HOW PEOPLE UPDATE BELIEFS ABOUT CLIMATE CHANGE: GOOD NEWS AND BAD NEWS

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People are frequently exposed to competing evidence about climate change. We examined how new information alters people's beliefs. We find that people who are not sure that man-made climate change is occurring, and who do not favor an international agreement to reduce greenhouse gas emissions, show a form of asymmetrical updating: They change their beliefs in response to unexpected good news (suggesting that average temperature rise is likely to be less than previously thought) and fail to change their beliefs in response to unexpected bad news (suggesting that average temperature rise is likely to be greater than previously thought). By contrast, people who strongly believe that man-made climate change is occurring, and who favor an international agreement, show the opposite asymmetry: They change their beliefs far more in response to unexpected bad news (suggesting that average temperature rise is likely to be greater than previously thought) than in response to unexpected good news (suggesting that average temperature rise is likely to be smaller than previously thought). The results suggest that exposure to varied scientific evidence about climate change may increase polarization within a population due to asymmetrical updating. We explore the implications of our findings for how people will update their beliefs upon receiving new evidence about climate change, and also for other beliefs relevant to politics and law.

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People are exposed to a great deal of variable information with respect to climate change.[1] Within the United States, the Environmental Protection Agency stated, "Increases in average global temperatures are expected to be within the range of 0.5°F to 8.6°F by 2100, with a likely increase of at least 2.7°F for all scenarios except the one representing the most aggressive mitigation of greenhouse gas emissions."[2] That range is extremely wide: 0.5°F is quite modest, whereas 8.6° F would be catastrophic.[3] It is easy to find projections near the lower end of the range, and it is even easier to find projections near the highest end, or even above it.[4]

Moreover, projections of anticipated warming have changed significantly over time.[5] There are also sharp disagreements about the likely effects of different levels of warming.[6] For example, the three integrated assessment models, used by the United States government under President Obama to project the social cost of carbon, offer dramatically different estimates of those effects, and they too change over time.[7] Some experts believe that those projections greatly understate the existence of uncertainty and are therefore essentially worthless.[8] In their view, exceptionally wide ranges

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1 For one account, see Michael Greenstone et al., *Developing a Social Cost of Carbon for US Regulatory Analysis: A Methodology and Interpretation*, 7 REV. ENVTL. ECON. & POL'Y 23 (2013). The social cost of carbon was upheld against a variety of legal challenges in *Zero Zone, Inc. v. U.S. Dep't of Energy*, 832 F.3d 654, 677–80 (7th Cir. 2016).

2 *See* U.S. ENVTL. PROT. AGENCY, FUTURE OF CLIMATE CHANGE (Jan. 18, 2017) https://www3.epa.gov/climatechange/science/future.html [https://perma.cc/KKU8-5JAQ].

3 *See* Martin L. Weitzman, *Fat-Tailed Uncertainty in the Economics of Catastrophic Climate Change*, 5 REV. ENVTL. ECON. & POL'Y 275, 277–79 (2011).

4 *See, e.g.*, WILLIAM NORDHAUS, THE CLIMATE CASINO: RISK, UNCERTAINTY, AND ECONOMICS FOR A WARMING WORLD 42–49 (2013); Weitzman, *supra* note 3, at 277–79.

5 For a good overview, see NORDHAUS, *supra* note 4, at 42–66.

6 *Id.* at 69–146 (discussing, for example, the impacts on ecological systems and human health).

7 *See* Greenstone et al., *supra* note 1, at 23–25.

8 *See, e.g.*, Robert S. Pindyck, *Climate Change Policy: What Do the Models Tell Us?* (Nat'l Bureau of Econ. Research, Working Paper No. 19244, 2013), http://www.nber.org/papers/w19244.pdf [https://perma.cc/9TV4-CJ5G].

are the best that can be done with respect to likely warming, and for damages, the ranges are too wide to be useful.

