

ORIGINAL RESEARCH

Rethinking the Virtuous Circle Hypothesis on Social Media: Subjective versus Objective Knowledge and Political Participation

Sangwon Lee ^{1*}, Trevor Diehl², & Sebastián Valenzuela ³

1 Department of Communication Studies, New Mexico State University, 1405 International Drive, New Mexico State University, Las Cruces, NM 88003, USA

2 School of Broadcast and Cinematic Arts, Central Michigan University, Moore Hall 313, Central Michigan University, Mt Pleasant, MI 48859, USA

3 School of Communications, Pontificia Universidad Católica de Chile, Santiago, Region Metropolitana, Chile

Despite early promise, scholarship has shown little empirical evidence of learning from the news on social media. At the same time, scholars have documented the problem of information 'snacking' and information quality on these platforms. These parallel trends in the literature challenge long-held assumptions about the pro-social effects of news consumption and political participation. We argue that reliance on social media for news does not contribute to people's real level of political knowledge (objective knowledge), but instead only influences people's impression of being informed (subjective knowledge). Subjective knowledge is just as important for driving political participation, a potentially troubling trend given the nature of news consumption on social media. We test this expectation with panel survey data from the 2018 U.S. midterm elections. Two path model specifications (fixed effects and autoregressive) support our theoretical model. Implications for the study of the 'dark side' of social media and democracy are discussed.

Keywords: Social Media News, Objective Political Knowledge, Subjective Political Knowledge, Political Participation, Panel Data

doi:10.1093/hcr/hqab014

Democratic theorists have long espoused that a well-informed, educated citizenry is an ideal component of active engagement in democratic society (Delli Carpini & Keeter, 1996; Norris, 2000). Accordingly, scholars of social media have examined the seeming pro-social, pro-democratic connections between informational uses of social media and political participation (Dimitrova et al., 2014; Gil de Zúñiga et al., 2014). However, recent developments suggest that the quality and context of news consumption on social media requires more scrutiny (Cacciatore et al., 2018; Lee, 2020). While social media appear to provide ample opportunities for individuals to access political

*Corresponding author: Email: swlee@nmsu.edu

information—and thus may represent an ideal platform to seek out and learn about politics—recent findings show either no statistically significant evidence (Dimitrova et al., 2014; Oeldorf-Hirsch, 2018) or even a negative impact on political learning (Cacciatore et al., 2018; Lee, 2020; Lee & Xenos, 2019; Shehata & Strömbäck, 2018).

Such a null—and often negative—relationship between frequency of social media news use and political knowledge may be the direct outcome of how news is generated and disseminated on social media. Notably, a significant amount of news content is user-generated rather than professionally curated. Of course, this does not mean that all news posted to these platforms is of low quality. In fact, those interested in politics can subscribe to high-quality news providers (e.g., the Facebook page of the *New York Times*). Yet, for many adopters it does not seem to translate into political knowledge acquisition. The short posts and endless feeds lend to a type of “snack news” or news “that briefly addresses a news topic with no more than a headline, a short teaser, and a picture.” (Schäfer, 2020, p. 1). Constant consumption of short pieces of information that do not provide background information, context, nor explanations may hinder one’s political knowledge. Meanwhile, several reports indicate that it leads to the (faulty) impression that one is getting relevant news and public affairs information (Gil de Zúñiga et al., 2017; Lee, 2020). Thus, the field has turned to examining perceived political knowledge (Feezell & Ortiz, 2019) and knowledge miscalibration, or the gap between what one thinks they know and what they actually know (Yamamoto et al., 2018). This line of work is more skeptical of normative claims about democratic processes and is consistent with a growing number of studies suggesting that social media amplify “darker,” anti-social processes of political engagement (e.g., Quandt, 2018; Valenzuela et al., 2019).

In contrast to the literature on political knowledge, there is robust evidence showing a positive relationship between social media news use and political participation, especially regarding expressive, organizing, and protest activities (Boulianne, 2015). These seemingly pro-democratic outcomes pose a challenge to theorists examining the epistemic nature of political participation on social media. Epistemology refers to the study of knowledge gain and its outcomes, and in this study, we are concerned with how people learn about and respond to facts about political issues, actors, and processes. If people do not base decisions to participate on factual knowledge, then what is the epistemic driver of political behavior on social media? To answer this question, we propose a theoretical and empirical path model that explores how subjective knowledge (i.e., people’s self-perception of how much they know), and not objective knowledge (i.e., relative level of accurate information people possess), leads to political behavior. In this way, this study aims to rethink the normative, or ideal, framework of the “virtuous cycle” of news consumption, political knowledge, and political participation.

We test our expectations with original panel survey data from the 2018 U.S. mid-term election ($N = 818$). The analysis employs two time-based modeling approaches to path modeling (i.e., autoregressive and fixed-effects) that reduce measurement error and offer a robustness checks of our findings.

Social media and political participation

Over the past decade, scholars have consistently found a positive relationship between informational social media use and political participation (Dimitrova *et al.*, 2014; Gil de Zúñiga *et al.*, 2014). According to the classical definition given by Verba and Nie (1972, p. 2), “political participation” refers to “those activities by private citizens that are more or less directly aimed at influencing the selection of governmental personnel and/or the actions they take,” and includes a wide range of political activities, including voting, protesting, contacting a public official, attending a public meeting, and signing a petition, among others.

Several reasons have been put forth to explain the positive relationship between social media use and political participation, most of which have focused on social media’s: (a) informational, (b) expressional, and (c) networking role in fostering political participation. First, the informational effects hypothesis posits that social media, by helping users quickly and easily obtain news/political information, develops user’s awareness of and knowledge about political issues and opportunities, which in turn increases the likelihood of participating in civic and political life. This assumption is grounded in studies of traditional media, which have shown that those who use media to learn about current events have both greater political knowledge and a higher likelihood of being politically engaged (McLeod *et al.*, 1996, 1999).

However, the theoretical path from informational media use to knowledge gain has not received much empirical support in the context of social media. Indeed, several studies that have investigated such relationships find that using social media for news does not help (Dimitrova *et al.*, 2014; Feezell & Ortiz, 2019; Lee & Xenos, 2019; Oeldorf-Hirsch, 2018)—and can actually hinder—learning about politics and current affairs (Cacciatore *et al.*, 2018; Lee, 2020; Shehata & Strömbäck, 2018; van Erkel & Van Aelst, 2020). Exceptions to this negative re-enforcement trend exist (c.f. Bode, 2016; Park, 2019), but an overwhelming amount evidence suggests that the informational hypothesis is not well supported. The goal of this study is to address these findings by further explicating the epistemic dimension of political behavior in response to news consumption on social media.

If knowledge is not a key driver of participation, a long tradition of scholarship suggests that people who take advantage of the expressive and networking affordances of these technologies are most likely to engage in public life. A second explanation is that social media increase participation by encouraging political expression in response to consuming news content on these platforms (e.g., Gil de Zúñiga *et al.*, 2014). Such arguments assert that political expression on social media inherently involves self-reflective processes via reading, thinking about, then posting or discussing (Pingree, 2007), thus providing an opportunity for cognitive engagement with issues in the news. Reflection helps provide further motivation to act. For example, posting or sharing news stories, commenting on news/political content, and generally expressing one’s voice through friend networks fosters participation at higher rate than those who refrain from expressive behaviors (Yamamoto *et al.*, 2015).

This line of thinking runs parallel to work on the mediating role of political discussion on participation (Shah et al., 2005), and studies find this link on social media as well (Gil de Zúñiga et al., 2014). In short, engagement (albeit virtually) in politically expressive activities may make an individual transition from observer to participant.

A third, related explanation has explored the role of social media in forging social networks that can be mobilized. Social networks can be conducive to political participation in several ways (Boulianne, 2015). First, social networks facilitate information flows, which increase the chances of being exposed to mobilizing information (e.g., where, when, and how to participate), as well as the likelihood being asked to participate in political activities. In addition, social media are an ideal platform to form and sustain online civic/political groups, where ideological ties can easily be reinforced and mobilized (Conroy et al., 2012; Valenzuela, 2013). Considering the proposed explanations, the networking and expressive affordances of social platforms represent ample explanation for a direct effect, and therefore we propose the following, confirmatory hypothesis:

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

Social media and political knowledge

The positive, seemingly pro-social link between social media news use and political participation is well established (Boulianne, 2015, 2019). Yet, the underlying individual-level cognitive variables that might explain how these various mechanisms work in practice are not as well understood. One primary explanation treats social media as an informational resource. That is, people easily consume news/political information, curate news flows and follow news that aligns with their interests, and such news consumption is likely to make people attentive to and become knowledgeable about politics, which then lead them to engage in various participatory activities (Boulianne, 2016; Conroy et al., 2012). This rationale is based on the normative, or ideal, framework of the “virtuous cycle” of news consumption and civic participation (De Vreese & Boomgaarden, 2006; Norris, 2000). The virtuous cycle has been used as a theoretical framework to explain the circular relationship between news consumption, factual knowledge, and political participation. However, the expectation that this framework will also hold in the social media environment is dubious because many empirical studies have failed to prove a positive learning effect from social news reliance.

