Forthcoming

Mass Communication and Society

Peers versus Pros: Confirmation Bias in Selective Exposure to User-Generated versus Mass Media Messages and its Consequences

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Political information is now commonly consumed embedded in user-generated content and social media. Hence, peer users (as opposed to professional journalists) have become frequently encountered sources of such information. This experiment tested competing hypotheses on whether exposure to attitude-consistent versus -discrepant political messages (confirmation bias) depends on association with peer versus professional sources, through observational data and multi-level modeling. Results showed the confirmation bias was differentiated, as attitude importance fostered it only in the peer sources condition: When consuming user-generated posts on political issues, users showed a greater confirmation bias the more importance they attached to a specific political issue. Furthermore, exposure generally affected attitudes in line with message stance, as attitude-consistent exposure reinforced attitudes, while attitude-discrepant exposure weakened them (still detectable a day after exposure). Attitude impacts were mediated by opinion climate perceptions.

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Citizens in a democracy are expected to have knowledge and opinions about political issues and to engage in political deliberation in a trustful and cooperative manner with the purpose of consensus on impartial, rational grounds (e.g., Strömbäck, 2005). Yet reality may be far from these ideals because the internet allows citizens to retreat into so-called filter bubbles (Pariser, 2011). Per confirmation bias, they tend to favor attitude-consistent content over attitude-discrepant content (e.g., Hart, Albarracín, Eagly, Brechan, Lindberg, & Merrill, 2009). Along these lines, former U.S. president Obama noted: "One of the dangers of the internet is people can have entirely different realities. They can be just cocooned in information that reinforces their current biases" (Wintour, 2017). Hence, unlike offline contexts that often entail cross-cutting contacts to individuals with opposing political views (Mutz, 2006), online communication is thought to foster creation of attitude-aligned contexts. As a result, many citizens fail to engage with public discourse that is at the heart of the democracy (Sunstein, 2011). What's worse, in the wake of Russia's meddling with the 2016 U.S. presidential election (e.g., Parlapiano & Lee, 2018), they are at risk of influence from misinformation from (potentially fake) user-generated content.

The current work examines how source perceptions in the online context might drive a possibly greater confirmation bias and its consequences. Understanding the relevant processes is crucial in times where news consumers increasingly get political information from social media, even though they often encounter fabricated news and have low trust in news sources they attend to (Bialik & Matsa, 2017), and polarized attitudes hinder constructive discourse (Pew Research, 2017). After touching on some general aspects of the internet context that might affect the

confirmation bias, we zoom in on relevant social perceptions online. Hence, we discuss source authority, information processing motivations, and source similarity as factors shaping the confirmation bias and exposure impacts. Given that polarization concerns drive interest in the confirmation bias, attitudinal impacts from exposure will be examined as well, along with potential mediating and moderating impacts. Competing hypotheses will be tested through multi-level modeling, based on unobtrusively tracked exposure in a computerized experiment in which available messages were either associated with peer or professional sources.

Confirmation Bias in the Internet Era

The notion that individuals tend to prefer content that supports preexisting attitudes goes back to classic work in communication science (Lazarsfeld, Berelson, & Gaudet, 1948) with widely recognized theorizing (Festinger, 1957). This pattern is oftentimes labeled *confirmation bias* (Hart et al., 2009). Historically, scholars commonly used the term *selective exposure* to denote a confirmation bias (e.g., Sears & Freedman, 1967); contemporary work often labels *any* possible bias with *selective exposure* (e.g., the observation that smokers and non-smokers differ in time spent viewing anti-smoking ads would present an instance of selective exposure). Related research since the turn of the millennium corroborated the confirmation bias for political messages rather consistently, although earlier decades had yielded inconsistent findings (Donsbach, 2009). Studies examining the confirmation bias in online contexts, however, generally supported it—possibly due to stronger confirmation bias online and more refined methods of tracking users' message selections and exposure durations in precise second-units (e.g., Scharkow, 2016).

Given that the present study will allow participants to select from both attitude-consistent and –discrepant messages, it adopts the term *voluntary exposure* from Festinger (1957) to label

the measure of time spent on a message once selected. The term thus helps to differentiate from exposure length for a message that an individual was assigned to view (as in many communication science experiments) or encounters without a choice (incidental exposure; e.g., Kaiser, Keller, & Kleinen-von Königslöw, in press). A confirmation bias would be evident if voluntary exposure to attitude-consistent messages is significantly greater than to attitude-discrepant messages; in other words, a moderating effect of attitude-consistency would demonstrate the confirmation bias if showing that attitude-consistent messages attract greater voluntary exposure. This conceptualization thus aligns with arguments that seeking reinforcement and avoiding attitude challenges are distinct facets of the confirmation bias as a specific selective exposure phenomenon (Garrett, 2009). Furthermore, the current investigation focuses on the most precise operationalization of voluntary exposure by observing duration in seconds.

