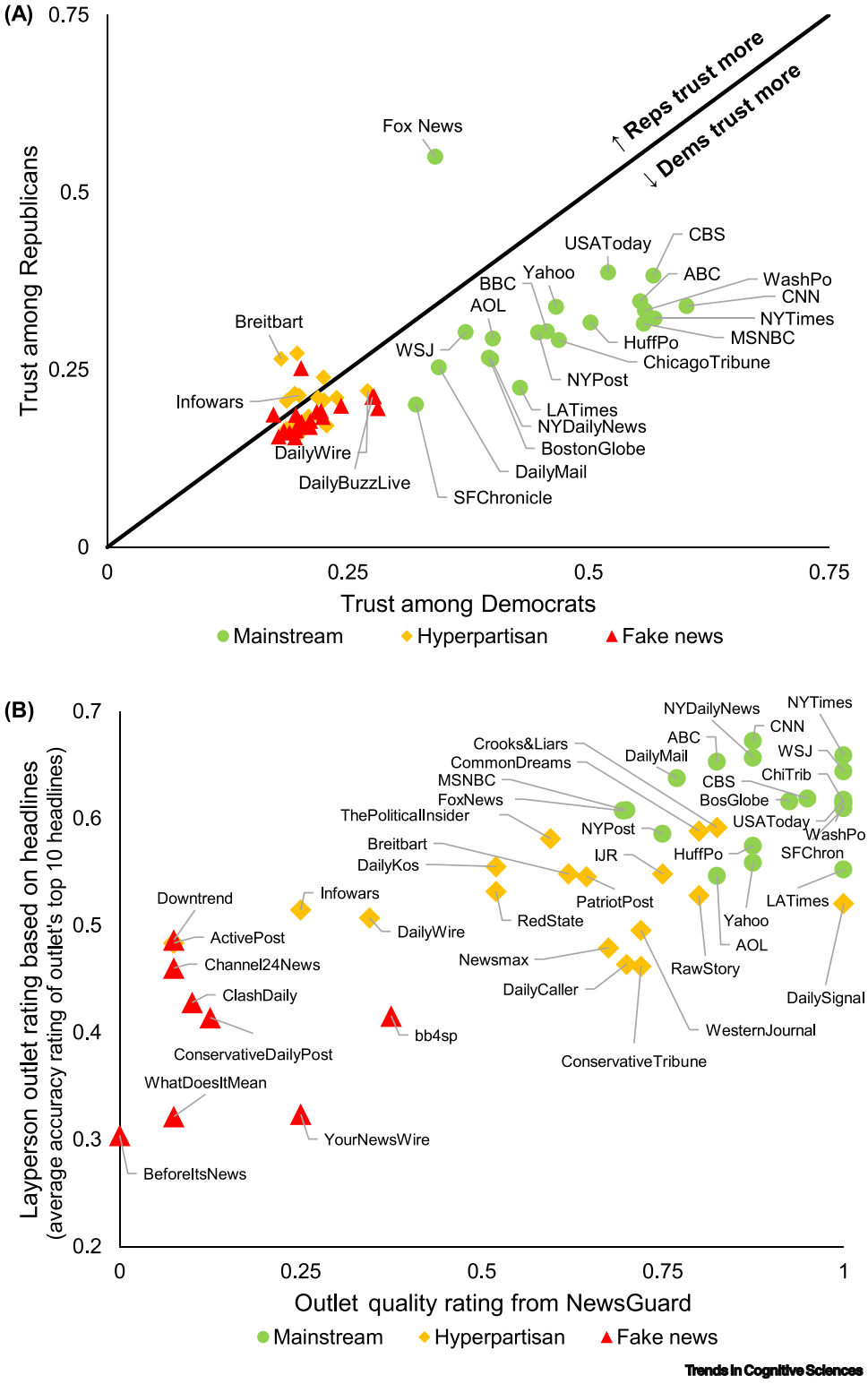
reflect about the accuracy of what they see on social media may be effective in slowing the spread of misinformation.