At first glance, social media may be considered an ideal platform for citizens to learn about politics and current affairs. Indeed, on such platforms, users can not only actively seek out and consume news from various sources more than ever before, but also have opportunities to be incidentally exposed to news/political information from their social networks, even when using social media for non-informational purposes (e.g., Bode, 2016; Fletcher & Nielsen, 2018). Yet, despite

such theoretical potential, empirical studies have dampened this optimism. For instance, many studies failed to find the incidental learning effect of social media (e.g., [Feezell & Ortiz, 2019](#); [Kümpel, 2020](#); [Oeldorf-Hirsch, 2018](#)) despite some exceptions (e.g., [Lee & Kim, 2017](#)). One of the plausible explanations was that incidental news exposure does not necessarily make people deeply process the content, which thus does not necessarily translate into knowledge. Recent scholarship also suggests that since content exposure is likely to be filtered by algorithms, one's networks, and one's preferences ([Lee & Xenos, 2020](#); [Thorson & Wells, 2016](#)), incidental exposure to news is limited to those who are already interested in news/politics, thus not producing much learning effect ([Kümpel, 2020](#)).

Yet, what makes it difficult to interpret the non-positive relationship between social media use and political knowledge is that such relationship does not just hold for passive social media use (e.g., incidental exposure to news), but also for active social media use (e.g., social media use for news consumption, political social media use). Because if media effects have largely been understood upon the basis of the uses and gratification theory, where people select media content to satisfy their needs ([Katz et al., 1974](#)), it may seem obvious that social media use—when used for informational or political purposes—should help people stay informed. Prior to the social media era, unsurprisingly, media scholars had established the positive relationship between informational media use and political knowledge, regardless of the type of media, such as newspaper (e.g., [Chaffee & Kanihan, 1997](#)), TV (e.g., [Prior, 2007](#)), and even the internet (e.g., [Xenos & Moy, 2007](#)). In this sense, social media seemingly provides an ideal platform, at least to those using it for informational purposes, to access and learn about news and current affairs, as it provides voluminous, near-real-time updates from various sources.

Yet, despite such theoretical potential, most empirical studies—with some exceptions (e.g., [Park & Kaye, 2019](#))—have found either non-positive ([Dimitrova et al., 2014](#); [Feezell & Ortiz, 2019](#); [Lee & Xenos, 2019](#); [Oeldorf-Hirsch, 2018](#)) or even negative ([Cacciatore et al., 2018](#); [Lee, 2019, 2020](#); [Shehata & Strömbäck, 2018](#); [van Erkel & Van Aelst, 2020](#)) relationship between social media news (even when people purposefully use social media for news consumption) and political knowledge.

One reason is because social media news is that it often comes in the form of “snack news,” or news presented with “no more than a headline, a short teaser, and a picture” ([Schäfer, 2020, p.1](#)). Such bits are unlikely to be read in their entirety, but rather glimpsed at quickly before being swapped for other news articles ([Molyneux, 2018](#)). This means users get many short pieces of news—and thus, would report that they consume a lot of news—that do not provide background information, contexts, nor explanations. Such news may prevent, and even confuse them, from acquiring accurate information about politics.

Another essential characteristic of social media is that a lot of content (including news) is user-generated. On social media, anyone can easily create “news,” whether verified or not, and such user-generated content can spread rapidly and widely throughout social media. Thus, social media news content suffers from quality

concerns ranging from superficiality to biased coverage and veracity concerns (e.g., [Brossard, 2013](#); [Sveningsson, 2015](#), [Tandoc et al., 2018](#)). What is more serious is that the information on social media is not only of lower quality, but that such low-quality information pretends to be news. That is, while people may believe that they read “news” on social media (and thus, believe that they will consequently become politically informed), they may in fact be reading biased, subjective, inaccurate/misleading news content, and even mis/disinformation ([Egelhofer & Lecheler, 2019](#)), which can negatively affect one’s acquisition of factual political information.

Lastly, on social media, news and political information is often interspersed with non-political content—such as personal updates from friends, entertainment content, memes, advertisements, etc.—thus concurrently exposing its viewers to considerable non-political content and other unrelated pop-ups ([Chadwick, 2009](#); [Pentina & Tarafdar, 2014](#)). Such an information environment may make individuals feel distracted and even overwhelmed when consuming news content, which can hamper their learning about politics.

Thus, if objective knowledge of the key facts, actors and events of politics is not associated with news consumption on social media, what is the epistemic driver of political participation on social media?

Subjective knowledge and social media for news

While the news environment on social media can impede one from assimilating objective knowledge about politics and current affairs, it can also contribute to people’s general impression of being informed (rather than demonstratively informing them about politics). Indeed, the argument that news media exposure can enhance users’ perceived sense of knowledge, without enhancing actual knowledge, is not new. For example, [Park \(2001\)](#) noted that as exposure with certain events or content increase, “media audiences may increasingly recognize frequently portrayed events as familiar, without necessarily gaining knowledge” (p. 419). She argued that news media exposure can develop an “illusion of knowing” by enhancing familiarity with an issue. [Mondak \(1995\)](#) found that the prevalence of local newspapers only enhanced subjective knowledge about national politics unless respondents had higher levels of education attainment and prior political knowledge.

Consistent with these patterns, [Hermida \(2010\)](#) notes that the omnipresence of news in the current media environment creates an “ambient awareness” of news events, where production and control of knowledge are more fluid. Following the logic established on familiarity ([Park, 2001](#)), it stands to reason that this fluid news context could lead to the erroneous belief that one can stay well informed. This environment blurs the traditional lines between news and non-news to the extent that one’s subjective perception about what counts as “newsy” may have dramatic impact on the formation political ideals and behaviors ([Edgerly & Vraga, 2020](#)).

Several empirical studies support this rationale. For example, [Gil de Zúñiga et al. \(2017\)](#) pointed out that the ubiquity of news in contemporary media environment

can create a “news-finds-me” (NFM) perception, which refers to a faulty perception that the news will be pushed through them anyway and thus inform them, even if they do not actively seek it out. This perception is especially prevalent within the context of social media, where users are constantly exposed to news from their online social networks, even when they do not use a platform purposefully for obtaining the news (Gil de Zúñiga *et al.*, 2017; Gil de Zúñiga & Diehl, 2019). Similarly, Müller *et al.* (2016) and Schäfer (2020) noted that repeated exposure to certain news content in social media news feeds makes consumers feel that they are informed, even though they did not learn any objective facts, which they referred to as “illusion of knowledge.” These findings have been replicated in experimental research. Feezell and Ortiz (2019) conducted two longitudinal, controlled experiments to examine whether exposure to political information increases factual political knowledge among participants. They did not find any significant difference in levels of factual political knowledge between those exposed to political information compared to those who were not. Instead, they pointed out that such exposure increases self-perceived knowledge among those with lower levels of political interest.

Thus, the information environment provides strong incentives for subjective knowledge to misalign with actual knowledge gain. In this vein, subjective knowledge shares some overlap with the NFM perception, which stipulates that people’s false sense of being informed is a product of peer reliance for news updates (Gil de Zúñiga *et al.*, 2017). The NFM perception directly implicates subjective knowledge via the self-confirmation bias (Song *et al.*, 2020), and lower levels of objective knowledge is an outcome for high NFM individuals (Gil de Zúñiga *et al.*, 2017). However, subjective knowledge is a distinct concept, and one’s self-perception of being informed is present regardless of whether they actively seek news (online or offline) or rely on friends for updates. On social media, the NFM perception offers some evidence that reliance on social media for news may contribute or operate as an antecedent to the inflation of subjective knowledge.

These theoretical considerations and empirical findings show that constant exposure to news content on social media may create some familiarity with an issue through an ambient information environment, rather than deeply informing the consumer. Based on all these empirical and conceptual considerations, we propose the following:

RQ1. What is the relationship between social media news use and objective political knowledge?

H2. Social media news use will be positively related to subjective political knowledge.

Political knowledge and participation

Objective political knowledge, in some literature referred to as factual knowledge, has long been regarded as an antecedent of political participation (Delli Carpini &

Keeter, 1996; Kaid et al., 2007; Verba et al., 1995). One reason is because political knowledge can facilitate political participation through increasing one's feelings of efficacy. For instance, Kaid et al. (2007), through a series of focus group interviews, found that young citizens largely attributed their non-voting behavior to a lack of sufficient political knowledge about the candidates and the issues. Delli Carpini (2000) made a similar remark by arguing that "young adults often lack the ability to become involved in public life. Most important in this regard is lack of information—from general knowledge about how government works to specific knowledge about how to register and vote" (p. 345). Jung et al. (2011), based on the framework of an O-S-R-O-R model of communication effects (e.g., McLeod et al., 1999), argued that news exposure indirectly facilitates political participation through factual political knowledge and efficacy.

Yet, feelings of efficacy may not coincide with actual knowledge about politics and current affairs. In this sense, recent studies suggested that subjective knowledge can serve as a stronger antecedent of political participation than objective knowledge. For instance, Lee and Matsuo (2018), in the UK context, found that confidence in one's knowledge about politics is indeed a better predictor of political participation (rather than retrieval accuracy) because they think they know enough to recognize the importance of politics and further engage in political activities. Yamamoto et al. (2018) also found a negative association between objective knowledge and political participation (both offline and online) and a positive association between subjective knowledge and political participation (both offline and online), though they could not make a causal inference regarding the relationship due to the cross-sectional nature of their data. Schäfer (2020) also found that perceived knowledge, rather than factual knowledge, is positively related to attitude strength and the willingness to discuss a topic. Overall, the literature suggests that subjective self-assessments of political knowledge can be a powerful driver of political participation. In hypothesis form:

H3. Subjective political knowledge will be positively related to political participation.

