7 Responsiveness to Evidence: A Political Cognition Approach[1]

Nathaniel Rabb, Małgorzata Kossowska, Thomas J. Wood, Daniel Schulte, Stavros Vourloumis and Hannes Jarke

Introduction

Why do people believe things that aren't true and refuse to believe things that are? In this chapter, we approach the question through the lens of political cognition, a cross-disciplinary effort to understand how people make judgments of political import using the tools of cognitive psychology and experimental political science. The study of political cognition deals with the mental representations (beliefs, prior knowledge) people use as political actors. We explore the psychological determinants of political judgment to contemplate how best to encourage responsiveness to evidence. In a democratic society, citizens are expected to make informed choices, so understanding how to make them more receptive to evidence is critical. This holds particularly true because of the transition to high-choice information environments (Van Aelst et al., 2017) and the increasing prevalence of misinformation and disinformation. Whether an individual updates her beliefs in accordance with information in her environment can depend on a host of factors including the valence or salience of the information, her beliefs about the information's source, her prior commitments to counter-evidential beliefs, and her cognitive predispositions.

Partisan Cues

To gain traction on the difficulties this complex problem space creates, we first consider perhaps the most stable finding in recent research: people make many judgments along partisan lines. They do so when assessing policies (Colombo & Kriesi, 2017) but also when judging facial attractiveness (Nicholson et al., 2016), awarding scholarships to high school students (Iyengar & Westwood, 2015), choosing which light bulb to buy (Gromet et al., 2013), or deciding who sorts shapes better (Marks et al., 2019). They do so inside (Jerit & Barabas, 2012) and outside (Jacobson, 2010) of the laboratory, whether partisan associations are experimentally manipulated (e.g. Ehret et al., 2018) or partisan affiliations are measured (e.g. Gaines et al., 2007). They judge policy proposals associated with their own party more favorably irrespective of the substance of the proposal (e.g. Cohen, 2003; Satherley et al., 2018). And perhaps most startlingly, in the US, partisanship predicts consequential COVID-related health behaviors even when

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controlling for a host of factors including determinate risk of poor COVID outcomes (Allcott et al., 2020; Gollwitzer et al., 2020).

The tendency to form and favor in-groups is well documented (Balliet et al., 2014) and seems to be at the bedrock of human behavior (Dunham, 2018). Partisan effects on judgments could therefore be held to show that people unthinkingly parrot the beliefs of their groups. But another interpretation follows from claims many psychologists would find uncontroversial. First, the notion that *individual cognition is meant to serve communal action* enjoys growing support (e.g. Heyes et al., 2020; Mercier & Sperber, 2011; Sloman & Fernbach, 2018). This is not a hypothesis to confirm or refute, but a research framework that takes seriously the constraints on individual cognition imposed by the social nature of human behavior (Hutchins, 2010). Second, the world is inordinately complex, yet the capacity of individual cognition is limited. As such, *individuals necessarily rely on cues to identify patterns* rather than basing each decision on exhaustive investigation and reasoning (Simon, 1956). Third, individual and collective belief formation is necessarily bidirectional: individuals learn information or reach conclusions and share them with their communities who in turn pass them on to other individuals via public knowledge representations (Boyd et al., 2011). Since people affiliate with voluntary, like-minded groups in large part because of their like minds (similar beliefs, values, etc.), this bidirectionality means that *group cues can be valid cues.* The fact that one's community holds certain descriptive or normative beliefs is often good reason for an individual to hold those descriptive beliefs or adopt those norms, since the reasons for these beliefs could be retrieved from other community members even if they are not presently available (see Mondak, 1993, for a convincing demonstration).

Taken together, these observations imply that trusting one's community can be an eminently reasonable shortcut. For difficult political judgments like policy appropriateness or candidate suitability, reliance on partisan cues indicating community beliefs may not reflect some cognitive deficit but rather an adaptive strategy,[2] especially if the information required for exhaustive reasoning is unavailable at the moment of judgment (for direct evidence, see Boudreau, 2009; Dahlberg & Harteveld, 2016; Pannico, 2017).

