

# Believe It or Not? Credulity, Skepticism, and Misinformation in the American Public

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**Abstract:** Despite many concerns about misinformation in American public discourse, there is little research on how credulous or skeptical the American public actually is. Using both an initial test sample of 200 mTurk workers and a national, online survey sample of over 1,000 American adults conducted in January of 2018, we test a battery of items that comprise a “credulity scale.” We find, that when it comes to evaluating ambiguous claims, most Americans are neither overly credulous nor skeptical but mostly uncertain. People who were more likely to endorse ambiguous claims as true, however, were far more likely to believe several different types of misinformation, while “skeptics” are more likely disbelieve information, even if it is true. The likelihood of receptivity is also exacerbated by the message’s intuitive appeal – ambiguous statements with more information are more appealing to the credulous and less appealing to skeptics.

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“You can fool all the people some of the time and some of the people all the time, but you cannot fool all the people all the time.”

■ Abraham Lincoln, 1858

In this “age of misinformation,” Americans are regularly bombarded with false or misleading claims. From conspiracy theories on internet chat rooms to “fake news” on social media, misrepresentation is pervasive in American political culture (Collins, 2012; Guess et al., 2018). For many commentators, this situation is a cause for alarm. Some fear that misinformation will distort democracy—if the public is overly credulous, misinformation may result in inaccurate or distorted collective preferences (Kuklinski et al., 2000). Some fear the opposite—that pervasive misinformation will create an overly skeptical public that rejects important factual information, such as with climate change or vaccines (Lewandosky et al., 2016).

Although the pervasiveness of misinformation is both well-recognized and much fretted over, the magnitude of its effect is unclear. This is largely because most research on misinformation has focused on the plausibility of particular claims, rather than the credulity of the public. Numerous studies find that people are more likely to believe statements that accord with their informational priors and predispositions (Kunda, 1990; Flynn et al., 2017; Redlawsk, 2002; Taber & Lodge, 2006), that come from credible sources (Hoveland et al., 1953; Ohanian, 1990), or that are consistent with their intuitions (Kahneman & Tversky, 1974; Nisbett & Ross, 1980; Oliver & Wood, 2018). In other words, people are likely to believe rumors or fake news if they confirm their common ways of thinking.

But while the credibility of *messages* has been well studied, the credulity of *receivers* has not.<sup>1</sup> Most existing research focuses on the content of particular messages and not on the variance in receptivity among consumers. There are no studies, to our knowledge, that demarcate the baseline levels of credulity or skepticism in the American public or determine what makes some people more credulous than others to political misinformation.

This paper reports on our efforts to measure the credulity of the American public and evaluate the efficacy of a credulity scale at predicting receptivity to four types of misinformation: conspiracy theories, fake newsfeeds, political misinformation, and intuitive misinformation. Drawing from a national, online survey conducted in January of 2018, we report three central findings: 1) most Americans are neither overly credulous nor skeptical when it comes to evaluating uncertain claims; 2) Americans are distinguishable by their receptivity to misinformation, and this receptivity has effects independent of factors like partisanship or ideology; and 3) the effects of credulity are affected by the intuitive character of the message. Most notably, adding information to a claim exacerbates the differences between the credulous and skeptical.

### *Who is susceptible to believing misinformation?*

Misinformation is probably as old as mass politics, and social scientists have been pondering questions of credulity and skepticism for over a century (see Lippmann 1920, Donovan 2007). But while the *potential* dangers of misinformation have been well described, its actual dangers are still unknown. Most research on misinformation focuses on the particulars of the

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<sup>1</sup> Credulity is defined as “the readiness to believe information, particularly on weak or insufficient grounds” (Merriam Webster, 2017).

message rather than the characteristics of the individual. The gross impact of misinformation remains unclear.

For example, the most common finding is that individuals accept misinformation that is consistent with their prior beliefs, this is often referred to as *directionally-motivated reasoning*. Individuals often do not evaluate information objectively; instead, their preferences for a particular outcome of a given reasoning task affects how they evaluate new information, form impressions, and ultimately make decisions (Kunda, 1990). Motivated reasoning is divided into two major categories depending on the type of conclusion that is pursued. The first category encompasses reasoning in which the motive is to arrive at an accurate conclusion; the second category encompasses reasoning that is driven by the motivation to arrive at a particular, directional conclusion (Kunda, 1990). In politics, directional conclusions are often driven by one's partisanship, ideology, or group affiliation (Taber and Lodge, 2006; Flynn et al., 2017). By this rationale, people will accept misinformation if it reinforces prior political commitments. Republicans, for example, are more likely to believe that Trump won the popular vote than either Independents or Democrats (Oliver and Wood, 2016).

Susceptibility to misinformation also comes from the authority of the source. Credible sources are more persuasive than non-credible sources, and source credibility is thought to rely upon three factors: the expertise, trustworthiness, and attractiveness of the source (Ohanian, 1990).<sup>2</sup> Expertise refers to “the extent to which a communicator is perceived to be a source of valid assertions”, while trustworthiness is defined as “the degree of confidence in the communicator’s

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<sup>2</sup> Other studies qualify this finding, however. Sternthal, Dholakia, and Leavitt (1978) find that when individuals are positively predisposed to a particular message, a source who lacks credibility can be more persuasive than one who has high credibility. Source credibility therefore interacts with motivated reasoning to some extent to determine message reception.

intent to communicate the assertions he considers most valid” (Hoveland et al., 1953 qtd. in Ohanian, 1990, p. 41). Attractiveness refers to our attitudes about the source; the extent to which we admire them and share the same preferences (Hass, 1981).

A third source of credulity may come from the content of the message, specifically whether it coincides with intuitive explanations. Rumors, conspiracy theories, and fake news often coincide with our innate intuitions and can have a persuasive effect because they simply *seem and feel right*. The persuasive effect of these messages operates through two mechanisms: emotions and heuristics. Uncertainty generates anxiety in humans and other species, and people seek expedient explanations to reduce their apprehension. Supernatural beliefs, rumors, and conspiracy theories often serve as emotional palliatives in the face of uncertain circumstances.<sup>3</sup> In the face of uncomfortable realities—terrorist attacks, school shootings, emerging technologies—our anxieties drive us to seek explanations, “if only to resolve our uncertainty and placate our fear” (Oliver & Wood, 2018, p. 20).

Receptivity to information also increases when that information coincides with the common heuristics that people utilize when making decisions. Heuristics are an essential part of efficient decision-making, but they often lead to incorrect inferences (Nisbett & Ross, 1980). Take, for example, the availability heuristic, the tendency to overestimate the occurrence of an event when it resembles events that either recent or easy to recall (Kahneman & Tversky, 1974). People are most likely to make judgments based on events that had the greatest emotional impact or were

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<sup>3</sup> This claim stems from ethnographic research conducted by Bronislaw Malinowski on the indigenous population of the Trobriand Islands. In studying the myths about death told by the indigenous population, Malinowski notes that the myths served to quell the fear and apprehension held by the indigenous about inevitable passing (Malinowski, 1948). Myths therefore functioned to give the indigenous hope in the face of death by bringing the inevitable into human control (Malinowski, 1948). The practice of applying myths, superstitious beliefs, and rituals to situations characterized by great uncertainty has been theorized to be a universal human condition. Stuart Vyse (2013) notes that given the high mortality rate among the English population during the sixteenth and seventeenth centuries, popular superstitious beliefs during the time dealt with curing illness and maintaining health (Vyse, 2013, p. 14).

temporally and spatially proximate to the individual (Nisbett & Ross, 1980). Misinformation that appeals to the use of the availability heuristic may result in its misapplication as well as erroneous beliefs.

