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To cite this article: Sebastián Valenzuela, Daniel Halpern, James E. Katz & Juan Pablo Miranda (2019): The Paradox of Participation Versus Misinformation: Social Media, Political Engagement, and the Spread of Misinformation, Digital Journalism, DOI: [10.1080/21670811.2019.1623701](https://doi.org/10.1080/21670811.2019.1623701)

To link to this article: <https://doi.org/10.1080/21670811.2019.1623701>



Published online: 12 Jun 2019.



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The Paradox of Participation Versus Misinformation: Social Media, Political Engagement, and the Spread of Misinformation

Sebastián Valenzuela^{a,b} , Daniel Halpern^a , James E. Katz^c and Juan Pablo Miranda^a 

^aSchool of Communications, Research Center for Integrated Disaster Risk Management (CIGIDEN), Pontificia Universidad Católica de Chile, Santiago, Chile; ^bMillennium Institute for Foundational Research on Data (IMFD), Pontificia Universidad Católica de Chile, Santiago, Chile; ^cDivision of Emerging Media Studies, Boston University, Boston, MA, USA

ABSTRACT

The mechanisms by which users of platforms such as Facebook and Twitter spread misinformation are not well understood. In this study, we argue that the effects of informational uses of social media on political participation are inextricable from its effects on misinformation sharing. That is, political engagement is both a major consequence of using social media for news as well as a key antecedent of sharing misinformation. We test our expectations via a two-wave panel survey of online media users in Chile, a country experiencing information disorders comparable to those of the global North. Analyses of the proposed and alternative causal models with two types of structural equation specifications (fixed effects and autoregressive) support our theoretical model. We close with a discussion on how changes in the way people engage with news and politics – brought about by social media – have produced a new dilemma: how to sustain a citizenry that is enthusiastically politically active, yet not spreading misinformation?

KEYWORDS

Misinformation; social media; news; political participation; Chile

A decade of research addressing news consumption on social platforms such as Facebook and Twitter has produced two consistent findings. First, social media have become a major source for news about public affairs (Newman et al. 2017). Second, using social media for news increases individuals' political engagement (Boulianne 2019; Skoric et al. 2016). As a consequence, many researchers have lauded the informational value of social media as contributing to democratic processes by means of fostering citizen engagement (Gil de Zúñiga, Jung, and Valenzuela 2012). Social media, however, can also be used to promote antidemocratic processes. Hate groups, online harassment, hyperpolarization, and state-sponsored propaganda, are all examples of illiberal forces exploiting the informational value of social platforms (Tucker et al. 2017).

Yet there has been a rise of public concern since the Brexit referendum in the United Kingdom, and most especially after the 2016 US elections, that social media

spreads misinformation (Allcott and Gentzkow 2017; Lazer et al. 2018). Distressingly, the phenomenon of misinformation is closely related to social media news use (Grinberg et al. 2019; Tandoc et al. 2018; Vargo, Guo, and Amazeen 2018). Thus, while some work finds that social media news use is democratically positive, seeming to promote political participation, other strands of research finds that it is democratically negative since it contributes to the spread of misinformation. Because these strands of the literature have often developed independently, our study seeks to integrate them into a theoretical and empirical model combining (1) the processes of news use on social media, (2) individuals' political engagement, and (3) misinformation diffusion. As we shall argue, we expect that the effects of informational uses of social media on political participation are strongly connected to the distribution of misinformation, which suggests a new democratic dilemma: how to sustain a citizenry that is enthusiastically politically active, yet not an amplifier of misinformation?

This research is relevant on normative, theoretical, and empirical grounds. Sharing false information online runs counter to the ideal of a well-functioning democracy in which citizens base their preferences on accurate information (Kuklinski et al. 2000). Further, from a theoretical perspective, our research adds complexity and nuance to existing accounts of how news use on social media impacts citizens' knowledge, beliefs and behaviors (Bode 2016; Dimitrova et al. 2014). As Quandt (2018, 44) noted, in the past decade there has been an "idealistic [...] well intended, but partially misguided and naïve" embrace of citizen participation in the news process. This is evident with the plethora of studies – including our own past work – arguing that informational uses of social media promote democratic citizenship because they spur political participation. In the current study, we heed Quandt's call for more nuanced research by examining the negative side-effects of such increased user engagement, namely, diffusion of false information.

Further, extant studies on misinformation sharing often suffer from a lack of geographical diversity, as most studies are from the global North. As such, a community of scholars and policymakers that focuses on this domain have a circumscribed understanding of the phenomena. Comparative data from other regions, such as the global South, are needed to help refine our understanding and explore similarities and differences across a variety of boundaries (Lewis and Molyneux 2018). Thus, beyond the inherent interest to be derived from the analysis itself, there is additional merit in conducting this study in Chile, a Latin American country with high levels of social media news use and participation but with decreasing levels of confidence in journalism and traditional information gatekeepers (Navia and Ulriksen 2017).

Social Media News Use and Political Participation

People have different motivations for using social media. One is what the uses and gratifications literature calls surveillance motivation, that is, when individuals use social media "to learn about one's community, events, and political affairs" (Ruggiero 2000, 26). On interactive platforms such as social media, fulfilling one's surveillance motivations can involve different behaviors, such as reading news shared by friends, endorsing news from a professional media site (i.e., "liking"), and posting links to journalistic

content (Choi 2016). Another motivation is fear of missing out (Przybylski, Murayama, De Haan, and Gladwell 2013), to which many individuals respond to by staying continually connected with what others are doing through social media (Katz and Aakhus 2002). Pivotal to all these activities is news exposure, that is, the extent to which users have encountered – intentionally or incidentally – news content while using social media (de Vreese and Neijens 2016).

Research shows that informational uses of social media increase users' participation in political activities (Ekström and Shehata 2018; Knoll, Matthes, and Heiss 2018). By participation, we mean "activities by private citizens that are more or less directly aimed at influencing the selection of governmental personnel and/or the actions they take" (Verba and Nie 1972, 2). In keeping with more recent conceptualizations, these voluntary political acts may also be aimed at collective or community issues, take place online, and occur within social media platforms. A restricting dimension to this definition is that all such aspects must have a clear political motivation (van Deth 2014). Manifestations of such political participation include voting, protesting, volunteering for a community project, boycotting products for ethical reasons, or encouraging other people to take action using social media (Theocharis and van Deth 2018).

Several explanations have been advanced to account for the relationship between news use in social media and political engagement. One such explanation is that news exposure raises awareness and knowledge of political issues, which in turn increases the likelihood of engaging in political activities (Valenzuela 2013). Yet there is evidence that political learning through social media is tenuous. It may be in fact that social media news use can hamper knowledge acquisition (Pentina and Tarafdar 2014; Shehata and Strömbäck 2018). Another explanation holds that informational uses of social media increase participation by promoting political expression (Gil de Zúñiga, Molyneux, and Zheng 2014). The premise is that exercising one's political voice on social media involves cognitive elaboration and reflection, which in turn are conducive to political engagement (Pingree 2007). Expression can also be a precursor of political discussion with fellow social media users, which have also been found to motivate individuals to participate more frequently (Valenzuela 2013).

The current study will not be testing the specific mechanisms that may causally relate informational uses of social media with political participation. Instead, we take this association as a starting point for our theoretical discussion. Hence, our first hypothesis' aim is confirmatory:

H1: Social media news use will be positively related to political participation.

Conceptualizing Misinformation and Misperceptions

While it may facilitate political engagement, social media news use also provides mechanisms through which individuals and collectives may receive and spread misinformation. Before explaining how and why this occurs, we need to define what we understand by the term "misinformation." A review of the academic literature shows that a variety of terms have been connected to or even used as synonyms for the term; these include fake news, false information, disinformation, misperceptions (Lazer et al. 2018; Wardle and Derakhshan 2017).

Some experts have decried the term “fake news” because it obscures the multidimensionality of the phenomenon of misinformation, which includes issues of content, format, motivations, and agents involved in its distribution (Kalsnes 2018; Wardle and Derakhshan 2017). Further, fake news has become a trope for whatever information politicians and people in general do not believe in (Nielsen and Graves 2017; Waisbord 2018). At its worse, it is used to delegitimize an oppositional viewpoint (Farkas and Schou 2018). False news is not appropriate either, because it suggests a true/false dichotomy, rather than a continuum (Mourão and Robertson 2019, 4). Disinformation also refers to inaccurate news, but it is different in intent. According to Jackson (2017), promoters of disinformation distribute it purposively “to engender public cynicism, uncertainty, apathy, distrust, and paranoia.” That is, disinformation is necessarily deceptive.