Of course, people belong to many different, partially overlapping groups, and disagreement between groups about normative claims is a normal feature of human society. But disagreements about the veracity of descriptive claims are of special concern. When two people do not agree that *p*, they will encounter serious difficulties deciding what to do about *p*, and disagreements of this descriptive nature have also been shown to divide along political fault lines (Frenda et al., 2013).

Personality and Cognitive Traits Predict Group Membership

Partisan groups disagree when their respective cues conflict, but why do people belong to these groups in the first place? Theorists have long noted that personality factors influence people's attitudes toward political issues and broader political ideologies. Previously, this research has largely focused on the direct

relationships between traits and ideological self-placement. Recently, however, psychologists have examined the psychological processes underlying ideological preferences (Hibbing et al., 2014; Johnston et al., 2017; Jost et al., 2017). After 85 years of theory and research on personality/cognitive style and political orientation has produced a long list of dispositions, traits, and behaviors. While the literature is diverse, the field is converging on two common ideas. First, *liberalism and conservatism are rooted in stable differences in threat sensitivity and tolerance for uncertainty*, from the initial processing and evaluation of stimuli (e.g. Oxley et al., 2008; but see Bakker et al., 2020) to the core values and moral inclinations that consistently guide behavior (e.g. Haidt, 2012). Second, scholars have identified *two opposing personality types or cognitive styles* consistently associated with these ideologies: an "open" type typically associated with political liberalism and a "closed" type associated with political conservatism (see Johnston et al., 2017). For example, studies administering both subjective and objective tests of cognitive style, as reviewed by Jost (2017), do reveal ideological asymmetries in information processing. These include cognitive and perceptual rigidity, intolerance of ambiguity, integrative complexity, and cognitive reflection, as well as need for cognition, the need for cognitive closure, self-deception, and preferences for intuitive versus analytical reasoning in general. Meta-analyses show that both patterns are stable and cross-cultural (Burke et al., 2013; Jost et al., 2017). Recently, Zmigrod et al. (2021), using an unprecedented number of cognitive tasks (n = 37) and personality surveys (n = 22), demonstrated that conservatism is associated with reduced strategic information processing (reflecting variables associated with working memory capacity, planning, cognitive flexibility, and other higher order strategies). Remarkably, recent studies using physiological measures also find that personality/cognitive traits and ideological beliefs covary (Dodd et al., 2012; Petersen et al., 2015; Soroka et al., 2019).

The fact that threat sensitivity predicts ideological positions shows that people affiliate with groups in part because of underlying traits. This is informative for understanding human behavior, but it is not particularly actionable. Although fear appeals sometimes work (Tannenbaum et al., 2017), clearly sometimes they do not, as there was no shortage of fear messaging during Covid-19 that evidently failed to convince many on the conservative end of the ideological spectrum (e.g. Gollwitzer et al., 2020). Other reliable predictors of group membership are uncertainty tolerance (Hogg & Adelman, 2013; Kruglanski et al., 2006) and openness to experience (Van Hiel et al., 2000), although it is an open question whether these dimensions are best understood as traits, cognitive style, or values (i.e. characteristics that follow from as opposed to generating ideological beliefs).

Individual Responsiveness to Information I: Is There a Crisis of Knowledge?

So much for leveraging personality or cognitive traits – how about simply providing the information that people lack? For decades, survey researchers have

measured voters' factual familiarity. The initial expectations of voter factual understanding were drawn from democratic theory: A democratic citizen is required to have *chronic* knowledge – to evaluate candidates' promised policy initiatives – and *topical* political knowledge, to appraise recent office holders' performance (Dahl, 1956; Key, 1966; Pitkin, 1967). This understanding of political knowledge – the things a person knows assessed to some reasonable standard of truth – can helpfully guide our understanding of political cognition. Descriptive beliefs which a person firmly accepts as true despite lacking any evidential support are sometimes called *misinformation*, and there is current evidence of *acute* misinformation acceptance regarding highly politically salient but ultimately descriptive (as opposed to normative) issues (Flynn et al., 2017). Common examples include the beliefs that the role of anthropogenic causes in global warming is the subject of scientific debate (Van der Linden et al., 2017), that vaccines endanger the health of the vaccinated (Dixon & Clarke, 2013), or that a shadowy group of elites controls geo-politics (Oliver & Wood, 2014). At the opposite extreme, we find topics on which the public is *uninformed*, such as the current partisan composition of a legislative body (Carpini & Keeter, 1993), the rate of economic growth or unemployment (Evans & Andersen, 2006), or an elected official's name (Mann & Wolfinger, 1980). Given that both phenomena concern information, a tempting thought is that recent cases of acute misinformation regarding matters on which scientific evidence can be brought to bear might be explained by a historically anomalous deficit of information about science itself. Are people unusually uninformed?