The findings around subjective knowledge are potentially troubling in the context of social media; unlike prior eras in which news media was limited to only a few sources, in today's media environment, opinions and facts, as well as accurate and inaccurate information, are all mixed, yet hard to distinguish, rendering it difficult for consumers to have an accurate sense of how well-informed they are about politics and current affairs. In other words, the question of subjective knowledge has been underexplored as scholars assumed that the various cues people rely for political decision making were derived from credible sources. Accordingly, it follows logically that objective knowledge and subjective knowledge may misalign in social spaces, as the nature of consumption habits and generally lower quality information feeds the false sense of being informed.

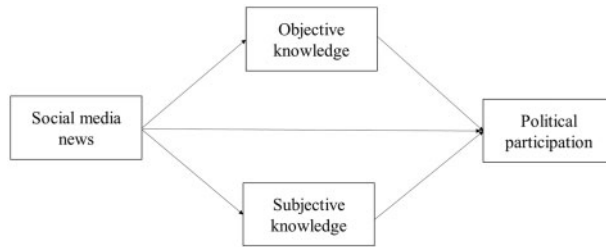


Figure 1 Conceptual model of social media news use, political knowledge, and political participation.

Building on the logic above, we propose a theoretical cognitive-process model to connect the expected direct and indirect associations between social media news use and political participation through subjective political knowledge (see [Figure 1](#)). If direct effects exist for social media news use and subjective political knowledge (H2), and subjective political knowledge drives political participation (H3), it is logical to posit indirect effects of social media news consumption on participation through subjective political knowledge. That is, the direct effect of social media news on political participation (H1) is mediated by subjective political knowledge. On the other hand, given the difficulties in predicting objective political knowledge's role in this process, the indirect effect of social media news use on political participation through objective political knowledge is posed as a research question. Thus, we propose the following:

H4. Social media news use will lead to higher levels of political participation through subjective political knowledge.

RQ2: What, if any, is the indirect effect of social media news on political participation, through objective political knowledge?

Method

To test our research questions and hypotheses, we draw upon an original two-wave national panel survey conducted during the 2018 U.S. midterm election. Both waves of the survey were collected by the polling company Dynata. To accurately represent the U.S. population, Dynata specified a quota based on gender, age, education, and income. The sample closely mimics the general population, except that we slightly under-sampled respondents with lower levels of education relative to the general population (see [Appendix B](#)). Yet, given that discrepancies are rather minor, we believe that our sampling strategy does not threaten our fundamental conclusions. The first wave of the survey (W^1) was conducted between September 26 and September 30, 2018 ($N = 1,555$). The second wave of the survey (W^2) was conducted between November 7 and November 13, 2018 ($N = 818$; a retention rate of 52.6%). All variables, except socio-demographic information, were measured at

both Waves. There were few differences in the sample composition of the initial and final sample, which alleviated concerns about selection bias.

Measures

Social media news use

Following Gil de Zúñiga et al. (2017), we asked survey respondents how often they used to follow social media platforms for getting news: Facebook, Twitter, Snapchat, Google+, YouTube, Instagram, Reddit, and LinkedIn. Three additional questions asked how often you use social media “to stay informed about current events and public affairs,” “to get news about current events from mainstream media,” and “to get news from online news sites.” The response options ranged from 1 (never) to 10 (all the time) (11-items averaged scale; W^1 Cronbach’s $\alpha = .93$, $M = 3.23$, $SD = 2.30$; W^2 Cronbach’s $\alpha = .93$, $M = 3.19$, $SD = 2.36$).

Objective political knowledge

Objective knowledge was measured based on how accurately the survey respondents answered a series of factual questions about politics and current affairs. Following existing studies (e.g., Delli Carpini & Keeter, 1996; Shehata & Strömbäck, 2018), correct responses were coded as 1, while incorrect responses and not sure/don’t know were coded as 0. Respondents were told not to open a web browser when answering questions and to select “not sure/don’t know” if they did not know the answer to a particular question. In Wave 1, we asked 11 factual questions about politics and current affairs, including six items of general/chronic political knowledge and five items related to campaign-specific knowledge regarding the 2018 mid-term election. A composite index of political knowledge was constructed by adding up the scores from general and campaign knowledge (W^1 Guttman’s lambda = .86, $M = 7.14$, $SD = 3.40$). In Wave 2, respondents were only asked questions about issues and events that occurred between the two waves, enabling us to measure how much new information the respondents had gained since the first wave (e.g., Shehata & Strömbäck, 2018) (10-items; W^2 Guttman’s lambda = .84, $M = 5.16$, $SD = 2.95$). A complete list of political knowledge items can be found in Appendix A.

Subjective political knowledge

Based on previous research (Yamamoto et al., 2018), *subjective political knowledge* was measured by asking agreement with four statements: “I know a lot about current affairs and political issues”; “I classify myself as an expert in current affairs and political issues”; “Compared to most people, I know more about current affairs and political issues”; and “When it comes to current affairs and political issues, I am quite knowledgeable.” Responses were coded using a 10-point Likert scale and averaged to create a scale of subjective political knowledge (W^1 Cronbach’s $\alpha = .96$, $M = 5.69$, $SD = 2.65$; W^2 Cronbach’s $\alpha = .96$, $M = 5.68$, $SD = 2.61$).

Political participation

On a 10-point, Likert-type scale (1 = *never*, 10 = *all the time*), survey respondents were asked how often during the past 12 months they had participated in any of the following activities: “signed a petition,” “boycotted or bought certain products for political, ethical or environmental reasons,” “participated in any political rallies,” “attended a public meeting dealing with political or social issues,” “taken part in concerts or a fundraising event with a political cause,” and “contacted a politician or public official.” A factor analysis showed that these items all loaded on one factor with high reliability (W^1 Cronbach’s $\alpha = .94$, $M = 2.62$, $SD = 2.24$; W^2 Cronbach’s $\alpha = .93$, $M = 2.31$, $SD = 2.17$).

News media use

To measure *newspaper news* use, respondents were asked to indicate how often they get print news from local newspapers and national newspapers. They were also asked to rate their overall frequency of reading printed news sources (W^1 Cronbach’s $\alpha = .91$, $M = 4.45$, $SD = 2.80$; W^2 Cronbach’s $\alpha = .91$, $M = 4.30$, $SD = 2.92$). To measure *radio news use*, respondents were asked the following two questions: “How often do you get news from radio?” and “How often do you use radio for news?” (W^1 Spearman-Brown = .95; $M = 5.02$, $SD = 2.98$; W^2 Spearman-Brown = .95; $M = 4.85$, $SD = 2.90$). To measure *TV news use*, respondents were asked to indicate how often they get news from “TV,” “network TV,” “local TV,” and “cable TV” (W^1 Cronbach’s $\alpha = .89$, $M = 6.62$, $SD = 2.61$; W^2 Cronbach’s $\alpha = .89$, $M = 6.46$, $SD = 2.73$). To measure *Internet news use*,¹ respondents were asked on a 10-point Likert scale (1 = *no attention at all*, 10 = *very close attention*) to indicate how much attention they paid to news about politics and public affairs on Internet (W^1 : $M = 6.07$, $SD = 2.94$; W^2 : $M = 4.97$, $SD = 3.19$).

Political interest

Political interest was measured by asking respondents on a 5-point scale (1 = *not at all interested*, 5 = *extremely interested*) how interested they are in politics (W^1 $M = 3.23$, $SD = 1.31$; W^2 $M = 3.17$, $SD = 1.30$).

Party affiliation

Survey respondents were asked “As of today, do you lean more to the Republican Party or more to the Democratic Party?” The response options were Republican/Lean Republican (30.7%), Democrat/Lean Democrat (38.1%), Independent (21.8%), and Others (9.4%). Those who identified themselves as partisans (either Republican/Lean Republican or Democrat/Lean Democrat) were coded as 1, while others were coded as 0.

Discussion frequency

Another important factor that influence political participation is discussion frequency (e.g., [Chen & Lin, 2021](#)). To measure discussion frequency, survey respondents were asked the following two questions: “During the past month, how often did you talk about politics or public affairs via - face-to-face or over the phone?” and “During the past month, how often did you talk about politics or public affairs via - the Internet, including e-mail, chat rooms, and social media platforms” (W^1 : $M = 3.74$, $SD = 2.70$, Spearman-Brown = .70).

Demographic variables

A standard set of demographic variables were measured and included as controls, including age ($M = 45.38$, $SD = 16.33$), gender (50.5% females), race (65% white), education (assessed as highest level of education completed; $M = 4.08$, $Mdn = 2$ -year college degree), and annual household income ($Mdn = \$60,000$ – $\$69,999$). [Appendix B](#) provides a comparison between the sample and the population based on several demographic characteristics.

Analytical procedure

To take advantage of the panel design of the survey, we used two different modeling approaches (autoregressive and fixed-effects approach) using the lavaan package in R ([Rosseel, 2012](#)), following the approach from [Shah et al. \(2005\)](#). Each of these methods has significant advantages. With the autoregressive path models, we assessed how Wave 2 variables are related, while each Wave 2 variable is regressed on its corresponding Wave 1 variables. In all the models, gender, age, education, ethnicity, income, political interest, party affiliation, discussion frequency, and news variables were included as exogenous variables. This method explains the direct and indirect effects of the modeled variables while also accounting for measurement error between the panel time frames. Despite the robustness of the auto-regressive model, the change scores are only estimated at the aggregate level. Thus, to test individual-level change, we also used the fixed effects model where we calculate the raw difference score (i.e., subtracting the Wave 1 score from the Wave 2 score) for all variables in the model ([Shah et al., 2005](#)). The conceptual model is presented in [Figure 1](#).

