

# Through the Grapevine: Informational Consequences of Interpersonal Political Communication

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## **Abstract**

Much of the U.S. public acquires political information through social channels. However, the consequences of acquiring information from others instead of the media are largely under-explored. In this paper, I first conduct a "telephone-game" experiment to examine how information about U.S. economic performance changes as it flows from the official BEA report to news outlets to other people. I find that socially transmitted messages are less informative and substantially different from the news article and official report. I then use the messages generated in the first study to explore the consequences of these vastly different information sets. In a second experiment on a nationally representative sample, I randomly assign participants to read the full news article or a socially supplied summary of that article written by a Democrat, Republican, or Independent. I find that participants exposed to social information learned significantly less than participants who were exposed to the full news article. However, consistent with classic theories of opinion leadership, individuals exposed to information from an ideal informant who shares their preferences and is more knowledgeable learned the same objective facts as those who received information from the media. Although participants learned the same factual information from these ideal informants as they did from the media, they had different subjective evaluations of the economy and their approval of the president moved in the direction of the informant.

Today, technological innovations enable individuals to learn about politics from countless sources. With the growth of online news and the spread of information on social media, individuals arguably have more access to information now than ever before. Even with the proliferation of news options, 41.7 percent of Americans report getting information from talking with friends and colleagues daily.<sup>1</sup> Some of these social information exchanges might be occurring online, given that two-thirds of American adults get news from social media (Shearer & Gottfried 2017). This tendency to rely on others for information characterizes the “two-step flow” of information, which suggests that information flows from the media, to interested individuals known as opinion leaders, to others (Katz 1957; Katz and Lazarsfeld 1955). The idea is that because many Americans are not particularly interested in or knowledgeable about politics (Delli Carpini and Keeter 1996), they find it easier to ask others for information about politics instead of spending time looking it up on their own. Turning to an ideal informant who is more knowledgeable about politics and has similar preferences might be an effective, rational information shortcut (Downs 1957; Lupia and McCubbins 1998). Despite the potential time-saving benefits, there could be hidden costs to the social information transmission inherent in the two-step flow that have gone largely under-explored.

Recent efforts to understand social information transmission present a relatively grim view of the self-educating potential of the American public. Using a series of highly controlled lab experiments, Ahn, Huckfeldt, and Ryan (2014) show that when incentivized to maximize the number of votes their preferred candidate receives, individuals often send biased information in favor of their preferences to other participants, hindering correct voting decisions. Carlson (2018) also demonstrates that a substantial amount of information is lost and distorted in the social transmission stage of the two-step flow, showing that those who get information from others are exposed to less — and less precise — information than those who get information directly from a media source. Between filtering out which information is worth passing on to another person, explaining that information through the lens of one’s own experiences, preferences, and (mis)understanding, and introducing new information that may or may not be accurate, socially generated political information is likely to change as it flows from the media, to opinion leaders, to others. However, little research to date has characterized how socially transmitted information differs from information communicated by the media. More importantly, we know even less about the *consequences* of socially transmitted information for political behavior, relative to information communicated by the media.

How exactly is socially supplied information different from information supplied by the media? What are the *consequences* of relying on socially supplied information instead of information from the media?

I first quantify the ways in which socially generated information differs from information generated by

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<sup>1</sup>World Values Survey 2014. Only 5.4 percent of Americans report never using conversations with friends or colleagues for political information, which is similar to TV News, where only 5.6 percent report never using TV news for political information.

the news media. I use a telephone game experiment to examine how information about U.S. economic performance changes as it flows from the Bureau of Economic Analysis to the media to other people. I compare the text of the official report, media coverage of that report, and socially generated summaries of news coverage. The results demonstrate that socially supplied messages contain less information that is less similar to the original report than news articles. Next, I examine the consequences of exposure to socially generated political information with an experiment conducted on a nationally representative sample of U.S. adults. Participants were randomly assigned to receive information about U.S. economic performance written by a news outlet or generated by another person in the telephone game experiment. I examine learning and attitude change about the state of the economy and the president.

I find that participants who received information from another person learned significantly less than those who received information from the media. However, those who received information from an “ideal informant,” someone who was more knowledgeable and shared their partisanship, learned the same amount as those who received information from the media, even though the social message was substantially shorter than the news article. But, those who received information from a non-ideal informant did not learn at all. Thus, consistent with previous research (e.g. Lupia and McCubbins 1998), turning to others for information might not be problematic as long as individuals receive information from these ideal informants.

However, while individuals learned the same amount of objective information from ideal informants and the media, they used that information differently to form subjective evaluations. Those who learned from the media thought the economy was getting worse, whereas those who learned from an ideal informant did not update their beliefs about the economy at all. Socially generated information affected participants’ subjective evaluations of the president, even if it did not affect evaluations of the economy. Those who received information from a Republican or an Independent held significantly more positive evaluations of President Trump than those who received information from a Democrat or the media.

Together, these results suggest that ideal informants can help facilitate how much individuals know about the news in the absence of information from the media, this comes at the cost of exposure to biased information that can lead individuals to update their preferences. This illuminates some of the limitations of the classic theories of opinion leadership and turning to others as a useful informational shortcut (e.g. Downs 1957; Lupia & McCubbins 1998). This also suggests that we should more carefully consider not only the impact of partisan *media* bias, but also how social information compares to information from the media.

# Why Socially Supplied Information Looks Different and Why It Matters

Obtaining information from other people might allow individuals to efficiently learn about politics, but the content of socially generated information is likely to be different from information generated by the media. Information from the media is largely communicated by professional journalists who adhere to professional norms that incentivize producing accurate information and fact-checking (Graves, Nyhan, and Reifler 2016). While partisan media bias may exist (Arceneaux and Johnson 2013; Levendusky 2013; Budak, Goel, and Rao 2016), professional news outlets must still subscribe to some degree of journalistic integrity that motivates accurate reporting. In contrast, information communicated by others is largely unregulated. This means that individuals can transmit political information to others that is not only biased, but perhaps wildly inaccurate, with little to stop — or correct — them, beyond social or reputational costs (Lupia and McCubbins 1998). On the other hand, peers may be more effective at communicating important political information than elites.

Recent research suggests that information can indeed become distorted through interpersonal communication. In particular, individuals at the end of an information diffusion chain are typically exposed to less information that is less accurate or precise than information at the start of a chain (Moussaïd, Brighton, and Gaissmaier 2015; Carlson 2018). Furthermore, partisan media bias can become *amplified* through interpersonal communication (Druckman, Levendusky, and McLain forthcoming). Individuals who receive information from others are thus likely to be exposed to a very different information set that may or may not be accurate. If the individuals who are least interested in or knowledgeable about politics are also those most likely to look to others for information, they might be unlikely to question the validity of the information communicated by their peers.

There is good reason to expect socially communicated information to be *different* from information communicated by the media, but there is less evidence about why these differences matter. In this paper I explore two forms of political behavior that could be affected by whether individuals are exposed to information communicated by the media or another person. Specifically, I explore how these different information sets affect objective learning and subjective evaluations.

## Consequence 1: Objective Learning

A long line of research has demonstrated that individuals can learn about current events and politics from the news media (Zaller 1992; Bartels 1993; Popkin 1994; Weaver 1996; Baum 2002; Wei and Lo 2008; Hill and Roberts, n.d.). Even though the mechanism through which individuals learn from the media (e.g. cognitive mediation (Eveland 2001), attention (Drew and Weaver 1990; Zaller 1992; Popkin

1994)) is debatable, most scholars agree that exposure to the media can inform the electorate. Similarly, scholars have long theorized that we can learn a lot about politics from others in our social networks (Berelson, Lazarsfeld, and McPhee 1954; Katz and Lazarsfeld 1955; Katz 1957; Huckfeldt et al. 1995; Ellison and Fudenberg 1995; Ahn, Huckfeldt, and Ryan 2014). While there is evidence to suggest that it is at least possible for individuals to learn from either the media or other people, these studies do not directly compare whether one offers a learning advantage over the other. Scholars interested in whether individuals can learn from other people focus on understanding whether turning to others can be an effective information shortcut. In contrast, those interested in whether individuals can learn from the media are generally interested in whether the media are able to effectively educate the public. In asking slightly different questions, and analyzing slightly different subsets of the population, we have little understanding about how information from the media and information from opinion leaders informs the public differently.