So what is misinformation? In the current study, we use Southwell et al.’s (2018, 3) definition: “a category of claim for which there is at least substantial disagreement (or even consensus rejection) when judged as to truth value among the widest feasible range of observers.” That is, misinformation refers to claims that – unlike information – are not supported by the majority of societally accepted evidence adjudicators, and reflects content that may be inaccurate, uncertain, vague, or ambiguous (Karlova and Fisher 2013).

When individuals perceive these inaccurate claims as truthful they are described as having misperceptions (Garrett, Weeks, and Neo 2016) or being misinformed (Flynn et al. 2017). This means that to study how users share misinformation, it is important to gauge misperceptions, too. Some users spread misinformation because they are convinced it is accurate information and wish to “enlighten” their followers. Others know misinformation when they see it but spread it anyway to misinform others and advance an agenda. And some spread it because it is interesting or noteworthy or somehow otherwise promotes their social standing or visibility. By measuring misperceptions, we can better identify whether the process of misinformation sharing is guided mostly by deception (i.e., disinformation campaigns) or biases in cognition. We suspect that the more prevalent mechanism is the latter, as we discuss next.

Political Participation and Misinformation Sharing

Cognitive theory holds that people do not always process information accurately. Instead, individuals sometimes process information to arrive at a desired conclusion that reaffirms prior positions (Kunda 1990). This is usually the case with information related to individuals’ identity that arouses an affective response (Lodge and Taber 2013). For instance, it is more likely for strong partisans to select and trust political content that is consistent with their ideological beliefs, even if this content misrepresents facts (Weeks 2015).

Motivations are not the only source of error in information processing. People tend to seek conclusions in the fastest, easiest way possible – they are “cognitive misers” (Fiske and Taylor 2013, 16). This phenomenon encourages individuals to maintain or reinforce their established beliefs given the cognitive costs required to access and process new information. Hence, seeking and processing information is more likely with

attitude-consistent than with counter-attitudinal messages – a bias called selective exposure. Importantly, studies show that selection and exposure to attitude-consistent information can increase sharing of such content as a consequence of greater attitude accessibility, especially on social media (Hasell and Weeks 2016). This occurs because selection and sharing on social networks are self-reinforcing (Bright 2016).

Prior research has found that politically engaged individuals are more likely to exhibit biases in information processing than their less politically engaged counterparts (Flynn et al. 2017; Reedy et al. 2014). This association is particularly salient in digital media. Allcott and Gentzkow (2017), for example, studied the use of social media during the 2016 US election and found that both Republicans and Democrats tend to believe 15% more in attitude-consistent news compared to neutral or counter-attitudinal news. This is because for people who participate in politics, ideology and partisanship are major determinants of their worldviews and belief systems. Political identity, thus, provides an interpretive filter for processing information. Accordingly, individuals who participate in politics are more likely to share information and misinformation, so long as they fit with their ideological molds.

Independent of individuals' ideological predispositions, research also shows that political participation can encourage the formation of closed groups where misinformation is more likely to be retransmitted (Hochschild and Einstein 2015; Lazer et al. 2018). While these groups consolidate and reinforce their group identity, the opportunity to access divergent information decreases. Concomitantly, the willingness to accept positions different from their own also decreases. Thus, the consolidation of polarized networks based on political ideology favors isolation and selective exposure to partisan information. At the same time, the dense and clustered structure of online political networks increases the virality of messages, including inaccurate claims (Tambuscio et al. 2015).

A third reason for expecting that politically active social media users are more likely to share false information than less active users stems from their role as opinion leaders. Distributing information, opinions, news and other content has long been a marker of opinion leadership (Lazarsfeld et al. 1944; Rogers 1995). To the extent that opinion leadership and engagement in political affairs mutually reinforce each other (Shah and Scheufele 2006), it is likely that politically engaged users also share more content online than less engaged users. In other words, even if politically active users are not biased information processors and do not live in online echo chambers, they may still spread misinformation at higher rates as a consequence of their tendency to share all types of online content more frequently. For all these reasons, we expect that:

H2: Political participation will be positively related to the spread of misinformation.

This hypothesis, however, needs to be qualified. We do not think that political participation will necessarily lead to sharing any kind of misinformation. Instead, we posit that political participation will be associated with sharing such content when it conforms to individuals' beliefs. All else constant, social media users that are politically engaged will be more likely to retransmit misinformation when they hold misperceptions.

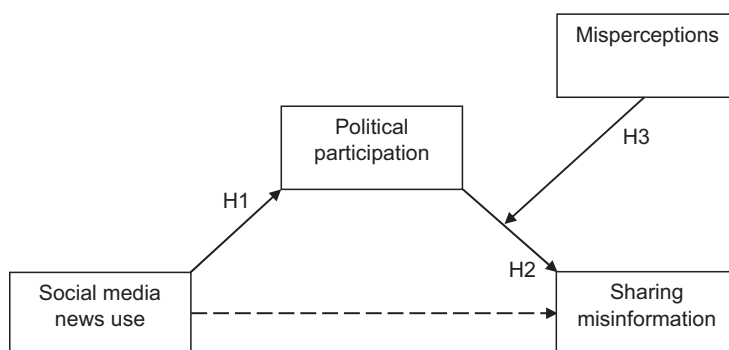


Figure 1. Conceptual model of hypothesized relationships. *Note.* Bold line = direct relationship. Dotted line = indirect relationship.

Due to its distorting role in the decision-making process of citizens, the phenomenon of misperceptions has generated much concern (Hochschild and Einstein 2015). Importantly, the issues in which participatory users are misinformed include not only matters of government and elections, but cover a wide range of topics, such as health, food, the environment – even natural disasters (Wolters and Steel 2018). This is because politically engaged individuals, for whom political ideology and attitudes are more central to their identity, tend to process information about different stimuli through a political lens. Thus, the effects of political participation on misinformation can extend well beyond purely political affairs.

Although misperceptions have been associated with being psychologically engaged with political affairs (Miller et al. 2016), they can play a differentiated role from political participation in the propagation of misinformation. To the extent that individuals are more likely to share content that they find credible or useful (Rudat et al. 2014; Valenzuela, Piña, and Ramírez 2017), the relationship between political engagement and the spread of misinformation should be contingent upon misperceptions. In hypothesis form, the expectation is that:

H3: Misperceptions will moderate the relationship between political participation and the spread of misinformation, such that the relationship will be stronger for misinformed users and weaker for informed users.

Integrating the three hypotheses leads to the structural model shown in Figure 1, in which political participation mediates the relationship between social media news use and the spread of misinformation. Misperceptions, in turn, regulate the relationship between political participation and the spread of misinformation.

Method

Context

With our aim of expanding an understanding of misinformation in the global South, one of the first things to note is that, like countries in the global North, Chile is experiencing symptoms of information disorder (Wardle and Derakhshan 2017). Public opinion surveys show a steady decline in trust of professional media. Those who trust TV

news and newspapers decreased, respectively, from 54% and 37% in 2009 to 37% and 20% in 2017 (González 2017). Simultaneously, Facebook, Twitter, and WhatsApp have become major news sources. Reuters Institute found that 64% of Chilean online users preferred to get news via social media (the world average is 23%; Newman et al. 2017, 14). Public concern over spreading of online misinformation has also increased, notably regarding government affairs, science, and disasters (Arriagada and Velasco 2017; Groshek et al. 2018; Mendoza, Poblete, and Castillo 2010). These concentrations of false news seem typical of other countries as well (Vosoughi et al. 2018). Hence, we measured misinformation related to these three issues. Although they cover different domains, all of them are more or less political, in the sense that political identities can shape perceptions and behaviors related to them (Wolters and Steel 2018).