Indeed, recent research shows that a simple accuracy prompt – specifically, having participants rate the accuracy of a single politically neutral headline (ostensibly as part of a pretest) before making judgments about social media sharing – improves the extent to which people discern between true and false news content when deciding what to share online in survey experiments [21,44]. This approach has also been successfully deployed in a large-scale field experiment on Twitter, in which messages asking users to rate the accuracy of a politically neutral news headline were sent to thousands of accounts who recently shared links to misinformation sites [21]. This subtle prompt significantly increased the quality of the new they subsequently shared (Figure 2B). Furthermore, survey experiments have shown that asking participants to explain how they know whether a headline is true or false before sharing it increases sharing discernment [105], and having participants rate accuracy at the time of encoding protects against familiarity effects [106]. Relatedly, metacognitive prompts – probing questions that make people reflect – increases resistance to inaccurate information [107].

A major advantage of such accuracy prompts is that they are readily scalable. There are many ways that social media companies, or other interested parties such as governments or civil society organizations, could shift people's attention to accuracy (e.g., through ads, by asking about the accuracy of content that is shared, or via public service announcements, etc.). In addition to scalability, accuracy prompts also have the normative advantage of not relying on a centralized arbiter to determine truth versus falsehood. Instead, they leverage users' own (often latent) ability to make such determinations themselves, preserving user autonomy. Naturally, this will not be effective for everyone all of the time, but it could have a positive effective in the aggregate as one of the various tools used to combat misinformation.

Finally, platforms could also harness the power of human reasoning and the 'wisdom of crowds' to improve the performance of machine-learning approaches. While professional fact-checking is not easily scalable, it is much more tractable for platforms to have large numbers of non-experts rate news content. Despite potential concerns about political bias or lack of knowledge, recent work has found high agreement between layperson crowds and fact-checkers when evaluating the trustworthiness of news publishers: the average Democrat, Republican, and fact-checker all gave fake news and hyperpartisan sites very low trust ratings [92] (Figure 3A). This remained true even when layperson raters were told that their responses would influence social media ranking algorithms, creating an incentive to 'game the system' [108]. However, these studies also revealed a weakness of publisher-based crowd ratings: familiarity with a publisher was necessary (although not sufficient) for trust, meaning that new or niche publishers are unfairly punished by such a rating scheme. One solution to this problem is to have laypeople rate the accuracy of individual articles or headlines (rather than publishers), and to then aggregate these item-level ratings to create average scores for each publisher (Figure 3B). Furthermore, the layperson ratings of the articles themselves are also useful. Analyzing a set of headlines flagged for fact-checking by an internal Facebook algorithm found that the average layperson accuracy rating for fairly small crowds correlated equally well with that of professional fact-checkers as the fact-checkers correlated with each other [77]. Thus, using crowdsourcing to add a 'human in the loop' element to misinformation detection algorithms is promising.

These observations about the utility of layperson ratings have a strong synergy with the aforementioned idea of prompts that shift users' attention to accuracy: periodically asking social



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media users to rate the accuracy of random headlines both (i) shifts attention to accuracy and thus induces the users to be more discerning in their subsequent sharing, and (ii) generates useful ratings to help inform ranking algorithms.

Concluding Remarks

The spread of misinformation online presents both a scientific puzzle and a practical challenge. The research we have synthesized here shows that the common narrative, whereby failing to differentiate false or misleading news from truth is a symptom of political polarization in a 'post-truth' world, is not an appropriate characterization. Although people do preferentially believe news that aligns with their politics, this occurs as much or more for true headlines compared with false headlines – and thus people are actually more accurate, not less, when judging headlines that are politically concordant. Rather than being bamboozled by partisanship, people often fail to discern truth from fiction because they fail to stop and reflect about the accuracy of what they see on social media. Accordingly, simple prompts that shift people's attention to accuracy increase the quality of news that people share on social media. Approaches of this nature, including providing digital literacy tips, are not hindered by the same issues of scalability related to strict fact-checking approaches – and, in fact, can be combined with crowd-sourced fact-checking to maximize efficiency. Human reasoning, when applied appropriately, can be a powerful salve against the lure of misinformation. Nonetheless, numerous important questions remain unanswered (see Outstanding Questions).