Being uninformed is dependent on human psychology and political incentives: people face competing demands for their time, and few intrinsic benefits to offset the costs of becoming deeply knowledgeable (Bartels, 1996; Lau & Redlawsk, 2001; Lupia, 1994). Evidence shows there's no growing trend in the incidence of being uninformed regarding basic political knowledge measured over decades (Baum, 2003; Galston, 2001). This is apparent in numerous developed countries (Grönlund & Milner, 2006). The trend is the same for basic scientific knowledge, as a simple description of Europeans' factual understanding over recent decades shows. Since the 1980s, the European Commission's Eurobarometer has intermittently administered a 12-item quiz on scientific understanding to a probability sample of EU adults. These items tap topics of science with which regular people should have some factual familiarity. For instance, the effectiveness of antibiotics in killing viruses as well as bacteria, or the working of lasers, have chronically eluded respondents. Other questions, touching on basic scientific topics like geology or photosynthesis, have proven easy over the entire time. This pattern is largely stable over multiple decades (see Figure 7.1).

In sum, there is no recent, sudden deficit of information. Plainly, the fundaments of human psychology, which have shaped our engagement with the political world for as long as humans have lived in organized units (Axelrod & Hamilton, 1981), have not changed either. Rather, it is the information and political environment in which citizens live that has changed (Van Aelst et al., 2017),

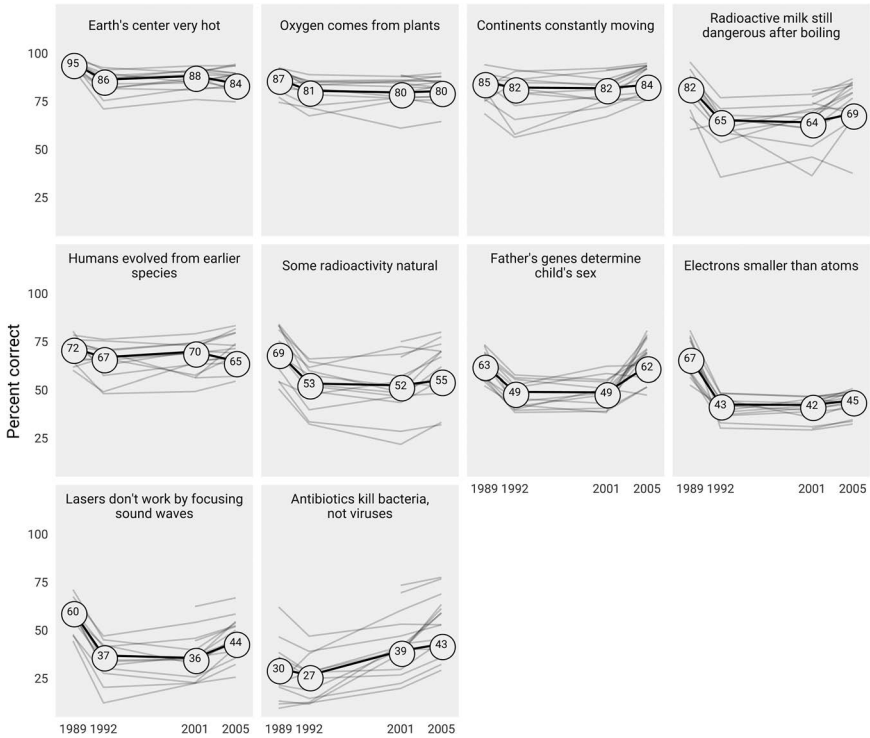

Figure 7.1 Scientific Understanding in Europe, 1989–2005.

Each facet shows the percentage of respondents providing the correct answer to a separate item. Light grey lines indicate the proportion correct inside a specific European state. Dark grey lines, and labeled points, indicate the overall mean by year, weighted by states' population. Source: Eurobarometers 63, 55.2, 38.1, 31.

so the psychological question becomes how this change interacts with human cognition (Marsh & Rajaram, 2019).