Socially transmitted information is likely to be less precise and contain fewer units of information than information communicated by the media itself (Moussaïd, Brighton, and Gaissmaier 2015; Carlson 2018). This variation in information quantity and quality might impact how much individuals learn about a given topic. On the one hand, we might expect individuals to learn more when they are presented with a greater quantity of higher quality information. If this is the case, we would expect individuals to learn more from media articles than they would learn from socially transmitted summaries of those articles, given the previous research illustrating the differences between these two information sources.

On the other hand, socially transmitted information might facilitate learning by being more accessible and direct than the longer, more detailed information communicated by news articles. Turning to others who are more knowledgeable and share our preferences should, in theory, be a useful information shortcut, allowing us to learn a sufficient amount of information without spending time and resources sifting through information communicated by the media (Downs 1957; Lupia and McCubbins 1998). It is possible that these knowledgeable political informants — opinion leaders — are able to package information in a way that is easier to comprehend than complex news articles. Furthermore, opinion leaders might be able to summarize information in a way that highlights the main points, so others do not have to expend cognitive resources trying to discover which pieces of information in a news article are worth learning and remembering. Thus, it is unclear whether individuals will learn and recall more information communicated by the media or other people.

Digging deeper into how much individuals learn from socially communicated information compared to information from the media, individuals should learn differently depending upon the characteristics of the informant. Of particular importance is the perceived level of agreement between the information sender and receiver, which will most readily be cued by partisanship. Individuals are slower to process

information that is inconsistent with their prior beliefs (Lodge and Taber 2013; Taber and Lodge 2006) and they have a harder time learning information that is inconsistent with their preferences (Hill 2017). As a result, individuals who receive information from like-minded, copartisan informants are likely to recall more information than individuals who receive information from disagreeable, outpartisan informants.

## Consequence 2: Subjective Evaluations

Most evidence suggests that media exposure can increase political knowledge and awareness, but can it influence subjective opinions? Political scientists were initially skeptical that the media could influence opinions (Berelson, Lazarsfeld, and McPhee 1954; Campbell et al. 1960), but most research since then argues that the media can indeed impact public opinion (Iyengar 1987; Iyengar and Kinder 1987; Krosnick and Kinder 1990; Zaller 1992; Iyengar and Simon 1993; Bartels 1993; Popkin 1994). Whether the media influences public opinion through priming, making some issues more salient, framing, or some other mechanism, it seems clear that public attitudes about policy and candidates can be influenced by the media.

Social influence has also been shown to affect subjective evaluations. Research on political discussion networks suggests that individuals can persuade members of their social networks (Huckfeldt and Sprague 1995; Huckfeldt, Johnson, and Sprague 2004). However, it is possible that the degree of persuasion and opinion homogeneity within social networks is overestimated because individuals have been shown to publicly express the same opinion as the group, but privately hold a different opinion (Carlson and Settle 2016; Levitan and Verhulst 2016). Directly examining the two-step flow, Druckman, Levendusky, and McLain (forthcoming) find that the effects of partisan media on political attitudes are amplified in political discussions, such that individuals who were not exposed to partisan media, but discussed politics with people who were exposed to partisan media showed dramatic changes in their political attitudes in the direction of the media's bias. In fact, the authors find that those who were only exposed to the discussion showed a greater change in attitude than those who were exposed to the partisan media. Thus, social political communication can have a dramatic impact on attitudes, above and beyond the independent influence of the [partisan] media.

Beyond active persuasion and the downstream effects of *partisan* media, I argue that social information transmission could still have a meaningful impact on opinion. A relatively small segment of the American population consumes partisan media (Levendusky 2013; Arceneaux and Johnson 2013), which means that it is also important to consider how socially transmitted information stemming initially from non-partisan media—that is, media that has not been shown to be biased toward Republicans or Democrats—impacts public opinion. Non-partisan, objective information might quickly become politicized through social communication. Even if individuals are not actively trying to persuade others when they discuss politics,

their political biases might still be communicated – and possibly amplified – as they attempt to inform others about politics.

The extent to which information is congruent with one’s prior beliefs influences whether and how one is likely to update his or her beliefs (Kunda 1990; Lodge and Taber 2000; Redlawsk 2002; C. Erisen, Redlawsk, and Erisen 2017; Hill 2017). Individuals engaged in motivated reasoning are likely to engage in more effortful information processing and often result in holding on to their prior beliefs more strongly than they did before instead of updating their beliefs in light of new information (Redlawsk 2002). The possibility that social informants inject their political biases into the information they transmit to others, paired with the general tendency to reject incongruent information suggests that social information transmission might lead individuals to sub-optimally update their beliefs. Individuals exposed to information from an out-partisan should be more likely to be exposed to incongruent information, which they should be less likely to use to update their beliefs. Those exposed to information from a copartisan should be more likely to be exposed to congruent information, which they are likely to accept. Because the congruent information is similar to their prior beliefs, there is little room to update. Both of these cases can be problematic, especially if the incongruent information is accurate and the congruent information is not.

Ultimately, I expect the content of socially supplied information compared to information from the media to impact subjective political evaluations due to the possibility of bias being introduced in social messages. The media is motivated to adhere to professional norms that require communicating balanced, unbiased information, whereas individuals could be motivated to persuade others. In the real world, those who choose to rely on other people for information about politics might be especially susceptible to bias because they are less likely to be interested in or knowledgeable about politics. As a result, they might be more easily swayed based on the information with which they are presented.

## Method

I conduct two studies to examine how social information differs from that communicated by the media and how information source affects learning and attitudes. First, I analyze the text from observational and experimental data to examine how information changes as it flows from an official report to media outlets to the public. I then conduct an experiment in which participants are randomly assigned to receive information generated by a news source or another person, using messages generated in the first study.

In both studies, I focus on news articles about economic performance in the US. This topic is ideally suited for this analysis for four reasons. First, any study about information acquisition and learning needs to protect against the information environment changing during data collection. The Bureau of Economic Analysis (BEA) releases quarterly reports on Gross Domestic Product (GDP) in the United States on a

fixed schedule. While the economy certainly can change during a quarter, these economic changes are not typically released more regularly than on a quarterly basis. This means that using a news story about the most recent GDP figures will reflect a relatively stable information environment for a three-month time-frame. This gives me more confidence that the information environment will stay constant during the data collection period.

Second, most news outlets cover economic reports. This means that I will have more data with which to analyze changes in information from the official report to news outlets. The abundance of news articles also suggests that these economic reports are sufficiently newsworthy to be relevant to American voters. This is related to a third advantage of using news stories about economic performance: economic performance is strongly related to vote choice. When the economy is doing well, individuals tend to reward incumbents at the polls. As a result, exploring the extent to which information source can impact one's perception of economic performance can have important consequences for how one votes and makes economic decisions.

Fourth, information transmitted about economic performance based on the BEA's reports can be validated to an objective measure. To the extent that we believe that the data analyses conducted by the BEA are accurate, they should serve as an objective truth of how the economy is performing. We can then examine how information in news articles about the BEA's report deviates from the objective truth contained in the actual report. One important step further, we can examine how socially transmitted messages deviate from the truth.

## **Study 1: How does information change? Research Design**

To examine how information changes, I focus on the BEA's report reflecting the revised GDP estimate of the first quarter of 2017. This report, released on June 29, 2017, reflects the final GDP estimates of President Trump's first quarter in office, which leaves room for the report to be especially politicized. The BEA report represents the objective benchmark to which I compare information from the media and other people.