Data

This study used data from a national, two-wave survey collected from an online panel administered by TrenDigital, a think tank hosted in the School of Communications at Pontificia Universidad Católica de Chile. To generate a more representative sample, we matched the frame to population parameters using demographic characteristics of gender, age, and region of residence. The first wave was fielded in April 2017 from an initial sample of 5000 panel participants contacted via email through Qualtrics. We received responses from 1,007 participants, which translate into a completion rate of 20%. Although the completion rate is relatively low compared to conventional “one-shot” surveys, rates between 10% and 30% are typical of online surveys (LaRose and Tsai 2014; Sauermann and Roach 2013). This is evident from the median completion time, which at 27 minutes is on the high end of most web surveys (Callegaro, Manfreda, and Vehovar 2015, 101–102).¹ Prior to fielding the second wave in June 2018, we dropped 127 respondents because of incomplete responses in the key variables. An additional 9 respondents were dropped as they completed the questionnaire too quickly (i.e., less than 1/3 of the median completion time). Of the 871 respondents remaining, 451 completed the second wave (attrition rate = 48%).²

Variables

Social Media News Use

Respondents were asked: “On the average, how many days a week do you watch or read news on social media platforms?” (wave 1: $M = 5.18$, $SD = 2.53$; wave 2: $M = 5.00$, $SD = 2.62$). To isolate news use exclusively on social network sites and microblogging platforms, this question was asked after other questions about news exposure on television, radio, print newspapers, and online news sites. More, we also controlled for professional news use.

Political Participation

Following Theocharis and van Deth (2018), we asked how frequently in the past year respondents engaged in eight different political behaviors. Respondents used a 5-point scale to report how often they had: (a) signed a petition; (b) registered as a

volunteer for a social or political cause; (c) commented on social media on political or social issues; (d) joined political, public or citizen-led causes on social media; (e) encouraged other people to take action on political or public affairs using social media; (f) shared photos or videos on social media to political news; (g) followed a politician or political activism group on Facebook or Twitter; and (h) changed the profile photo on a social media account to show support for a political or social cause. Individual responses were averaged into a single scale (wave 1: Cronbach's $\alpha = 0.85$; $M = 1.96$, $SD = 0.77$; wave 2: Cronbach's $\alpha = 0.86$; $M = 1.97$, $SD = 0.76$).

Misinformation

We presented respondents with a list of 10 statements covering the three issue domains explained earlier (see Table 1). To reduce social desirability biases, we did not specify whether the statements were true or false. Instead, we simply explained that these statements referred to stories circulating online (as they actually had) in the past 12 months. For each statement, respondents were asked whether they had: (a) not been aware of it, (b) been aware of it but had not shared it, or (c) been aware of it and had shared it. Subsequently, respondents were asked how credible the statements were. Answers were coded on a 5-point response scale (1 = *not at all*, 5 = *extremely*). With these questions, two variables were created: a scale of misperceptions (i.e., average of the credibility scores of each story; wave 1: Cronbach's $\alpha = 0.78$, $M = 2.54$, $SD = 0.66$; wave 2: Cronbach's $\alpha = 0.82$, $M = 2.55$, $SD = 0.73$), and an index of misinformation sharing (range = 0 [*no story was shared*] to 10 [*shared all stories*]; wave 1: KR-20 = 0.73, $M = 1.19$, $SD = 1.71$; wave 2: KR-20 = 0.65, $M = 0.65$, $SD = 1.26$).³

Table 1. Prevalence of misinformation exposure, beliefs, and sharing (wave-1).

| Claim | Issue domain | Familiar with claim % | Believes claim is accurate % | Has shared claim % |
|---|--------------|-----------------------|------------------------------|--------------------|
| 1. Groups of Mapuche Indians caused the great wildfires of the summer. | D | 92 | 13 | 14 |
| 2. Forestry companies started the wildfires to collect insurance and compensate a loss in export revenues due to Donald Trump's election. | D | 81 | 31 | 20 |
| 3. Some vaccines have side effects that may be worse than the very illnesses they are trying to prevent. | S | 75 | 26 | 12 |
| 4. Genetically modified foods are harmful to health. | S | 74 | 49 | 25 |
| 5. Animal milk is not nutritious and may even be harmful to one's health. | S | 70 | 26 | 17 |
| 6. Some vaccines can cause autism in children. | S | 68 | 18 | 10 |
| 7. Members of the Colombian guerrilla FARC, along with Mapuche Indians, burned the forests in the south to destabilize the country. | D | 60 | 6 | 6 |
| 8. Israeli agents have purchased large tracts of land in Chilean Patagonia. | G | 42 | 26 | 10 |
| 9. A Colombian gang is snatching children from schools and parks in Santiago. | G | 32 | 24 | 6 |
| 10. President Michelle Bachelet has suffered from depression and alcohol abuse at certain stages of her current government. | G | 26 | 15 | 3 |

Note: D = disasters, S = science, G = government affairs. Percentage that believes the story is accurate is the sum of participants who find it "very credible" and "extremely credible".

Control Variables

A number of covariates were included in the analysis, all measured in wave 1. Prior research has found that sharing content on social media and political participation are a function of gender, age, and socio-economic status (Beam, Hutchens, and Hmielowski 2016; Dimitrova et al. 2014). Gender was binary (female: 54%) and age was measured in years ($M = 33.75$, $SD = 13.37$). For education, we used a 7-point scale (range = 1 [*elementary school or less*] to 7 [*graduate school*], $M = 5.95$, $SD = 0.80$). A survey question that measured income asked “What is your family’s monthly household income?” Answers ranged from 1 (*under CLP 400,000*) to 6 (*over CLP 3,500,000*; $M = 3.20$, $SD = 1.37$). Another important antecedent of both political participation and misperceptions refers to political ideology (Guess et al. 2018). Thus, participants were asked a 7-point, left-right self-placement question (wave 1: $M = 3.89$, $SD = 1.41$). Prior research has also found that misinformation is related to mistrust on professional journalism (Lazer et al. 2018). Trust in professional media was computed by averaging individuals’ level of agreement with three statements: (a) “they are trustworthy sources of information”; (b) “they deliver news that are trustworthy”; and (c) “I trust that the news they deliver are true” (range = 1 [*strongly disagree*] to 5 [*strongly agree*], Cronbach’s $\alpha = 0.87$, $M = 2.85$, $SD = 0.71$). We also took into account participants’ information self-efficacy, based on six statements adapted from Marshall’s (2006) Information Competency Assessment Instrument, which were averaged to form a scale (range = 1 [*strongly disagree*] to 5 [*strongly agree*], Cronbach’s $\alpha = 0.76$, $M = 3.97$, $SD = 0.56$). This was done in response to claims that digital literacy could reduce individuals’ proclivity to spread false news (Lazer et al. 2018). Last, because traditional media use is an important antecedent of political engagement and can be a gateway to false news consumption as well (Shah et al. 2005; Vargo, Guo, and Amazeen 2018), we measured exposure to news on professional media, such as TV, newspapers (print and online), and radio, using the same response scale than for social media news use. We combined these items into an index of professional news media use ($M = 2.98$, $SD = 1.77$).

Statistical Analysis

To take advantage of the panel design of the survey, the hypotheses were tested using two different models. One relates change at the intra-individual level using the raw difference score, which is calculated by subtracting wave-1 scores from wave-2 scores. Because all time-invariant variables are partialled out, estimates are unbiased from the influence of variables such as demographics, personality traits, political ideology, socialization and so forth. While this is the greatest strength of the change score model, it is not without drawbacks. One is that it assumes that change is independent from the initial levels of the dependent or endogenous variables (Finkel 1995). Another is that error variances may be inflated as a consequence of producing estimates at the intra-individual level (Shah et al. 2005). Thus, we also estimated autoregressive models, where change over time is estimated by regressing each wave-2 variable on its corresponding wave-1 value, controlling for wave-1 covariates. Unlike the change scores model, the autoregressive approach derives estimates of change

across the sample rather than within each individual, effectively reducing error variance. Of course, our expectation is that results are consistent across both modeling strategies.

To reduce the risk of spurious relationships, we opted for a sequential process of model construction. To test H1 and H2, a mediation analysis was conducted, relating social media news use and misinformation sharing through political participation. Following the recommendations of Hayes (2013), the indirect relationship was calculated with bootstrapping. To address the causality quandary, the proposed mediation model was compared against all alternate causal orderings of the three sets of variables. To test H3, we conducted a moderation analysis, in which the relationship between political participation and misinformation sharing varies across levels of misperceptions. All models were estimated with full information maximum likelihood using Stata 15. The data that support the findings of this study are openly available in .csv format at: http://bit.ly/fake_data.