All of these explanations, however, focus on the message and not the receiver. Although partisans, ideologues, and people who rely on intuitions may be more likely to accept misinformation under the right circumstances, there is no measure of credulity as an independent trait in itself. It may be that credulity is an inherited characteristic but there are several reasons to suspect it may also be a function of environmental circumstance.<sup>4</sup> For example, it is likely that credulity would be negatively associated with education. People with higher levels of education may be better able to present counterarguments to information that does not accord with their predispositions and factual beliefs (Redlawsk, 2002). Older people, having more experience in the world, may also be less credulous as well (Obermiller & Spagenberg, 1998). Gender may also play a role in credulity, although this may depend on the type of message in question—women are more likely to believe in the supernatural and paranormal, including angels, past lives, or ESP, while men are more likely to believe in conspiracy theories (Oliver & Wood, 2018, p. 118).

Receptivity to misinformation may also be a product of one's dispositions. One particular disposition that may increase one's susceptibility to believing false claims is reliance on one's gut feelings, referred to by Oliver and Rahn (2016) as *cultural populism*. Cultural populists are the types of people who say they value their "heart over their head," who mistrust experts, and who place great stock in "common sense." This populist disposition is correlated with belief in conspiracy theories, and because misinformation often runs counter to the opinions of experts and

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<sup>4</sup> There is a sizeable research on skepticism, particularly in regards to advertising and consumer research. See Hurtt 2010.

mainstream narratives used to explain events, receptivity to misinformation may increase with favorable disposition toward populist appeals (Oliver and Wood, 2018).

Receptivity to misinformation may also be related to one's worldview, in particular, whether a person adheres to a strictly dogmatic belief system. Many religious faiths, for example, require unquestioning adherence to their foundational texts or rules. In the United States, the most common example of this occurs amongst Christian fundamentalists, who often believe the Bible is the literal and inerrant word of God. Given that fundamentalists take many biblical stories as literal truths, they may also be accustomed to taking other types of ambiguous information as fact as well (Ellison and Musick 1995).

### *Constructing the Credulity Scale*

To evaluate the credulity of the American public, we started our research with a preliminary survey conducted over Amazon Mechanical Turk. Two hundred mTurk workers examined 28 statements which were tested for correlations with ideology, receptivity to “pseudo-profound bullshit” (Pennycook et al., 2015), and the Cognitive Reflection Test pioneered by Frederick (2005). Pennycook et al. (2015) constructed a measure that tests individual receptivity to “bullshit” by asking individuals to rate how profound they believed randomly generated, syntactically-structured statements to be. Moreover, the Cognitive Reflection Test captures the tendency to override an incorrect but intuitive response to a series of mathematical questions. In order to differentiate our measure of credulity from what Pennycook et al. (2015) and Frederick (2005) capture in their measures, we compiled our credulity measure using statements that were not correlated with bullshit receptivity or responses to the Cognitive Reflection Test. The statements

we chose were also found not to be significantly correlated with ideology or partisanship. Six statements, four of which were false and two of which were true, were ultimately chosen to compose the credulity scale. The statements differed in subject matter to reflect the wide variety of topics to which misinformation may relate, ranging from health to jobs to federal law. Judgements on the truth or falsity of the statements were made by third-party sources, including PolitiFact (politifact.com).

The credulity scale incorporated both true and false statements for two reasons. First, true statements allowed the researchers to honestly inform subjects that some of the statements they encountered were true (Fessler et al., 2017). Second, true statements were incorporated in the scale to fully capture the definition of “credulity” as “an inclination to believe information, particularly on weak or insufficient grounds.” In other words, regardless of the truth or falsity of a particular statement, the most credulous individuals should be willing to believe whatever they read or hear; in some instances, their credulity will drive them to believe statements that are true, and in other instances, they will be inclined to accept information that is false. The statements that composed the credulity scale were as follows:

1. Consuming coffee just before taking a nap does a better job of restoring your alertness than does simply taking a nap.<sup>5</sup>
2. People who majored in philosophy in college make more money, on average, than welders in the United States.<sup>6</sup>

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<sup>5</sup> This statement is true according to an article by Jacqueline Howard, writing for the Huffington Post. The article can be accessed at the following link: [https://www.huffingtonpost.com/2014/09/03/coffee-sleep-power-naps-science\\_n\\_5753360.html](https://www.huffingtonpost.com/2014/09/03/coffee-sleep-power-naps-science_n_5753360.html).

<sup>6</sup> This statement is true according to Clayton Youngman, writing for PolitiFact.com. The article can be accessed at the following link: <http://www.politifact.com/truth-o-meter/statements/2015/nov/11/marco-rubio/marco-rubio-welders-more-money-philosophers/>.



3. The U.S. is producing as much steel as it ever was, but steel jobs are lacking because the industry only needs one-tenth of the workers it once did.<sup>7</sup>
4. Federal law prohibits university campuses in America from checking the immigration status of their students.<sup>8</sup>
5. California allows Muslims to wear face-concealing burqas in their driver's license photos.<sup>9</sup>
6. Obesity currently kills, on average, 34.2 children per hour in America.<sup>10</sup>

In order to test beliefs about these statements and discover what predicts credulity, we deployed these questions in a nationally-representative survey of 1,022 respondents conducted via Qualtrics.<sup>11</sup> We informed respondents that “In this next section, you will read a series of statements or newsfeeds. Some are true, some are false. Please indicate how likely you think each statement is either true or false” and then asked respondents to indicate, on a scale of 1 to 7, of how likely they believed each statement was true or false.<sup>12</sup> The distribution of responses to the credulity scale items can be found in Figure 1.

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<sup>7</sup> This statement is false according to Louis Jacobson, writing for Politifact.com. The article can be accessed at the following link: <http://www.politifact.com/truth-o-meter/statements/2016/jul/05/barack-obama/barack-obama-wrong-about-size-us-steel-production/>.

<sup>8</sup> This statement is false according to W. Gardner Selby, writing for Politifact.com. The article can be accessed at the following link: <http://www.politifact.com/texas/statements/2016/dec/28/lloyd-doggett/lloyd-doggett-says-federal-law-universities-dont-c/>.

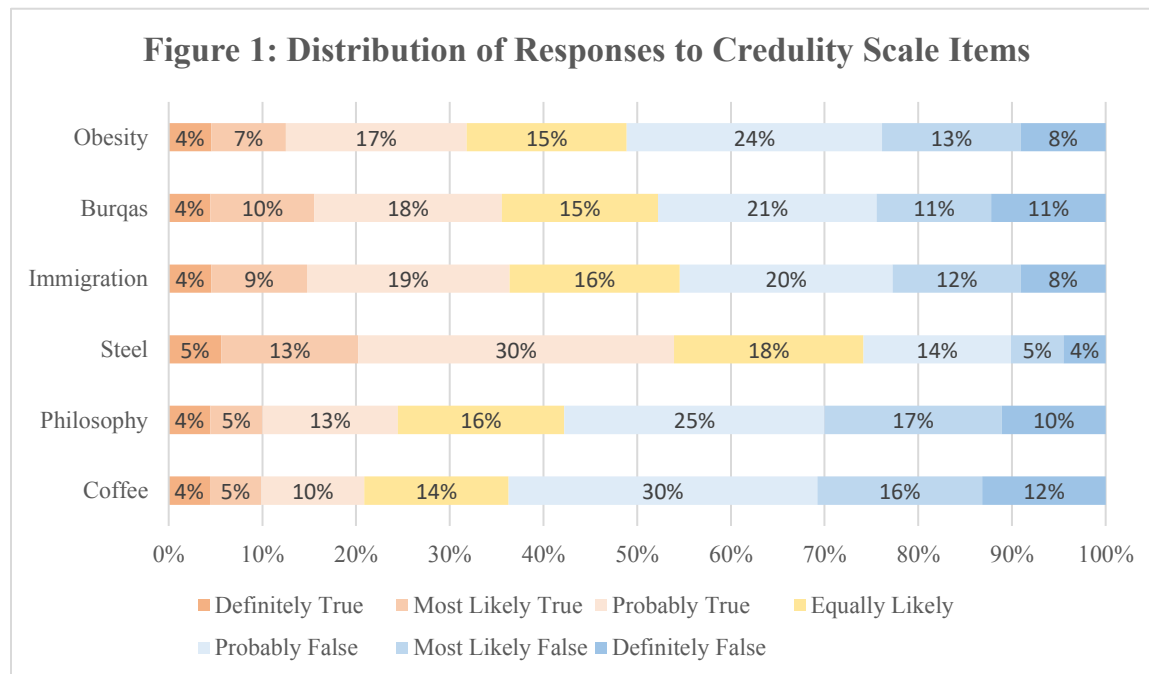
<sup>9</sup> This statement is false according to DMV public information officer Artemio Armenta. The article in which Armenta is interviewed can be accessed at the following link: <https://www.pe.com/2014/07/13/traffic-column-glasses-can-be-on-or-off-for-license-photo/>