Undoubtedly, the internet features an enormous variety of contexts in which individuals encounter political information: Scholars argued that in online search contexts, the ability to customize and personalize news offerings provided by professional news organizations (Dylko, 2016; Dylko et al., 2017) as well as the use of news recommendation systems, affect the confirmation bias. The present study is specifically interested in the social context and perceptions that online environments facilitate. The overarching question pertains to if and why the online context induces a greater confirmation bias than traditional media. Possibly, online technologies allow for easier, more targeted selections. For instance, selecting messages that concur with preexisting views is easier on an online news site compared to browsing a print magazine (e.g., Sunstein, 2011). But technological features aside, social contexts online might make a fundamental difference, too. Plenty of user-generated content allows users to choose

from an enormous variety of sources (Bruns, 2008; Naab & Sehl, 2017) that may be associated with different levels of authority (Ma & Atkin, 2017). Online users encounter many non-institutionalized sources and can provide immediate feedback. Thus, mass communication is fundamentally different from current online contexts of political information—blogs, social media, YouTube, etc., where user-generated content is accessible, can be commented on, and every user, in principle, can also contribute. Possibly, the online content thus facilitates cross-cutting exposure to attitude-discrepant views, which is traditionally associated with interpersonal communication in offline contexts (Mutz, 2006).

The present study examines how this fundamental difference between a mass communication context—with institutionalized sources and no feedback option—and a computer-mediated, interpersonal communication context with peer sources potentially alters the confirmation bias. The following two sections discuss source perceptions regarding authority and similarity, and how they might moderate the confirmation bias in conjunction with information processing variables.

Source Authority and Confirmation Bias

Despite inconsistent support, Festinger's (1957) theory of cognitive dissonance and its proposition that individuals prefer attitude-consistent messages over attitude-discrepant messages (confirmation bias) remained a cornerstone in communication and social psychology (Donsbach, 2009; Mills & Harmon-Jones, 2009). In this line of work, a particular model that speaks to our focus of comparing peer sources and professional sources is the approach-avoidance model (Lowin, 1967). It suggests that attitude-discrepant messages will not be so rigorously avoided if they can be easily refuted, for instance, because they come from a low-authority source. Along these lines, computer-mediated, interpersonal communication contexts might yield greater

voluntary exposure to attitude-discrepant messages because these come from nonprofessional sources and thus should have lower authority. Per Lowin (1967), these messages from nonprofessionals should be easily refuted and more often attended to than attitude-discrepant messages that are associated with professional journalists. This notion aligns with the suggestion that social media might foster cross-cutting exposure (Hampton, Shin, & Lu, 2017). Indeed, Wojcieszak (in press) found an aligned pattern in voluntary exposure, wherein attitude-consistent messages from high-credibility sources and attitude-discrepant messages from low -credibility (blog) sources were preferred, albeit all messages covered the same topic (gun control or abortion). Hence, the interaction proposed in our first hypothesis builds on the approach-avoidance model. It suggests that the positive impact of attitude consistency on voluntary exposure (the confirmation bias) is moderated by source association, with the demonstration of a confirmation bias being a precondition for support for this hypothesized moderation.

H1a: Voluntary exposure to attitude-consistent political content is longer than to attitude-discrepant content (confirmation bias)—more so when messages are associated with professional sources than with peer sources.

Source Similarity and Persuasive Impact

While at first glance, professional sources are likely to garner higher authority than lay sources and should thus be more difficult to refute in Lowin's (1967) terms, the related perceptions are more complicated upon closer inspection. In addition to source authority as an important determinant of source credibility and persuasiveness (Hovland & Weiss, 1951), in-group sources have been shown to be impactful—an effect that has been described under a variety of labels, such as source similarity, reference group effects, identification, attractiveness, or referent informational influence (Mackie, Worth, & Asuncion, 1990). Relatedly, the concept

of (normative or interactive) social distance can elucidate the notion that sources who are construed as “close” to oneself, either due to shared norms or frequent interaction, should be more persuasive (Karakayali, 2009).

The greater persuasiveness of messages that come from in-group sources, perceived as similar to oneself, is thought to stem from greater perceived self-relevance that induces more elaboration (Petty & Cacioppo, 1986). Per Kelman’s (1961) related notion of identification, a reciprocal relationship between source and receiver may increase the relevance of the message and thus foster elaboration and persuasive impact. In other words, if people anticipate interacting with a source, they are more likely to “identify” (Kelman, 1961) with it and take its perspective.