Before fitting the model to the data, we created a residualized covariance matrix by regressing all the variables in the theoretical model on the control variables, including demographics, political interest, party affiliation, news media use variables, and discussion frequency. This means that any variance accounted for by the tested model can be construed as being above and beyond the variance already explained by the control variables. Model fit was assessed by using several fit indicators, including the maximum likelihood chi-square, comparative fit index (CFI), Tucker-Lewis index (TLI), root-mean-square error of approximation (RMSEA), the

Standardized Root Mean Square Residual (SRMR), and the Bayesian Information Criterion (BIC).

Results

To test our research questions and hypotheses, we conducted two different structural equation modeling (SEM) approaches—autoregressive (see Figure 2) and fixed-effects (see Figure 3). This approach allows researchers to stringently test the relationships among all variables of interest as a structure, while also accounting for measurement error in the models. Before turning into the individual hypotheses, we assessed the overall model fit to the data using the fit indicators mentioned above. Our theoretical model represents an appropriate fit to the data [autoregressive: $\chi^2 = 436.58$, $df = 70$, $p < .001$, CFI = .94, TLI = .92, RMSEA = .08, SRMR = .07, BIC = 29248.04; fixed-effects²: $\chi^2 = 35.90$, $df = 11$, $p < .001$, CFI = .98, TLI = .97, RMSEA = .05, SRMR = .02, BIC = 16045.42].²

Turning to the individual hypotheses, H1 predicted that social media news use would be positively associated with political participation. We found that social media news is directly correlated with an increase in political participation (autoregressive: $\beta = .24$, $p < .001$, Figure 2; fixed-effects: $\beta = .21$, $p < .001$, Figure 3). The positive influence of social media news on political participation is confirmed through both modeling approaches (fixed-effects and autoregressive), which shows the robustness of our results. Thus, H1 was supported.

RQ1 examined the relationship between social media news use and objective political knowledge. Social media news was associated with a decrease in objective political knowledge in the autoregressive approach ($\beta = -.08$, $p = .04$), but was not significantly associated in the fixed-effects approach ($\beta = .01$, $p = .62$). In both models, social media news was not positively associated with an increase in objective political knowledge.

H2 predicted that social media news would be positively related to subjective political knowledge. We found that social media news was associated with an increase in subjective political knowledge (autoregressive: $\beta = .14$, $p < .001$; fixed-effects: $\beta = .26$, $p < .001$). Again, we confirmed this pattern through two different modeling approaches (see Figure 2 and Figure 3).

H3 predicted that subjective political knowledge would be positively related to political participation. We found that subjective political knowledge was associated with an increase in political participation (autoregressive: $\beta = .11$, $p = .002$; fixed-effects: $\beta = .26$, $p < .001$). Again, we confirmed this pattern through two different modeling approaches (see Figure 2 and Figure 3). Thus, H3 was supported.

Considering that we found positive, significant relationships between our key independent, mediator, and outcome variables, we proceeded to test RQ2 and H4

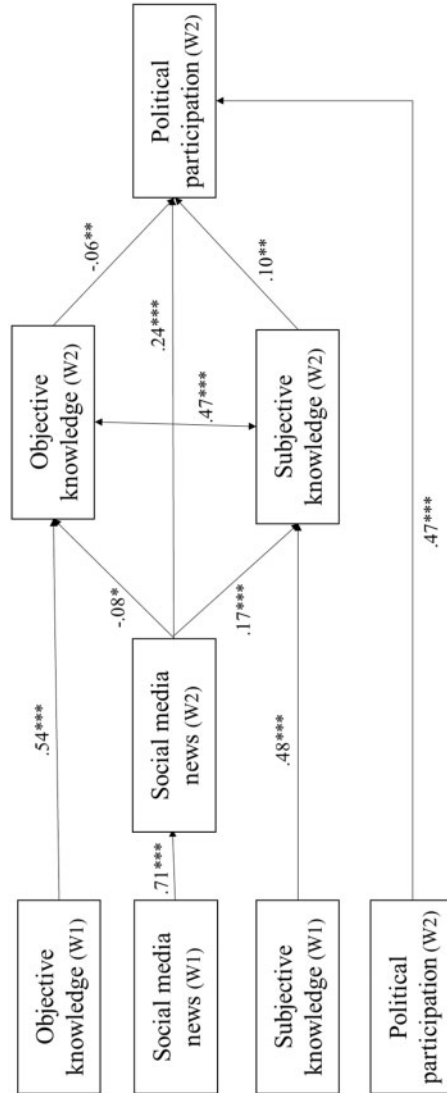


Figure 2 Results of the mediation model (Autoregressive).

Note. Path estimates are standardized coefficients. * $p < .05$; ** $p < .01$; *** $p < .001$

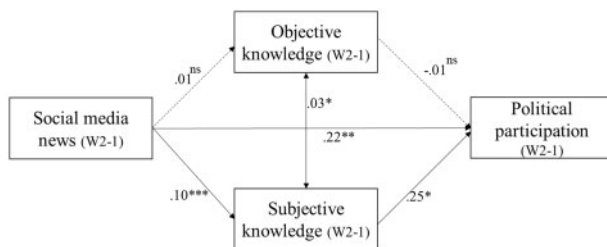


Figure 3 Results of the mediation model (fixed effect).

Note. Path estimates are standardized coefficients. # $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 1. Indirect Effect of Social Media News Use on Political Participation in Wave 2 through Different Types of Knowledge

Indirect effects paths	Point estimate	95% CI
[Autoregressive] Social media news use → objective knowledge → participation	.01	−.001 to .011
[Fixed-effects] Social media news use → objective knowledge → participation	−.00	−.005 to .003
[Autoregressive] Social media news use → subjective knowledge → participation	.02	.004 to .027
[Fixed-effects] Social media news use → subjective knowledge → participation	.04	.010 to .061

Note. Path estimates are standardized coefficients. CI are statistically significant when they do not include a zero.

through SEM. Specifically, RQ2 explored whether there is an indirect effect of social media news on political participation, through objective political knowledge. H4 predicted that subjective political knowledge would mediate the relationship between social media news use and political participation. As predicted there was a significant mediation effect when the mediator is subjective political knowledge, as signaled by the fact that the confidence interval of the indirect relationship between social media news use and political participation does not include zero (autoregressive: point estimate = .02, 95% CI = [.004, .027]; fixed-effects: point estimate = .04, 95% CI = [.010, .061]). Thus, H4 was supported. The estimates and 95% confidence intervals for all indirect effects are presented in Table 1. On the other hand, objective political knowledge did not mediate the relationship between social media news use and political participation. These findings suggest that using news on social media contributes to people’s impression of being informed (rather than really informing them), which in turn encourages them to participate in politics.

Post-hoc analysis

Since the mediating mechanisms proposed above may also apply to other forms of media, we tested the alternative model with traditional news consumption as an independent variable to strengthen our argument. The results shown in [Appendix C](#) and [D](#) suggest that our model uniquely holds for social media news, as traditional news consumption indeed helps one acquire objective political information as presented by previous research ([Prior, 2007](#); [Shehata & Strömbäck, 2018](#)). In addition, our theoretical model reflects a better model fit compared to the alternative model, and the difference is statistically significant based on BIC values (to see fit indices for the alternative models, see [Appendix C](#) and [D](#)).

Discussion

It has long been argued that factual knowledge about politics is a critical component of democratic citizenship. Indeed, the more people are informed about politics, the more likely they are to be attentive to politics and engage in various participatory activities, thus taking advantage of their civic opportunities ([Delli Carpini & Keeter, 1996](#); [Verba et al., 1995](#)). These ideals notwithstanding, few would disagree with [Converse's \(1990\)](#) dictum: “The two simplest truths I know about the distribution of political information in modern electorates are that the mean is low and the variance high” (p. 372). In the current study, we explore the possibility that the proliferation of information sources over the last few decades—most notably social media, which are fast becoming the modal form of media use—has not so much increased citizens' *actual* levels of political knowledge as *perceived* levels of political knowledge. Furthermore, our results suggest that subjective knowledge is more closely related to political participation than objective knowledge. Thus, the current study sheds light on an overlooked mechanism by which social media news use may promote political participation.

We envision several theoretical implications regarding the results of our study. First, the powerful predictive characteristics of subjective knowledge suggests that the meta-cognitive processes described in other literature are just as important for understanding how emerging media technology fosters political behavior. For instance, a widely cited result in psychology is the so-called “Dunning-Kruger effect”, which holds that individuals with low levels of competence will judge themselves to be higher achieving than they really are ([Kruger & Dunning, 1999](#)). In a way, our results are consistent with the Dunning-Kruger effect, as we find that subjective knowledge, independent of its relationship with objective knowledge, is prevalent and consequential for political behavior (also, see [Ortoleva & Snowberg, 2015](#)).