<sup>10</sup> This statement is false according to Ciara O'Rourke, writing for Politifact.com. The article can be accessed at the following link: <http://www.politifact.com/texas/statements/2011/may/31/rob-eissler/state-rep-rob-eissler-says-34-children-die-obesity/>

<sup>11</sup> The respondents were supplied by Lucid Inc. and we chosen to approximate a nationally representative sample.

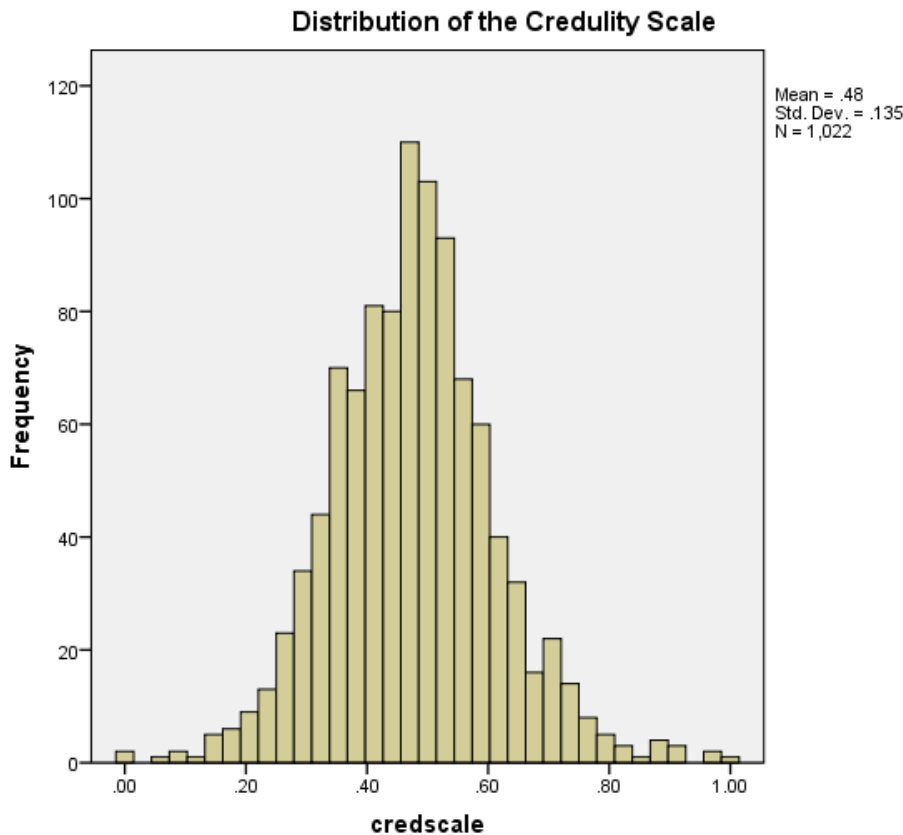
<sup>12</sup> The full option of responses was as follows: 1=Definitely True, 2=Most Likely True, 3=Probably True, 4=Equally Likely, 5=Probably False, 6=Most Likely False, 7=Definitely True.

Looking only at the frequency of respondents who answered “true,” we find that most Americans are not grotesquely credulous nor overly skeptical either. Although only 14 percent of respondents did not believe any of the items were true, 65 percent in total thought that only two or fewer of the statements were true (although they were not, on the whole better at predicting the actual true from the false statements). Meanwhile, only 4 percent of the sample thought that at least five of the statements were true, and less than one percent believed all 6 of the statements in the credulity scale to be true. In light of the increased presence of misinformation in our society, this is a finding that warrants optimism. It suggests that individuals exhibit a healthy caution about the information they encounter, especially when they are unaware of the source from which it derives.



Source: January 2018 Survey, Qualtrics  
n=1,022

From these six questions, we created a credulity scale. We construct it as a simple additive scale, combining the scores on all six items. For interpretive ease, we then recoded the credulity scale so that its minimum value is zero (for those who are most skeptical) and its maximum value is one (for those who credulous). The scale has a near normal distribution (see Figure 2) with a mean value of .48 and a standard deviation of .14. Once again, this suggests that Americans are not overly credulous but neither are they overly skeptical. For example, only 2 percent of the sample scores below .28, which means they would evaluate all claims as most likely or definitely false; similarly, only 4 percent of the sample scores above .71, meaning they evaluate all claims as most likely or definitely true. Instead, the average respondent is relatively uncertain about whether an ambiguous statement is true or false.



We next consider predictors of where someone resides on the credulity scale. Table 1 lists coefficients from ordinary least squares regressions estimating the effects of age, education, sex, ideology, partisanship, cultural populism, and fundamentalism on the credulity scale. All the variables in the regression are coded so their maximum value is one and their minimum value is zero. Cultural populism is measured with a four-item scale about reliance on gut feelings and skepticism of expert advice.<sup>13</sup> Fundamentalism is measured with three items common to Christian fundamentalist doctrine.<sup>14</sup>

According to the regression analysis, age, populism, and fundamentalism are strong predictors of credulity.<sup>15</sup> The most robust predictor of credulity is age. We find that older individuals tend to be less credulous than younger individuals. The model predicts that the average 75-year-old will score twelve percent lower on the credulity scale than the average 18-year-old. Populism was the second largest predictor of credulity: those lowest on the cultural populism scale should score, on average, about eleven percent lower in credulity than those at the highest end. Christian fundamentalists were also slightly more credulous as well, scoring four percent higher on the credulity scale, on average, than non-Fundamentalists. Partisanship and ideology were not

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<sup>13</sup> Cultural populism is measured with a factor scale from responses to four questions: When it comes to really important questions ..(the head is a better guide than the heart/the heart is a better guide than the head); when it comes to really important questions, scientific facts don't help very much (5 point Likert scale); politics is ultimately a struggle between good and evil (5 point Likert scale); ordinary people can ..(really use the help of experts to understand complicated things like science and health/are perfectly capable of deciding what's true or not themselves).

<sup>14</sup> The Fundamentalism scale is measured with a factor scale from responses to three questions: A person can find the future revealed in places like the Bible if he or she knows how to read the signs; we are living in End Times as foretold by Biblical prophecy; The Bible is the literal word of God and without error. All responses were coded on a five-point Likert scale.

<sup>15</sup> When the populism measure is removed from the model, education was also found to be a significant predictor of credulity.

significant predictors of credulity, supporting the notion the credulity scale is not simply capturing political predispositions.