Individual Responsiveness to Information II: Heuristics, Biases, and Motivated Reasoning

We have argued that reliance on group cues can be a reasonable cognitive strategy, that individual differences partly determine ideological preferences, and that the apparently deepening divisions regarding certain descriptive matters are not caused by a recent decline in basic descriptive knowledge. Still, we do not wish to overstate the rationality of the individual thinker. An extensive literature in psychology implicates basic cognitive processes that are likely contributors to, though not root causes of, the rejection of claims with good evidence. In the jargon, a heuristic is a type of mental shortcut, while a bias is a systematic leaning towards certain judgment outcomes (Gilovich et al., 2002; Tversky & Kahneman, 1974).

Heuristics

Representativeness describes an individual estimating the likelihood of an outcome based on its similarity to past events of its kind or salient situation features while ignoring the base rate of such outcomes (Tversky & Kahneman, 1974). Representativeness is a plausible cause of base rate neglect in political decision-making. Describing an individual as possessing the characteristics of an illegal immigrant, criminal, or terrorist, for example, may strongly suggest membership in these categories despite their infrequency in the population.

Availability describes an individual judging the frequency of a phenomenon by the subjective ease of recalling instances of its occurrence (Kahneman, 2011). Given that the amount of news coverage an event receives is proportional to its novelty, this heuristic is likely to distort probability judgments of politically charged occurrences, and the effect may be strengthened by political actors exploiting the well-known relationship between mere repetition of a statement and increased belief in its veracity (Dechêne et al., 2010). For instance, there is no statistical relationship between immigration and violent crime (Bell et al., 2013), but repeat mentions of particular instances in which an illegal immigrant committed a violent crime may cause a listener to overestimate their prevalence. Preferential attention to negative stimuli (Fessler et al., 2014) may also make a rare but violent or frightening event more readily available to a person considering its likelihood, especially if she is highly threat sensitive.

Biases

It is commonplace to assert that political judgment involves motivated reasoning (Bolsen et al., 2014b; Flynn et al., 2017; Kraft et al., 2015; Leeper & Slothuus, 2014), a broad category of cognitive phenomena in which reasoning slants toward a favored conclusion (Kunda, 1990). Here the empirical record is strong. A meta-analysis of motivated reasoning studies (Ditto et al., 2019) found that the average effect size was moderate but almost identical across ideological groups (liberals, $r = 0.235$; conservatives, $r = 0.255$; see Figure 7.2). In a startling extension of bias blind spot – rating oneself as less biased than everyone else (Ehrlinger et al., 2005) – Ditto and colleagues also asked people to rate how biased they considered members of their own political party and members of the opposing party. Results were again symmetrical: each group thought the other was more biased than their own. In a similar finding, liberals ($d = 0.63$) and conservatives ($d = 0.58$) were equally averse to hearing the other side's views (Frimer et al., 2017).

Political polarization is also often overestimated by either side, in that people believe the divide between their own opinions and that of the supporter of an opposing political party or ideology to be bigger than it is. In an investigation across 26 countries, Ruggeri et al. (2021) found that so-called meta-perceptions – what we think others think – are often inaccurate. Experimental evidence from the same study also shows that inaccurate meta-perceptions can be corrected by