We aim here to investigate two simple questions: (1) How do people update their beliefs when they receive new information about likely warming? (2) How do people's prior attitudes affect their response to such information? The answers to these questions are valuable in themselves, because they show how different groups, with different initial views about climate change, will respond to new information. Simple though they are, the answers also offer more general lessons about how people will update their beliefs in response to new information about contested questions in science, politics, and law.

We find that people who are not sure that man-made climate change is occurring, and unenthusiastic about an international agreement, show a form of asymmetrical updating: They change their beliefs far more in response to unexpected good news, suggesting that average temperature rise is likely to be (even) smaller than previously thought, than in response to unexpected bad news, suggesting that average temperature rise is likely to be larger than previously thought. In fact, we do not find a statistically significant change in their views in response to bad news at all.

By contrast, people who strongly believe that man-made climate change is occurring, and who strongly favor an international agreement to reduce greenhouse gas emissions, show the opposite asymmetry: They change their beliefs far more in response to unexpected bad news, suggesting that average temperature rise is likely to be even greater than previously thought, than in response to unexpected good news, suggesting that average temperature rise is likely to be smaller than previously thought. People with moderate beliefs about climate change show no asymmetry.

These findings have evident connections with other work on the formation and alteration of beliefs. It is well known that when people are confronted with balanced information on political and legal issues, they often credit the information that supports their antecedent convictions and disregard information that contradicts it ("biased assimilation").[9] It

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[9] *See, e.g.*, Charles G. Lord et al., *Biased Assimilation and Attitude Polarization: The Effects of Prior Theories on Subsequently Considered Evidence*, 37 J. PERSONALITY & SOC. PSYCHOL. 2098 (1979); John W. McHoskey, *Case Closed? On the John F. Kennedy Assassination: Biased Assimilation of Evidence and Attitude Polarization*, 17 BASIC & APPLIED SOC. PSYCHOL. 395 (2002); Geoffrey D.

follows that if people come to a balanced presentation with opposite priors, they are likely to polarize. A more recent finding is that some seemingly credible corrections of erroneous political beliefs *backfire*; they strengthen people's commitment to their original beliefs.[10]

Outside of the domain of politics and law, good news with respect to personal prospects typically has a stronger effect on beliefs than bad news, regardless of priors.[11] People are more likely to update their beliefs if they receive information suggesting (for example) that their likely longevity is greater than they previously estimated than after receiving information suggesting that it is shorter. Not only do people update their beliefs more upon receiving good personal news, they are also more likely to do so in a Bayesian manner than when receiving bad news.[12]

In line with these findings is one of our own: Weak believers in man-made climate change adjust to unexpected good news about the climate to a greater extent than to unexpected bad news (which has essentially no impact). But in apparent contrast, we find that strong believers in man-made climate change adjust to unexpected bad news about the climate to a greater extent than to unexpected good news. We suggest that in the domains of politics and law, this form of asymmetrical updating is likely to be pervasive and quite important, increasing polarization in many areas of social, political, and legal life.

I
THE STUDY

A. Participants

Three hundred and two volunteers (177 males, 125 females) living in the United States were recruited via Amazon

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Munro et al., *Biased Assimilation of Sociopolitical Arguments: Evaluating the 1996 U.S. Presidential Debate*, 24 BASIC & APPLIED SOC. PSYCHOL. 15 (2002).

10 Brendan Nyhan & Jason Reifler, *When Corrections Fail: The Persistence of Political Misperceptions*, 32 POL. BEHAV. 303 (2010).

11 David Eil & Justin M. Rao, *The Good News-Bad News Effect: Asymmetric Processing of Objective Information About Yourself*, 3 AM. ECON. J.: MICROECONOMICS 114 (2011); Tali Sharot et al., *How Unrealistic Optimism Is Maintained in the Face of Reality*, 14 NATURE NEUROSCIENCE 1475 (2011).