**Table 1: Predictors of Credulity, 2018**

	Credulity
Age	-0.128*** (0.020)
Education	-0.021 (0.013)
Democrat	-0.001 (0.012)
Republican	-0.006 (0.013)
Liberal	0.007 (0.011)
Conservative	0.012 (0.011)
Sex	-0.001 (0.008)
Fundamentalism	0.037** (0.016)
Populism	0.106*** (0.022)
Constant	0.473*** (0.021)
Observations	1,022
R2	0.101
Adjusted R2	0.093

Note: \*\*p<0.05; \*\*\*p<0.01

While a credulity measure should predict if individuals will believe information with which they are presented, it should *not* be predictive of individuals' *a priori* beliefs. Credulity is about how we evaluate uncertain information not about the particular beliefs we already hold, no matter how implausible those beliefs may be. To test for this, we asked respondents whether or not they held certain paranormal, supernatural, and scientific beliefs.<sup>16</sup> We then ran an ordinary least squares regression in order to determine whether our measure of credulity predicted belief in these items. Table 2 lists the coefficients from this analysis.

With one exception, the credulity scale is not a significant predictor of *a priori* beliefs, especially in comparison with Christian fundamentalism or cultural populism. Whereas fundamentalists are far less likely to believe in evolution and far more likely to believe that humans and dinosaurs coexisted or in angels, the same does not hold with the credulous. The only exception is with reincarnation—here the credulous are slightly more likely to believe. Considering, however, this is one of the least common paranormal beliefs, this is not a surprising finding. Unlike with angels, ghosts, or evolution, there are not as many religious or cultural institutions promoting ideas about reincarnation in particular. This provides us with additional support for the notion that our credulity scale is measuring one's inclination to believe anything they encounter.

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<sup>16</sup> In each instance, respondents were given the choice of answering “believe in” “don’t believe in” or “don’t know”. For the regression, those saying “believe” were coded as 3, “don’t know” as 2, and “don’t believe” as 1. The prompts were angels, reincarnation, whether dinosaurs coexisted with humans, ESP, Darwin’s theory of evolution, and ghosts.

**Table 2: Predictors of Belief in Supernatural, Paranormal, and Scientific Beliefs**

	Angels	Reincarnation	Coexistence	ESP	Evolution	Ghosts
Credulity	-0.273 (0.143)	0.547*** (0.192)	0.333 (0.194)	0.074 (0.179)	0.318 (0.169)	-0.015 (0.198)
Age	-0.091 (0.094)	-0.273** (0.126)	-0.023 (0.127)	0.488*** (0.118)	0.018 (0.111)	-0.564*** (0.130)
Education	-0.010 (0.060)	-0.178** (0.081)	-0.152 (0.082)	-0.170** (0.076)	0.129 (0.072)	-0.172** (0.083)
Democrat	-0.079 (0.053)	-0.047 (0.071)	-0.069 (0.071)	0.031 (0.066)	0.106 (0.062)	0.086 (0.073)
Republican	0.082 (0.058)	-0.141 (0.078)	0.038 (0.079)	0.058 (0.073)	-0.070 (0.069)	0.167** (0.081)
Liberal	-0.005 (0.050)	0.073 (0.067)	-0.071 (0.067)	0.084 (0.062)	-0.026 (0.059)	0.047 (0.069)
Conservative	-0.034 (0.049)	-0.243*** (0.065)	-0.032 (0.066)	-0.087 (0.061)	-0.167*** (0.058)	-0.189*** (0.067)
Sex	0.178*** (0.038)	0.067 (0.052)	-0.030 (0.052)	0.052 (0.048)	-0.118*** (0.046)	0.152*** (0.053)
Fundamentalism	1.376*** (0.072)	-0.184* (0.097)	0.549*** (0.098)	0.052 (0.091)	-1.215*** (0.086)	0.232** (0.100)
Populism	0.393*** (0.101)	0.772*** (0.136)	0.115 (0.137)	0.208 (0.127)	-0.213 (0.120)	0.549*** (0.140)
Constant	1.580*** (0.118)	1.619*** (0.159)	1.559*** (0.161)	1.877*** (0.148)	2.888*** (0.140)	1.832*** (0.164)
Observations	1,022	1,022	1,022	1,022	1,022	1,022
R2	0.404	0.109	0.076	0.030	0.293	0.094
Adjusted R2	0.398	0.100	0.067	0.021	0.286	0.085

Note:

\*\*p&lt;0.05; \*\*\*p&lt;0.01

## *Credulity and Misinformation*

Our attention now turns to whether credulity determines receptivity to misinformation. We define misinformation as “false or incorrect information that is often presented with the intentional effort to deceive.” Misinformation can appear in many forms but for this research we examine four types.

### A. Fake News

One common expression in contemporary politics is “fake news.” These are fabricated news stories that make false or unsupported claims and are often shared online. Although “fake news” has been around since the beginning of mass media, it has become increasingly visible with the rise of internet communications and social media. While fake news stories often implicate politics, others relate to matters of science, health, and other topics.

To test receptivity to fake news, we created four fake news “snapshots.” The snapshots appeared in the form of articles that one would see in a typical social media newsfeed, such as Facebook or Instagram: they included a photograph, headline, brief description of the article, and a source.<sup>17</sup> Respondents were asked to rate how confident they were that each headline was true or false, on a 7-point scale ranging from *1=Definitely False* to *7=Definitely True*.<sup>18</sup> The fake news snapshots were created from a variety of perspectives: one to appeal to a conservative audience

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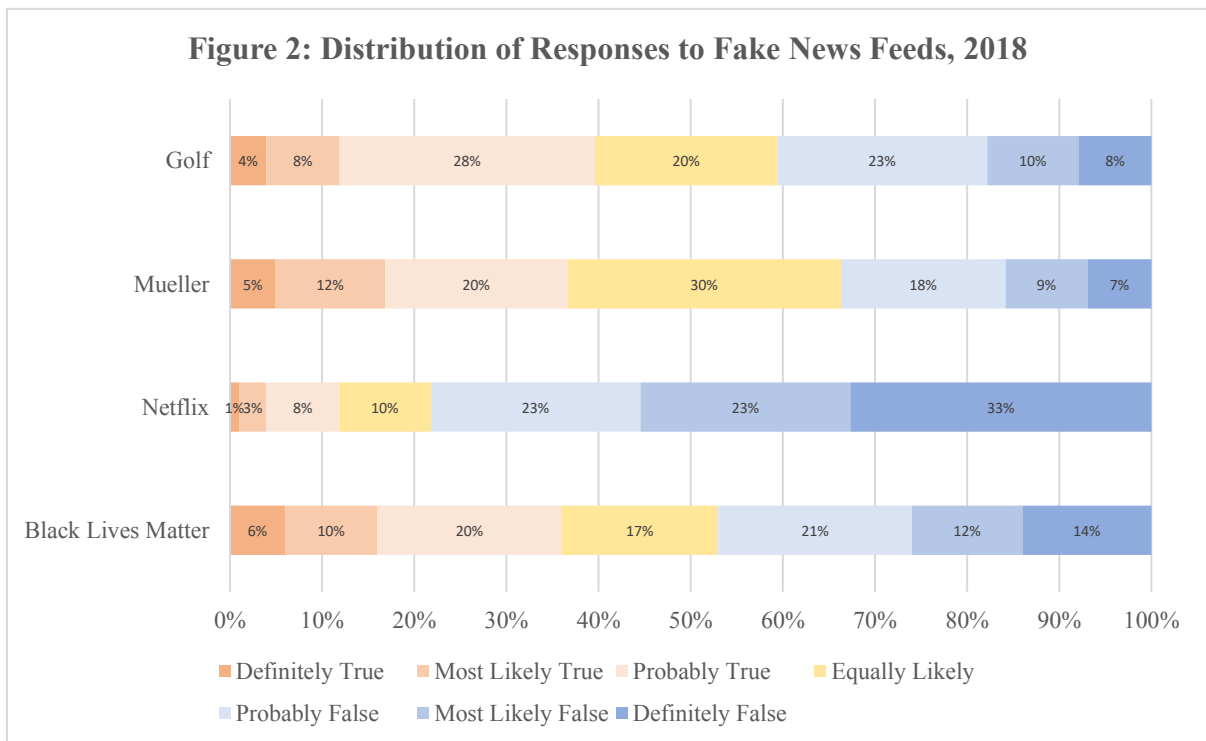
<sup>17</sup> The aim of the current project is not to measure the degree of authority bias that individuals attribute to articles from established sources such as the Washington Post or the Wall Street Journal. Some of the sources to which the fake news snapshots are attributed were made up, while others were lesser-known real sources. These were chosen or created in order to reduce the effects of source bias on an individual’s propensity to believe in fake news. Given that the sources of the misinformation are likely to be unfamiliar, individuals will be less likely to believe the information presented (Rieh & Danielson, 2007; Hinnosaar & Hinnosaar, 2015). In other words, the presence of a lesser-known or made-up source will bias the results in favor of disbelief than belief.