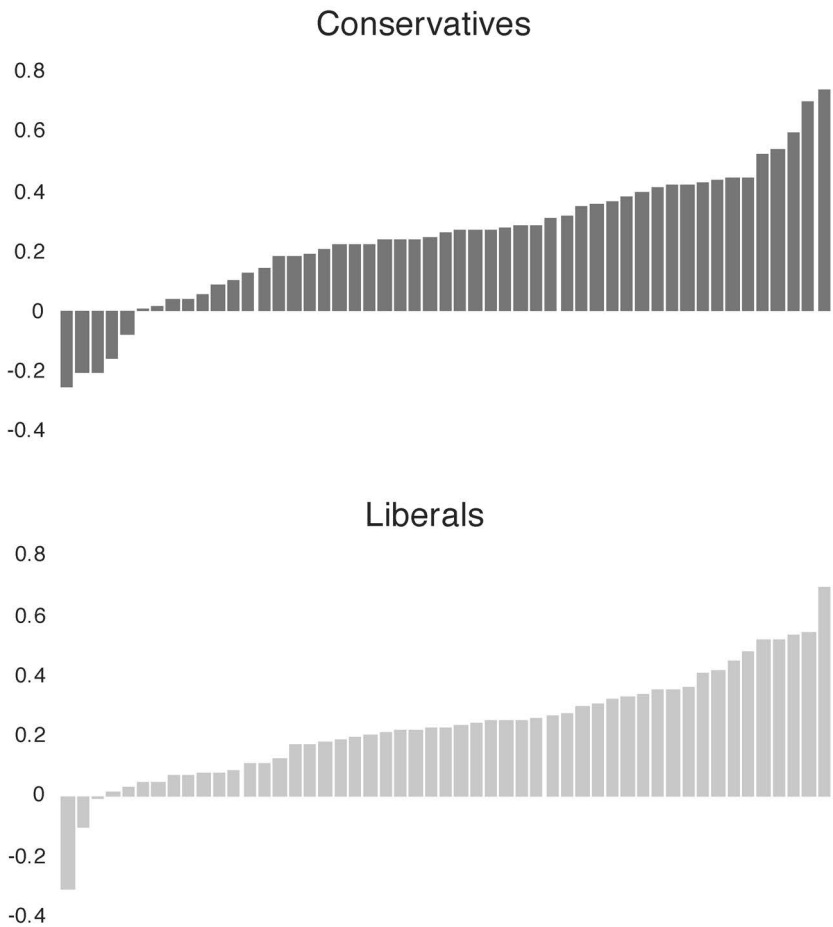

Figure 7.2 Range of Motivated Reasoning Effect Sizes by Political Ideology in Ditto et al.'s (2018) Meta-Analysis.

informing people of the actual opinions that supporters of the opposite political spectrum hold.

Confirmation bias or myside bias is a particular form of motivated reasoning defined as "the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand" (Nickerson, 1998). The evidence that people do this is also substantial (see Mercier, 2017; Stanovich et al., 2013). Since citizens are prone to preferentially attend to and weigh evidence that supports desired belief outcomes, it follows that they may resist changing beliefs due to evidence that supports undesired outcomes.

Motivated reasoning is difficult to observe under controlled conditions because of a plausible alternative explanation: even paradigmatically rational belief updating (i.e. following Bayes' rule[3]) requires that new evidence is

weighted in accordance with preexisting beliefs (priors). But Washburn and Skitka (2018) provide a convincing demonstration by measuring prior beliefs and manipulating the quality of the evidence. Participants received a fictional report about a politically relevant scientific finding accompanied by data shown in a 2 x 2 contingency table. The conclusions that the scientists drew in the fictional reports depended on either a correct or incorrect reading of the table. Respondents overlooked erroneous data interpretations when doing so yielded evidence that confirmed their prior beliefs, and this effect was seen across partisan groups. Kahan et al. (2017) report similar results in an earlier experiment (but see Persson et al., 2021), as do Scurich and Shniderman (2014), although these researchers did not manipulate whether the fictional scientists' inferences were warranted. Similarly, Ditto et al. (2018) found motivated reasoning effects specifically when respondents assessed empirical data or methods (as opposed to policy or candidate information). As with the full set of studies, liberals sometimes show larger effects than conservatives and vice versa. But the average effect sizes are again similar (liberals, $r = 0.292$; conservatives, $r = 0.228$), and neither group shows a disproportionately greater tendency to engage in motivated reasoning than the other.

Finally, we consider a different sort of bias. The Dunning–Kruger effect describes individuals with the lowest knowledge or ability in a domain displaying the largest overestimations of their knowledge or ability (Kruger & Dunning, 1999). This phenomenon has been demonstrated with basic political knowledge (Anson, 2018; Ortoleva & Snowberg, 2015) and is especially worrying for considerations of public policy, where nearly everyone lacks extensive knowledge (Lupia, 2016) and people often overestimate their own knowledge regardless of how severely they do so (Fernbach et al., 2013; Vitriol & Marsh, 2018). This bias may have real consequences for cases of acute misinformation, as a recent study found that a Dunning–Kruger effect for autism knowledge predicted opposition to mandatory vaccinations (Motta et al., 2018). In a related finding, self-assessments of knowledge are inversely correlated with actual knowledge and support for the scientific consensus on GMO foods (Fernbach et al., 2019).