Second, the study is in line with an emerging trend in political communication research identifying a counter-normative, less optimistic approach to the finding that social media use promotes political participation. [Quandt \(2018\)](#) has elaborated on the “dark side” of participation, which refers to user

engagement with a variety of malevolent content, actors, actions, and processes that take place online. He argued that within research on digital media there has been an “idealistic [. . .] well intended, but partially misguided and naïve” embrace of citizen participation (p. 44). We heed his call to produce a more realistic account of the social media basis of political engagement by elaborating on how participation can be founded on ignorance of one’s ignorance (or knowledge) of public affairs. In this sense, the current work is consistent with other research examining the negative consequences of political participation as promoted by social media news use. For instance, Valenzuela and colleagues (2019) demonstrated that the spread of misinformation online was one of the negative externalities of social media’s participatory effect. In their work, they noted that “it is not clear whether it is actual or perceived levels of information what matters for political engagement” (p. 815). Here, we provide an answer: it is the latter. Of course, this does not mean that we completely disregard the positive aspects of social media and participation. For instance, social media provides a platform for the marginalized to voice out (Freelon *et al.*, 2016).

In addition, there is growing evidence that reliance on social media for political information is associated to developing a “news finds me” (NFM) perception—the belief that actively seeking the news is not important to become well informed because important news will find one online (Gil de Zúñiga *et al.*, 2017). Research on the NFM perception highlights the role of subjective evaluations on politically relevant attitudes and behaviors, such as political interest and voting (Gil de Zúñiga & Diehl, 2019). Again, the current study is consistent with the line of work around the NFM perception by showing how social media use determines meta-cognitive evaluations, as well as the effects of these subjective judgments on participation in political activities. In our view, the so-called ‘virtuous circle’ of news, knowledge building and participation also deserves rethinking. Participation has always been considered the hallmark of the “good citizen”, and the antithesis is media malaise, or disengagement in political life. Today we are experiencing a shift toward an electorate divorced from objective facts. There is a real possibility for an anti-social turn where the ease and ubiquity of new media are not only lower boundaries to participation. They also operate as a resource (Verba *et al.*, 1995) that fosters the illusion of knowing. The potential impact is support for issues, causes, and candidates that have either no ties to practical outcomes or are directly championed by nefarious actors. Classical studies of political knowledge admit that people do not need complete or perfect information and instead rely on heuristics (e.g., Lupia & McCubbins, 1998; Popkin, 1991). But as the information environment shifts away from professional journalism and toward a multifaceted paradigm of truth and misinformation, making informed opinions—let alone taking appropriate political action—represents a significant challenge (Kuklinski *et al.*, 2000). The various engagement opportunities that have been celebrated as pro-social, democratic enhancing activities are in practice potentially troubling, or even threatening to democracy. That is, less attention has been paid

to the tone and tenor of participatory democracy when people are emboldened by their informational experience on social media.

These results have practical implications regarding the improvement of citizen competence. As any teacher can attest, ideally, students should be able to estimate with accuracy what and how much knowledge they have. That way, they can make better decisions about what they already understand and what they ought to know (Nederhand et al., 2019). To improve these metacognitive evaluations, a variety of actions could be explored. One is to have content interventions to stimulate social media news users to think about what they are learning, either in the form of triggers, cues, or nudges. Algorithmic interventions, in which platforms change the political content they uprank and surface to users, may help increase exposure to high-quality information while reducing so-called “data voids” that are exploited by low-quality sources to misled users (see Golebiewski & Boyd, 2019). These interventions need not seek to have users know everything, an impracticable ideal for citizen competence (Lupia, 2002). Rather, they can narrow the gap between subjective and objective knowledge.

Despite the important implications of this study, there are some limitations that should be acknowledged and addressed in future work. First, theoretically we still do not know precisely why only subjective rather than objective knowledge facilitates political participation. Some explanations have been put forth above, but these warrant further exploration in future work. Second, this study relied on a self-reported measure of media use. Scholars have previously observed that people tend to overestimate their actual media usage (e.g., Prior, 2009). Yet, the limitations attendant with self-reported survey measurements do not threaten the main finding of the study. According to the recent study by Guess and his colleagues (2019), self-reports tended to correlate with the respondents’ actual observed social media activity. Third, the way in which the political participation variable was operationalized and measured is somewhat simplistic. Though most prior studies have also used this measurement (e.g., Xenos & Moy, 2007), when defined as such, this variable discloses little about the kind of political participation in which one has engaged. There is wide array of political participation—from voting to joining a political campaign and participating in political rallies—and subjective knowledge can increase some forms of participation while decreasing others.

Additionally, scholars should consider a more rigorous conceptualization of subjective knowledge. Three of the four items used to measure this concept are comparative, capturing one’s “relative” amount of knowledge compared to other people, rather than allowing one to assess their own quantity of knowledge. Future research can replicate our findings using self-assessment of one’s quantity of knowledge. Last, our measurement of political knowledge (i.e., recall of factual pieces of political events or issues)—though typically used in the field of political communication—may not accurately capture how much political information people have really obtained. That is, there can be a discrepancy between how

scholars measure political knowledge and the type of political content people actually acquire on social media. Lodge and colleagues (2005) argue that even if individuals tend to rapidly forget about factual information, they usually remember how they felt about it. If one can extract critical information (e.g., emotional tag) while making political decisions, we cannot say one learned nothing from such news. Given the news provided on social media come in the form of “snack news” (Schäfer, 2020), social media users may not recall detailed news events (thus, not helping one to score high in objective knowledge). However, exposure to such content—though not translated into one’s memory—may increase one’s attentiveness to political issues, which can potentially help people keep informed in the longer term (Xenos & Becker, 2009). Thus, we cannot conclude that no knowledge is meaningful in participation. To be clear, we argue that the factual/objective knowledge political communication scholars have been measuring for a long time, especially during the elections (questions tapping into whether participants accurately know what happened during the elections), is not a necessary condition for further political participation. Future studies should replicate this knowledge model using an alternative measurement of political knowledge (e.g., soft news knowledge, structural knowledge).

Limitations notwithstanding, this study contributes to the literature on the political effects of social media news use by showing the importance of meta cognitive processes and how these relate to political behavior. Looking forward, we envision three important lines of research. First, future work could study how subjective knowledge among social media news users is related to exposure, beliefs, and sharing of misinformation and false claims. A significant gap between objective and subjective knowledge is a characteristic of misinformed individuals, who behave in many ways differently from both informed and uninformed people, for whom the gap is narrower (either because they know a lot and know it, or because they do not and are aware of their ignorance; see, e.g., Kuklinksi *et al.*, 2000). Second, the causal chain between informational uses of social media, subjective and objective knowledge, and political participation proposed in the current study needs to be examined with an experimental design. For instance, manipulation of exposure to social media news could more firmly establish that perceived levels of knowledge are a consequence—and not an antecedent—of social media news use. Another experiment manipulating subjective political knowledge could establish its effects on participation. Last, future work should study the mechanisms by which informational uses of social media results in increased subjective knowledge. Prior work has found that it stems from a variety of sources, including lack of metacognitive awareness, personality, social pressure, and so forth. Some of these mechanisms may matter more than other in the context of social media and learning. Identifying which ones are causally related would enable us to better understand when and how citizens learn accurate information from using digital platforms.

Conflict of interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Notes

1. All news consumption variables ask about ‘frequency of use’ with the exception of internet use, which asks about ‘attention’ to news. This is because the dataset does not have a frequency for Internet news use. Yet, given that our data shows very strong correlation between frequency measures and attention measures across all the news media platforms, we do not think our measurement of Internet use threatens the validity of our results.
2. Although the chi-square value is significant, this statistic is sensitive to sample size and model complexity. As such, other fit indices we used are more appropriate for assessing model fit here.

References

- Bode, L. (2016). Political news in the news feed: Learning politics from social media. *Mass Communication and Society*, 19(1), 24–48. <https://doi.org/10.1080/15205436.2015.1045149>
- Boulianne, S. (2015). Social media use and participation: A meta-analysis of current research. *Information, Communication & Society*, 18(5), 524–538. <https://doi.org/10.1080/1369118X.2015.1008542>
- Boulianne, S. (2016). Online news, civic awareness, and engagement in civic and political life. *New Media & Society*, 18(9), 1840–1856. <https://doi.org/10.1177/1461444815616222>
- Boulianne, S. (2019). Revolution in the making? Social media effects across the globe. *Information, Communication & Society*, 22(1), 39–54. <https://doi.org/10.1080/1369118X.2017.1353641>
- Brossard, D. (2013). New media landscapes and the science information consumer. *Proceedings of the National Academy of Sciences of the United States of America*, 110, 14096–14101.
- Cacciatore, M. A., Yeo, S. K., Scheufele, D. A., Xenos, M. A., Brossard, D., & Corley, E. A. (2018). Is Facebook Making Us Dumber? Exploring Social Media Use as a Predictor of Political Knowledge. *Journalism & Mass Communication Quarterly*, 95(2), 404–424. <https://doi.org/10.1177/1077699018770447>
- Chadwick, A. (2009). Web 2.0: New challenges for the study of e-democracy in an era of informational exuberance. *I/S: Journal of Law and Policy for the Information Society*, 5, 9–41.
- Chaffee, S. H., & Kanihan, S. F. (1997). Learning about politics from the mass media. *Political Communication*, 14, 421–430. <https://doi.org/10.1080/105846097199218>
- Chen, H. T., & Lin, J. S. (2021). Cross-cutting and like-minded discussion on social media: The moderating role of issue importance in the (de) mobilizing effect of political discussion on political participation. *Journal of Broadcasting & Electronic Media*, 1–22. <https://doi.org/10.1080/08838151.2021.1897822>