Hence, both similarity of the source with oneself as well as anticipation of interacting with the source foster persuasive impacts. Arguably, then, postings on blogs and social media may have greater persuasive impact than mass communication messages because recipients may feel more similar to these non-institutionalized sources and can easily interact with them. As a result, messages from peers might be more impactful than messages from professionals. Taking these considerations back to the confirmation bias and the approach-avoidance model, this could mean the opposite of what some have hoped. Instead of greater cross-cutting exposure when attending to user-generated content, users may intuitively know about its potentially strong persuasive impact and circumvent attitude-challenging messages even more than for mass media messages. Hence, H1b below is the competing hypothesis to H1a. Again, the positive impact of attitude consistency on voluntary exposure (the confirmation bias) is hypothesized to be moderated by source association, with the demonstration of a confirmation bias being a precondition for support for this hypothesized moderation. Yet the opposite moderating impact is put forward in this competing hypothesis.

H1b: Voluntary exposure to attitude-consistent political content is longer than to attitude-discrepant content (confirmation bias)—more so when messages are associated with peer sources than with professional sources.

Motivation and Ability for Information Processing & Source Authority

The considerations above suggest that the nature of sources matter for message refutability in the sense of Lowin's (1967) model. Furthermore, the extent to which individuals pay attention to cues such as attitude consistency and source type, when selecting political messages, likely depends on level of motivation to process the information (per Petty & Cacioppo's elaboration likelihood model, 1986). In fact, [redacted] (2013) found that users who attach high importance to an issue at hand even prefer low-credibility sources that provide them with attitude-consistent content over highly credible sources. Hence, news consumers who are highly motivated to process information on a political issue, due to perceived high importance, might go for amateur (low-credibility) sources on social media—more so than professional news (high-credibility) sources—that give them attitude-consistent content.

These findings have high relevance in light of stark concerns that many citizens encounter news and political information on social media, often coming from amateur and low-authority sources (e.g., Beam, Hutchens, & Hmielowski, 2018). If substantial amounts of incoming political information are coming from questionable sources and people primarily attend to attitude-consistent messages, concerns about filter bubbles would be exacerbated by misinformation potentially circulating and often being attended to, especially if it supports preexisting views. Such processes could accelerate not only misinformation but also polarization and intolerance in the electorate, hindering efficient public discourse in the interest of solving

societal issues (Strömbäck, 2005). These processes may have been crucial in possible influence on Americans during the 2016 election from the Russian propaganda via social media (Parlapiano & Lee, 2018).

Therefore, it is pivotal to understand the processes at work. Given that level of education, cognitive abilities, and motivations may affect the confirmation bias (e.g., Taber & Lodge, 2006), there could be a complicated interplay of these variables and attitude importance that all shape whether less confirmation bias occurs for messages that are easily refutable (i.e., from low-credibility sources). Sources with greater authority are not always more persuasive (Briñol & Petty, 2009): When motivation and/or ability to process persuasive messages are low, source cues serve as simple cues (building on the elaboration likelihood model; Petty & Cacioppo, 1986). In such a low-elaboration scenario, "source factors serve as heuristics or simple cues […] [and] produce persuasion in the same direction as their valence. Thus, likable, attractive, similar, or expert sources produce more persuasion than dislikeable, unattractive, dissimilar, or inexpert sources" (Briñol & Petty, 2009, p. 53). On the other hand, in a situation when motivation and ability to think are high because the topic has high personal importance, individuals think more carefully about a message, and source variables can shape the valence of these thoughts (Briñol & Petty, 2009). In brief, source cues will have different impacts depending on the ability or motivation for information processing. Accordingly, the study will test H2, with a focus on attitude importance.

However, H2 offers only a nondirectional hypothesis, for several reasons. The outlined theorizing focused on persuasive impacts and not on voluntary exposure patterns, albeit the mentioned empirical evidence extended persuasion theory to make predictions about voluntary exposure. The motivated cognition perspective (Taber & Lodge, 2006) argued that the

confirmation bias occurs only among motivated recipients, implying a contingent moderation of attitude importance (in Holbert and Park's, in press, terminology for moderating impacts). Festinger (1957), on the other hand, proposed that high levels of dissonance could result in changing one's attitude, which would likely primarily occur at high levels of attitude importance and possibly entail selecting attitude-discrepant information. Prior related evidence has found different patterns of moderation, including contributing moderation (e.g., Knobloch-Westerwick & Meng, 2009) and contingent moderation (e.g., [redacted]). In brief, it is very likely that attitude importance affects the confirmation bias and how it plays out when messages are associated with peer or professional sources—but how this moderating impact occurs is unclear. Thus a non-directional moderation hypothesis will be examined per H2.

H2: The confirmation bias pattern suggested in H1 depends on motivation to process information (i.e., attitude importance).