<sup>18</sup> Once again, the respondents were told that some of the items they would evaluate were true and some would be false. For the regression equations, the items were rescaled so that the minimum value is zero and the maximum value is one.



(the snapshot claiming that Black Lives Matter is stockpiling weapons), one to appeal to a liberal audience (the snapshot claiming Special Counsel Mueller is about to indict Jared Kushner), one to provide an intuitive appeal to respondents (the snapshot claiming Netflix is about to go bankrupt from people sharing accounts), and one that would seem counterintuitive but is actually true (a snapshot reporting that golf courses get tax breaks if they are in the flight paths of geese and other migratory birds). The full texts of these snapshots can be found in the appendix of this paper.

The distribution of responses to the fake news feeds are presented in Figure 2. As with the credulity items, few respondents were likely to believe the fake news feeds. They were most skeptical of the story that Netflix would soon be going out of business (under 12 percent thought this was true). At least a third of the sample, however, thought that either the partisan news feeds or the actually true news story was correct.



Source: January 2018 Survey, Qualtrics  
n=1,022

We next turn to predictors of receptivity to each of the fake news items. Table 3 lists coefficients from ordinary least squares regressions estimating the effects of credulity, age, education, sex, ideology, partisanship, fundamentalism, and populism on receptivity to the fake news feeds. On the whole, the credulity scale is a strong and consistent predictor of belief in all four fake news items. The biggest differences occur with the news feed claiming members of the Black Lives Matter movement were stockpiling weapons. In this case the model predicts that someone at the high end of the credulity scale would, on average, rate this claim as somewhere between “probably true” and “most likely true.” A person at the low end of the scale would rate these claims as between “probably false” and “most likely false.” These differences exist even when taking the effects of partisanship and ideology into account and far exceed these in magnitude. Although partisanship and ideology predict belief in both the BLM and Mueller fake news items as we would expect from past research on motivated reasoning, the size of these differences are not great.

Similar differences also occur for the other fake news feeds. Regardless of their age, education, or political views, the credulous are more likely to believe that Netflix is about to be discontinued or that golf courses get tax breaks for hosting migratory birds. The only other factor that approaches the size of the credulity scale is the cultural populism scale. Cultural populists score about a two-tenths higher in believing the Black Lives Matter fake news feed and a tenth higher in the Mueller and Netflix news feeds. Fundamentalists are also more likely to believe the fake news feed about Netflix.

**Table 3: Predictors of Belief in Fake News, 2018**

	BLM	Mueller	Netflix	Golf
Credulity	0.430*** (0.063)	0.358*** (0.059)	0.295*** (0.057)	0.399*** (0.060)
Age	-0.022 (0.042)	-0.023 (0.038)	0.150*** (0.037)	0.031 (0.039)
Education	-0.033 (0.027)	-0.037 (0.025)	-0.021 (0.024)	0.010 (0.026)
Democrat	-0.066*** (0.024)	0.061*** (0.022)	-0.054** (0.021)	0.00004 (0.022)
Republican	0.061** (0.026)	-0.046* (0.024)	-0.058** (0.024)	0.001 (0.025)
Liberal	-0.076*** (0.023)	0.045** (0.021)	-0.015 (0.020)	0.011 (0.021)
Conservative	0.056** (0.022)	-0.019 (0.020)	0.001 (0.020)	0.016 (0.021)
Sex	-0.030 (0.017)	0.007 (0.016)	0.025 (0.016)	-0.009 (0.016)
Fundamentalism	0.048 (0.033)	0.032 (0.030)	0.090*** (0.029)	-0.038 (0.031)
Populism	0.190*** (0.045)	0.083** (0.042)	0.101** (0.040)	0.015 (0.043)
Constant	0.432*** (0.044)	0.446*** (0.040)	0.124*** (0.039)	0.483*** (0.041)
Observations	1,022	1,022	1,022	1,022
R2	0.170	0.071	0.059	0.004
Adjusted R2	0.162	0.063	0.050	-0.004

Note: \*\*p<0.05; \*\*\*p<0.01

## B. Conspiracy Theories

A second common type of misinformation is conspiracy theories. Following Oliver and Wood (2014), we define conspiracy theories as “narratives about hidden, malevolent groups secretly perpetuating political plots and social calamities to further their own nefarious goals.” Unlike with fake news, conspiracy theories often implicate politics but they are not always partisan in content. Belief in conspiracy theories can range from general ideas about small groups controlling everything to specific accounts about sex-rings in pizza parlors, but they are widely accepted by the US population (Oliver & Wood, 2014).

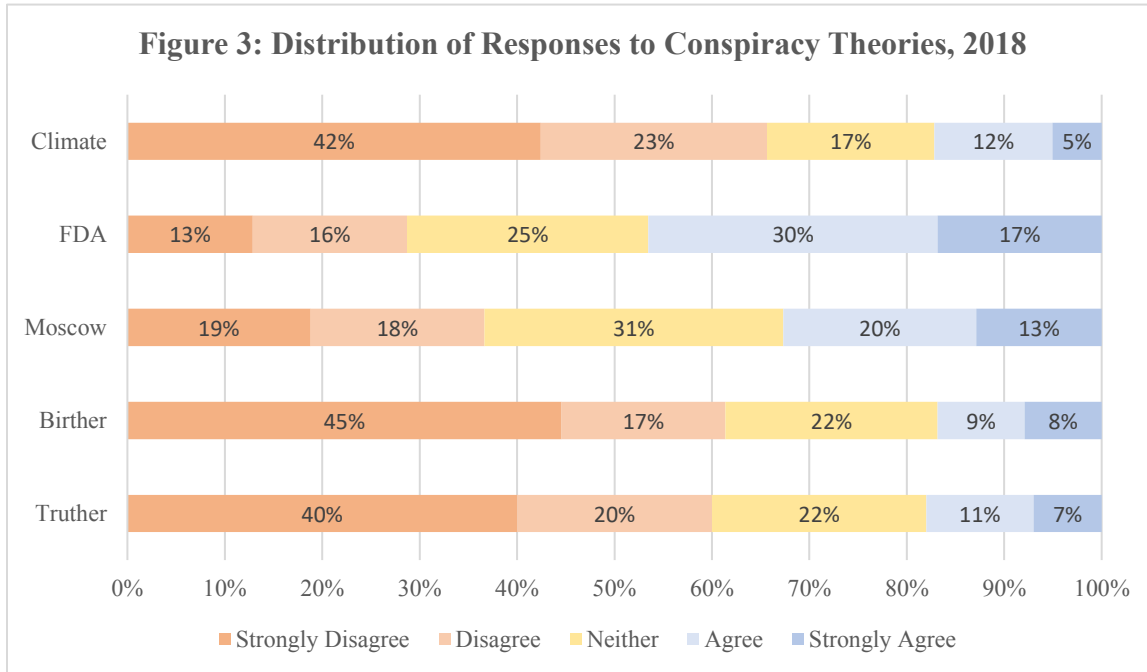
To test receptivity to conspiracy theories, respondents were asked to indicate their level of agreement with 5 conspiracy narratives on a 5-point Likert scale. These included conspiracy theories about Barack Obama’s citizenship (“Birther”), about the government planning the attacks of 9/11 (“Truther”), about climate change being a hoax perpetuated by foreign governments (“Climate”), about Donald Trump secretly colluding with the Russian government since 2013 (“Moscow”), and whether the Food and Drug Administration is deliberately withholding natural cures for cancer because of secret pressure from the pharmaceutical industry (“FDA”).<sup>19</sup> The distribution of respondents can be found in Figure 3.