Results

Before turning to the hypotheses, we assessed the prevalence of the misinformation problem in Chile, as compared to countries with more data on the subject. We anticipate that this assessment will provide a benchmark for those wishing to do comparative or cross-national studies of misinformation. Table 1 details the degree of familiarity, beliefs, and sharing of the 10 false items we measured. Notably, the level of exposure to misinformation in the sample is substantial. In wave-1, more than 75% of respondents reported being aware of at least four claims, especially those related to the great wildfires of 2017 and scientific myths related to vaccines. The proportion of respondents that believe these stories are true, however, is considerably lower. On average, only 24% of respondents find the claims to be “very” or “extremely” credible. Still, there are notable deviations from this pattern. While only 18% of the participants believe that vaccines can cause autism, nearly half of them think that consumption of GMOs and illness are related. These proportions are comparable to those found elsewhere. Bode and Vraga (2015, 625) conducted a web survey in the US in 2014 and found that the vaccines-autism and GMOs-health relationships were credible for 11% and 51% of the respondents, respectively. Compared to exposure and beliefs in these claims, fewer Chileans admitted to sharing them. Each claim was shared, on average, by 12% of participants. However, the averages for stories related to disasters (12%) and health (16%) were higher than those related to government affairs (6%). Again, this is in line with international trends (see, e.g., Allcott and Gentzkow 2017).

Turning now to the hypotheses, we sought to examine the relationships between social media news use, political participation, and sharing misinformation. For ease of interpretation, Figures 2 and 3 plot standardized regression coefficients of fixed effects and autoregressive models, respectively (for full results, see Appendix, Tables A1 and A2). First, in both specifications we found that using social media for news is positively associated with political participation (fixed effects: $\beta = 0.18$, $p < 0.001$; autoregressive: $\beta = 0.19$, $p < 0.001$). These relationships are quite robust (in

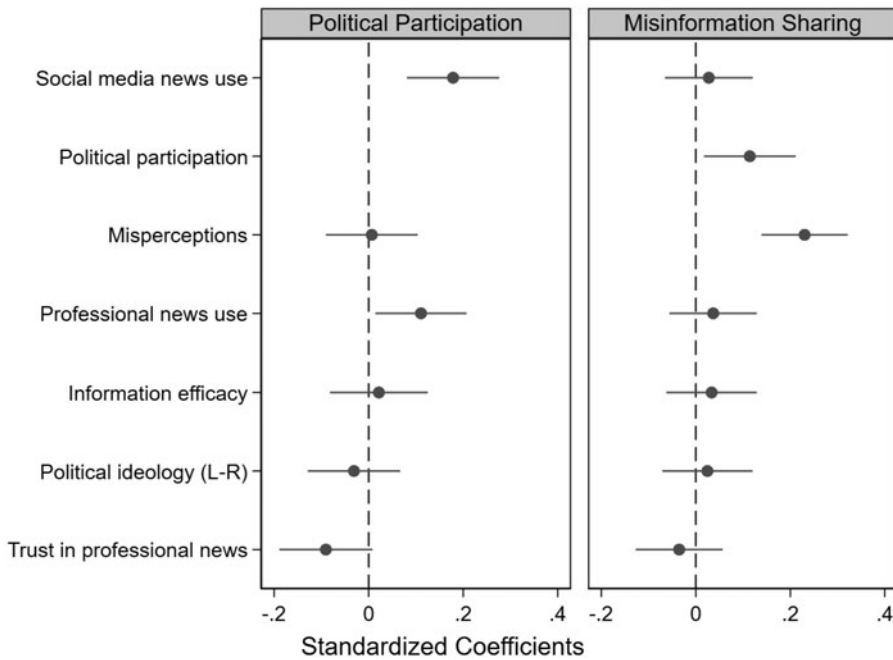


Figure 2. Fixed-Effects Model of Social Media, Political Participation and Misinformation Sharing. *Note.* Plot shows standardized regression coefficients, using markers for point estimates and spikes for 95% confidence intervals. Statistically significant coefficients are those with spikes that are entirely above or below zero. Full results available in Appendix, [Table A1](#).

her meta-analysis, Boulianne [2019] found that the average effect size of informational uses of social media on civic and political engagement is 0.07). H1 is thus supported.

Second, we predicted that participation is positively related to misinformation sharing (H2). This was, indeed, the case (fixed effects: $\beta = 0.11$, $p < 0.05$; autoregressive: $\beta = 0.10$, $p < 0.05$), although the relationship is somewhat weak. Importantly, in none of the models was social media news use found to be directly related to misinformation sharing – and this held true with and without including the control variables. The latter suggests that political participation may mediate the relationship between using social media for information and sharing incorrect claims. To formally test this possibility, we calculated bias-corrected bootstrap confidence intervals of the indirect relationship (fixed effects: $\beta = 0.02$; autoregressive: $\beta = 0.03$). For both models, the confidence interval was above zero: fixed effects (95% CI: 0.003, 0.030), and autoregressive (95% CI: 0.001, 0.020). This means that we can rule zero out from the realm of plausible values of the indirect association. In other words, for at least these data we demonstrated that informational uses of social media can indirectly increase, albeit weakly, willingness to share misinformation by promoting political participation.

Despite the consistency of our findings across model specifications, there is the possibility that a different ordering of the variables could yield a structural model with better results and, thus, alert us to alternative relationships not considered in our theorizing. Inspired by the seminal work by Shah and colleagues (2005), we estimated every other conceivable causal ordering of our key variables and compared

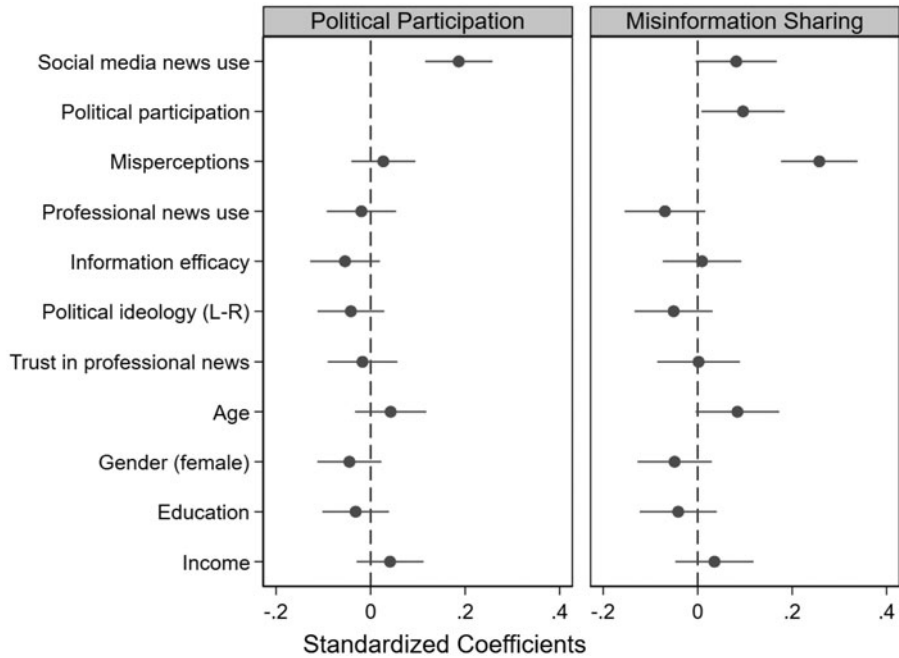


Figure 3. Autoregressive Panel Model of Social Media, Political Participation and Misinformation Sharing. *Note.* Plot shows standardized regression coefficients, using markers for point estimates and spikes for 95% confidence intervals. Statistically significant coefficients are those with spikes that are entirely above or below zero. Full results available in Appendix, [Table A2](#).

goodness-of-fit statistics to identify the best model. As detailed in [Table 2](#), all alternative orderings produced a worse fit than the proposed model.

When misinformation sharing served as the mediator between social media use and political participation, model fit was extremely poor across the two specifications (models 2 and 4). Among the fixed-effects specifications, only model 6, in which political participation mediates the relationship between misinformation sharing and social media news use, approaches the goodness of fit of the proposed model. However, the coefficient of determination of this alternate model ($R^2=0.055$) is considerably lower than the theoretical model ($R^2=0.112$). Among the autoregressive specifications, all alternative models exhibit worse fit statistics than the theoretical model. Thus, these data support our proposed causal ordering of the variables.