12 Eil & Rao, *supra* note 11; Tali Sharot & Neil Garrett, *The Myth of a Pessimistic View of Optimistic Belief Updating – A Commentary on Shah et al.* (2016), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2811752 [http://perma.cc/W5ZR-CEEE].

Mechanical Turk to participate in an online study.[13] Their characteristics were as follows: age: 45.7% were 29 years old or younger, 41.7% were 30-49 years old, 11.6% were 50-64 years old, and 1.0% were over 64 years old; race: 73.8% identified themselves as White, 11.3% as Asian, 7.6% as African American, 5.3% as Hispanic, 0.3% as Native American, and 1.7% as Other; income: 25.8% earned less than $30K, 41.1% earned $30K–$59K, 19.2% earned $60K–$89K, 7.6% earned $90K–$119K, 3.0% earned $120K–$149K, and 3.3% earned more than $150K; party affiliation: 49.7% of participants identified themselves as Democrats, 33.4% as Independents, and 16.9% as Republicans; education: 0.3% attained less than a high school education, 10.6% a high school education, 38.1% some college education, 38.4% a four-year college degree, 1.7% a professional degree, 9.3% a master's degree, and 1.7% a doctoral degree. The study takes approximately two minutes to complete and participants were paid $0.25 for participation.[14]

B. Tasks

Our goal was to examine whether and by how much people will update their beliefs about the likely temperature rise after receiving information that was better or worse than previously received. We hypothesized that people who strongly believe in man-made climate change would be more reluctant to alter their beliefs upon receiving unexpected good news (i.e., the expected temperature rise is in fact lower than previously assumed) than upon receiving unexpected bad news (i.e., the expected temperature rise is in fact higher than previously assumed). We also hypothesized that those who were more skeptical about man-made climate change would show the opposite pattern: They would be more likely to alter their beliefs upon receiving unexpected good news (the expected temperature rise is in fact lower than previously assumed) than bad news.

To test the two hypotheses, we first assessed participants' attitudes. Specifically, participants were asked three ques-

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13 AMAZON MECHANICAL TURK, https://www.mturk.com/mturk/welcome [https://perma.cc/SZ45-NSQX]. Respondents on MTurk, though not a nationally representative sample, have been shown to be similar to respondents on most other survey platforms. Connor Huff & Dustin Tingley, *"Who Are These People?" Evaluating the Demographic Characteristics and Political Preferences of MTurk Survey Respondents*, RES. & POL., July–Sept. 2015, at 1 (2015). Our goal was to measure people's reactions to new information about climate change, and for that particular purpose, it would be most surprising if a nationally representative sample turned out to be fundamentally different.

14 Percentages may not add up due to rounding.

tions: 1) Do you consider yourself an environmentalist? 2) Do you believe that man-made climate change is occurring? 3) Do you think that the United States was right to sign the recent Paris agreement to reduce greenhouse gas emissions? Participants indicated their answers on a scale of 1 to 5 (where 1 is strongly disagree and 5 is strongly agree).

The responses were correlated (Q1&Q2: $r = .26$, $p < .001$; Q1&Q3: $r = .31$, $p < .001$; Q2&Q3: $r = .72$, $p < .001$) and thus summed up to create an overall "climate change belief" score (CCB) for every subject (acknowledging that the "environmentalist" question does not directly measure belief in climate change). Participants were then divided into three groups: those with high scores (high climate change belief group, N = 108, mean CCB = 13.83±.08), those with medium scores (medium climate change belief group, N = 105, mean CCB = 11.02±.08), and those with low scores (low climate change belief group, N = 89, mean CCB = 7.73±.17).[15]

Next, we gave participants an initial piece of information regarding climate change: *"Many scientists have said that, 'By 2100, the average U.S. temperature will rise at least* **6°F***'"* and asked them "*How many degrees Fahrenheit do you personally expect the average U.S. temperature to rise by 2100, if further regulatory steps are not taken?"* Participants could indicate their answer by selecting a number from 0 to 12.