The conspiracy theories that garnered the largest support were about the FDA and Trump and Russia. Forty-seven percent of the sample agreed that FDA is withholding approval for natural cures for cancer, and thirty-three percent agree that “Donald Trump has been secretly working

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<sup>19</sup> All of the conspiracy theories on our survey, with the exception of the item that pertains to global warming and the item that pertains to President Trump and Moscow, were first tested by Oliver & Wood (2018). The wording of all of the conspiracy theories tested in the survey can be found in the appendix of this paper. With regard to the 3 items that were tested by both Oliver & Wood (2018) and the present investigation, there were comparable percentages of individuals who indicated that they agreed with each of the items.

with the Russian government since 2013. The birther, truther, and climate change conspiracies get lower levels of support (each under 20 percent) although at levels similar to those found in other research (Oliver and Wood 2014).



Source: January 2018 Survey, Qualtrics  
n=1,022

We next turn to predictors of belief in the various conspiracy theory items. Table 4 lists coefficients from ordinary least squares regressions estimating the effects of credulity, age, education, sex, ideology, partisanship, fundamentalism, and populism on receptivity to conspiracy theories tested. Each of the conspiracy theory items was rescaled so its minimum value is zero and maximum is one.

**Table 4: Predictors of Belief in Conspiracy Theories, 2018**

	Truther	Birther	Moscow	FDA	Climate
Credulity	0.190*** (0.069)	0.163** (0.065)	0.141** (0.062)	0.238*** (0.072)	0.147** (0.063)
Age	-0.374*** (0.044)	0.030 (0.042)	-0.078** (0.040)	-0.171*** (0.047)	-0.061 (0.041)
Education	-0.096*** (0.029)	-0.074*** (0.027)	-0.012 (0.026)	-0.038 (0.030)	-0.051* (0.027)
Democrat	-0.004 (0.025)	-0.167*** (0.024)	0.130*** (0.023)	-0.022 (0.027)	-0.071*** (0.023)
Republican	-0.073*** (0.028)	0.124*** (0.026)	-0.219*** (0.025)	0.007 (0.029)	0.069*** (0.026)
Liberal	0.054** (0.024)	-0.019 (0.023)	0.081*** (0.022)	0.021 (0.025)	-0.069*** (0.022)
Conservative	-0.032 (0.023)	0.083*** (0.022)	-0.059*** (0.021)	-0.056** (0.025)	0.061*** (0.021)
Sex	0.010 (0.019)	-0.017 (0.017)	0.049*** (0.017)	0.013 (0.019)	-0.041** (0.017)
Fundamentalism	0.070** (0.035)	0.115*** (0.033)	0.015 (0.031)	0.153*** (0.037)	0.086*** (0.032)
Populism	0.271*** (0.048)	0.213*** (0.045)	0.196*** (0.043)	0.365*** (0.051)	0.295*** (0.044)
Constant	0.335*** (0.047)	0.211*** (0.044)	0.362*** (0.042)	0.414*** (0.049)	0.212*** (0.043)
Observations	1,022	1,022	1,022	1,022	1,022
R2	0.178	0.345	0.381	0.137	0.241
Adjusted R2	0.171	0.339	0.375	0.130	0.234

Note:

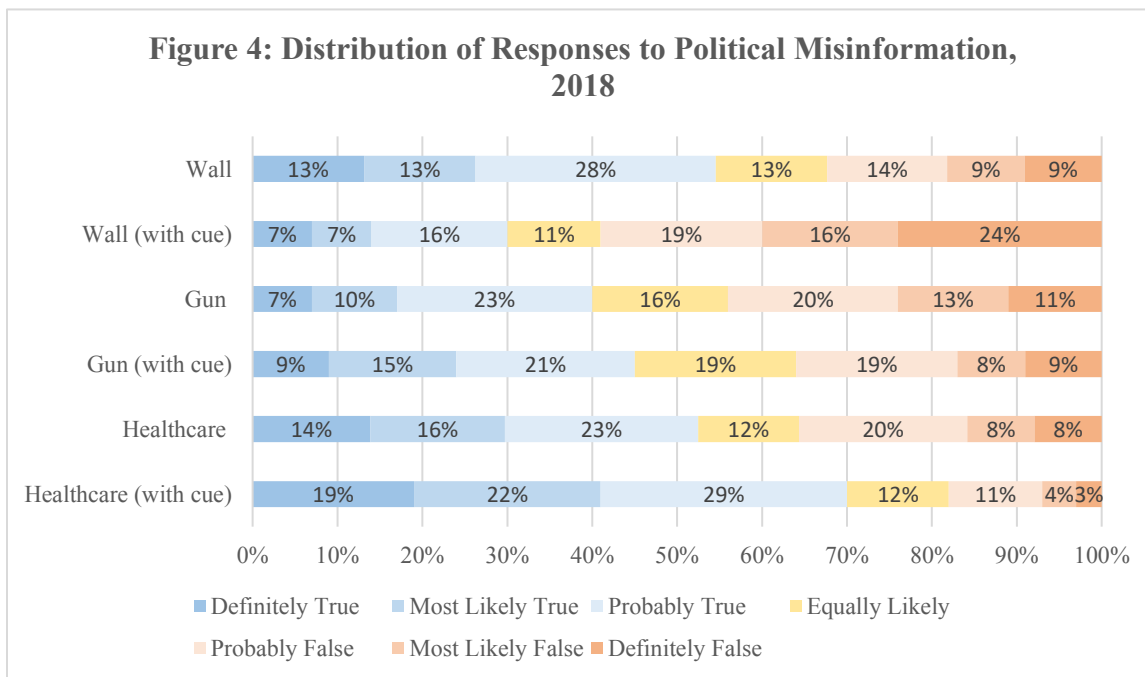
\*p&lt;0.1; \*\*p&lt;0.05; \*\*\*p&lt;0.01

Here again, the credulity scale is a robust predictor of conspiracism, ranking only behind the populism scale in the magnitude of its effects. The credulity scale has the largest effect regarding the least partisan conspiracy theory about the FDA. Here, in the absence of a partisan effect, the model predicts that the most credulous score 24 percent higher on the FDA conspiracism scale than the most skeptical. In other words, the model would predict that the average credulous person is likely to agree with this conspiracy theory while the average skeptic would not. The credulity scale also predicts support for all the other conspiracy theories although the predicted differences are not quite as great. Even more interesting is how these effects persist even though the models are also controlling for cultural populism and fundamentalism, two factors that also correlate with credulity.