The last hypothesis proposed a boundary condition. Specifically, H3 stated that the link between participation and misinformation sharing depended upon respondents' misperceptions, such that politically engaged users who are misinformed are more likely to share inaccurate claims than those who are better informed. To test for this possibility, we first checked whether there was evidence of an overlap between misperceptions and political engagement. The relationship was not statistically significant (fixed effects: $p=0.921$; autoregressive: $p=0.447$; see Appendix, [Tables A1](#) and [A2](#)). These data, then, allow comparing misinformed respondents who participate more often with misinformed respondents who seldom participate. Nevertheless, the

Table 2. Comparison of proposed and alternate structural models.

| | AIC | BIC | RMSEA | χ^2/df | CFI | Overall R^2 |
|---|----------|----------|-------|-------------|-------|---------------|
| Fixed-effects | | | | | | |
| 1. Social media → Participation → Misinformation sharing | 9008.897 | 9185.690 | 0.000 | 0.337/1 | 1.000 | 0.112 |
| 2. Social media → Misinformation sharing → Participation | 9020.097 | 9196.890 | 0.153 | 11.537/1 | 0.749 | 0.085 |
| 3. Participation → Social media → Misinformation sharing | 9013.769 | 9190.562 | 0.097 | 5.209/1 | 0.897 | 0.108 |
| 4. Participation → Misinformation sharing → Social media | 9020.097 | 9196.890 | 0.153 | 11.537/1 | 0.742 | .093 |
| 5. Misinformation sharing → Social media → Participation | 9013.769 | 9190.562 | 0.097 | 5.209/1 | 0.823 | 0.042 |
| 6. Misinformation sharing → Participation → Social media | 9008.897 | 9185.690 | 0.000 | 0.337/1 | 1.000 | 0.055 |
| Autoregressive | | | | | | |
| 7. Social media → Participation → Misinformation sharing | 21269.28 | 21799.66 | 0.000 | 1.949/6 | 1.000 | 0.783 |
| 8. Social media → Misinformation sharing → Participation | 21273.30 | 21803.68 | 0.000 | 5.969/6 | 1.000 | 0.782 |
| 9. Participation → Social media → Misinformation sharing | 21283.74 | 21814.12 | 0.062 | 16.416/6 | 0.984 | 0.777 |
| 10. Participation → Misinformation sharing → Social media | 21286.59 | 21816.97 | 0.070 | 19.266/6 | 0.980 | 0.775 |
| 11. Misinformation sharing → Social media → Participation | 21277.75 | 21808.13 | 0.040 | 10.424/6 | 0.993 | 0.780 |
| 12. Misinformation sharing → Participation → Social media | 21292.06 | 21822.44 | 0.083 | 24.733/6 | 0.971 | 0.774 |

Note: $N = 451$. All path models were estimated with full information maximum likelihood.

Abbreviations: AIC = Akaike's information criterion; BIC = Bayesian information criterion; CFI = comparative fit index; RMSEA = root mean square error of approximation. χ^2/df = discrepancy level.

interactions between participation and misperceptions when predicting sharing of misinformation were not statistically significant (fixed effects: $p = 0.169$; autoregressive: $p = 0.649$; see Appendix, [Tables A1](#) and [A2](#)). As an additional check, we also replicated the analyses testing each information claim individually (i.e., whether political participation interacts with misperceptions about, say, vaccines when predicting sharing misinformation about vaccines). Again, none of the interactions were statistically significant. The conclusion is that politically engaged social media users distribute inaccurate claims more often than the less engaged – a relationship that holds regardless of how misinformed respondents are.

Discussion

Our findings support the idea that using social media for news can lead to the spread of misinformation, albeit indirectly, due to its association with individuals' political participation. Although being politically engaged does not make users more or less likely to be misinformed, participatory users seem more likely to share inaccurate claims regarding governmental affairs, science, and natural disasters than those who are less politically engaged. To the degree that informational uses of social media promotes political participation, this increased participation can lead to the spread of misinformation.

The results can seem contradictory. After all, knowledge of correct political facts gained through news media use is a causal antecedent of participation (Delli Carpini and Keeter 1996). Several explanations can account for this counterintuitive finding. Knowledgeable people exhibit higher levels of political interest and attitude strength, and hence will also tend to defend their attitudes (Lodge and Taber 2013). Thus, knowledgeable people may nevertheless spread misinformation if that helps justify their attitudes.

Conversely, the type and amount of knowledge necessary for participation need not be the same as the type and amount of knowledge that are necessary to inoculate

oneself from sharing misinformation. Media effects on learning vary by type of knowledge measured, such that one medium may influence knowledge of current events but not of historic facts (Garrazone and Atkin 1986). In survey research, political knowledge is usually gauged by asking respondents' to recall information on three domains (Delli Carpini and Keeter 1996): current policy news, rules of the political system, and public figures. It is not clear that knowing the correct answers to these questions (e.g., How long is the term of office for a senator?) also entails being informed about other aspects (e.g., Are genetically modified foods harmful to health?). That the variables measuring information and misinformation may be orthogonal to each other is bolstered by research showing that, rather than substituting for consumption of fabricated or inaccurate news, they complement accurate news consumption. Thus, social media users who share misinformation also share much other information (Guess et al. 2018; Lazer et al. 2018). Hence, knowledgeability about some hard facts, as a consequence of using social media, may be sufficient for political participation, but may be insufficient to prevent misinformation spreading.

Also, it is not clear whether it is *actual* or *perceived* levels of information what matters for political engagement. Kuklinski and his colleagues (2000) argued that the important distinction in assessing citizens' competence is not the informed versus the uninformed. Rather, the distinction should be threefold: the uninformed (people with no factual beliefs), misinformed (people with incorrect beliefs), and informed (people with factually correct beliefs). Research has shown that uninformed voters participate in politics less frequently, while the misinformed participate as often as the informed (White et al. 2006). In fact, partisan selective exposure – a behavior that is related to developing misperceptions – has been found to predict participation (Feezell 2016). Perhaps, then, our findings reflect the use of social media by both informed and misinformed users. Specifically, informed users would be those for whom social media news use and political participation does not lead to misinformation sharing. Misinformed users, instead, would be those for whom this relationship holds. This possibility is also consistent with the literature on the illusion of knowledge (Tsai, Klayman, and Hastie 2008): at a certain point on the learning curve, individuals acquire high levels of confidence in their knowledge, which subsequently prevents them from processing new information and makes them more likely to assume inaccurate beliefs.

However it may be, the results suggest the existence of a paradox. Using a platform for informational purposes, such as Twitter or Facebook allow, can motivate users to become more politically engaged. Increased political engagement is correlated with increased spread of content, including misinformation. The addition of the concept of increased engagement's association with sharing of misinformation complicates the narrative of most research, which has traditionally addressed the nexus between informational uses of social media and political engagement in positive tones. For too long, researchers – including the authors of this article – have described engagement in positive terms. More recently, scholars have begun questioning this one-sided account. Quandt (2018), for instance, has described the phenomenon of “dark participation.” Our argument is consistent with this new line of work, which is a more nuanced, if not altogether revisionist, approach on the study

of social media news use and politics. To paraphrase Quandt (2018), this study is about “dark sharing,” which contrasts with brighter forms of information diffusion, such as news sharing.

This paradox between political engagement and (mis)information sharing resonates with the tension between deliberative versus participatory models of democracy. Mutz (2002, 851) said that “the kind of environment widely assumed to encourage an open and tolerant society is not necessarily the same kind of environment that produces an enthusiastically participative one.” Paraphrasing, we would argue that the kind of social media environment widely assumed to produce an enthusiastically participative society is not necessarily the same kind of environment that produces one where misinformation is contained. This dilemma is not entirely new. Schudson’s study (1995) of the US news culture found that the partisan press of the nineteenth and early twentieth centuries mobilized the mass public at the expense of factual reporting. Contrastingly, the professional, nonpartisan news media that subsequently became mainstream provided better information, but at the expense of mass mobilization. Perhaps news exposure in the social media era comports with the earlier (and seemingly returning) partisan press era model.

What might explain this paradox? We had predicted that the paradox was a consequence of motivated reasoning, but this does not seem to be the case. If it were, then politically engaged users would be more likely to spread misinformation that is consistent with their beliefs. But this is not what our results show. For now, we see four alternatives that would be consistent with the findings. First, those who are engaged may be participating in disinformation campaigns to advance their political goals, intentionally spreading inaccurate claims to deceive others. Second, politically engaged users may be sharing misinformation to debunk it (i.e., as fact-checkers do) or motivate a discussion among their followers. Third, due to the fact that politically engaged users tend to be opinion leaders, they may be more exposed to misinformation in general – and exposure is a key antecedent of sharing false claims (Grinberg et al. 2019). Fourth, there may be some group dynamic or culturally relevant dimensions that are important in this process. It may be, for instance, that identity defenses or sub-group solidarity may be at play (Tappin, Pennycook and Rand 2018). However, at this point, our data are insufficient to resolve the intention quandary, and the resolution of this paradox must be left for future research.