### **Data Collection**

*Media Transmission.* I began by collecting news articles published on June 29, 2017 that were about the GDP estimates. I first searched the Lexis Nexis University database for news articles mentioning GDP or gross domestic product anywhere in the article. I restricted the data collection to US-based news outlets. This search yielded about 316 news articles, many of which were newswires that get updated several times each day. After removing duplicates from the hourly newswire updates and articles that did



not reference the BEA’s report<sup>2</sup> I was left with 32 unique articles. I supplemented this Lexis Nexis Uni search with organic searches using a method similar to that used by Hill and Roberts (working paper). Altogether, I ended up with 61 news articles published on June 29, 2017 about the BEA’s GDP report.

***Social Transmission.*** To examine how information changes as individuals transmit what they learned from a news article to another person, I conducted a telephone game experiment (Carlson 2018). I selected one of the 61 news articles for participants to read. The full article is available in the appendix. I chose an article published by Reuters because Budak, Goel, and Rao (2016) show that Reuters is an objectively neutral news source. In an ideal case, I would examine social transmission of a variety of news articles, including those that contain considerable bias. However, as a first step into analyzing these effects, it was more important to examine deviations from a neutral source before adding the complexity of media bias.

I recruited 492 participants on Amazon’s Mechanical Turk for this experiment. While some raise concerns about the generalizability of data collected on Mechanical Turk, others have suggested that for Mechanical Turk samples are often more representative than other convenience samples, such as college students (Mullinix et al. 2015; Berinsky, Huber, and Lenz 2012). In particular, experiments that do not require substantial “buy in” from participants can yield suitable samples (Krupnikov and Levine 2014). Although this sample may not be nationally representative, there are features of Mechanical Turk that are especially suited to telephone game experiments (Carlson 2018). For example, it is important to ensure that the information environment does not change dramatically over the course of data collection and Mechanical Turk allows researchers to collect data within hours.

After gaining informed consent electronically, participants were asked to read the Reuters news article. The specific prompt was “Please spend a few minutes reading the following article about U.S. economic performance in the first quarter of 2017. You can spend as much time reading it as you like, but we ask that you read it as if you were trying to learn about the economy or read the news in your daily life.” The experimental manipulation was introduced on the next screen. After reading the article, participants were asked to write a message telling another person about the article that they just read. The intended recipient of the message was manipulated, such that participants were randomly assigned to write their message to a Republican, a Democrat, or an Independent. Specifically, participants were given the following instructions: “Imagine that you were discussing politics and current events with a [**Republican / Democrat / Independent**]. Please write what you would tell a [**Republican / Democrat / Independent**] about the article you just read. Please do not include any names or

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<sup>2</sup>Some articles were about GDP in other countries such as Germany and Ghana, but made no reference to US economic performance in the first quarter of 2017. Other articles discussed the strength of the dollar or trade relations with respect to GDP, but did not discuss the new GDP figures from the BEA.

identifying information about you or the people you know.”<sup>3</sup> Finally, after writing their messages, participants were asked a few additional survey questions including some demographic information, their perceptions of the article, how much information they recalled from the article, their subjective evaluations of the economy, and their self-reported political engagement.

## Measuring Information Changes

I demonstrate how information differs between official reports, news articles, and socially generated messages using a variety of strategies. I first present a descriptive analysis of how much information is contained in each stage of this diffusion chain. As a rough proxy for the amount of information, I use the total word count of the information (e.g. report, news article, message). Word count correlates very highly with a more structured coding of “units of information” (Carlson 2018; Moussaïd, Brighton, and Gaissmaier 2015; C. Erisen, Redlawsk, and Erisen 2017).<sup>4</sup> I expect the amount of information communicated to decline at each stage, such that social messages have the least information and the original report has the most information.

Beyond this descriptive analysis, I analyze how similar the documents are to each other using cosine similarity. Cosine similarity is a commonly used metric to analyze how similar the content of two documents are (Conover et al. 2011; Huang 2008). Cosine similarity comes from the angle between two vectors of word counts, one from each of the two documents to be compared. This metric is bounded between 0 and 1, where 0 indicates that two documents are not at all similar to one another and 1 indicates that the two documents are identical. An important feature of cosine similarity is that it is independent of document length. This is especially important for my analysis here because the socially transmitted messages are substantially shorter than the news article and original report. Cosine similarity relies on the bag of words assumption, which means that the order of the words does not matter. This assumption may not always be fair, but as a rough test of how similar sets of documents are to each other, it provides a good starting point. As shown in the appendix, all results hold using Jaccard Similarity and cosine similarity with doc2vec.

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<sup>3</sup>The last sentence of the instructions about omitting identifying information was included for IRB purposes to protect the anonymity of the participants.

<sup>4</sup>Two independent coders coded each response for the number of units of information contained in each message, following the coding scheme developed by Moussaïd et al. 2015 and utilized in a political context by Carlson 2018. The coders obtained reasonable levels of inter-coder reliability (Krippendorff’s Alpha=.776; correlation=.815). Please see the appendix for an analysis using the hand-coded data, which shows the same patterns as word count.

## Study 1 Results

### How much information is communicated?

I first examine how much information is communicated in each informational message. Considering the number of words contained in a document to be a loose proxy for the amount of information, there is a dramatic loss of information at each stage of this diffusion chain. News articles (mean=583 words) contained less than half the amount of information as the official report (1,681 words). The social messages contained only about 2.23 percent of the information contained in the official report, with an average length of 38 words. Thus there is strong support for the expectation that socially generated messages are shorter than news articles. Looking specifically at the socially transmitted messages, there were no statistically significant differences in the length of the messages written to Republicans, Democrats, or Independents. However, participants sent shorter messages to copartisans than to outpartisans.

### Similarity

Beyond how much information is communicated, there might be variation in how similar the informational messages are to each other. Table 1 presents example socially transmitted messages to provide a sense for the content of the socially supplied information in this experiment, as well as to contextualize the similarity scores. Specifically, Table 1 shows the messages with the five lowest similarity scores, the median similarity score (.46), and the five highest similarity scores. The messages shown in Table 1 provide some face validity to the cosine similarity measure. Messages with low scores focused more on partisanship and President Trump, offering little information about economic performance. In contrast, the messages with high similarity scores discussed economic growth, often using specific numbers.

**Table 1:** Example Socially Transmitted Messages and Similarity Scores

Cosine Similarity	Message
.11	While I * * * * * hate Donald Trump it seems that he is actually doing some good. He is still a moron but he appears to be getting numbers up so that's something
.15	Economics is confusing and things aren't improving as well as they were said they were going to.
.16	Republicans cannot not even be successful with their new president with getting a clear budget cut done.
.17	This president is not performing as promised.
.19	Obama's economy continues to chug along but Trump's inaction is slowly causing damage.
.46	The article reveals that the standard economic statistics are doing slightly better than expected, but that the economy, judged be these standards is still not back to where it was some years ago. It is not clear how well Trump's program is doing with regards to the economy. Personally I am not sure how much these numbers reflect underlying reality.
.72	The U.S. economy slowed less in the first quarter due to unexpectedly higher consumer spending and a bigger jump in exports. Consumer spending rose although it was still the slowest pace since the second quarter of 2013.
.73	The GDP increased 1.4 percent annual rate when it was expected to go up 1.2 percent. That is still the lowest since last year. Trump administration's stated target of swiftly booting U.S. growth to 3 percent remains a challenge. President Donald Trump's economic program of tax cuts, regulatory rollbacks and infrastructure spending has yet to get off the ground five months into his presidency.
.73	The US economy grew at a revised rate of 1/4% in the first quarter of the year, well below the Trump administration's projections for the time period. The administration's projections of 3% growth seem foolhardy and doomed to fail. That rate of economic growth hasn't been seen since the 1990s. Other economic indicators were mixed.
.78	You know, the most recent reporting on the U.S. economy showed a bit of an improvement owing to some unexpectedly moderate rise in consumer spending & a bigger jump in exports. This also included a nice showing on Gross domestic product according to the Commerce Department final assessment on prior first quarter estimates, as Thursday's reporting says. A sustained average of 3 percent growth has not been seen since the 1990s. Since 2000, the U.S. economy has grown at an average 2 percent rate. The Trump administration's stated that it is still expecting a target of swiftly boosting U.S. growth to 3 percent. We shall see how things develop going forward, given President Donald Trump's economic program of tax cuts, regulatory rollbacks, and infrastructure spending.
.78	The U.S. economy slowed less sharply in the first quarter than initially estimated due to unexpectedly higher consumer spending and a bigger jump in exports. Gross domestic product increased at a 1.4 percent annual rate instead of the 1.2 percent pace reported last month, the Commerce Department said in its final assessment on Thursday.