### C. Political Misinformation

A third type of misinformation is housed within the broad category of political speech. This type of misinformation is often disseminated by political elites with the intent to persuade individuals to adopt a particular position, or simply “to be witty, to distract voters from more difficult issues, [or] to reinforce hatred of government” (Hochschild & Einstein, 2015, p. 610). To test receptivity to political misinformation, we asked respondents to rate how confident they were that the three statements we provided were true or false, on a 7-point scale ranging from *1=Definitely False* to *7=Definitely True*. For each of the three statements, respondents were randomly assigned into one of two conditions: a neutral condition or a political condition. The political condition contained a cue to partisanship, such as a direct reference to a political party or

candidate. For example, one statement asserted “In the past two years, most states saw their health care costs double” while the political statement asserted “In the past two years, under Obamacare, most states saw their health care costs double.” This design was used to test differences in statements that possessed the political cue and those that lacked it. The distribution of responses to the political misinformation we tested are presented in Figure 4.<sup>20</sup>



Respondents expressed greater belief in the statement pertaining to healthcare that contained the cue relative to the statement that did not ( $z = 6.424, p < 0.01$ ). Similarly, respondents

<sup>20</sup> The other two questions stated “Catapults have been used at the US-Mexico border to launch packages of drugs over the wall” or “Under President Obama’s watch, catapults have been used at the US-Mexico border to launch packages of drugs over the wall; and “The gun industry is the only business in the United States wholly protected from being sued for liability” or “Backed by powerful Republican officials, The gun industry is the only business in the United States wholly protected from being sued for liability.”



expressed greater belief in the statement pertaining to the gun industry that contained the cue relative to the statement that did not ( $z = -2.7285$ ,  $p < 0.01$ ). However, we observed the opposite effect with regard to the statement pertaining to the US-Mexico border: respondents were less likely to believe the statement that contained the cue than the statement that did not ( $z = 8.995$ ,  $p < 0.01$ ). We take this finding to be exemplary of a backfire effect: despite being a true statement, respondents were more likely to reject the statement when an individual (President Obama) was blamed for a negative occurrence (drugs being catapulted over the wall on his watch). This suggests that individuals do not respond to all political information in the same way.

We next turn to predictors of belief in political misinformation. Table 5 lists coefficients from ordinary least squares regressions estimating the effects of credulity, age, education, sex, ideology, partisanship, fundamentalism, and populism on receptivity to the political misinformation items. Here again, the single greatest predictor is the credulity scale. Not surprisingly, we find partisanship often predicts belief in political misinformation that directly references political party or a political candidate. For example, Democrats were less likely to believe the statement claiming that drugs were being catapulted over the wall under President Obama's watch, also suggesting directionally-motivated reasoning is, in part, driving responses. Nevertheless, these differences pale in comparison next to the credulity measure. Even more notable was that the coefficient size for the credulity scale nearly doubles with the presentation of more information in the case of the gun industry or border wall statements. In other words, providing more information to partisan statement seems to exacerbate the differences in baseline credulity.

**Table 5: Predictors of Belief in Political Misinformation, 2018**

	Healthcare (without)	Healthcare (with cue)	Gun (without)	Gun (with cue)	Wall (without)	Wall (with cue)
Credulity	0.264*** (0.081)	.234*** (0.087)	0.367*** (0.095)	0.478*** (0.095)	0.272*** (0.103)	0.400*** (0.101)
Age	-0.100 (0.052)	-0.041 (0.074)	-0.113 (0.064)	-0.117 (0.061)	0.099 (0.069)	0.139** (0.064)
Education	-0.075** (0.033)	-0.039 (0.038)	-0.075 (0.041)	-0.038 (0.041)	-0.014 (0.046)	0.032 (0.042)
Democrat	-0.018 (0.030)	-0.157*** (0.032)	0.013 (0.037)	0.061 (0.034)	-0.014 (0.039)	-0.084** (0.037)
Republican	0.016 (0.034)	0.091*** (0.035)	-0.037 (0.042)	-0.061 (0.038)	0.050 (0.043)	0.055 (0.042)
Liberal	-0.011 (0.028)	-0.050 (0.030)	0.085** (0.035)	0.045 (0.033)	-0.057 (0.037)	0.021 (0.035)
Conservative	0.038 (0.028)	0.081*** (0.029)	0.014 (0.035)	-0.045 (0.031)	-0.002 (0.034)	0.022 (0.036)
Sex	0.036 (0.022)	-0.004 (0.024)	0.053** (0.027)	-0.019 (0.025)	-0.065** (0.028)	-0.109*** (0.028)
Fundamentalism	0.091** (0.039)	0.070 (0.046)	-0.035 (0.054)	0.025 (0.046)	-0.002 (0.052)	0.053 (0.053)
Populism	0.250*** (0.056)	.148** (0.062)	0.127* (0.070)	0.192*** (0.066)	0.176** (0.071)	0.040 (0.073)
Constant	0.538*** (0.054)	.421*** (0.074)	0.418*** (0.068)	0.516*** (0.064)	0.556*** (0.073)	0.451*** (0.068)
Observations	515	506	503	519	500	522
R2	0.158	0.31	0.065	0.095	0.065	0.113
Adjusted R2	0.143	0.29	0.048	0.079	0.048	0.097

Note: \*\*p<0.05; \*\*\*p<0.01

#### D. Intuitive Appeals

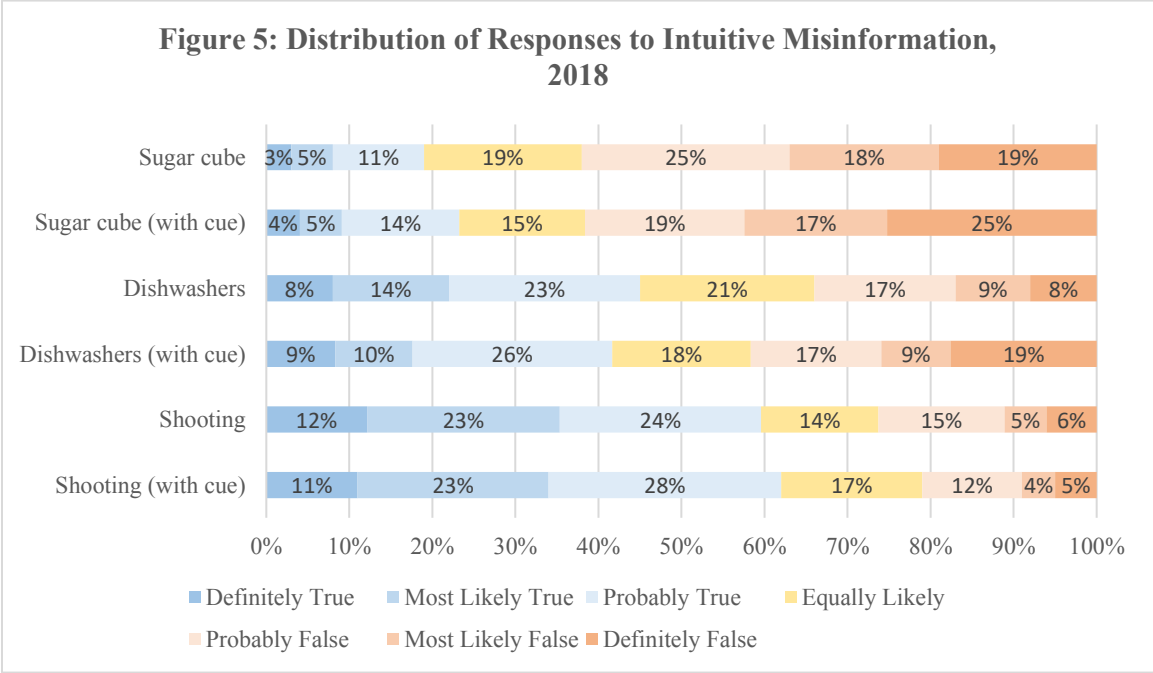
A fourth type of misinformation is false or unsupported claims that provide an intuitive appeal, or simply just *seem right*. These statements coincide with our current emotions and are consistent with commonly-employed heuristics. In other words, they play into our emotions by confirming our *a priori* feelings about an issue and trigger the use of cognitive shortcuts we often rely on to make quick decisions about complex information. To test belief in these claims, we asked respondents to rate the veracity of three statements on a seven-point scale where 1=*Definitely false* and 7=*Definitely True*. Similar to our methodology for testing receptivity to political information, for each of the three statements, respondents were randomly assigned into one of two conditions, a baseline statement, or a statement with a “cue” that would make it more intuitively plausible. For example, respondents were either told “Dishwashers are a good place to store your valuables during a natural disaster” or “As many people discovered during Hurricane Irma, dishwashers are a good place to store your valuables during a natural disaster.” The other two statements state that “All the matter that makes up the human race can fit into a sugar cube” or “Because atoms are made up mostly of empty space, all the matter that makes up the human race can fit into a sugar cube” and “In 2017, approximately 35,000 Americans died from firearms” or “Last year, mass shootings skyrocketed. In 2017, approximately 35,000 Americans died from firearms.” This design was used to test whether the incorporation of more information about a claim would increase receptivity to it. The distribution of responses is presented in Figure 5.