Attitude Impacts and Relevant Mediating and Moderating Influences

As an Obama quote illustrated earlier, broad concerns exist that the confirmation bias, especially in online information exposure, results in polarization of the electorate. Some research paints an even bleaker picture in which individuals disregard attitude-discrepant content on the less frequent occasions when they do choose it: Taber and Lodge (2006) postulated a so-called disconfirmation bias, according to which individuals refute and disregard selected attitude-discrepant messages. But this postulation has not held up in evidence from pre-election studies in the U.S., Germany, and Japan, which demonstrated across several issues that exposure to attitude-discrepant messages weakens attitudes ([redacted]

[redacted]). Further, a recent study that displayed more and different controversial issues in a different website context also found the same pattern that attitude-consistent exposure reinforced attitudes, whereas exposure to attitude-discrepant content had the opposite effect ([redacted]). Further evidence on the persistence of attitude impacts, as well as interpretation of what accounts for this pattern, was offered by [redacted]; thus we will not further elaborate here). Accordingly, the present study aims to test and replicate this pattern with a related hypothesis. Importantly, this study explores whether it matters if messages are associated with peer or professional sources through a research question.

H3: Voluntary exposure to (a) attitude-consistent messages reinforces attitudes, while voluntary exposure to (b) attitude-discrepant messages weakens attitudes.

RQ1: Are messages associated with peer versus professional sources comparable or different in impacts postulated in H3?

Despite the commonly stated concern that citizens attend primarily to attitude-consistent content with a polarizing impact, the exact mechanisms through which such polarization happens have infrequently been examined. Building on the spiral of silence theory (Noelle-Neumann, 1974), the present investigation will examine whether voluntary exposure to political messages shapes people's perception of opinion climate, which, in turn, could influence their attitudes, as illustrated in Figure 1. This theory is of particular interest here because it suggested that encounters of others' opinions both from other peer citizens, as well as in professional journalistic coverage, influence perceptions of what others think about a controversial issue. With social media use prevalent, peer expressions encountered online now affect public opinion perceptions as well (Hampton et al., 2017). Hence, both peer and professional sources online

should both be relevant in shaping these perceptions and potentially attitudes, as Noelle-Neumann (1974, p. 49) believed: “I hypothesize that, in the process of public opinion formation, observations of changes in the environment precede changes in one’s own opinion.” Survey evidence by Tsfati, Stroud, and Chotiner (2014) attests to this notion; one study with observational data revealed the same mediation pattern (Sude et al., 2019). By testing H4-6, the present study aims to replicate these findings with a larger sample. Yet it is not known whether peer or professional sources potentially weigh more heavily in these patterns; thus, a related research question will be pursued.

H4: Voluntary exposure to (a) attitude-consistent messages leads to perceiving a more attitude-consistent climate of opinion, while exposure to (b) attitude-discrepant messages leads to perceiving a less attitude-consistent climate of opinion.

H5: Change in opinion climate (resulting from voluntary exposure per H4) impacts attitudes in line with the change.

H6: The effects of voluntary exposure are mediated by impacts on perceived opinion climate change, which in turn, influence the attitudes.

RQ2: Do peer sources and professional sources differ in impacts postulated in H4-6?

Method

Overview

Participants (N = 190) completed a computerized experiment in a lab. The procedure built on Sude et al.’s (2019) research design but varied whether peer sources were displayed or professional sources implied (peer vs. pro). First, attitudes toward nine controversial political issues, including six target issues and three distractor issues, were captured, as well as perceptions of the opinion climate for each issue. Participants also answered distractor questions

before they proceeded to an information browsing task: The overview page featured six message headlines and corresponding leads; it was either attributed to a community blog for peer sources or a news site for professional sources (see Figure 2 for screenshots). Participants were told to read whichever messages they found interesting. The six messages each covered one of the six target issues. Each participant encountered three liberal and three conservative messages to browse, but the research software randomized the overview page across participants to avoid sequence effects. Software unobtrusively logged voluntary exposure to messages, such that the times spent on specific article pages were captured with hyperlink clicks. Participants browsed the messages for three minutes and were then asked about emotional reactions to the messages, to provide closure. Last, participants again reported attitude measures, measures of the opinion climate, demographics, and traits scales. Participants also completed a follow-up with attitude measures one day later.

Participants

The study recruited college students at The Ohio State University, for a study on news, from a research participant pool. Data were collected April-November 2017. Of the 197 people who participated in the main study, 68.5% self-categorized as female. The average age in the sample was 20.25 (*SD* = 2.19), with 14.5% of participants identifying as Asian, 5.0% as African-American, 2.0% as Hispanic or Latino, 0.5% as Native American, 72.0% as non-Hispanic White or Caucasian, 3.0% as multi-racial, and 1.0 % who wrote in other ethnicities (Arab, for example). Regarding partisanship, 39.09% categorized themselves as Republicans or, if independent, leaning Republican, 45.18% as Democrats, or leaning Democrat, and 6.09% as independent without leaning towards either party. Furthermore, 9.64% indicated that they supported a third party.