Figure 1 shows the distributions of cosine similarity scores between the different information sets in Study 1. The solid line shows the distribution of similarity scores that indicate how similar each news article was to the official BEA report. The Reuters article used in the experimental portion of Study 1 had a similarity score of about 0.78. The distribution of similarity scores indicates that overall, the news articles were fairly similar to the official report, with the average similarity score being about 0.7.

The dashed and dotted lines on Figure 1 show the distribution of similarity scores comparing the socially generated messages to the Reuters news article and the official BEA report. The social messages were remarkably less similar to the official report than were the news articles to the official report. The average similarity score between the social messages and the official BEA report was about 0.4, whereas the average similarity score between the news articles and the official report was about 0.7. A difference of means test indicates that this difference is statistically significant, such that socially generated messages were less similar to the official BEA report than were news articles ( $p < .001$ ). Similarly, the average

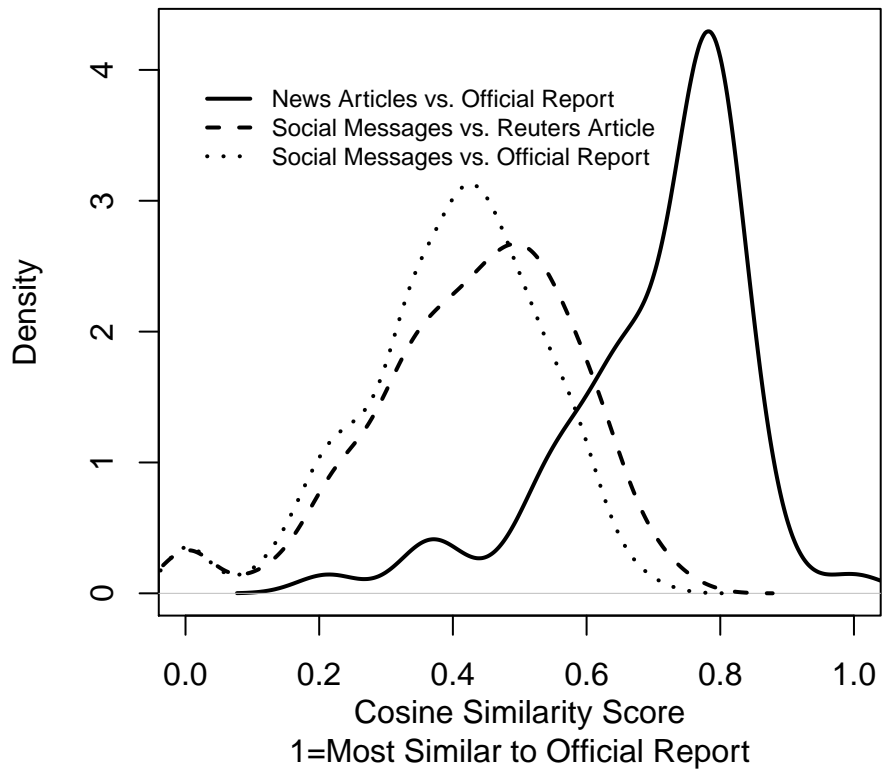
similarity score between the socially generated messages and the Reuters article, which participants actually read, was about 0.43. The similarity scores between the socially generated messages and the Reuters article were significantly lower than the similarity scores between the news articles and the BEA report ( $p < .001$ ). This suggests that the information communicated in a news article deviates less from the objective truth than socially generated messages deviate from both the objective truth and the news articles.

It is possible that some of the variation in similarity scores between the social messages and the news articles compared to the news articles and the official report is due to the variation in length. That is, are socially generated messages less similar to the news article because they are shorter? In an effort to address this concern, I calculated similarity scores comparing the social messages to computer-generated summaries of the news article. Across three different automatic summarizers creating news article summaries of different lengths, the same pattern holds.<sup>5</sup> Socially generated messages about a news article are less similar to a computer-generated summary of that news article than are news articles similar to the official report. This means that the variation in content between news articles and social summaries are likely due at least in part to individuals injecting their own biases and additional information into the message, as opposed to it being only a function of lost information.

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<sup>5</sup>Please see the appendix for more information. A summarizer yielded mean .276 and maximum .766. A summarizer set to be 5% of the original length yielded similarity scores with mean .177, maximum .637. In comparison, the text2vec cosine similarity scores of the full article and the social messages had mean .39, maximum .77.

**Cosine Similarity Distribution**  
**Official Report, News Articles, and Social Messages**



**Fig. 1** Distributions of cosine similarity scores. The solid line shows the distribution of similarity scores comparing the news articles to the official BEA report. The dashed line shows the distribution of similarity scores comparing the socially generated messages to the Reuters news article. The dotted line shows the distribution of similarity scores comparing the socially generated messages to the official BEA report.

## Cosine Similarity of Social Messages by Partisanship

Next, I examine whether individuals altered information more conditional on the partisanship of the receiver. Table 2 shows the cosine similarity scores comparing the text of the social messages to the Reuters article for all combinations of sender and receiver partisanship. The rows represent the partisanship of the information sender (the participant who wrote the message after reading the news article) and the columns represent the randomly assigned partisanship of the intended recipient of the information. The most striking result in Table 2 is that Independents do not appear to alter the information they transmit based on the partisanship of the intended recipient. Messages sent by Independents had the same similarity score for Republican, Independent, and Democrat receivers. In fact, one Independent participant randomly assigned to write a message to an Independent commented on this in his or her message: “Growth is slow, but there’s growth. I don’t really care about the economy, at least not in statistics and numbers, so that’s what I’d tell an Independent – or anyone, frankly, because why the hell would their political lean have any affect on what I would tell them about an article I read? How utterly absurd [sic].” While this participant’s thoughts may not be representative of all Independents, it does nicely capture the finding in Table 2 that Independents, on average, share information that is just as similar to (or different from) the original news source with people of all political leanings.

In contrast to Independents’ apparent lack of attention to the recipients’ partisanship, partisans sent different informational messages to people of different political leanings. Both Republicans and Democrats sent messages that were more similar to the news article to Independents than they did to Republicans and Democrats. Thus, Republicans and Democrats are likely to receive information with about the same degree of distortion from a Republican, Independent, or Democrat informant, but Independents are likely to receive information that is more similar to the original news source from Republicans and Democrats than from Independents.

**Table 2:** Cosine Similarity Between Social Messages and Reuters Article by Partisanship

		<i>Receiver</i>		
		Republican	Independent	Democrat
<i>Sender</i>	Republican	.42	.49	.41
	Independent	.43	.43	.43
	Democrat	.42	.46	.44

## Study 2: What are the consequences of socially generated information? Research Design

Study 1 demonstrated that information communicated by the media differs from information communicated by official reports and socially generated information is substantially different from both official reports and news articles. Study 2 examines the consequences of these differences by examining changes in information recall and subjective evaluations after exposure to a randomly assigned information treatment.

**Participants.** Participants were recruited from Survey Sampling International using a quota-based sampling procedure to ensure that the sample is demographically similar to the United States according to census records. The sample consisted of 1,009 participants. Respondents ranged in age from 18 to 89 years old, with the average respondent being 48 years old. The sample was approximately evenly split between women (50.5%) and men (49.5%). The sample's ethnoracial composition is slightly different from the estimates based on Census records. Specifically, this sample over-represents Asian Americans (10.7% instead of 4.7%) and under-represents Latinos (10.2% vs. 16.3%). The sample was evenly split between Democrats (39.6%) and Republicans (39.2%), and a smaller sample of pure Independents (21.1%). Descriptive statistics of this sample and comparisons between treatment groups are available in the appendix.