- Conroy, M., Feezell, J. T., & Guerrero, M. (2012). Facebook and political engagement: A study of online political group membership and offline political engagement. *Computers in Human Behavior*, 28(5), 1535–1546. <https://doi.org/10.1016/j.chb.2012.03.012>
- Converse, P. (1990). Popular representation and the distribution of information. In J. Ferejohn & J. Kuklinski (Eds.), *Information and democratic processes* (pp. 369–388). Chicago, IL: University of Illinois Press.
- De Vreese, C. H., & Boomgaarden, H. (2006). News, political knowledge and participation: The differential effects of news media exposure on political knowledge and participation. *Acta Politica*, 41(4), 317–341. <https://doi.org/10.1057/palgrave.ap.5500164>
- Delli Carpini, M. X. (2000). Gen. com: Youth, civic engagement, and the new information environment. *Political Communication*, 17(4), 341–349. <https://doi.org/10.1080/10584600050178942>
- Delli Carpini, M. X. & Keeter, S. (1996). *What Americans know about politics and why it matters*, New Haven, CT: Yale University Press.
- Dimitrova, D. V., Shehata, A., Strömbäck, J., & Nord, L. W. (2014). The effects of digital media on political knowledge and participation in election campaigns: Evidence from panel data. *Communication Research*, 41(1), 95–118. <https://doi.org/10.1177/0093650211426004>
- Edgerly, S., & Vraga, E. K. (2020). Deciding what's news: News-ness as an audience concept for the hybrid media environment. *Journalism & Mass Communication Quarterly*, 97(2), 416–434. <https://doi.org/10.1177/1077699020916808>
- Egelhofer, J. L., & Lecheler, S. (2019). Fake news as a two-dimensional phenomenon: A framework and research agenda. *Annals of the International Communication Association*, 43(2), 97–116. <https://doi.org/10.1080/23808985.2019.1602782>
- Feezell, J. T., & Ortiz, B. (2019). 'I saw it on Facebook': An experimental analysis of political learning through social media. *Information, Communication & Society*, 1–20. <https://doi.org/10.1080/1369118X.2019.1697340>
- Fletcher, R., & Nielsen, R. K. (2018). Are people incidentally exposed to news on social media? A comparative analysis. *New Media & Society*, 20(7), 2450–2468. <https://doi.org/10.1177/1461444817724170>
- Freelon, D., McIlwain, C., & Clark, M. (2016). Beyond the hashtags: #Ferguson, #Blacklivesmatter, and the online struggle for offline justice. Retrieved from <https://ssrn.com/abstract=2747066>
- Gil de Zúñiga, H., & Diehl, T. (2019). News finds me perception and democracy: Effects on political knowledge, political interest, and voting. *New Media & Society*, 21(6), 1253–1271. <https://doi.org/10.1177/1461444818817548>
- Gil de Zúñiga, H., Molyneux, L., & Zheng, P. (2014). Social media, political expression, and political participation: Panel analysis of lagged and concurrent relationships. *Journal of Communication*, 64(4), 612–634. <https://doi.org/10.1111/jcom.12103>
- Gil de Zúñiga, H., Weeks, B., & Ardèvol-Abreu, A. (2017). Effects of the news-finds-me perception in communication: Social media use implications for news seeking and learning about politics. *Journal of Computer-Mediated Communication*, 22(3), 105–123. <https://doi.org/10.1111/jcc4.12185>
- Golebiewski, M., & Boyd, D. (2019, May 11). *Data voids: Where missing data can easily be exploited*. Data & Society. Retrieved from <https://datasociety.net/output/data-voids-where-missing-data-can-easily-be-exploited/>

- Guess, A., Munger, K., Nagler, J., & Tucker, J. (2019). How accurate are survey responses on social media and politics? *Political Communication*, 36(2), 241–258. <https://doi.org/10.1080/10584609.2018.1504840>
- Hermida, A. (2010). Twittering the news: The emergence of ambient journalism. *Journalism Practice*, 4(3), 297–308. <https://doi.org/10.1080/17512781003640703>
- Jung, N., Kim, Y., & Gil de Zúniga, H. (2011). The mediating role of knowledge and efficacy in the effects of communication on political participation. *Mass Communication and Society*, 14(4), 407–430. <https://doi.org/10.1080/15205436.2010.496135>
- Kaid, L. L., McKinney, M., & Tedesco, J. (2007). Introduction: political information efficacy and young voters. *American Behavioral Scientist*, 50(9), 1093–1111. <https://doi.org/10.1177/0002764207300040>
- Katz, E., Blumler, J. G., & Gurevitch, M. (1974). *The uses of mass communications: Current perspectives on gratifications research*. Beverly Hills, CA: Sage.
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, 77(6), 1121–1134. <https://doi.org/10.1037/0022-3514.77.6.1121>
- Kuklinski, J. H., Quirk, P. J., Jerit, J., Schwieder, D., & Rich, R. F. (2000). Misinformation and the currency of democratic citizenship. *The Journal of Politics*, 62(3), 790–816. <https://doi.org/10.1111/0022-3816.00033>
- Kümpel, A. S. (2020). The Matthew Effect in social media news use: Assessing inequalities in news exposure and news engagement on social network sites (SNS). *Journalism*, 21(8), 1083–1098. <https://doi.org/10.1177/1464884920915374>
- Lee, J. K., & Kim, E. (2017). Incidental exposure to news: Predictors in the social media setting and effects on information gain online. *Computers in Human Behavior*, 75, 1008–1015. <https://doi.org/10.1016/j.chb.2017.02.018>
- Lee, S. (2019). Connecting social media use with gaps in knowledge and participation in a protest context: the case of candle light vigil in South Korea. *Asian Journal of Communication*, 29(2), 111–127. <https://doi.org/10.1080/01292986.2018.1549264>
- Lee, S. (2020). Probing the mechanisms through which social media erodes political knowledge: The role of the news-finds-me perception. *Mass Communication and Society*. doi: 10.1080/15205436.2020.1821381
- Lee, S., & Matsuo, A. (2018). Decomposing political knowledge: What is confidence in knowledge and why it matters. *Electoral Studies*, 51, 1–13. doi: 10.1016/j.electstud.2017.11.005
- Lee, S., & Xenos, M. (2019). Social distraction? Social media use and political knowledge in two US Presidential elections. *Computers in Human Behavior*, 90, 18–25. doi: 10.1016/j.chb.2018.08.006
- Lee, S., & Xenos, M. (2020). Incidental news exposure via social media and political participation: Evidence of reciprocal effects. *New Media & Society*. <https://doi.org/10.1177/1461444820962121>
- Lupia, A. (2002). Deliberation disconnected: What it takes to improve civic competence. *Law and Contemporary Problems*, 65(3), 132–154. doi: 10.2307/1192406
- Lupia, A., & McCubbins, M. D. (1998). *The democratic dilemma: Can citizens learn what they need to know?* New York: Cambridge University Press.
- McLeod, J. M., Daily, K., Guo, Z., Eveland Jr, Bayer, W. P., Yang, J., S., & Wang, H. (1996). Community integration, local media use, and democratic processes. *Communication Research*, 23(2), 179–209. <https://doi.org/10.1177/009365096023002002>

- McLeod, J. M., Scheufele, D. A., & Moy, P. (1999). Community, communication, and participation: The role of mass media and interpersonal discussion in local political participation. *Political Communication*, 16(3), 315–336. <https://doi.org/10.1080/105846099198659>
- Molyneux, L. (2018). Mobile news consumption: A habit of snacking. *Digital Journalism*, 6(5), 634–650. <https://doi.org/10.1080/21670811.2017.1334567>
- Mondak, J. J. (1995). Newspapers and political awareness. *American Journal of Political Science*, 39, 513–527. <https://doi.org/10.2307/2111623>
- Müller, P., Schneiders, P., & Schäfer, S. (2016). Appetizer or main dish? Explaining the use of Facebook news posts as a substitute for other news sources. *Computers in Human Behavior*, 65, 431–441. <https://doi.org/10.1016/j.chb.2016.09.003>
- Nederhand, M. L., Tabbers, H. K., & Rikers, R. M. J. P. (2019). Learning to calibrate: Providing standards to improve calibration accuracy for different performance levels. *Applied Cognitive Psychology*, 33, 1068–1079. doi: 10.1002/acp.3548
- Norris, P. (2000). *A virtuous circle: Political communications in postindustrial societies*. Cambridge, UK: Cambridge University Press.
- Oeldorf-Hirsch, A. (2018). The role of engagement in learning from active and incidental news exposure on social media. *Mass Communication and Society*, 21(2), 225–247. <https://doi.org/10.1080/15205436.2017.1384022>
- Ortoleva, P., & Snowberg, E. (2015). Overconfidence in political behavior. *American Economic Review*, 105(2), 504–535. <https://doi.org/10.1257/aer.20130921>
- Park, C. S. (2019). Learning politics from social media: Interconnection of social media use for political news and political issue and process knowledge. *Communication Studies*, 70(3), 253–276. <https://doi.org/10.1080/10510974.2019.1581627>
- Park, C. S., & Kaye, B. K. (2019). Mediating roles of news curation and news elaboration in the relationship between social media use for news and political knowledge. *Journal of Broadcasting & Electronic Media*, 63(3), 455–473. <https://doi.org/10.1080/08838151.2019.1653070>
- Park, C. Y. (2001). News media exposure and self-perceived knowledge: The illusion of knowing. *International Journal of Public Opinion Research*, 13, 419–425. <https://doi.org/10.1093/ijpor/13.4.419>
- Pentina, I., & Tarafdar, M. (2014). From “information” to “knowing”: Exploring the role of social media in contemporary news consumption. *Computers in Human Behavior*, 35, 211–223. <https://doi.org/10.1016/j.chb.2014.02.045>
- Pingree, R. J. (2007). How messages affect their senders: A more general model of message effects and implications for deliberation. *Communication Theory*, 17(4), 439–461. <https://doi.org/10.1111/j.1468-2885.2007.00306.x>
- Popkin, S. (1991). *The reasoning voter*. Chicago: Chicago University Press. 10.17645/mac.v6i4.1519
- Prior, M. (2007). *Post-broadcast democracy: How media choice increases inequality in political involvement and polarizes elections*. New York, NY: Cambridge University Press.
- Prior, M. (2009). The immensely inflated news audience: Assessing bias in self-reported news exposure. *Public Opinion Quarterly*, 73(1), 130–143. <https://doi.org/10.1093/poq/nfp002>
- Quandt, T. (2018). Dark participation. *Media and Communication*, 6(4), 36–48. <https://doi.org/10.17645/mac.v6i4.1519>
- Rosseel, Y. (2012). Lavaan: an R package for structural equation modeling. *Journal of Statistical Software*, 48, 1–36.