To screen out inattentive participants, any person who spent more than 1.5 minutes on the overview page was excluded (90 seconds on the overview page represents spending over half the time on the overview; these individuals were outliers, in that their overview reading times were over 2.30 times the interquartile range above the 3rd quartile). This exclusion brought the sample size to 190 for hypotheses testing. Neither age, $t(195) = -.227$, $p = .820$, nor gender $t(195) = -.670$, $p = .503$, varied by exclusion.

Further, 42 participants did not complete the follow-up. They did not differ from participants who completed the follow-up in age, gender, nor on any independent or dependent variable used in analyses, $ps < .167$. Analyses not including measures from the follow-up were run with all participants, regardless of whether they completed the follow-up or not.

Procedure

Baseline measures (t1). Participants completed the following computerized procedure in a research lab: After providing consent, they reported attitudes towards various political policies—six target issues and three distractor issues—and the extent to which each policy was important to them. The target issues included abortion, affirmative action, business regulation, death penalty, social welfare, and gun control. The distractor issues (for which participants indicated their attitudes and other perceptions but that were not covered in the stimuli messages presented in the information browsing task) served to avoid sensitization to specific issues and were defense budget, minimum wage, and immigration. They completed opinion climate measures for these same issues.

Distractor task. A writing task served to obscure the research interest of the study. The prompt was: “Before you look at current news, because prior research has shown that moods shape responses to news, we would like to know how you are feeling today. In the textbox

below, please indicate how happy are you with how your life and social relationships are going today! Most people type one to two paragraphs." Text entries ranged from 5 to 148 words, *M* = 54.21 (*SD* = 26.27).

Information browsing task. Next, the research software displayed the overview news screen which included three conservative-stance and three liberal-stance headlines and leads in randomized sequence, with random assignment by topic. All six target issues were covered with one headline and lead each. The overview mimicked the look a real website (*WIRED*) and was either presented as a community blog to represent a context with messages from peer messages, see Figure 2 for screenshots, or as a news site to represent a context associated with professional sources. Participants were instructed to browse as they normally would; they also were informed that time would not permit them to read everything, as after a while a questionnaire would be displayed automatically. There was no specific time limit indicated to the participants. The browsing task ended after three minutes. Participants then indicated current moods, which merely served as closure for the browsing task and to veil the actual research interest.

Post-exposure measures (t2). Next, measures on attitudes, opinion climate, political partisanship and ideology, and demographics were collected, in addition to covariates.

Stimuli and Stimuli Pretesting

Messages. The twelve stimuli messages included two messages, one with a liberal stance and one with a conservative perspective, for each of the six target issues. The texts were adapted from news sources (e.g., New York Times) and think tanks (e.g., Brookings Institution) and edited to be 700 words. Each headline featured between 8 and 10 words, *M* = 8.25 (*SD* = 1.06), and each lead between 25 and 30 words, *M* = 27.67 (*SD* = 1.15). The messages were adopted from an earlier study (Sude et al., 2019) and had been pretested to differentiate regarding

political stance while being equally interesting.

Experimental manipulation. Participants were randomly assigned to view the news site either with a "Community Blog: Your Place for Discussion" masthead (shown on the overview and all article pages) page or with a "News Views" masthead (shown on the overview and all article pages). The basic design was adapted from an actual news website (*WIRED*) because the site is generally known for information technology coverage. Hence, a blog version would be credible; it also publishes some political news, making the news items credible as well, without being widely associated with a certain political stance. The peer sources context contained the names of individual ostensible posters, shown as associated with the specific article leads and displayed both on the overview page and the respective names shown on the individual article pages (the names were adopted from another project where they were pretested for gender neutrality, as reported by [redacted], in press). Both overview pages featured six leads, with three conservative-stance and three liberal-stance leads displayed in randomized order. These six messages pertained to the six target issues for which participants had indicated their attitudes in the baseline measures, embedded in distracter issues. For three of these issues (based on random selection), participants viewed the conservative-version messages and for the other three topics, they viewed liberal-version messages. See Figure 2 for example screenshots of the "Community Blog" page for peer sources and "News Views" page for the professional sources context.

Participants browsed and read messages for three minutes and then completed a distracter task. A part of the sample responded to questions to check for manipulation effectiveness. The manipulation was successful. Participants rated the following statements: "The authors of the messages I read were everyday people," $t(63) = -2.12$, $p = .038$ ($M_{peer} = 6.02$, $SD_{peer} = 2.53$, M_{pro}

= 4.80, SD_{pro} = 2.18), "The authors of the messages I read were professional journalists," $t(63)$ = 2.60, p = .012 (M_{peer} = 4.38, SD_{peer} = 2.71; M_{pro} = 5.93, SD_{pro} = 2.10), and "The website I viewed allowed anyone to contribute texts," $t(86)$ = -2.32, p = .024 (M_{peer} = 5.37, SD_{peer}= 2.93; M_{pro} = 3.93, SD_{pro} = 2.01).