The average first estimate that participants gave was 5.40°F±0.156 (mean±SE). This estimate did not differ between participants who subsequently received additional good or bad news, $t(300) = 0.36$, $p = 0.721$, two-tailed t-test. Across participants, this estimate correlated positively with the climate change belief score ($r = 0.474$, $p < 0.01$). This was true also after controlling for age, education, and income ($r = 0.408$, $p < 0.01$). For the high climate change belief group, the average first estimate was 6.32±.20; for the moderate climate change belief group, it was 5.93±.25; and it was 3.64±.29 for the low climate change belief group. Note that the low climate change

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[15] Since the questions were on an integer scale, this created clustering of participants, which prevented portioning them into three equal groups. The following formula was therefore used to divide participants into three groups:

$$cutoff_t^* = \underset{cutoff}{\operatorname{argmin}} \left| \frac{tN}{3} - \#\{i | i \in S, \quad CCB_i \leq cutoff\} \right|$$

Where N is the sample size (302 participants), t is the tercile (1,2,3), i is the index for the participant in ascending rank order with respect to CCB score, S is the set of all participant indices, and $cutoff^*$ is the cutoff point between the respective terciles.

belief group did not consist of "climate change deniers"; members of the low climate change belief group believed that climate change would occur, but be smaller than members of the other two groups expected.

After indicating their initial estimate, participants were randomly assigned to one of two conditions. Specifically, they received information that was either better (good news, 152 participants, 72 female) or worse (bad news, 150 participants, 53 female) than originally received. In the good news condition, they were told: *"Assume that in the last few weeks, some prominent scientists have reassessed the science, concluded that the situation is far better than had previously thought, and stated that unless further regulatory steps are taken, 'By 2100, the average U.S. temperature is projected to increase by about* **1°F to 5°F**, depending on emissions scenario and climate model.'"

In the bad news condition, they were told*: "Assume that in the last few weeks, some prominent scientists have reviewed the science and concluded that the situation is far worse than they had previously thought. They stated that unless further regulatory steps are taken, 'By 2100, the average U.S. temperature is projected to increase by about* **7°F to 11°F**, depending on emissions scenario and climate model.'"

They were then asked to provide their updated estimate: *"How much do you personally believe that the average U.S. temperature will rise by 2100, if further regulatory steps are not taken?"* by selecting a number from 0 to 12 from a dropdown menu.[16] This was followed by a series of demographic questions (age, income, ethnicity, party affiliation).

Each participant's change in beliefs (i.e., update) was calculated as follows: subject's first estimate minus second estimate in the good news condition, and the reverse for the bad news condition. Thus, positive numbers generally indicated adjustment towards the new evidence, downwards in the former and upwards in the latter. These update scores were then entered into a 2x3 Analysis of Variance (ANOVA) with a between-subject factor of condition (good news, bad news) and a between-subject factor of group (high/medium/low belief in climate change), with age, education, income, gender, party

16 This, of course, creates a problem if the subject's true belief is below 0 or above 12. However, this restriction, if anything, would have made it more difficult to observe our results, rather than explain them.

affiliation, ethnicity, and *first estimate* controlled for by entering them as covariates.[17]

C. Results

There was an interaction between condition and group ($F(2, 284) = 6.28$, $p = .002$, $\eta^2 = .04$), such that subjects in the low climate change belief group updated their beliefs more upon receiving *good* news than upon receiving *bad* news ($F(1, 75) = 6.96$, $p = .01$, $\eta^2 = .09$), whereas those in the high climate change belief group updated their beliefs more upon receiving *bad* news than upon receiving *good* news ($F(1, 95) = 8.35$, $p = .005$, $\eta^2 = .08$). Subjects in the medium climate change belief group did not show a significant difference in updating between conditions ($F(1, 93) = 1.94$, $p = .167$, $\eta^2 = .02$).