Trust in Information Sources and the New Media Environment

Thus far we have discussed various determinants of responsiveness to evidence. But except in rare cases of direct observation – where your keys are, for instance – evidence comes from sources, and individuals have beliefs about the credibility of those sources. Such beliefs manifest as source effects, a topic of growing concern because of the changing information environment (Petty & Wegener, 1998; Pornpitakpan, 2004; Strömbäck et al., 2020). In stark contrast to previous eras of human civilization, individuals today face a surfeit rather than a deficit of information sources. This shifts the burden of identifying good information – a task once relegated to "gatekeepers" like governments or news organizations – to the layperson (Seifert, 2017). Moreover, the propagation of politically-relevant false claims through new information channels like social media is

widespread (Bradshaw & Howard, 2018) and has drawn international attention. We therefore expect the exercise of epistemic vigilance, already a feature of normal cognition (Sperber et al., 2010), to increase as the consequences of these changes sink in.

Dimensions of Source Trust

Theorists typically highlight two key dimensions of perceived source credibility, expertise and honesty (e.g. Harris et al., 2016). These dimensions are conceptually distinct – a scientist thought to be hiding conflicts of interest may seem expert but dishonest, a young politician may seem honest but inexpert – but they are rarely directly compared in experimental studies. Interestingly, Lupia and McCubbins (1998) add a third dimension, commonality of interests. Arguably this captures cues indicating a source's group, since co-membership in voluntary groups implies overlapping interests. Whether perceived commonality of interests is a precondition for perceived honesty (as in their model) or a separate factor is an open empirical question.

Available evidence suggests that people are sensitive to both expertise and honesty and distinguish them in their judgments. For instance, the continued influence effect has been shown to attenuate when a correction comes from an honest and expert source (Guillory & Geraci, 2013). Such attenuation was not observed, however, when expertise alone was manipulated. In addition, people may doubt the honesty but not the expertise of a scientist who is willing to discuss the ethical implications of his work (Hendriks et al., 2016). Other studies find that source expertise interacts with source honesty (Birnbaum & Stegner, 1979), argument strength (Bohner et al., 2002), and bandwagon cues, or indicators of widespread peer support for a claim (Go et al., 2014). The pattern of interaction in all cases is that higher expertise increases differences associated with the levels of these other factors[4]; in other words, people expect more from experts. The only study that we are aware of that arguably examines the commonality of interests (Swire et al., 2017) finds that attributing misinformation to Donald Trump (as opposed to no one in particular) increased belief in the claims for Republicans and decreased belief for Democrats. Since Trump is neither an expert on the issues used (vaccines) nor known for his unwavering honesty, commonality of interests could explain the result. Overall, this area is understudied given the collapse of the gatekeeper system discussed above, and the absence of political cognition research directly comparing these three dimensions of source credibility urgently merits redress.

Science Communication

In contrast, a rapidly growing body of research examines source credibility for scientific claims. As with so much else, partisan considerations loom large in the findings. A highly cited study found that trust in "the scientific community" markedly declined for US conservatives but not liberals or independents

between 1974 and 2010 (Gauchat, 2012). This apparent asymmetric trust in the scientific enterprise offers a simple explanation for why doubts about the scientific consensus on certain high-profile issues seem to cluster on the right, and partisan differences in trust in scientific experts on Covid-19 have been frequently observed (Hamilton & Safford, 2021; Kerr et al., 2021). But as Kahan (2015) emphasizes, asymmetric trust in scientific findings is not observed across issues; for instance, he finds no partisan divide over the safety of cell phones or artificial food colorings. This issue-selective pattern is also seen in source effects when the source is a scientist. Conservatives consider a scientist more credible when he presents evidence for conservative-consistent outcomes (e.g. that marijuana use is risky) as opposed to uncontroversial issues, while liberals consider him less credible (Vraga et al., 2018). And citizens' inferences about scientists' motives vary by political ideology: conservatives are more likely than liberals to infer that a (presumed liberal) scientist used his research to illustrate external causes of human behavior (e.g. education) rather than internal determinants (genetic disposition; Hannikainen, 2019). This selectivity is also seen in judgments of policy derived from scientific evidence; people consider policy "nudges" (behavioral interventions) more appropriate after reading about interventions that successfully guided behavior towards ideologically-consistent (versus inconsistent) outcomes (Tannenbaum et al., 2017).