**Experimental Design.** This experiment included four key components.<sup>6</sup> First, participants answered pre-treatment questions to measure their baseline knowledge about US economic performance and baseline attitudes about the economy and President Trump. Having pre-treatment measures of participants' objective knowledge and subjective evaluations allows me to make within-subject comparisons to more accurately examine *changes* in learning and evaluations after exposure to information. Second, participants answered a variety of questions that were part of other studies.<sup>7</sup> These questions serve to distract participants from the purpose of the study and to provide some distance between the pre-treatment measures and the treatment. Third, participants were randomly assigned to one of four treatment groups and presented with a corresponding informational treatment that either came from the media or another person. The treatment groups included: (1) Media, (2) Democrat Informant, (3) Republican Informant, and (4) Independent Informant. Participants in the media treatment received the Reuters article about US economic performance in the first quarter of 2017 used in Study 1. Participants in the social treatments—Democrat Informant, Republican Informant, and Independent Informant—were

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<sup>6</sup>See appendix for an illustration of this design.

<sup>7</sup>Many of these questions were mostly about what cues individuals use to infer others' political attitudes. It is possible that the distractor questions influenced the way in which individuals interpreted the treatment. Priming participants to think about how they infer political views could have made partisan bias more salient when they eventually received an information treatment. However, all participants were exposed to the same distractor questions, so all participants should be similarly affected by this possibility. In addition, providing separation between the pre- and post-treatment measures is a stronger advantage than the impact the distractor questions could have on how participants interpreted the treatments.



given one of the social messages generated in Study 1. Participants in the Democrat Informant condition received a message written by a Democrat in Study 1, participants in the Republican Informant treatment received a message written by a Republican in Study 1, and participants in the Independent Informant condition received a message written by an Independent in Study 1.<sup>8</sup>

As shown in Study 1 and by previous research (e.g. Ahn, Huckfeldt, and Ryan 2014), socially supplied information is likely to vary conditional on the partisanship of both the information sender and receiver. As a result, it was important to randomly assign participants to receive information written by individuals with different partisan identities. However, because the information senders are likely to tailor information conditional on the partisanship of the intended recipient, I needed to account for this in assigning informational messages. In this study, participants are *randomly* assigned to receive a message written by a Democrat, Republican, or Independent. But, each participant, regardless of the randomly assigned treatment condition, is assigned to receive a message that was written to someone of the participant's partisanship. For example, a Democrat Study 2 participant randomly assigned to the Republican Informant condition would receive an informational treatment written by a Study 1 Republican to a Democrat. A Democrat Study 2 participant randomly assigned to the Democrat Informant treatment would receive a message written by a Study 1 Democrat to a Democrat. This approach means that participants in the same treatment group are not all receiving the exact same informational treatment. However, in the real world, a Democrat would rarely receive information that was intended for a Republican. Thus, it would be unrealistic to present a Democrat participant with an informational message that was written for a Republican.

Instead of selecting only one message for each social treatment combination, participants within each treatment were presented with a randomly selected informational message. For instance, a Democrat participant in the Democrat Informant condition would read one of the 85 messages written by a Democrat to a Democrat in Study 1. A different Study 2 Democrat participant randomly assigned to the Democrat Informant condition might receive a different message written by a Democrat to a Democrat in Study 1. To preserve the authenticity of the socially transmitted messages, I did not edit the messages to correct typos, spelling errors, or grammatical errors, and I preserved all capitalization and punctuation. I did, however, edit some messages in two ways. First, I used asterisks in place of letters used in profanity or expletives. Study 1 participants rarely used expletives, but in order to protect Study 2 participants from viewing explicit content, I used asterisks over these words. Second, some participants opened their messages with statements like "I would tell them that" instead of writing a message directly to the hypothetical person. In these cases, I simply deleted the introductory phrase and left the rest of the

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<sup>8</sup>Study 1 Independents who reported leaning toward the Democratic or Republican party were considered partisans, thus only messages written by pure Independents were used in the Independent Informant treatment.

message unedited.

After reading their randomly assigned informational treatment, participants were asked a series of post-treatment questions. They were asked the same objective knowledge and subjective evaluation questions as in the pre-treatment portion of the study to allow for within-subject comparisons. Participants were also given the opportunity to seek additional information about US economic performance and then were asked a series of political engagement questions. The study concluded by asking participants a few questions about their perceptions of the information source itself, such as whether they considered it trustworthy, biased toward Democrats or Republicans, and whether the structure of the information was similar to what they would experience in their daily lives.

## Dependent Variable Measurement

There are two dependent variables of interest in this study: the amount of objective information participants learned and the change in subjective evaluations. Both of these dependent variables are analyzed using both within-subject and between-subject measures.

*Learning.* I measure learning by calculating the change in the number of questions about information communicated in the original Reuters article participants answered correctly after exposure to an information treatment. Both before and after treatment, participants were asked to report whether each of six statements were true or false. The statements are shown in Table 3. Ultimately, learning is calculated by subtracting the number of correct answers to the pre-treatment questions from the number of correct answers to the post-treatment questions. Thus, positive learning scores indicate that participants answered more questions correctly post-treatment than they did pre-treatment.<sup>9</sup>

*Evaluations.* I measure two types of subjective evaluations: economic performance and presidential approval. I first measure participants' perceptions of the economy, the focus of the information treatments, using Gallup's economic confidence index. Economic confidence is measured using the average response to two questions: (1) Right now, do you think that the economic conditions in the country as a whole are getting better or getting worse? (2) How would you rate economic conditions in this country today? I measure the confidence index both pre- and post-treatment, which allows me to calculate a within-subjects change in economic confidence. Thus, change in subjective evaluations of the economy (economic confidence) is measured by subtracting the pre-treatment economic confidence score from the post-treatment economic confidence score. Positive economic evaluation change scores indicate that participants had more positive evaluations of the economy post-treatment.

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<sup>9</sup>It is possible that prior exposure to these questions could alter the responses participants provide post-treatment. In particular, participants might pay attention to the content of those questions when reading their information treatment. The distractor questions should alleviate some of this potential bias. In addition, this bias is likely to overstate the amount of learning that occurs in all treatment groups, so between-subject comparisons should still be internally valid; the potential within-subject problem is more related to external validity.

In addition to economic evaluations, I examine how participants evaluated the president. I use Gallup’s presidential approval questions about overall presidential approval and presidential approval with respect to the economy. The full question wording is available in the appendix. Both questions were asked pre- and post-treatment, which allows me to capture changes in presidential approval in response to the information treatments. Unlike the economic confidence index, I analyze the two forms of presidential approval separately. Since presidential approval is likely to be strongly tied to party identification, overall approval might be less likely to change in response to information treatments. However, the extent to which participants approve of how the president is handling the economy, one specific dimension of his job performance, might be more likely to fluctuate. For both presidential evaluations, I subtract the pre-treatment approval from the post-treatment approval to create change in approval scores, such that positive values indicate greater approval post-treatment.

## Independent Variable Measurement

***Information Source Treatment.*** The primary independent variable of interest is the information source — whether individuals were randomly assigned to receive information from the media or another person. In the analyses that follow, I compare individuals who received information from the media to those who received information from a Republican, a Democrat, or an Independent in Study 1. In regression models, those in the media treatment will be the omitted category.

***Ideal and Non-Ideal Informants.*** Following Lupia and McCubbins (1998), I created a variable that indicates whether an individual received information from an ideal informant. An ideal informant is one who has the same partisanship as and is more knowledgeable than the recipient. The ideal informant variable takes the value of 1 if the Study 2 participant received a message from a Study 1 participant of the same partisanship who was more knowledgeable, and 0 otherwise. I measure the relative knowledge-level by comparing the number of factual questions about the content of the article Study 1 participants answered correctly to the number of factual questions about the content of the article Study 2 participants answered in the pretest — before exposure to the informational message. If the Study 1 participant answered more questions correctly than the Study 2 participant, then the Study 1 participant was considered more knowledgeable.

***Information-level Controls.*** Beyond analyzing the average treatment effects across the distribution of message and informant characteristics, I introduce a host of control variables based on the characteristics of the information and informant.