Those in the high climate change belief group updated their beliefs more upon receipt of bad news than did those in the low climate change belief group ($F(1, 91) = 20.50$, $p < .001$, $\eta^2 = .18$). There was also a difference across groups in updating upon receipt of good news ($F(1, 79) = 6.89$, $p = .01$, $\eta^2 = .08$). All updates were significantly greater than zero (good news, low belief: $t(42) = 3.87$, $p < .001$; good news, medium belief: $t(58) = 5.07$, $p < .001$; good news, high belief: $t(49) = 4.03$, $p < .001$; bad news, medium belief: $t(45) = 5.79$, $p < .001$; bad news, high belief: $t(57) = 7.58$, $p < .001$)), with the important exception of the low belief group in the bad news condition, for which belief change was not different from zero ($t(45) = .71$, $p = .479$).

In terms of expected temperature increase, the average estimate of low climate change believers decreased by 1.05° in the good news condition. In the bad news condition, it increased by .2° (which, as noted, was not significant). In the bad news condition, the average estimate of high climate change believers increased by 1.94°. In the good news condition, it fell by .9°. For medium climate change believers, the difference between the two conditions was not significant: 1.25° decrease for good news and 1.8° increase for bad news.[18]

There was no main effect of condition ($F(1, 284) = .98$, $p = .324$, $\eta^2 = .00$) nor significant effect of group ($F(2, 284) = 1.45$, $p = .237$, $\eta^2 = .01$). None of the covariates was significant except for the first estimate ($F(1, 284) = 6.67$, $p = .01$, $\eta^2 = .02$). We

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17 Visual analysis of the scatterplots of the residuals versus the predicted values in the ANOVAs did not show any linear trends, suggesting that the assumptions of homoscedasticity were not violated.

18 *See* Figure 1.

stress that all the results above are given after controlling for subjects' first estimate in the ANOVA.

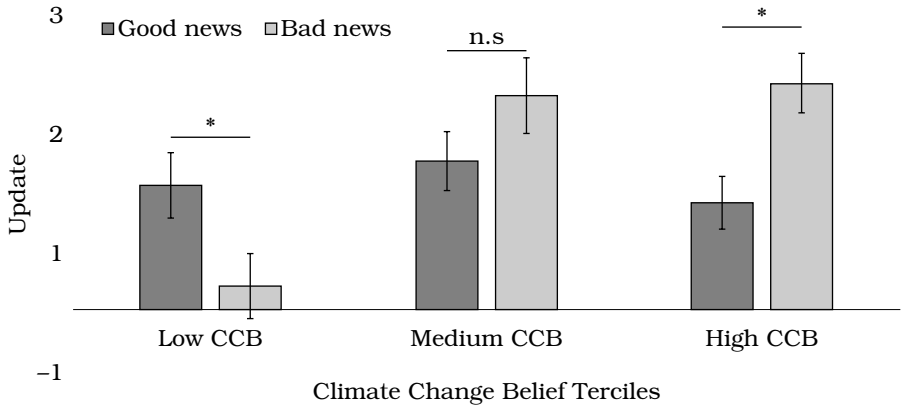

Figure 1. Update in Climate Change Belief.

(*) indicates difference between update in response to good news and bad news within a tercile ($p < .05$);

(n.s.) indicates non-significant differences between update in response to good news and bad news within a tercile.

Error bars are standard errors of the mean.

With regard to party affiliation, we note that Democrats had a higher climate change belief score than Republicans ($t(199) = 7.68$, $p < .001$, two-tailed t-test) and greater first estimates (Democrats = 6.13±0.18 (mean±SE), Republicans, 3.73±0.40, $t(199) = 6.19$, $p < .01$, two-tailed t-test). Updating behavior across good and bad news did not interact significantly with party affiliation ($F(1,191) = 2.72$, $p = .101$, $\eta^2 = .01$), after controlling for all other demographic variables and climate change belief scores.