There is also much to be gained for psychology and cognitive science *per se* from investigating online misinformation. Fake news and other forms of online misinformation represent a powerful (and ecologically valid) testing ground for evaluating theories from cognitive, social, and political psychology. More so than many other domains, when studying fake news and misinformation it is often possible to combine traditional laboratory experiments with large-scale social media data [71,109] – or even to conduct actual field experiments on-platform [21,110,111]. Furthermore, these topics also motivate theory development by highlighting a new class of problems in need of further explanation: only a small fraction of online content draws sufficient attention and interest to be shared on social media. Understanding the psychology that underpins the dynamics of social media sharing is an important emerging subfield in psychology [21,67,112] (in addition to other areas such as computer science [76], political science [113], communication [114], and public health [115], among others [116]), driven in large part by concerns about misinformation. Tackling these questions

Figure 3. The Wisdom of Crowds Can Help To Illuminate Information Quality. (A) Data from study 2 of [92] in which US participants (n = 970) from Lucid indicated their level of trust in 60 news publishers. Average trust ratings for each source among Democrats (Dems; x axis) and Republicans (Reps; y axis) are shown. Although some partisan differences are evident (e.g., Republicans trust Fox News more than any other publisher), all hyperpartisan and fake news sites received low average trust ratings from members of both parties. Thus, when creating a politically balanced layperson rating by averaging trust from Democrats and Republicans, every mainstream outlet scores higher than every fake news or hyperpartisan outlet; in addition, the layperson ratings were highly correlated with ratings of professional fact-checkers: $r(58) = 0.90$, $P = <0.001$. (B) Data from study 4 of [93] in which US participants (n = 1008) from Amazon Mechanical Turk (MTurk) provided accuracy ratings for the headlines of the 10 most-popular articles from a range of fake news, hyperpartisan, and mainstream accounts. Shown is a layperson outlet-quality score, constructed by averaging the accuracy ratings for the 10 headlines from each outlet, on the y axis, plotted against the rating assigned to each outlet by NewsGuard, a company that hires professional journalists to conduct detailed investigations of the quality of news outlets, on the x axis. The layperson ratings are strongly correlated with the professional journalist ratings: $r(44) = 0.79$, $P = <0.001$. News source abbreviations are given in Figure 2 legend, additional abbreviations: ABC, American Broadcasting Company; AOL, Aol. (formerly America Online); BBC, British Broadcasting Corporation; bb4sb, BB4SP/Barracuda Brigade; BosGlobe, *The Boston Globe*; CBS, Columbia Broadcasting System (now CBS); ChiTrib, *The Chicago Tribune*; HuffPo, HuffPost (formerly Huffington Post); IJR, Independent Journal Review; LATimes, *The Los Angeles Times*; MSNBC, from Microsoft plus National Broadcasting Company; SFChronicle, *The San Francisco Chronicle*.

Outstanding Questions

What are the impacts of exposure to misinformation? How does exposure affect belief in the specific claims made in the misinformation, more general attitudes (e.g., support for political candidates or policies), and relevant behaviors (e.g., vote choice or health behaviors)? Do these effects differ for misinformation versus reliable news? How much misinformation must be encountered to shift attitudes, beliefs, and behaviors?

Does the design of social media platforms actively promote the spread of misinformation? For example, by inducing distraction and incentivizing or directing attention to factors other than veracity?

How do times of crisis (e.g., the COVID-19 pandemic) affect susceptibility to misinformation and the dynamics of social media behavior?

To what extent do findings about misinformation and social media from the USA and other Western countries generalize to other cultures and other social contexts (e.g., messaging apps such as WhatsApp)?

What are the similarities and differences between the psychology of online misinformation relative to related constellations of beliefs, such as conspiracy ideation, political misperceptions, rumors, and bullshit? How does the psychology of online misinformation compare with misinformation distributed by traditional media such as television and talk radio, or by political elites?

How will findings about current forms of misinformation generalize in the face of the continually evolving nature of online content?

Will social media corporations be willing to invest in, and implement, major changes to fight misinformation, given that their business models are premised on maximizing engagement? How can advocates and policy makers most effectively incentivize them to do so?

How can academics and social media platforms collaborate to study misinformation, given the platforms

will give psychologists the opportunity to demonstrate the power and real-world impact of psychological theory.

near-total control of relevant data, and widespread concerns about privacy?

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