- Schäfer, S. (2020). Illusion of knowledge through Facebook news? Effects of snack news in a news feed on perceived knowledge, attitude strength, and willingness for discussions. *Computers in Human Behavior*, 103, 1–12. <https://doi.org/10.1016/j.chb.2019.08.031>
- Shah, D. V., Cho, J., Eveland Jr, W. P., & Kwak, N. (2005). Information and expression in a digital age: Modeling Internet effects on civic participation. *Communication Research*, 32(5), 531–565. <https://doi.org/10.1177/0093650205279209>
- Shehata, A., & Strömbäck, J. (2018). Learning Political News from Social Media: Network Media Logic and Current Affairs News Learning in a High-Choice Media Environment. *Communication Research*, 104, 1–23. <https://doi.org/10.1177/0093650217749354>
- Song, H., Gil de Zúñiga, H., & Boomgaarden, H. G. (2020). Social media news use and political cynicism: Differential pathways through “news finds me” perception. *Mass Communication and Society*, 23, 47–70. <https://doi.org/10.1080/15205436.2019.1651867>
- Sveningsson, M. (2015). “It’s only a pastime, really”: Young people’s experiences of social media as a source of news about public affairs. *Social Media + Society*, 1, 1–11. <https://doi.org/10.1177/2056305115604855>
- Tandoc Jr E. C., Ling, R., Westlund, O., Duffy, A., Goh, D., & Zheng Wei, L. (2018). Audiences’ acts of authentication in the age of fake news: A conceptual framework. *New Media & Society*, 20, 2745–2763. <https://doi.org/10.1177/1461444817731756>
- Thorson, K., & Wells, C. (2016). Curated flows: A framework for mapping media exposure in the digital age. *Communication Theory*, 26, 309–328. <https://doi.org/10.1111/comt.12087>
- Valenzuela, S. (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. <https://doi.org/10.1177/0002764213479375>
- Valenzuela, S., Halpern, D., Katz, J. E., & Miranda, J. P. (2019). The paradox of participation versus misinformation: Social media, political engagement, and the spread of misinformation. *Digital Journalism*, 7(6), 802–823. <https://doi.org/10.1080/21670811.2019.1623701>
- van Erkel, P. F., & Van Aelst, P. (2020). Why don’t we learn from social media? Studying effects of and mechanisms behind social media news use on general surveillance political knowledge. *Political Communication*, 1–19. <https://doi.org/10.1080/10584609.2020.1784328>
- Verba, S., & Nie, N.H. (1972). *Participation in America: Social equality and political democracy*. New York, NY: Harper & Row.
- Verba, S., Schlozman, K. L., & Brady, H. E. (1995). *Voice and equality: Civic voluntarism in American politics*. Cambridge, MA: Harvard University Press.
- Xenos, M. A., & Becker, A. B. (2009). Moments of Zen: Effects of the daily show on information seeking and political learning. *Political Communication*, 26, 317–332. <https://doi.org/10.1080/10584600903053569>
- Xenos, M., & Moy, P. (2007). Direct and differential effects of the Internet on political and civic engagement. *Journal of Communication*, 57(4), 704–718. <https://doi.org/10.1111/j.1460-2466.2007.00364.x>
- Yamamoto, M., Kushin, M. J., & Dalisay, F. (2015). Social media and mobiles as political mobilization forces for young adults: Examining the moderating role of online political expression in political participation. *New Media & Society*, 17(6), 880–898. <https://doi.org/10.1177/1461444813518390>
- Yamamoto, M., Kushin, M. J., & Dalisay, F. (2018). How informed are messaging app users about politics? A linkage of messaging app use and political knowledge and participation. *Telematics and Informatics*, 35(8), 2376–2386. <https://doi.org/10.1016/j.tele.2018.10.008>

Appendix A

Political Knowledge Batteries at Wave 1

1. Whose responsibility is it to determine if a law is constitutional or not... is it the president, the Congress, or the Supreme Court?
 - a) Don't know/Not sure/Can't remember the answer now
 - b) President
 - c) Congress
 - d) Supreme Court

2. Which party is generally more supportive of increasing taxes on higher income people to reduce the federal budget deficit?
 - a) Don't know/Not sure/Can't remember the answer now
 - b) Democrats
 - c) Republicans

3. How much of a majority is required for the U.S. Senate and House to override a presidential veto?
 - a) Don't know/Not sure/Can't remember the answer now
 - b) 51%
 - c) Two-thirds
 - d) Three-fourths

4. Do you happen to know which party currently has the most members in the House of Representatives in Washington?
 - a) Don't know/Not sure/Can't remember the answer now
 - b) Democrats
 - c) Republicans
 - d) Neither

5. Do you happen to know which party currently has the most members in the Senate in Washington?
 - a) Don't know/Not sure/Can't remember the answer now
 - b) Democrats
 - c) Republicans
 - d) Neither

6. What is the name of the current Vice President of the United States?
 - a) Don't know/Not sure/Can't remember the answer now
 - b) Joe Biden
 - c) Paul Ryan
 - d) Jeff Sessions
 - e) Mike Pence

7. Players of this organization have sought to call attention to police brutality toward African-Americans and minorities and racial oppression by taking a knee during the anthem before games. Trump said kneeling players "maybe shouldn't be in the country". Which organization is it?

- a) Don't know/Not sure/Can't remember the answer now
- b) NBA
- c) NCAA
- d) NFL
- e) MLB

8. Where did U.S. President Donald Trump and North Korean leader Kim Jong Un meet face-to-face for a historic summit in this June?

- a) Don't know/Not sure/Can't remember the answer now
- b) Pyongyang
- c) Singapore
- d) Geneva
- e) Hong Kong

9. What is the name of the special counsel that is overseeing the investigation into Russian tampering with the 2016 US election?

- a) Don't know/Not sure/Can't remember the answer now
- b) Christopher Wray
- c) Robert Mueller
- d) Paul Manafort
- e) Michael Flynn

10. This person was recently convicted in his financial fraud trial. He hid millions of dollars in foreign accounts to evade taxes and lied to banks repeatedly to obtain millions of dollars in loans. He was the President Trump's former campaign chairman. Who is he?

- a) Don't know/Not sure/Can't remember the answer now
- b) Christopher Wray
- c) Robert Mueller
- d) Paul Manafort
- e) Michael Flynn

11. Who are two politicians who spoke at McCain's service at the National Cathedral?

- a) Don't know/Not sure/Can't remember the answer now
- b) Donald Trump/George W. Bush
- c) Donald Trump/Barack Obama
- d) George W. Bush/Barack Obama
- e) Paul Ryan/George W. Bush

Political Knowledge Batteries at Wave 2

1. In 2018, Stacey Abrams was nominated by a major political party to run for governor. Who is Stacey Abrams?

- a) Don't know/Not sure/Can't remember the answer now
- b) The first black woman to be nominated by a major political party
- c) The first Native American woman to be nominated by a major political party for governor
- d) The first Muslim woman to be nominated by a major political party for governor
- e) The first lesbian woman to be nominated by a major political party for governor

2. This person is an American lawyer and jurist who serves as an Associate Justice of the Supreme Court of the United States. This person has recently been accused of several sexual misdeeds. Who is he?

- a) Don't know/Not sure/Can't remember the answer now
- b) Blake Farenthold
- c) John Roberts
- d) Neil Gorsuch
- e) Brett Kavanaugh

3. Eleven (11) people were killed on the morning of October 24th at Pittsburgh, Pennsylvania. Who were the victims?

- a) Don't know/Not sure/Can't remember the answer now
- b) Muslims
- c) Jewish people
- d) Black people
- e) Children

4. This person is well-known for never taking a public stance on politics. During the polarization of the U.S. 2016 election, this person drew criticism for not declaring his/her support for a specific presidential candidate. However, for the 2018 midterm election, this person has endorsed two Democratic candidates in his/her home state of Tennessee. Who is this person?

- a) Don't know/Not sure/Can't remember the answer now
- b) He will allow birth right citizenship
- c) He will sign an executive order to end birth right citizenship
- d) He will go through Congress, rather than use an executive order, to end birth right citizenship
- e) After December 2018, he will not allow birth right citizenship.

5. What was the most common subject of televised campaign advertisements (during the 2018 Midterm election) by Democrats in both the House and the Senate?