Measures

Measures are detailed below; Appendices A and B report descriptive statistics.

Attitudes. Participants reported attitudes based on the question "How much do you personally oppose or support each issue below?" with a slider scale that was labeled with "strongly oppose" (-5) to "strongly support" (+5).

Attitude impacts. For messages supporting a policy, immediate attitude impact was operationalized by subtracting pre-exposure attitudes from post-exposure attitudes (indicating greater personal support for the policy). For messages opposing a policy, attitude impact was operationalized by subtracting post-exposure attitudes from pre-exposure attitudes (indicating less personal support for the policy). For persistent attitude impacts, the difference between pre-exposure attitudes and attitudes one day later was investigated, per the same operationalization.

Attitude importance. Participants indicated personal importance for each issue on a scale with "not at all important" (-5) and "extremely important" (+5) as anchors. The scale did not display numeric feedback.

Attitude consistency. A binary variable was generated for each of the six issues to indicate whether the related displayed message aligned in stance with the individual participant's attitude. Positive scores reflected support of a policy, whereas negative scores reflected opposition. On average, 48 (43%) of the leads that participants saw were attitude-consistent (*SD* = 19.78%).

Opinion climate. For each of the six issues, participants were asked, "about what percentage of Americans currently supports this policy?" with a sliding scale from 0% to 100%.

Change in opinion climate perceptions. For messages supporting a policy, change in opinion climate perceptions was operationalized by subtracting pre-exposure estimate of opinion climate from post-exposure estimate (indicating perceiving greater support). For messages opposing a policy, change in opinion climate perceptions was captured by subtracting post-exposure estimate from pre-exposure estimate (indicating perceiving less support).

Voluntary exposure. Voluntary exposure (VI) was logged unobtrusively in seconds spent on an actual message page, based on hyperlink clicks. If an article was never clicked on, the related voluntary exposure was zero. This method is common in observational selective exposure studies (Clay, Barber, & Shook, 2013); work by Zillmann, Knobloch, and Yu (2001) corroborated it by showing that longer exposure time reflects more reading and correlates strongly with article choice and information recall. Participants selected less than half of the messages (M = 2.52, SD = 2.96). For the selected messages, participants spent on average 59.65 seconds (SD = 49.72) reading.

Covariates. After the information browsing task, various control variables were collected: need for cognition (M = 0.71, SD = 1.48) (Cacioppo, Petty, & Kao, 1984), cognitive reflection (M = 0.29, SD = 0.35) (Frederick, 2005), political interest (M = 4.87, SD = 1.95), online news use the prior day (M = 26.77 min, SD = 32.70 min), and blog news use the prior day (M = 23.80 min, SD = 28.50 min). Need for cognition items were displayed with a sliding scale which ranged from 0 to 10 and recorded responses up to two decimal places. Cognitive reflection was measured via three items, with answers coded as either correct or incorrect and summed. Political interest was reported on a scale from 1 to 9.

Data Analysis

Multi-level regressions differentiated based on the six target issues and related message contacts. Data were restructured into 'long format' such that there were six cases per participant; each case represented a message contact. Hence, the data had two clustering variables: participant and message (n = 12, 6 liberal, 6 conservative). Because of missing data per participants across topics, not every individual has six cases, reflected in N's in Appendices A and B. Accordingly, 1112 cases existed over 190 participants (after pairwise missing data deletion). Further, two participants opted to skip both post-exposure attitude and public opinion measures, resulting in 1093 observations over 188 people.

Analyses used the lme4 package (Bates, Maechler, Bolker, & Walker, 2015), the lmerTest package (Kuznetsova et al., 2017), and jtools (Long, 2017), in the R environment (R Core Team, 2017) with full information maximum likelihood estimation. While models are reported without covariates, they remain significant when incorporating the covariates. See Appendix C for model fit criteria and intra-class correlations.