As in any study, ours has limitations that future research can address. While the panel design of our survey is an improvement over cross-sectional designs, it is not based on random assignment. Thus, the causality quandary is still not definitively resolved, and an experiment would help in more firmly establish the causal ordering of key variables. Although we designed the misinformation questions to reduce socially desirable responding, we cannot rule out that participants engaged in expressive responding (i.e., when respondents knowingly chose answers they do not really believe to support the in-group position and criticize out-group members; Schaffner and Luks 2018). Existing research, however, has shown that the probability of expressive responding is rather low (Berinsky 2018).

Another issue that we did not control for was the sensitization that may have occurred by involving respondents in the first wave. Future researchers might want to

set aside a group and only administer them the second wave to check on the question of sensitization, as has been recommended by the quasi-experimental design literature. Still, we would speculate that given the relatively long time that elapsed between the first and second waves, this potential problem would have been attenuated. Last, we did not investigate the sources of misperceptions. Instead, we treated being misinformed as exogenous. Although our results supported this choice (i.e., misperceptions were not significantly correlated to social media news use or political participation), it is plausible to conceive of informational uses of social media as a determinant of being misinformed by its process of exposing users to inaccurate claims. Future research, then, should address the link between social media news use and misperceptions.

Limitations notwithstanding, our main contribution is a recommendation that any attempts at remediating misinformation spread on social media need to consider important trade-offs between reducing misinformation and promoting citizen mobilization. Yet, while we make a broad suggestion concerning this matter, we do so in recognition that our study is based on one country, namely Chile, which as we have pointed out is part of the global South. Although based on our informal assessment of the situation in the global North, we anticipate that our findings concerning Chile are extensible to the global North. If so, then this study contributes evidence to the belief that social media-driven news and contemporary journalistic structures are extensible to all moderately-to-highly developed societies. If this assessment is verified, the present study could aid understanding of major academic and policy questions concerning the generalizability of selectively observed consistencies between the level of economic development and the technologies for spreading of information and misinformation across local and national cultures.

Still, beyond the question of cross-national comparisons of information/misinformation processes, lies an even more central question. That is, should the conclusions of our study be borne out, it would indicate severe ramifications for programmatic interventions specifically and public policy more generally. For decades, scholars and policymakers have praised the well-informed, participatory citizen; numerous large-scale mobilization projects have been launched to promote exchange of information among citizens. There has also been feverish efforts to create systems to filter, rate and curate news with an eye towards purging fabricated content. Although not mutually exclusive processes, there may well be an inherent conflict between the goals of spreading information and blocking misinformation. A mobilized public could notwithstanding engage in pernicious behaviors, such as the spread of misinformation. Future research needs to tackle this hitherto hidden paradox.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. Importantly, low response rates alone do not necessarily suggest bias. What matters is whether respondent characteristics are representative of nonrespondents (Krosnick 1999). Hence, we estimated nonresponse bias by comparing the wave-1 sample to population

benchmarks, and found that it was similar in terms of gender and social media usage, but considerably younger, and both more educated and ideologically left-wing. To correct for these biases mathematically, the variables that could be used to construct a post-stratification weight were entered as control variables in the statistical models reported below (Gelman 2007, 154).

2. To check whether the failure to re-survey some panel respondents resulted in selection bias (i.e., panel effects), we compared the magnitude and statistical significance of differences in all key and control variables between all wave-1 respondents and those who completed wave-2. None of the 12 comparisons yielded a statistically significant result.
3. Skewness scores were $<|1.0|$ for all variables, except for misinformation sharing (change score = -1.25 ; wave-1 = 1.75 ; wave-2 = 2.41). This is not surprising; count variables tend to be positively skewed. The results of both Poisson and negative binomial estimators, however, were entirely consistent with those reported in the main text.

Funding

This work was supported by the National Commission for Scientific and Technological Research (CONICYT) under grants Fondap/CIGIDEN/15110017 and Fondecyt/1181600; and the Millennium Science Initiative under grant ICM/2018/Millennium Institute for Foundational Research on Data (IMFD).

ORCID

Sebastián Valenzuela  <http://orcid.org/0000-0001-5991-7364>

Daniel Halpern  <http://orcid.org/0000-0002-1569-9876>

Juan Pablo Miranda  <https://orcid.org/0000-0002-8959-4647>

References

- Allcott, Hunt, and Matthew Gentzkow. 2017. "Social Media and Fake News in the 2016 Election." *Journal of Economic Perspectives* 31 (2): 211–36.
- Arriagada, Cristóbal, and Ignacia Velasco. 2017. "Noticias Falsas Sobre Chile Fueron Vistas o Compartidas 3,5 Millones de Veces en Redes Sociales Durante Este Año." *El Mercurio*, November 26.
- Beam, Michael A., Myiah J. Hutchens, and Jay D. Hmielowski. 2016. "Clicking vs. Sharing: The Relationship between online News Behaviors and Political Knowledge." *Computers in Human Behavior* 59: 215–220.
- Berinsky, Adam J. 2018. "Telling the Truth About Believing the Lies? Evidence for the Limited Prevalence of Expressive Survey Responding." *The Journal of Politics* 80 (1): 211–224.
- Bode, Leticia. 2016. "Political News in the News Feed: Learning Politics from Social Media." *Mass Communication and Society* 19 (1): 24–48.
- Bode, Leticia, and Emily K. Vraga. 2015. "In Related News, That Was Wrong: The Correction of Misinformation through Related Stories Functionality in Social Media." *Journal of Communication* 65 (4): 619–638.
- Boulianne, Shelley. 2019. "Revolution in the Making? Social Media Effects across the Globe." *Information, Communication & Society* 22 (1): 39–54.
- Bright, Jonathan. 2016. "The Social News Gap: How News Reading and News Sharing Diverge." *Journal of Communication* 66 (3): 343–365.
- Callegaro, Mario, Katja Lozar Manfreda, and Vasja Vehovar. 2015. *Web Survey Methodology*. Los Angeles: Sage.

- Choi, Jihyang. 2016. "Why Do People Use News Differently on SNSs? An Investigation of the Role of Motivations, Media Repertoires, and Technology Cluster on Citizens' News-Related Activities." *Computers in Human Behavior* 54: 249–256.
- de Vreese, Claes, and Peter Neijens. 2016. "Measuring Media Exposure in a Changing Communications Environment." *Communication Methods and Measures* 10 (2–3): 69–80.
- Delli Carpini, Michael X. and Scott Keeter. 1996. *What Americans Know about Politics and Why it Matters*. New Haven, CT: Yale University Press.
- Dimitrova, Daniela V., Adam Shehata, Jesper Strömbäck, and Lars W. Nord. 2014. "The Effects of Digital Media on Political Knowledge and Participation in Election Campaigns: Evidence from Panel Data." *Communication Research* 41 (1): 95–118.
- Ekström, Mats, and Adam Shehata. 2018. "Social Media, Porous Boundaries, and the Development of Online Political Engagement among Young Citizens." *New Media & Society* 20 (2): 740–759.
- Farkas, Johan and Jannick Schou. 2018. "Fake News as a Floating Signifier: Hegemony, Antagonism and the Politics of Falsehood." *Javnost - The Public* 25 (3): 298–314.
- Feezell, Jessica T. 2016. "Predicting Online Political Participation: The Importance of Selection Bias and Selective Exposure in the Online Setting." *Political Research Quarterly* 69 (3): 495–509.
- Finkel, Steven E. 1995. *Causal Analysis with Panel Data*. Thousand Oaks: SAGE.
- Fiske, Susan T., and Shelley E. Taylor. 2013. *Social Cognition: From Brains to Culture*. 2nd ed. Los Angeles: Sage.
- Flynn, D. J., Brendan Nyhan, and Jason Reifler. 2017. "The Nature and Origins of Misperceptions: Understanding False and Unsupported Beliefs about Politics." *Political Psychology* 38 (S1): 127–150.
- Garramone, Gina M., and Charles K. Atkin. 1986. "Mass Communication and Political Socialization: Specifying the Effects." *Public Opinion Quarterly* 50 (1): 76–86.
- Garrett, R. Kelly, Brian E. Weeks, and Rachel L. Neo. 2016. "Driving a Wedge between Evidence and Beliefs: How Online Ideological News Exposure Promotes Political Misperceptions." *Journal of Computer-Mediated Communication* 21 (5): 331–348.
- Gelman, Andrew. 2007. "Struggles with Survey Weighting and Regression Modeling." *Statistical Science* 22 (2): 153–164.
- Gil de Zúñiga, Homero, Nakwon Jung, and Sebastián Valenzuela. 2012. "Social Media Use for News and Individuals' Social Capital, Civic Engagement and Political Participation." *Journal of Computer-Mediated Communication* 17 (3): 319–336.
- Gil de Zúñiga, Homero, Logan Molyneux, and Pei Zheng. 2014. "Social Media, Political Expression, and Political Participation: Panel Analysis of Lagged and Concurrent Relationships." *Journal of Communication* 64 (4): 612–634.
- González, Ricardo. 2017. "La Creciente Desconfianza en los Medios de Comunicación." *La Situación*, Available from: <http://lasituacion.cl/2017/10/17/la-creciente-desconfianza-en-los-medios-de-comunicacion/>
- Grinberg, Nir, Kenneth Joseph, Lisa Friedland, Briony Swire-Thompson, and David Lazer. 2019. "Fake News on Twitter During the 2016 U.S. Presidential Election." *Science* 363 (6425), 374–378.
- Groshek, Jacob, James E. Katz, Brittany Andersen, Chelsea Cutino, and Qiankun Zhong. 2018. "Media Use and Antimicrobial Resistance Misinformation and Misuse: Survey Evidence of information Channels and Fatalism in Augmenting a Global Health Threat." *Cogent Medicine* 5 (1): 1460898.
- Guess, Andrew, Brendan Nyhan, and Jason Reifler. 2018. "Selective Exposure to Disinformation: Evidence from the Consumption of Fake News During the 2016 US Presidential Campaign." Available from: <https://www.dartmouth.edu/~nyhan/fake-news-2016.pdf>
- Hasell, Ariel, and Brian E. Weeks. 2016. "Partisan Provocation: The Role of Partisan News Use and Emotional Responses in Political Information Sharing in Social Media." *Human Communication Research* 42 (4): 641–661.
- Hayes, Andrew F. 2013. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York: The Guilford Press.