II
Potential Mechanisms and Implications

Our aim here was to study how people adjust their beliefs about climate change upon receiving information that is better or worse than previously received. We found that those with high climate change belief scores show asymmetrical updating, changing their beliefs more in response to bad news than good news, while those with low climate change belief scores show the opposite asymmetrical updating, changing their beliefs more in response to good news than bad news (which had essentially no effect at all). Those with moderate climate change belief scores showed no asymmetrical updating.

What explains the asymmetrical updating for the former groups? And what are the implications of our findings for the formation of beliefs about politics and law in general?

A. Motivated Reasoning and Bayesianism

One possible explanation for the results involves motivated reasoning. We have noted that with respect to personally relevant information (say, about how good one's appearance is or likely health outcomes), people update their beliefs more in response to good news than bad news.[19] They are motivated to dismiss the latter or at least to give it less weight. For beliefs about others, or about the population at large, this is not necessarily the case.

Here, those with low and high climate change belief scores may both be invested in their attitudes and update their beliefs accordingly. For those with low belief scores, good news is welcome, because it is both positive (lower temperature rise is good news for the planet and mankind) and affirming (these individuals were less alarmed about climate change in the first place), leading to a large update. Bad news is both undesirable for the planet and disconfirming, leading to no effect on belief update.

Those with high belief scores, on the other hand, were especially likely to credit bad news. For them, such news is, in a sense, affirming, insofar as it supports their concerns and confirms that they have been right to have them.[20] To that extent, they may well be motivated to accept bad news. Good news, by contrast, causes dissonance. It suggests that they have been wrong to focus on climate change, or to be quite alarmed about it. With respect to political beliefs, good news (about the planet, country, or mankind) can evoke such a reaction if and to the extent that it threatens strongly held convictions and people's sense of identity.[21]

When society is divided, it follows that, whether good or bad, new information can heighten polarization. We suspect that these observations bear on both jury and judicial behavior, as when jurors and judges begin with different convictions

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19 *See* TALI SHAROT, THE OPTIMISM BIAS (2012); Eil & Rao, *supra* note 11; Sharot et al., *supra* note 11.

20 See Dan M. Kahan et al., *The Polarizing Impact of Science Literacy and Numeracy on Perceived Climate Change Risks*, 2 NATURE CLIMATE CHANGE 732 (2012), for a series of illuminating observations and findings.

21 *See, e.g.*, Nyhan & Reifler, *supra* note 10; Brendan Nyhan et al., *The Hazards of Correcting Myths About Health Care Reform*, 51 MED. CARE 127 (2013).

and are confronted with information from which they should update.

The second answer does not invoke motivations or emotions; it is purely cognitive and reflects a form of Bayesianism.[22] A participant's prior regarding the likely increase in temperature is best described as a distribution rather than a discrete number (e.g., Joe believes the probability that temperature will rise by 5 degrees is 10%, that it will rise by 6 degrees 30%, that it will rise by 7 degrees 20% and so on). When asked to declare the likely increase, Joe will give a number representing the peak of his belief distribution—in this case 6 degrees. Now imagine two scenarios. In one, Joe is told scientists believe the increase is likely to be 7 degrees (bad news) and in the other that scientists believe it is likely to be 5 degrees (good news). Joe is then asked about his new belief.

To form his new belief, Joe will combine his prior with the evidence and report back the peak of that distribution. Because the prior was originally skewed, even if Joe was using Bayesian statistics to form a posterior, the peaks of the posteriors in these two cases will not be equal distance from the peak of the prior. It is possible that the priors of individuals in the high and low groups were skewed, but in opposite directions. Although in our study we controlled for people's "peak priors," we did not record the full distribution of their priors.[23] Thus, Bayesianism could in theory be sufficient to account for both forms of asymmetrical updating here.[24] This remains to be tested.