Analyses with difference scores as dependent variables included pre-exposure values as covariate, to adjust for ceiling and floor effects (Dalecki & Willits, 1991). Following Judd, Kenny, and McClelland (2001), when a difference score served as dependent variable and another difference score served as independent variable, as when testing mediation per H5 and H6, inclusion of the sum of pre- and post-exposure measures of the independent variable served to adjust for non-normal distributions. To estimate degrees of freedom and t-statistics, the Satterthwaites method was used. Probing of interactions based on the regression method used the full sample because the dichotomous variable of attitude consistency served as a dummy variable when assessing the moderation impact. "When the moderator is dichotomous, […] we can

estimate the conditional effect of the focal antecedent X on consequent Y for the two values of moderator W" (Hayes, 2018, p. 273). These additions ensure more accurate model estimates (Allison, 1990; Dalecki & Willits, 1991). Last, following recommendations by Van der Meer, te Grotenhuis, and Pelzer (2010), all models were examined for high influence points (Cook's Distance) using the Influence.ME package (Nieuwenhuis, Pelzer, & te Grotenhuis, 2017), to examine models' robustness. This package computes Cook's distance per observation, to ensure that outlier responses do not bias the regression coefficients. Where high influence observations were detected, the model was re-run excluding these observations, which applied only to one model, testing RQ1. All other models were robust regarding high influence points.

Power Analyses

Power analyses performed with the R-package pwr (Champely, 2018) showed that a 180 participant study, with 6 observations per participant (1080 observations), and 10 parameters per model, has 90 % power to detect significance in models with $F^2 > .02$, a small effect according to Cohen (1988). See Snijders (2005) for a discussion of power analysis regarding OLS regression versus multi-level modeling and design effect adjustment. The design effects for the analyses in in this study range between 0.97 and 1.01. With sample sizes greater than 1091 (1080*1.01), each analysis has 90% power to detect even small effects.

Results

Source Condition and Attitude Importance Impacts on Confirmation Bias (H1a, H1b, H2)

First, the classic confirmation bias was tested, even though no hypothesis pertained to this well-established pattern. A multi-level mixed effects regression model (see details under "Data Analysis"), predicted voluntary exposure (in seconds) from attitude consistency (coded 1) versus discrepancy (coded 0). Attitude consistency increased voluntary exposure, $b = 14.68$

CI_{95}[11.21, 24.17], t(1060.00) = 5.48, p <. 001. Participants spent a grand mean of 32.34 seconds on attitude-consistent messages and a grand mean of 17.71 seconds on –discrepant messages. Thus, the data demonstrate a confirmation bias, as users spent almost 15 additional seconds on an article if it was attitude-consistent, compared to –discrepant.

The next analysis addressed alternative hypotheses H1a and H1b, as well as the moderation effect postulated in H2. A multi-level mixed effects regression model (details under "Data Analysis") predicted voluntary exposure (reading time) from attitude consistency (coded 1) versus discrepancy (coded 0), source condition (peer coded 1, pro coded 0), attitude importance (centered at the grand mean), and their interaction. The interaction term was significant, b = 4.67 CI_{95}[10.91, 82.48], t(1105.70) = 2.56, p = .011, supporting H2. This interaction will be disentangled in the following, first focusing on attitude importance impacts, second focusing on peer versus professional condition impacts.

Hence, the impact of importance was first examined for the peer and professional sources conditions, respectively, on attitude-consistent and –discrepant voluntary exposure, respectively. In the peer condition, greater attitude importance resulted in longer voluntary exposure (about 4 seconds per one scale-point on the importance scale) to attitude-consistent messages, b = 4.12, CI_{95}[2.33, 5.94], t(1102.80) = 4.48, p < .001. When people cared about the issues when reading messages from peers, they spent more time with confirming content.

On the other hand, attitude importance did not affect voluntary exposure to attitude-discrepant messages, p > .520, in the peer condition.

In the professional sources condition, attitude importance had no effect on voluntary exposure to attitude-consistent messages, p = .823, or attitude-discrepant messages, p = .206 (accordingly, the impacts within this condition will not be probed further; see Appendix D for

means, Appendix E features specifics on the interactions per reviewer request).

Thus, in the peer sources condition only, the more personally important an issue, the greater was voluntary exposure to attitude-consistent messages.

The second probing of the interaction tested the alternative hypotheses H1a and H1b, examining voluntary exposure to attitude-consistent content versus –discrepant content between the peer and professional sources conditions, at different levels of importance (also see Appendix D). Hence, this analysis tackles the confirmation bias specifically by comparing attitude-consistent and –discrepant voluntary exposure. Voluntary exposure for attitude-consistent messages was greater than voluntary exposure to attitude-discrepant messages within the professional sources condition, $b = 12.61$ $CI_{95}[5.41, 19.82]$, $t(1088.00) = 3.44$, $p = .001$, where importance did not play a moderating role. This finding serves as a comparison point from which to look at the extent of the confirmation bias in the peer sources condition, an extent that will vary by attitude importance. In other words, because the magnitude of the confirmation bias does not vary significantly across levels of importance in the pro condition, that coefficient and confidence interval above can be compared to the different values of the confirmation bias in the peer condition, described below.