First, I control for properties of the text of the messages that might influence the dependent variables. I control for the *amount of information communicated* by using the number of words included in a message as a proxy. I also control for the *similarity* between each socially generated message and the news article.

I measure similarity with the same cosine similarity scores calculated in Study 1. Thus messages with higher similarity scores are more similar to the news article than messages with lower similarity scores. Finally, I control for the *sentiment* of the information communicated using the Finn (2011) sentiment dictionary.<sup>10</sup> Higher sentiment scores represent messages with more positive emotional content, whereas lower sentiment scores represent messages with more negative emotional content.

In addition to the properties of the text itself, I control for the informant's self-reported goal in writing his or her message. After writing their messages, Study 1 participants (the informants) were asked "Which of the following best describes what you were trying to accomplish with the message you wrote to another person about the US economic performance?" The response options were: (1) "I was trying to objectively inform the other person," (2) "I was trying to persuade the other person to view the economy or politicians the way I do," (3) "I was trying to convince the other person to get involved in politics," and (4) "I was trying to mislead the other person about the state of the economy." In the analyses that follow, I create a variable that takes the value of 1 if the participant reported that he or she was trying to objectively inform the other person and 0 otherwise.

***Recipient-level Controls.*** In addition to controlling for characteristics of the information, I control for characteristics of the recipient that could impact how much he or she was able to learn and update his or her beliefs about the state of the economy. These characteristics should be evenly distributed between the treatment groups, and the balance table in the appendix suggests that this is the case. However, I still include the controls to show that the treatment effects are robust to these individual-level characteristics that could otherwise confound the relationship.

First, I control for political knowledge, which is measured using the number of standard American government knowledge questions participants could correctly answer. I used four questions commonly used on the American National Election Study (ANES),<sup>11</sup> meaning that the political knowledge score ranges from 0 (no questions answered correctly) to 4 (all four questions answered correctly). Next, I control for political interest, which is measured using another question common to the ANES. Participants were asked how interested they are in politics and public affairs on a scale that ranged from 1 (not at all interested) to 4 (very interested).

Next, I control for partisanship with a dummy variable that takes the value of 1 if the participant identified as a Democrat and 0 otherwise. I also control for the extent to which participants reported trusting the information they received to be accurate. While this is a post-treatment characteristic, the extent to which they trusted the information they received might have affected how much they learned

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<sup>10</sup>Please see the appendix for the model results using the Hu and Liu (2004) and Mohammad (2010) dictionaries.

<sup>11</sup>The questions were: (1) "Do you happen to know how many times an individual can be elected President of the United States under current laws?" (2) "For how many years is a United States Senator elected - that is, how many years are there in one full term of office for a U.S. Senator?" (3) "What is Medicare?" and (4) "On which of the following does the U.S. federal government currently spend the least?"

and the extent to which they updated their subjective evaluations. Trust is measured using responses to the following question: How much do you trust the content of this information to be accurate and reliable? The response options ranged from none at all (1) to a great deal (5).

Finally, I control for demographic characteristics including age, race, gender, and education. Age is a continuous variable measured in years. I measure race using the participants' self-reported ethnracial identification. I dichotomize this variable such that it takes the value of 1 if the respondent is White and 0 otherwise. Similarly, I create a dummy variable for gender that takes the value of 1 if the participant was female and 0 otherwise. Finally, education is an ordinal variable that represents the highest level of education received. Higher values indicate more years of education.

## Study 2 Results

### Learning

Table 3 shows the knowledge questions used to measure how much individuals learned about US economic performance in the first quarter of 2017. The answers to each question were communicated in the Reuters article used in the media treatment and from which the social treatments were generated. Table 3 also shows the percentage of respondents who correctly answered each question before and after exposure to the information treatment. Some of the questions were clearly easier than others. In particular, nearly three-quarters of respondents knew that the US economy grew in the first quarter of 2017 prior to exposure to an information treatment. In contrast, only about 44 percent of respondents knew that the following statement was false "Since 2000, the US economy has grown at an average rate of 0.5%." A significantly greater percentage of respondents correctly answered questions after exposure to treatment than before exposure to treatment for three out of the six questions. Across all of the questions, about one-third of the participants were able to learn successfully after exposure to information.

**Table 3:** Performance on Knowledge Questions

Statement	Correct	% (Pre)	Correct	% (Post)	Correct
The US economy grew in the first quarter of 2017	TRUE	72.9*		73.6*	
GDP grew at the fastest rate since the second quarter of 2016 in the US	FALSE	50.6		57.0*†	
GDP in January - March tends to over-perform relative to the rest of the year	FALSE	54.1*		54.6*	
In the first quarter of 2017, GDP grew at a slower rate than the Trump administration's target	TRUE	59.9*		66.8*†	
Since 2000, the US economy has grown at an average rate of 0.5%	FALSE	44.0*		48.3†	
Consumer spending accounts for less than 1/4 of US economic activity	FALSE	53.6*		54.0*	
Average Number Questions Correctly Answered		3.33		3.54†	

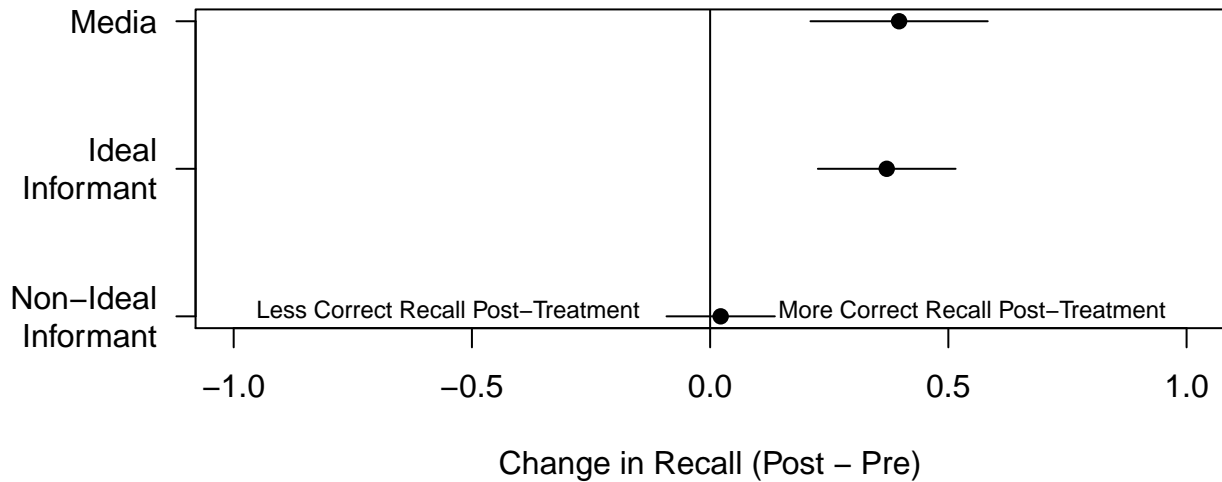
\*Significantly different from 50%

† Post-treatment significantly greater than Pre-treatment  
 $p < .05$

Next, I break down these overall trends by treatment group to examine how the informational treatments affected learning. Figure 2 shows the change in the number of correct responses before and after treatment by treatment group. Positive values indicate that a respondent answered more questions correctly after exposure to treatment. Specifically, +1 means that on average, respondents answered one more question (out of six total) correctly after exposure to information. The results suggest that participants in the media treatment answered significantly more questions correctly after exposure to treatment than before exposure to treatment ( $p < .001$ ). Specifically, those in the media treatment answered approximately 0.5 more questions correctly after exposure to information, which is about an 8 percent improvement.

Participants in the social treatments also learned from the treatments. I push beyond partisanship to examine whether ideal informants can compete with the media. Participants who received information from an ideal informant learned significantly more than participants who received information from a non-ideal informant ( $p < .001$ ). However, there was no statistically significant difference in learning between those who received information from an ideal informant and those who received information from the media, even though socially generated information is substantially different from and shorter than the news article, as shown in Study 1. These results hold if participants who answered all six questions correctly pre-treatment are excluded.