Respondents as a whole did not express greater belief in the statements with the cues than the statements without the cues.<sup>21</sup> Moreover, we find that respondents were least likely to indicate

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<sup>21</sup> This conclusion is based on results of z-tests performed on the pairs of statements. Shooting ( $z = 0.723$ ,  $p = 0.47$ ); Dishwashers ( $z = -0.8533$ ,  $p = 0.3935$ ); Sugar cube ( $z = -0.6987$ ,  $0.485$ )

that the Sugar cube items were true, despite the fact that these were the only true statements tested among the intuitive misinformation items. We believe this to be the case because like many scientific facts, the statement itself is highly counterintuitive.



Source: January 2018 Survey, Qualtrics  
n=1,022

But while adding more information did not, by itself, make the average respondent more likely to believe it, it did further differentiate the credulous from the skeptical. This is evident when we examine predictors of belief in intuitive misinformation. Table 6 lists coefficients from ordinary least squares regressions estimating the effects of credulity, age, education, sex, ideology, partisanship, fundamentalism, and populism on receptivity to the intuitive misinformation items.

**Table 6: Predictors of Belief in Intuitive Misinformation, 2018**

	Shooting (without)	Shooting (with cue)	Dishwashers (without)	Dishwashers (with cue)	Sugar cube (without)	Sugar cube (with cue)
Credulity	0.293*** (0.085)	0.555*** (0.090)	0.384*** (0.096)	0.412*** (0.095)	0.491*** (0.095)	0.549*** (0.088)
Age	0.052 (0.055)	-0.082 (0.060)	0.022 (0.063)	-0.055 (0.063)	-0.120* (0.063)	-0.157*** (0.059)
Education	0.016 (0.036)	-0.053 (0.040)	0.009 (0.042)	-0.032 (0.040)	-0.012 (0.041)	-0.100** (0.039)
Democrat	0.060 (0.031)	0.058 (0.035)	-0.009 (0.037)	0.030 (0.035)	-0.016 (0.036)	-0.027 (0.034)
Republican	-0.101*** (0.034)	-0.062 (0.040)	-0.016 (0.042)	0.112*** (0.038)	-0.038 (0.040)	-0.030 (0.037)
Liberal	0.038 (0.029)	0.005 (0.033)	-0.046 (0.034)	-0.050 (0.034)	-0.046 (0.033)	0.026 (0.033)
Conservative	0.023 (0.029)	0.007 (0.032)	-0.018 (0.034)	-0.039 (0.032)	0.033 (0.033)	0.014 (0.032)
Sex	-0.024 (0.023)	0.035 (0.025)	0.066** (0.027)	0.013 (0.026)	0.020 (0.026)	-0.017 (0.025)
Fundamentalism	-0.026 (0.044)	0.006 (0.047)	0.057 (0.047)	0.059 (0.051)	0.009 (0.049)	-0.045 (0.047)
Populism	0.041 (0.059)	0.012 (0.066)	-0.061 (0.068)	-0.077 (0.068)	-0.005 (0.068)	0.076 (0.065)
Constant	0.617*** (0.058)	0.592*** (0.064)	0.424*** (0.069)	0.522*** (0.064)	0.385*** (0.069)	0.486*** (0.060)
Observations	517	505	520	502	534	488
R2	0.085	0.059	0.021	0.035	0.020	0.040
Adjusted R2	0.069	0.042	0.004	0.017	0.003	0.022

Note: \*\*p<0.05; \*\*\*p<0.01

Not only do we find credulity to be a significant predictor of belief in all of the intuitive items, but the coefficient for the credulity scale also increases in size as more information about the statement is made available. This means that those who are on the higher end of the credulity scale are more likely to believe the statements when more information about the claim is provided to them. For example, they are more likely to believe that “Because atoms are mostly composed of empty space, all of the matter that makes up the human race can fit into a sugar cube” rather than simply “All of the matter that makes up the human race can fit into a sugar cube”. This is not true of respondents at large, however, for there was no significant difference between mean responses to the statements with and without the cues for the entire sample. This finding gives us further confidence that the credulity scale is measuring an inclination to believe information, since the most credulous individuals according to our measure were persuaded by providing more information about a claim, while the sample as a whole was not.

### *Conclusion*

We constructed a credulity scale in an attempt to determine whether the inclination to believe information could be captured by a measure and whether the concept of credulity could be shown to be predictive of belief in several types of common misinformation. Our credulity measure was insensitive to education, ideology, and partisanship, while age, fundamentalism, and populism proved to be significant predictors of one’s innate credulity. Based on this scale, we find that most Americans are not, on average, overly skeptical or credulous of ambiguous claims. Rather, the overwhelming majority vacillate somewhere in the middle, mostly hedging their beliefs. But where someone is on the credulity scale is highly predictive of their receptivity to misinformation. People scoring high in credulity are far more likely to believe in fake news feeds, conspiracy

theories, or ambiguous statements. Moreover, we also find that statements with more information tend to exacerbate these differences. The credulous seem more easily swayed by information that makes an item more plausible.

Our conclusions are somewhat tempered, however, but our methodological limitations. First, our respondents were informed that some items they would evaluate would be true and others would be false. This uncertainty may drive them towards the middle of the scale. Moreover, in reality, most people are getting information from particular sources, be it friends or contacts in social media or recognizable news organizations. Denuding our statements of any source may further attenuate real differences in people's willingness to either reject or endorse any particular claim.

In addition, the identical scaling of responses to the credulity scale and many of the misinformation items may be driving our results. It is likely that our measures are partly capturing some response bias. Nevertheless, there are several reasons why the credulity scale may be a reliable measure. First, our credulity scale proved to be predictive of belief in 5 conspiracy theories, the responses to which were on a 5-point Likert scale as opposed to the 7-point scale used for the credulity measure. Second, credulity became a more significant predictor of the intuitive misinformation *for highly credulous respondents* when additional information about a statement was presented, while we did not see this effect for the population at large. This suggests that the additional information made the statements more persuasive only to those who were already predisposed to believing the information. Third, our credulity measure was not significantly correlated with belief in supernatural, paranormal, and scientific beliefs with the exception of reincarnation. This suggests that our measure is not simply capturing *a priori* beliefs.

Overall, we suggest that our credulity measure is a consistent predictor of all of the common types of misinformation one may encounter in American society. We also find that presenting more information about particular claims makes them more persuasive for highly credulous individuals. Lastly, we find that providing respondents with political cues to aid in their evaluation of statements at times increases belief in the statements, while at others it has a backfire effect, causing individuals to indicate that the claim is false.

The prevalence of misinformation in American society gives scholars the opportunity to study the relationship between susceptibility to false or unsupported claims and credulity. Directions for future research on credulity include determining whether the results presented in this paper hold up when credulity is measured with a scale that differs from that with which belief in misinformation is measured. Further research may also seek to evaluate how familiarity with particular false claims affects susceptibility to believing misinformation, as well as how familiarity with particular claims interacts with credulity.



## Appendix

### *Fake News Snapshots*



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### *Conspiracy Theories*

1. Barack Obama was not really born in the United States and his “official” Hawaiian birth certificate is fake.
2. The U.S. government secretly helped plan the attacks of 9/11 to justify going to war in the Middle East.
3. The Food and Drug Administration is deliberately withholding approval for natural cures for cancer because of secret pressure from large pharmaceutical companies.
4. “Global Warming” is actually a hoax secretly created by America’s competitors to hinder our economy.
5. Ever since he went to Moscow in 2013, Donald Trump has been secretly working with the Russian government.

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