- Hochschild, Jennifer L., and Katherine Levine Einstein. 2015. "Do Facts Matter? Information and Misinformation in American Politics." *Political Science Quarterly* 130 (4): 585–624.
- Jackson, Dean. 2017. *Distinguishing Disinformation from Propaganda, Misinformation, and "Fake News."* National Endowment for Democracy Issue Brief. Available form: <https://www.ned.org/issue-brief-distinguishing-disinformation-from-propaganda-misinformation-and-fake-news/>
- Kalsnes, Bente. 2018. "Fake News." In *Oxford Research Encyclopedia of Communication*, edited by Jon F. Nussbaum. New York: Oxford University Press.
- Karlova, Natascha A., and Karen E. Fisher. 2013. "'Plz RT': A Social Diffusion Model of Misinformation and Disinformation for Understanding Human Information Behaviour." *Information Research* 18 (1): 1–17.
- Katz, James E. and Mark Aakhus, eds. 2002. *Perpetual Contact: Mobile Communication, Private Talk, Public Performance*. Cambridge: Cambridge University Press.
- Knoll, Johannes, Jörg Matthes, and Raffael Heiss. 2018. "The Social Media Political Participation Model: A Goal Systems Theory Perspective." *Convergence*. Advance online publication.
- Krosnick, Jon A. 1999. "Survey Research." *Annual Review of Psychology* 50 (1): 537–567.
- Kuklinski, James H., Paul J. Quirk, Jennifer Jerit, David Schwieder, and Robert F. Rich. 2000. "Misinformation and the Currency of Democratic Citizenship." *Journal of Politics* 62 (3): 790–816.
- Kunda, Ziva. 1990. "The Case for Motivated Reasoning." *Psychological Bulletin* 108 (3): 480–498.
- LaRose, Robert, and Hsin-yi Sandy Tsai. 2014. "Completion Rates and Non-Response Error in Online Surveys: Comparing Sweepstakes and Pre-Paid Cash Incentives in Studies of Online Behavior." *Computers in Human Behavior* 34: 110–119.
- Lazer, David M. J., Matthew A. Baum, Yochai Benkler, Adam J. Berinsky, Kelly M. Greenhill, Filippo Menczer, Miriam J. Metzger et al. 2018. "The Science of Fake News." *Science* 359 (6380): 1094–1096.
- Lewis, Seth C., and Logan Molyneux. 2018. "A Decade of Research on Social Media and Journalism: Assumptions, Blind Spots, and a Way Forward." *Media and Communication* 6 (4): 11–23.
- Lodge, Milton, and Charles S. Taber. 2013. *The Rationalizing Voter*. New York: Cambridge University Press.
- Marshall, Rodney K. 2006. "An Instrument to Measure Information Competency." *Journal of Literacy and Technology*, 6(1). <http://works.bepress.com/rodney-marshall/4/>
- Mendoza, Marcelo, Barbara Poblete, and Carlos Castillo. 2010. "Twitter Under Crisis: Can We Trust What We RT?" In *Proceedings of the First Workshop on Social Media Analytics (SOMA '10)*, 71–79. New York: ACM.
- Miller, Joanne M., Kyle L. Saunders, and Christina E. Farhart. 2016. "Conspiracy Endorsement as Motivated Reasoning: The Moderating Roles of Political Knowledge and Trust." *American Journal of Political Science* 60 (4): 824–844.
- Mourão, Rachel R., and Craig T. Robertson. 2019. "Fake News as Discursive Integration: An Analysis of Sites That Publish False, Misleading, Hyperpartisan and Sensational Information" *Journalism Studies*. Advance online publication.
- Mutz, Diana C. 2002. "The Consequences of Cross-Cutting Networks for Political Participation." *American Journal of Political Science* 46 (4): 838–855.
- Navia, Patricio, and Ulriksen, Camilla. 2017. "I Tweet, then I Vote: The Effect of Media Consumption and the Use of Social Networks on Electoral Participation in Chile, 2009–2013." *Cuadernos.info*, 40: 71–88.
- Newman, Nic, Richard Fletcher, Antonis Kalogeropoulos, David A. L. Levy, and Rasmus Kleis Nielsen. 2017. *Reuters Institute Digital News Report 2017*. Oxford: Oxford University.
- Nielsen, Rasmus Kleis, and Lucas Graves. 2017. "News You Don't Believe": Audience Perspectives on Fake News. Reuters Institute for the Study of Journalism. <http://reutersinstitute.politics.ox.ac.uk/our-research/news-you-dont-believe-audience-perspectives-fake-news>.
- Pentina, Iryna, and Monideepa Tarafdar. 2014. "From 'Information' to 'Knowing': Exploring the Role of Social Media in Contemporary News Consumption." *Computers in Human Behavior* 35: 211–223.