## Information Recall by Treatment Group



**Fig. 2** Average change in recall after exposure to an informational treatment. Horizontal lines represent 95 percent confidence intervals. The vertical line at zero indicates no change in the amount of correct information recalled after exposure to treatment. Thus, values significantly greater than 0 indicate learning based on the treatment, values indistinguishable from 0 indicate no learning, and values less than zero indicate that respondents were misled by the informational treatments.

Random assignment to treatment groups should account for variation between participants that could be driving these results. However, to demonstrate the robustness of these results to additional characteristics, Tables 4 and 5 present the results of Ordinary Least Squares regressions in which the dependent variable is the change in correct answers to the economic knowledge questions. Table 4 shows the effect of learning from an ideal informant and a non-ideal informant relative to learning from the media. As illustrated in Figure 2, participants who received information from an ideal informant did not learn any more or less than those who received information from the media. However, those who received information from a non-ideal informant learned significantly less than those who received information from the media. These results hold even after controlling for characteristics of the respondent that might make one more likely to answer correctly.

Table 5 examines just those who received information from another person, omitting those in the media condition, to examine the effect of receiving information from an ideal informant relative to a non-ideal informant. The goal in Table 5 is to examine whether properties of the text of the socially generated messages, such as the length, similarity, and sentiment, impacted learning. The results suggest that even after controlling for properties of the text, those who received information from an ideal informant learned significantly more than those who received information from a non-ideal informant. Curiously, however, those who received information from someone who reported that they were trying to objectively

inform the recipient learned significantly *less* than those who received information from someone who reported trying to persuade or mislead the recipient. That characteristics of the text do not significantly impact learning suggests that the complete “package” of the message and knowledge of the informant’s partisanship together contribute to learning.

**Table 4:** Change in Information Recall: Informant Type vs. Media

<i>Dependent variable:</i>		
Change in Number of Correct Answers (Post-Pre)		
	(1)	(2)
Ideal Informant	-0.026 (0.119)	-0.023 (0.127)
Non-Ideal Informant	-0.374*** (0.104)	-0.418*** (0.110)
Trust Information		0.060 (0.044)
Democrat		0.127 (0.096)
Age		-0.002 (0.003)
White		-0.014 (0.099)
Female		-0.017 (0.093)
Education		-0.023 (0.043)
Political Knowledge		0.107** (0.048)
Political Interest		-0.005 (0.053)
Constant	0.397*** (0.086)	0.169 (0.274)
Observations	993	930
R <sup>2</sup>	0.018	0.031
Adjusted R <sup>2</sup>	0.016	0.020
Residual Std. Error	1.322 (df = 990)	1.339 (df = 919)
F Statistic	9.278*** (df = 2; 990)	2.915*** (df = 10; 919)

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01



**Table 5:** Change in Information Recall: Ideal vs. Non-Ideal Informant

	<i>Dependent variable:</i>		
	Change in Number of Correct Answers (Post-Pre)		
	(1)	(2)	(3)
Ideal Informant	0.350*** (0.097)	0.338*** (0.099)	0.422*** (0.107)
Tried to Inform	-0.225** (0.106)	-0.233** (0.109)	-0.201* (0.113)
Trust Information		0.061 (0.045)	0.064 (0.048)
Word Count		0.001 (0.002)	0.002 (0.002)
Similarity		-0.141 (0.400)	-0.080 (0.417)
Sentiment		-0.036 (0.029)	-0.038 (0.029)
Democrat			0.287*** (0.106)
Age			-0.004 (0.003)
White			-0.159 (0.108)
Female			-0.0002 (0.101)
Education			-0.048 (0.047)
Political Knowledge			0.094* (0.053)
Political Interest			-0.038 (0.058)
Constant	0.191* (0.098)	0.092 (0.239)	0.166 (0.341)
Observations	755	743	706
R <sup>2</sup>	0.023	0.028	0.048
Adjusted R <sup>2</sup>	0.020	0.020	0.031
Residual Std. Error	1.266 (df = 752)	1.272 (df = 736)	1.275 (df = 692)
F Statistic	8.738*** (df = 2; 752)	3.472*** (df = 6; 736)	2.712*** (df = 13; 692)

*Note:*

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

## Evaluations

### Economic Evaluations

Next I examine how different sets of information impact subjective evaluations of the economy and the president. I expected that participants would have more negative evaluations of the economy and of President Trump after exposure to a message from a Democrat, while participants in the Republican Informant treatment would have more positive evaluations of the economy and President Trump. I expected this change based on the bias that Democrats and Republicans in Study 1 might have included in the messages they passed on. Democrats should be more critical of President Trump and the economy he oversees, while Republicans should be more positive about President Trump and the economy. In order to establish that the messages used in the social treatments were perceived as biased in the expected direction, I asked participants to indicate the extent to which they thought the information they received favored Democrats or Republicans. Overall, the perceived bias of the information treatments appeared to align with the partisanship of the author of the informational message.<sup>12</sup>

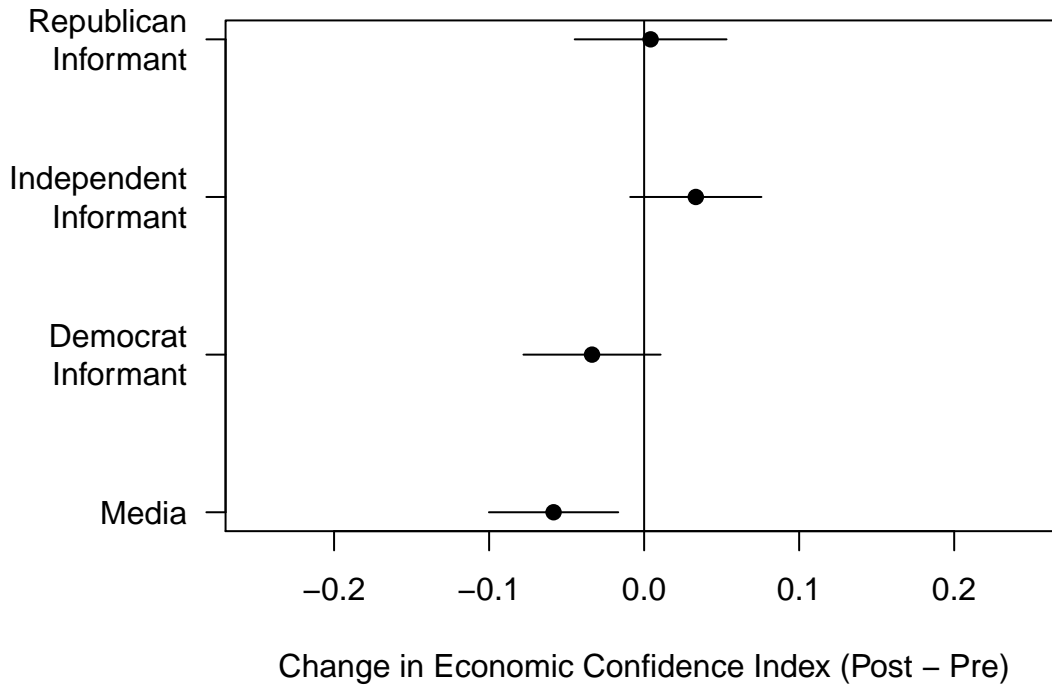
Figure 3 shows the average change in economic confidence after exposure to an informational message between treatment groups. Points to the right of 0 suggest an increase in economic confidence, that is, more positive evaluations of the economy, while points to the left of 0 indicate a decrease in economic confidence. Participants in the media condition had significantly lower economic confidence after exposure to the news article, compared to their baseline economic confidence ( $p < .05$ ). This is somewhat surprising because the article boasted a headline indicating that the economy had grown more than previously expected. However, the article also discussed some negative aspects of economic growth, such as the economic growth being slower than the 3 percent target rate set by the Trump administration. The social treatments did not appear to significantly affect participants' economic confidence. This relationship holds when analyzing Democrats, Republicans, and Independents separately: regardless of partisanship, participants in the social treatments did not significantly alter their economic confidence when exposed to socially supplied information about the economy. However, in the media treatment, only Democrats and Independents had significantly lower economic confidence after exposure to the news article; Republicans were not influenced by the news article.