Importantly, neither general distrust of the scientific enterprise nor selective trust in scientists' findings on particular issues can be chalked up to lack of information or poor education. A 40-country survey found the relationship between textbook scientific knowledge and positive attitudes about science to be quite small ($r = 0.08–0.14$; Allum et al., 2008), and educational attainment shows no relationship with trust in science regarding widely studied issues that exhibit partisan trust asymmetry, climate change (Ehret et al., 2017; McCright & Dunlap, 2011; Zia & Todd, 2010) and vaccinations (Kossowska et al., 2021). In fact, some data suggest that possessing more information leads to increased polarization rather than convergence regarding the descriptive claims of science: greater scientific and political knowledge predicts higher skepticism of anthropogenic climate change among conservatives and lower skepticism among liberals (Bolsen et al., 2014a; Hamilton, 2011; Kahan et al., 2012). This pattern is also issue-sensitive, as Drummond and Fischhoff (2017) found that educational attainment and science knowledge predicted partisan polarization on stem cell research, human evolution, and the Big Bang but not nanotechnology or genetically modified foods. However, Czarnek et al. (2021), analyzing the effects of education and political ideology across 64 countries, found that education has positive effects on pro-climate change beliefs at low and mid-levels of development. At higher levels of development, right-wing ideology attenuates (but does not reverse) the positive effects of education. These analyses extend previous findings by systematically investigating the between-country variation in the relationship between education, ideology, and climate change beliefs. Taken together, these findings further support the view that motivated reasoning partly accounts for group disagreements about descriptive scientific claims.

Wildcards

Having raised the specter of the new media environment, we note two findings that are highly relevant although they are not source effects per se. First, an extensive literature shows that claims are more likely to be considered true simply when repeated more often (see Dechêne et al., 2010, for a meta-analysis reporting medium effects). Plainly, this tendency can be exploited to a startling degree in the present information environment, where the options for repetition are nearly endless. This illusory truth effect has been observed in laboratory experiments using false headlines from the Internet (Pennycook et al., 2018), and increasing the number of repetitions does not appear to backfire (Ecker et al., 2019). In a related finding, Braasch et al. (2016) report that people became worse at identifying the source of a claim the more that equivalent claims were repeated by other sources.

Second, a growing body of research examines the bandwagon cues noted above. The number of "likes" a source receives can increase its perceived credibility (Borah & Xiao, 2018), negative comments can decrease credibility (Hughes et al., 2014), and the valence of user comments (Kim, 2015) or number of "likes" (Messing & Westwood, 2014) can overpower source credibility in news evaluations. Basing one's judgments on the views of peers is not new behavior, nor is it inherently problematic since these views may index group beliefs, as we have argued. But the extent to which one can access those views in real time and the degree to which online measures may distort true group opinion are historically novel. Even though mere repetition is not necessarily a valid cue to the trustworthiness of a claim and bandwagon cues are not necessarily indicative of one's group, we expect they will increasingly compete with source credibility.

Conclusions and Future Directions

Although people sometimes reflect on information in a balanced and objective way, they also engage in motivated cognition, i.e. reach a preferred conclusion first, and then appraise it in a directional way in order to confirm that conclusion. In this chapter, we tried to answer the question of why people would want to reject evidence and make their judgments based on biased or inaccurate information. Specifically, we focused on the role of partisan cues, misinformation, and source credibility as factors driving knowledge acceptance or rejection.

The evidence that judgments sort by political party or ideology is overwhelming. We interpret these findings in line with the common view in political science that using group cues as judgment-relevant information is a reasonable strategy since people generally lack the detailed knowledge of government and policy that would seem necessary for accurate predictions. This view is consonant with a perspective enjoying growing support in cognitive science, namely that individual cognition is best understood as serving and interacting with group behaviors. Partisan effects on judgment therefore reflect what is likely a general tendency in human cognition: to treat the beliefs of one's community as useful

information when reasoning under uncertainty. The fact that individual differences – specifically, in threat sensitivity and aversion to uncertainty or novelty – partly predict which ideological communities people belong to garners a deeper understanding of political sympathies.