- Przybylski, Andrew K., Kou Murayama, Cody R. De Haan, and Valerie Gladwell. 2013. "Motivational, Emotional, and Behavioral Correlates of Fear of Missing Out." *Computers in Human Behavior* 29 (4): 1841–1848.
- Quandt, Thorsten. 2018. "Dark Participation." *Media and Communication* 6 (4): 36–48.
- Reedy, Justin, Chris Wells, and John Gastil. 2014. "How Voters Become Misinformed: An Investigation of the Emergence and Consequences of False Factual Beliefs." *Social Science Quarterly* 95 (5): 1399–1418.
- Rudat, Anja, Jürgen Buder, and Friedrich W. Hesse. 2014. "Audience Design in Twitter: Retweeting Behavior between Informational Value and Followers' Interests." *Computers in Human Behavior* 35: 132–139.
- Ruggiero, Thomas E. 2000. "Uses and Gratifications Theory in the 21st Century." *Mass Communication and Society* 3 (1): 3–37.
- Sauermann, Henry, and Michael Roach. 2013. "Increasing Web Survey Response Rates In Innovation Research: An Experimental Study of Static and Dynamic Contact Design Features." *Research Policy* 42 (1): 273–286.
- Schaffner, Brian F., and Samantha Luks. 2018. "Misinformation or Expressive Responding? What an Inauguration Crowd can Tell Us about the Source of Political Misinformation in Surveys." *Public Opinion Quarterly* 82 (1): 135–147.
- Schudson, Michael. 1995. *The Power of News*. Cambridge, MA: Harvard University Press.
- Shah, Dhavan V., Jaeho Cho, William P. Eveland Jr, and Nojin Kwak. 2005. "Information and Expression in a Digital Age: Modeling Internet Effects on Civic Participation." *Communication Research* 32 (5): 531–565.
- Shah, Dhavan V., and Dietram A. Scheufele. 2006. "Explicating Opinion Leadership: Nonpolitical Dispositions, Information Consumption, and Civic Participation." *Political Communication* 23 (1): 1–22.
- Shehata, Adam, and Jesper Strömbäck. 2018. "Learning Political News from Social Media: Network Media Logic and Current Affairs News Learning in a High-Choice Media Environment." *Communication Research*. Advance online publication.
- Skoric, Marko M., Qinfeng Zhu, Debbie Goh, and Natalie Pang. 2016. "Social Media and Citizen Engagement: A Meta-Analytic Review." *New Media & Society* 18 (9): 1817–1839.
- Southwell, Brian G., Emily A. Thorson, and Laura Sheble. 2018. "Introduction: Misinformation among Mass Audiences as a Focus for Inquiry." In *Misinformation and Mass Audiences*, edited by Brian G. Southwell, Emily A. Thorson, and Laura Sheble, 1–11. Austin: University of Texas Press.
- Tambuscio, Marcella, Giancarlo Ruffo, Alessandro Flammini, and Filippo Menczer. 2015. "Fact-Checking Effect on Viral Hoaxes: A Model of Misinformation Spread in Social Networks." In *Proceedings of the 24th International Conference on World Wide Web (WWW '15 Companion)*, 977–982. New York: ACM.
- Tappin, Ben M., Gordon Pennycook, and David G. Rand. 2018. "Rethinking the Link Between Cognitive Sophistication and Identity-protective Bias in Political Belief Formation." *PsyArXiv*. <https://doi.org/10.31234/osf.io/yuzfj>
- Tandoc Jr. Edson C., Zheng Wei Lim, and Richard Ling. 2018. "Defining 'Fake News': A Typology of Scholarly Definitions." *Digital Journalism* 6 (2): 137–153.
- Theocharis, Yannis, and Jan W. van Deth. 2018. "The Continuous Expansion of Citizen Participation: A New Taxonomy." *European Political Science Review* 10 (1): 139–163.
- Tsai, Claire I., Joshua Klayman, and Reid Hastie. 2008. "Effects of Amount of Information on Judgment Accuracy and Confidence." *Organizational Behavior and Human Decision Processes* 107 (2): 97–105.
- Tucker, Joshua A., Yannis Theocharis, Margaret E. Roberts, and Pablo Barberá. 2017. "From Liberation to Turmoil: Social Media and Democracy." *Journal of Democracy* 28 (4): 46–59.
- Valenzuela, Sebastián. 2013. "Unpacking the Use of Social Media for Protest Behavior: The Roles of Information, Opinion Expression, and Activism." *American Behavioral Scientist* 57 (7): 920–942.

- Valenzuela, Sebastián, Martina Piña, and Josefina Ramírez. 2017. "Behavioral Effects of Framing on Social Media Users: How Conflict, Economic, Human Interest, and Morality Frames Drive News Sharing." *Journal of Communication* 67 (5): 803–826.
- van Deth, Jan W. 2014. "A Conceptual Map of Political Participation." *Acta Politica* 49 (3): 349–367.
- Vargo, Chris J., Lei Guo, and Michelle A. Amazeen. 2018. "The Agenda-Setting Power of Fake News: A Big Data Analysis of the Online Media Landscape from 2014 to 2016." *New Media & Society* 20 (5): 2028–2049.
- Verba, Sidney and Norman H. Nie. 1972. *Participation in America: Political Democracy and Social Equality*. Chicago: University of Chicago Press.
- Vosoughi, Soroush, Deb Roy, and Sinan Aral. 2018. "The Spread of True and False News Online." *Science* 359 (6380): 1146–1151.
- Wardle, Claire, and Derakhshan, Hossein. 2017. *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*. Paris, France: Council of Europe. <https://firstdraft-news.com/wp-content/uploads/2017/11/PREMS-162317-GBR-2018-Report-de%CC%81sinformation-1.pdf?x29719>
- Waisbord, Silvio. 2018. "Truth is What Happens to News." *Journalism Studies* 19 (13): 1866–1878.
- Weeks, Brian E. 2015. "Emotions, Partisanship, and Misperceptions: How Anger and Anxiety Moderate the Effect of Partisan Bias on Susceptibility to Political Misinformation." *Journal of Communication* 65 (4): 699–719.
- White, Kenneth Michael, Michael Binder, Richard Ledet, and C. Richard Hofstetter. 2006. "Information, Misinformation, and Political Participation." *American Review of Politics* 27: 71–90.
- Wolters, Erika Allen, and Brent S. Steel. 2018. *When Ideology Trumps Science: Why We Question the Experts on Everything from Climate Change to Vaccinations*. Santa Barbara: ABC-CLIO.

Appendix

Table A1 Fixed-Effects Model of Social Media, Political Participation and Misinformation Sharing

| Independent Variables: | Dependent Variables: | | | | | |
|--|-------------------------|---------|------------------------|---------|------------------------|---------|
| | Political Participation | | Misinformation Sharing | | Misinformation Sharing | |
| | b | (SE) | b | (SE) | b | (SE) |
| Social media news use | 0.043*** | (0.012) | 0.018 | (0.031) | 0.019 | (0.031) |
| Political participation | – | – | 0.312* | (0.136) | 0.282* | (0.138) |
| Misperceptions | 0.005 | (0.055) | 0.699*** | (0.144) | 0.695*** | (0.144) |
| Political participation x Misperceptions | – | – | – | – | –0.308 | (0.224) |
| Professional news use | 0.043* | (0.019) | 0.038 | (0.049) | 0.036 | (0.049) |
| Information efficacy | 0.023 | (0.057) | 0.099 | (0.145) | 0.103 | (0.145) |
| Political ideology (L-R) | –0.019 | (0.031) | 0.042 | (0.083) | 0.041 | (0.083) |
| Trust in professional news | 0.081 | (0.046) | –0.088 | (0.117) | –0.093 | (0.117) |
| Constant | 0.018 | (0.029) | –0.469 | (0.072) | –0.467 | (0.072) |
| R ² | .055 | | .077 | | .082 | |

Note. Sample size = 451. Cell entries are unstandardized path coefficients, with standard errors in parentheses.

* $p < .05$,

** $p < .01$,

*** $p < .001$ (two-tailed)

Table A2 Autoregressive Panel Model of Social Media, Political Participation and Misinformation Sharing

| Independent Variables: | Political Participation | | Misinformation Sharing | | Misinformation Sharing | |
|--|-------------------------|---------|------------------------|---------|------------------------|---------|
| | b | (SE) | b | (SE) | b | (SE) |
| Social media news use | 0.054*** | (0.010) | 0.038 | (0.021) | 0.038 | (0.021) |
| Political participation | – | – | 0.172* | (0.073) | 0.289 | (0.267) |
| Misperceptions | 0.027 | (0.036) | 0.443*** | (0.073) | 0.531** | (0.206) |
| Political participation x Misperceptions | – | – | – | – | –0.046 | (0.102) |
| Autoregressive term | 0.693*** | (0.035) | 0.304*** | (0.031) | 0.304*** | (0.031) |
| Professional news use | –0.009 | (0.016) | –0.049 | (0.031) | –0.046 | (0.032) |
| Information efficacy | –0.072 | (0.051) | 0.018 | (0.095) | 0.015 | (0.095) |
| Political ideology (L-R) | –0.021 | (0.019) | –0.044 | (0.037) | –0.042 | (0.037) |
| Trust in professional news | –0.019 | (0.040) | 0.007 | (0.079) | 0.009 | (0.079) |
| Age | 0.002 | (0.002) | 0.008 | (0.004) | 0.008 | (0.004) |
| Gender (female) | –0.067 | (0.053) | –0.125 | (0.102) | –0.130 | (0.102) |
| Education | –0.029 | (0.034) | –0.062 | (0.065) | –0.061 | (0.065) |
| Income | 0.023 | (0.020) | 0.033 | (0.039) | 0.034 | (0.039) |
| Constant | 0.830* | (0.340) | –0.754 | (0.652) | –.992 | (0.831) |
| R ² | .556 | | .323 | | .333 | |

Note. Sample size = 451. Cell entries are unstandardized path coefficients, with standard errors in parentheses.

* $p < .05$,

** $p < .01$,

*** $p < .001$ (two-tailed)