B. Asymmetrical Updating in Science, Politics, and Law

The findings have implications for how people will update their beliefs about climate change in particular, and also for

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22 For discussion, see Edward Glaeser & Cass R. Sunstein, *Does More Speech Correct Falsehoods?*, 43 J. LEGAL STUD. 65 (2014).

23 Eil & Rao, *supra* note 11, use an elegant technique to capture a subject's full distribution of priors with regards to his or her IQ and attractiveness. They show that, even after accounting for the full distribution of a subject's prior updating, the updating is asymmetric, favoring good news.

24 There are other potential explanations in addition to the two we discuss here. For example, strong climate change believers might be more pessimistic in general, in which case their greater incorporation of bad news would be consistent with their dispositions. We could easily imagine a set of pessimistic people who would be especially likely—for cognitive or affective reasons—to accept information suggesting that the world is likely to end up worse than they originally thought. In an early test, however, we explored this issue and did not find that strong climate change believers were more pessimistic in general. The question does bear further investigation.

beliefs about science, politics, and law more generally. If people receive new information about climate change (as is inevitable), and if it is highly variable (as is predictable), we should expect to see greater polarization. Those most concerned about climate change will be more likely to revise their estimates upwards upon receiving bad news than those who are least concerned. Those who are least concerned about climate change will be more likely to revise their estimates downwards upon receiving good news than those who are most concerned.

This asymmetry undoubtedly contributes to polarization with respect to climate change, as both alarming and less alarming news comes to people's attention. Quite apart from the other factors that contribute to polarization about climate change, asymmetrical updating should be sufficient to produce it.[25] Recall in this regard that in our study, those with low climate change belief scores were not skeptics or denialists. They simply believed that the magnitude of change would be lower than the two other groups did. Even so, they were more moved by good news than by bad news, as those with moderate climate change belief scores were not.

With respect to beliefs in general, we speculate that in many domains, something similar will occur. We could readily imagine studies of the formation of beliefs about terrorism (how much terrorism will there be in the next year?), immigration (for how much violence will immigrants be responsible over a specified future period?), the Affordable Care Act (what will be the effect of the act on insurance premiums?), and minimum wage legislation (how much of a disemployment effect should be expected from a $12 minimum wage?). For many people, good news for the country—in the form of an apparently credible expert judgment that things will be better than they think—will have far more weight than bad news. It is easy to imagine groups that will accept evidence (good news for the country) that the Affordable Care Act is not producing increases in insurance premiums, or that the $12 minimum wage is not increasing unemployment—and that would be highly reluctant to accept evidence to the opposite effect (bad news for the country).

For some groups, however, our findings suggest the possibility that apparently good news of exactly these kinds may trigger a negative reaction, in part because of people's desire to be vindicated—to see their actions and concerns affirmed

25 For other factors, see Kahan et al., *supra* note 20.

rather than contradicted. Some people have strong investments in their attitudes, even if the implication is that things are getting much worse—that terrorism will increase, that immigration is producing violence, that climate change will be devastating, that the Affordable Care Act is producing an increase in insurance premiums, that the $12 minimum wage produces significant increases in unemployment. For such people, it is possible that bad news for the country might therefore have more weight than good news.

We speculate that a great deal of polarization in politics and law is created and fueled in this way. Every week, if not every day, it is possible to encounter competing (and apparently plausible) predictions about future states of affairs, suggesting that one's own current estimates are too optimistic or too pessimistic. If the evidence involves one's own future, good news will usually have special weight. But if the evidence involves politics and law, this is not necessarily so. Some people will receive objectively good news (things will be better than expected for the planet or mankind) as such and give it particular attention in updating. For others, the same news could contradict convictions to which they are deeply committed and receive less weight. Whenever this is true, the circumstances are right for polarization—heightened or produced by asymmetrical updating of diametrically opposite kinds.

A great deal remains to be learned on this topic. But we suspect that this difference helps explain why polarization can increase over time and why agreement can be so hard to obtain, even on highly technical questions.