Participants who were exposed to information from an ideal informant did not update their subjective evaluations of the economy even though they learned the same amount of objective information as those in the media treatment. Those who read the full news article had significantly more negative evaluations

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<sup>12</sup>On average, the media treatment was perceived as relatively neutral with only a slight Democratic bias. There is suggestive evidence that the Democrat Informant treatment messages were perceived as favoring Democrats more than the media treatment ( $p < .10$ ). The perceived bias in the Independent Informant treatment was statistically indistinguishable from the perceived bias of the media treatment. The Republican Informant treatment was perceived to favor Republicans significantly more than the media treatment ( $p < .05$ ) and the Democrat Informant treatments ( $p < .01$ ).

### Change in Economic Confidence Index



**Fig. 3** Change in economic confidence index by treatment group. Horizontal lines represent 95 percent confidence intervals. The vertical line about zero represents no change in economic confidence. Points to the right of 0 indicate perceptions that the economy was getting better post-treatment; points to the left of 0 indicate perceptions that the economy was getting worse post-treatment.

of the economy than those who received information from an ideal informant ( $p < .05$ ). Thus, individuals might be more likely to update their subjective beliefs after exposure to information from the media than those who received information from an ideal informant, even if they learned the same amount.

#### Presidential Approval

In addition to the modest changes in economic evaluations based on the informational message, I also observe modest changes in evaluations of President Trump. Similar to the evaluations of the economy, those who received the news article had significantly more negative evaluations of how President Trump is handling the economy after exposure to treatment. Socially generated information, even from an ideal informant, did not significantly influence subjective evaluations of President Trump with respect to the economy. However, the news article did not influence evaluations of the President overall, but socially generated information did. Those who received information from a Republican or an Independent had significantly more positive evaluations of how President Trump is handling his job as president after

exposure to that information ( $p < .05$ ). Breaking these results down by the partisanship of the recipient, Democrats updated their beliefs the most.

Together, the subjective evaluations results suggest that the media can significantly alter perceptions of economic performance and how the president is handling the economy, but some social messages can significantly alter presidential approval overall. In particular, when participants are exposed to information from someone likely to support the president, approval tends to increase more than when someone is exposed to information from someone likely to oppose the president. This relationship is especially strong among Democrats, who should be the least likely to support President Trump. Before exposure to treatment, about 74 percent of Democrats strongly disapproved of how Donald Trump is handling his job as president. After exposure to a message from a Republican, this dropped to 68 percent. These results suggest that those who are initially opposed to the president might be more likely to update their preferences in light of new information than those who are initially supportive of the president, especially if that information comes from a supporter of the president.

## Discussion

In this paper, I explored theoretical consequences of reliance on social information. As a proof of concept, I first demonstrated that socially transmitted information is substantially shorter than information communicated by the media and official reports. Furthermore, the content of this information is significantly different, as measured by the specific words used in each message. Information communicated by the media is about twice as similar to the official source than information communicated by other people. Second, I examined how these important differences in information affect learning and evaluations. I found that participants exposed to socially generated information learned significantly less information than participants exposed to information from the media. However, those exposed to information from an ideal informant who shares their partisanship and is better informed learned significantly more than those exposed to information from a non-ideal informant, but the same amount as those who received information from the media. Thus, receiving information from ideal informants could serve as a valid information alternative to the media, just as previous research has theorized (Downs 1957; Katz 1957; Lupia and McCubbins 1998). Finally, I examined whether the information source affected evaluations. The results indicated that social information does not appear to affect economic confidence, but it can affect presidential approval, such that those exposed to information from a Republican or Independent showed significantly greater approval of President Trump compared to those who were exposed to information from another Democrat or the media. Altogether, these results suggest important implications for the public's self-educating potential.

This study is not without its limitations. First, this study examines only one issue area: economic evaluations. There are important reasons discussed throughout this paper for focusing on economic news, but it limits the external validity of this analysis. It is possible that social information transmission about other topics, such as elections, high- or low-salience policies, Supreme Court decisions, local politics, political scandals, or other topics might have different effects. There might even be different effects based on other economic news, such as unemployment data, which might be more familiar to the average reader than GDP. Future research should take care to examine whether the results presented here hold for different information topics.

Second, participants in social treatments in Study 2 knew very little about the author of the information they received. Participants only knew the partisanship of the author and that he or she had just read a news article about the U.S. economic performance in the first quarter of 2017. In the real world, however, individuals who rely on others for information are likely to know their informants personally and they can thus weigh the information they provide accordingly. That individuals knew little about the informants also limits the external validity of this analysis.

Third, the experimental designs used in Studies 1 and 2 are complex, making it possible that some analyses are under-powered. Beyond the possibility that some null results are simply under-powered, Study 2's complex design warrants further discussion. Participants in Study 2 were randomly assigned to read either a full news article or one of many messages generated by a Republican, Democrat, or Independent in Study 1. This means that most participants in the social treatments were exposed to a slightly different informational message. In addition, the messages were tailored toward the partisanship of the participant. This feature adds some external validity in that it ensures that Democrats receive information that was intended for a Democrat to read instead of information that was intended for a Republican to read, just like what would happen in the real world. However, it challenges the internal validity of the experiment by making the *treatment* less clear.

Despite these limitations, this analysis presents important results that improve our understanding of information transmission in American politics. Furthermore, it opens the door for ample opportunities for additional research utilizing similar research designs. Future research can build on the results presented here to examine the consequences of social information transmission about additional topics, using different initial news sources, and using different characteristics to describe the social informants.

## Conclusion

Given that political discussion is one of the most common ways in which individuals acquire information about politics, it is imperative that we understand how this information source impacts political attitudes

and behavior. To date, most research on the role of information in political attitudes and behavior focuses on information from the media. However, as I demonstrate here, socially communicated information is substantially different from information communicated by the media. It is thus important that we begin to unpack the effects of socially supplied information, just as we have with information from the media. This paper makes an important contribution by providing a step toward understanding the consequences of social information transmission.

In part, I provide evidence in support of classic theories of opinion leaders using a novel research design. Similar to previous theories (e.g. Lupia and McCubbins 1998; Downs 1957), I find that individuals can learn the same amount from others who share their partisanship and are more knowledgeable as they would from the media. This even holds with messages much shorter than the full news article. However, this important theoretical work was largely previously tested using controlled, incentivized lab experiments in which individuals would communicate about whether a coin toss was heads or tails, for example (Lupia and McCubbins 1998). The research design employed here allows us to broaden our understanding of the effectiveness of turning to others for information by allowing individuals to actually communicate about political information. Thus, there is an empirical contribution in this paper by providing new evidence in support of classic, oft-cited theories.

Social information is not a panacea for the lack of attention to and knowledge from the news media in American politics. Many individuals over-estimate the expertise of their social ties (Ryan 2011) and actively avoid discussing politics with those who are more politically knowledgeable in an effort to avoid psychological discomfort (self-citation omitted). This means that many of our political discussions are unlikely to be with ideal opinion leaders who can actually close the learning gap between the news media and social informants.

Beyond the impact of information source on learning, the effects on subjective evaluations were quite different. In particular, individuals did not update their beliefs about the economy, nor the president's handling of the economy, in response to information from another person—even an ideal informant. This adds to the body of work suggesting that objective facts have minimal effects on political attitudes (Kuklinski et al. 2000) and that individuals may interpret facts differently, leading to different subjective evaluations (Gaines et al. 2007). I show that indeed, individuals who learn the same objective facts still have different subjective evaluations. However, I build on previous work by showing that these effects extend beyond directional motivated reasoning based on one's partisanship and can be influenced by the information source.

Individuals use information from the media differently than they use information from other people. Just as scholars have thoroughly explored the consequences of partisan media bias, I argue that we need to also consider the impact of bias in socially generated information. With the rise of *social* media, it is

important to reconcile the media bias and political discussion literatures to understand the benefits and limitations of social political communication *relative* to the media.

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