- a) Don't know/Not sure/Can't remember the answer now
- b) Taylor Swift

- c) Miley Cyrus
 - d) Alec Baldwin
 - e) Leonardo DiCaprio
6. On October 24th, a package containing a pipe bomb was delivered to several places. Which is one of the places these packages were delivered to?
- a) Don't know/Not sure/Can't remember the answer now
 - b) Economy
 - c) Health care
 - d) Immigration
 - e) Gun control
7. Do you happen to know which prominent political figure recently released an analysis of his/her DNA indicating that he/she has a Native American ancestor?
- a) Don't know/Not sure/Can't remember the answer now
 - b) CNN
 - c) MSNBC
 - d) New York Times
 - e) NPR
8. At a United Nations meeting, President Donald Trump claimed the U.S. "this country" has been attempting to interfere in this past 2018 midterm election. What country is it?
- a) Don't know//Not sure/Can't remember the answer now
 - b) Russia
 - c) Mexico
 - d) China
 - e) North Korea
9. In the 2018 Midterm elections, which state became the first Midwestern state to legalize cannabis?
- a) Don't know/Not sure/Can't remember the answer now
 - b) Nancy Pelosi
 - c) Elizabeth Warren
 - d) Joe Biden
 - e) Cory Booker
10. Which of the following statements is true about the 2018 Midterm elections?
- a) Dont' know/Not sure/Can't remember the answer now.
 - b) Democrats took the majority of the House and the Senate.
 - c) Republicans took the majority of the House and the Senate.
 - d) Democrats took the majority of the House, and Republicans took the majority of the Senate.
 - e) Republicans took the majority of the House, and Democrats took the majority of the Senate.

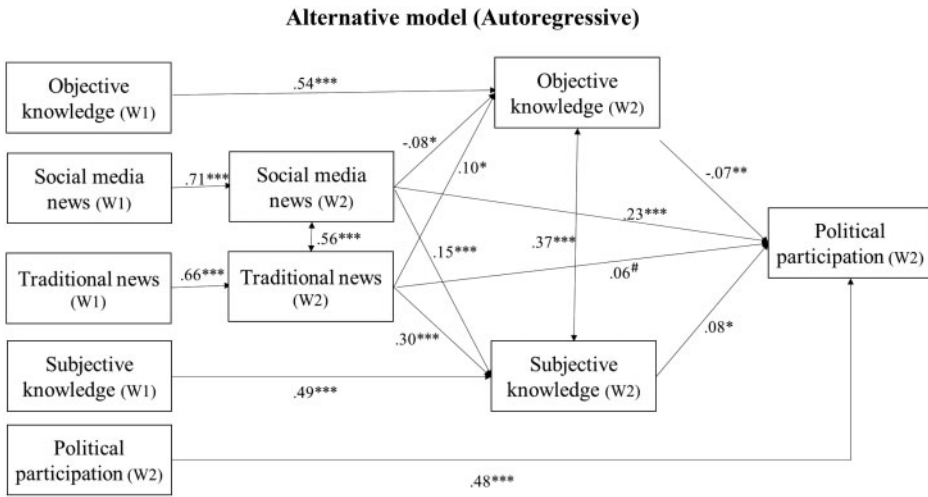
Appendix B

Key sample parameters versus the 2018 American Community Survey

	2018 ACS (%)	Study sample (%)
Age (years)		
20–34	27	27
35–54	33	39
55–74	28	27
74 and over	8	4
Gender		
Male	49	49
Female	51	51
Ethnicity		
White	72	65
Education		
Less than high school	12	2
High school graduate	27	17
Some college or Associate's	29	32
Bachelor's degree	19	29
Graduate or above	12	19
Income		
Under \$10,000	6	6
\$10,000–\$19,999	9	6
\$20,000–\$29,999	9	8
\$30,000–\$39,999	9	9
\$40,000–\$49,999	8	7
\$50,000–\$59,999	8	9
\$60,000–\$69,999	7	7
\$70,000–\$79,999	6	8
\$80,000–\$89,999	5	5
\$90,000–\$99,999	4	7
\$100,000–\$14,999	13	9
\$150,000 and over	15	11

Appendix C

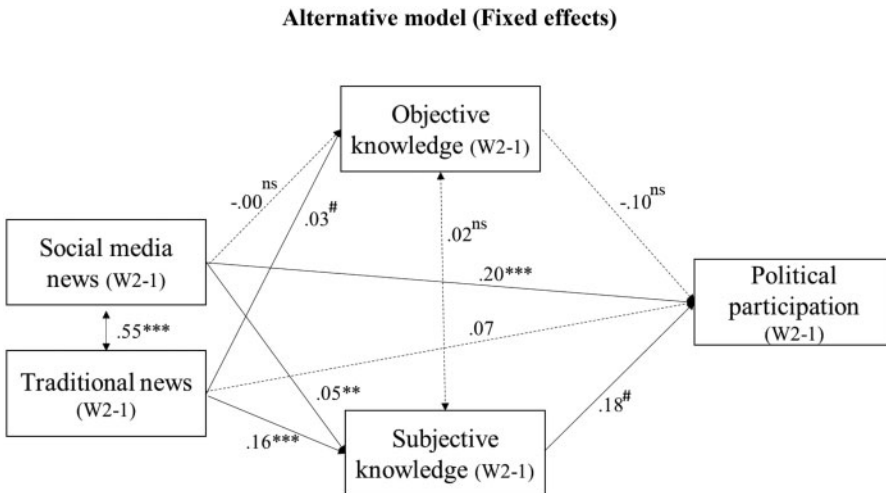
Alternative model (Autoregressive)



Note. $\chi^2 = 502.69$, $df = 91$, $p < .001$, CFI = .94, TLI = .92, RMSEA = .08, SRMR = .07, BIC = 31818.12.

Appendix D

Alternative model (Fixed effects)



Note. $\chi^2 = 38.78$, $df = 14$, $p < .001$, CFI = .99, TLI = .97, RMSEA = .05, SRMR = .02, BIC = 21315.55

Appendix E

Zero-order correlations among all key variables in the study

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Facebook news(W1)	—																	
2. Twitter news(W1)	.54 ^a	—																
3. Instagram news(W1)	.57 ^a	.69 ^a	—															
4. YouTube news(W1)	.57 ^a	.59 ^a	.66 ^a	—														
5. Snapchat news(W1)	.51 ^a	.62 ^a	.76 ^a	.62 ^a	—													
6. Google+ news(W1)	.52 ^a	.53 ^a	.64 ^a	.66 ^a	.64 ^a	—												
7. LinkedIn news(W1)	.49 ^a	.62 ^a	.67 ^a	.61 ^a	.73 ^a	.67 ^a	—											
8. Reddit news(W1)	.42 ^a	.63 ^a	.64 ^a	.58 ^a	.70 ^a	.59 ^a	.73 ^a	—										
9. Social media news 1(W1)	.73 ^a	.60 ^a	.57 ^a	.62 ^a	.52 ^a	.52 ^a	.48 ^a	.48 ^a	—									
10. Social media news 2(W1)	.69 ^a	.59 ^a	.57 ^a	.62 ^a	.50 ^a	.53 ^a	.48 ^a	.47 ^a	.89 ^a	—								
11. Social media news 3(W1)	.65 ^a	.59 ^a	.55 ^a	.60 ^a	.49 ^a	.52 ^a	.50 ^a	.48 ^a	.82 ^a	.84 ^a	—							
1. Social media news(composite; W1)	.76 ^a	.80 ^a	.84 ^a	.81 ^a	.81 ^a	.80 ^a	.80 ^a	.77 ^a	.82 ^a	.81 ^a	.79 ^a	—						
1. Objective knowledge(W1)	-.24 ^a	-.18 ^a	-.30 ^a	-.25 ^a	-.35 ^a	-.27 ^a	-.23 ^a	-.24 ^a	-.14 ^a	-.13 ^a	-.09 ^a	-.28 ^a	—					
1. Objective knowledge(W2)	-.14 ^a	-.06 ^a	-.19 ^a	-.17 ^a	-.26 ^a	-.20 ^a	-.15 ^a	-.15 ^a	-.07 ^c	-.06 ^a	-.04 ^a	-.18 ^a	.80 ^a	—				
1. Subjective knowledge(W1)	.23 ^a	.38 ^a	.30 ^a	.32 ^a	.32 ^a	.31 ^a	.37 ^a	.36 ^a	.37 ^a	.37 ^a	.39 ^a	.42 ^a	.34 ^a	.42 ^a	—			
1. Subjective knowledge(W2)	.14 ^a	.30 ^a	.18 ^a	.21 ^a	.18 ^a	.18 ^a	.21 ^a	.21 ^a	.30 ^a	.28 ^a	.30 ^a	.29 ^a	.48 ^a	.48 ^a	.80 ^a	—		
1. Political participation(W1)	.42 ^a	.57 ^a	.59 ^a	.52 ^a	.63 ^a	.55 ^a	.63 ^a	.62 ^a	.49 ^a	.49 ^a	.50 ^a	.69 ^a	-.15 ^a	.00	.47 ^a	.34 ^a	—	
1. Political participation(W2)	.31 ^a	.45 ^a	.44 ^a	.37 ^a	.52 ^a	.42 ^a	.52 ^a	.47 ^a	.35 ^a	.35 ^a	.37 ^a	.54 ^a	-.09 ^c	-.07 ^c	.31 ^a	.33 ^a	.72 ^a	—

Note. Cell entries are two-tailed zero-order correlation coefficients.

a=p < .05, b=p < .01, c=p < .001.