Measures of basic political and scientific knowledge show no sudden, recent decline, so the well-known cases of misinformation that have engendered a sense of crisis in the research community are not a consequence of historically anomalous levels of information deficit. They may of course be consequences of bad-faith actors spreading misinformation, but the question that political psychology can help answer is why these claims are accepted, not where they come from. We have seen that for certain highly politicized issues, higher levels of knowledge, education, and reasoning ability are associated with greater polarization rather than convergence on beliefs about descriptive matters. This pattern is strongly suggestive of motivated reasoning. Similarly, although conservatives and liberals outwardly express different levels of trust in science as an institution, this trust can influence judgments in an issue-selective manner. Motivated reasoning has been extensively documented, and the notion that it partly drives political judgment is hardly novel. But its symmetrical presentation across the ideological divide suggests that it too is a normal feature of cognition rather than a defect. The social role of cognition has been invoked to explain some forms of motivated reasoning as well.

We emphasize that these findings represent patterns, not inviolable rules. It is not the case that political judgments are *unfailingly* determined by these factors, so the question is how to cut through the fog of counter-evidential group cues, motivated reasoning, mere repetition, and so on. Some strategies show promise. For example, preliminary findings suggest that making information easier to understand (Shulman & Sweitzer, 2018; Van der Linden et al., 2014; Visschers et al., 2009) and promoting reflective thinking (Bessarabova et al., 2016; Swami et al., 2014) may be effective. Some studies have also shown that message inoculation ("pre-bunking") reduces belief in subsequent mischaracterizations of scientific consensus (Cook et al., 2017; Van der Linden et al., 2017), and that encouraging people to reflect on the inaccuracy of information reduces the likelihood that they pass it on through social media (Pennycook et al., 2021). In addition, providing causal information has been shown to counteract lingering misinformation (Johnson & Seifert, 1994), although it is less clear why. Given that individual causal representations are usually sparse, not just in the political domain but for many complex systems, the answer likely requires a deeper understanding of the relationship between individual and collective representations.

A final factor that we have considered is source credibility, or the beliefs that an information consumer holds about an information provider. Unfortunately, the roles of perceived trustworthiness, expertise, and commonality of interests in political judgments are not well understood. More research in this area is urgently needed because source credibility takes on an outsized importance in the changing information environment. In this environment, claims travel quickly, and even photographic or video evidence is easily manipulated. Given

that people are generally bad at detecting such manipulations, information consumers will need to be increasingly discerning about source credibility. This problem becomes acute when information is highly time sensitive – for example, when people go to vote.

Notes

1 In this chapter, we used parts of a report written by the authors for the European Commission's Joint Research Centre ("Understanding our political nature" project). The copyright in that report is owned by the European Union. Reuse of the parts of the report reproduced in this book chapter is authorized under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence. This means that reuse is allowed, provided appropriate credit is given and any changes are indicated. We thank Ralph Hertwig, Stephan Lewandowsky, David Mair, Hugo Mercier, Steven Sloman, and Laura Smillie for invaluable feedback on an earlier draft.
2 Political scientists have long studied and often defended political decision makers' reliance on partisan cues (e.g., Lau & Redlawsk, 2001; Lupia & McCubbins, 1998) but under the rubric of *heuristics*, a term with slightly different connotations in cognitive science.
3 Updating according to Bayes' rules happens when the prior belief is adjusted in light of the new information, taking into account the individual's confidence in the new information relative to her confidence in the prior 'best guess'. For example, imagine that someone takes money from a tip jar. If you have stronger (more certain) prior beliefs about this person's trustworthiness, you may decide that she has innocent intent (e.g., she was intending to make change for a dollar). By contrast, if you have weaker (less certain) prior beliefs about her trustworthiness, you might be less likely to see this behavior in a positive light.
4 We note with interest that an in-group manipulation eliminated this pattern of interaction in Go et al.'s (2014) data, suggesting that group cues can override other source effects.

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