When attitude importance was low (1 SD below mean), no confirmation bias was evident in the peer condition, $b = 7.00$ $CI_{95}[-2.57, 16.56]$, $t(1110.00) = 1.44$, $p = .152$. However, at moderate importance (at mean), the confirmation bias was significant within the peer condition, $b = 16.82$ $CI_{95}[9.88, 23.87]$, $t(1101.80) = 4.68$, $p < .001$. A still stronger confirmation bias was evident at high importance (1 SD above mean) in the peer condition, $b = 26.64$ $CI_{95}[16.71, 36.57]$, $t(1097.50) = 5.26$, $p < .001$. At very high importance (2 *SD* above the mean), confirmation bias was clearly stronger in the peer condition, $b = 36.46$ $CI_{95}[21.03, 51.89]$,

$t(1107.10) = 4.64$, $p < .001$, than in the overall pro condition and did not overlap with the confidence interval of the pro condition impact, where the overall impact was $b = 12.61$ $CI_{95}[5.41, 19.82]$. Hence, a clear contrast with regards to H1a/b emerged only at very high attitude importance, where peer sources yielded a stronger confirmation bias than professional sources. Analyses above detail that the confirmation bias was present in every condition, except for the selection of messages low in attitude importance in the peer condition.

Immediate Attitude Impacts of Voluntary Exposure (H3a, H3b, RQ1)

H3 proposes that voluntary exposure will impact attitudes in line with the message stance whether the message is a) attitude-consistent or b) attitude-discrepant. To test H3a and H3b, a multi-level mixed effects regression model predicted attitude impacts from voluntary exposure (scaled so that a one unit change in voluntary exposure represents 10 seconds greater reading time), attitude-consistency (coded as 1), and their interaction. The interaction term was significant, $b = -0.08$ $CI_{95}[-0.13 -0.03]$, $t(1095.40) = -3.012$, $p = .003$. Voluntary exposure to attitude-discrepant messages had a significant, positive impact in line with those messages, $b = .08$ $CI_{95}[0.04, 0.12]$, $t(1073.50) = 3.76$, $p < .001$. Voluntary exposure to attitude-consistent messages yielded no discernable impact ($p = .973$). Thus, only H3b was supported.

RQ1 asks whether the source condition further moderates this relationship. To test RQ1, a multi-level mixed effects regression model predicted attitude impacts from voluntary exposure, attitude-consistency (coded as 1), source (professional sources coded as 1), and their interaction. While the interaction term was significant, $p = .038$, this significance was not robust to the elimination of high cook's distance observations (Van der Meer et al., 2010), suggesting that the appearance of an interaction was driven purely by these unusual cases. Thus, the interaction was not analyzed further.

Immediate Attitude Impacts of Voluntary Exposure via Opinion Climate Perceptions

H4a and H4b, H5, and H6 describe a mediation model in which voluntary exposure impacts opinion climate perceptions, which in turn, have an immediate impact on attitudes. Both the opinion climate and attitude impacts were operationalized as changes in line with the stance taken by the message that was read. In Hayes (2018) terminology, the impact of exposure on opinion climate perception represents the 'a-path.' The impact of opinion climate perception on immediate attitude impacts represents the 'b-path.' The direct effect of voluntary exposure on attitude impacts represents the 'c'-path' (a moderated path per the findings from tests of H3a and H3b, above). In other words, both partial mediation and moderated direct effects were examined.

To test H4a and H4b, a multi-level fixed effects regression model was first run predicting change in opinion climate perceptions from voluntary exposure, attitude-consistency (coded as 1), and their interaction. The interaction was not significant, $p = .308$. Thus, the impact of voluntary exposure on perceptions of the climate of opinion did not depend on whether a message was attitude-consistent or attitude-discrepant.

A multi-level mixed effects regression examining the impacts of voluntary exposure on opinion climate perceptions demonstrated a significant 'a path,' $b = 0.34$ $CI_{95}[0.09, 0.59]$, $t(857.10) = 3.19$, $p = .001$, supporting H4a and H4b. The significant coefficient means that, if a person spent an additional 10 seconds on reading a message, he or she perceived that 0.34% more or fewer Americans would support a policy, per message stance. As participants on average spent a minute on a message, shifts in perceived opinion climate among Americans of 2 percentage points were common. Regarding RQ2, the impact of exposure was not moderated by source ($p > .10$), showing that messages associated with peer and professional sources were equally influential in shaping opinion climate perceptions.

The model assessing the ‘c’-path’ and ‘b-path’ was constructed regressing attitude impact on change in opinion climate perceptions (‘b’) as well as voluntary exposure, attitude-consistency, and their interaction (‘c-path’ moderated per the prior findings for H3a and H3b).

The ‘b path’ was significant, $b = 0.01$ $CI_{95}[0.01, 0.02]$, $t(1089.00) = 4.35$, $p < .001$, supporting H5. The significant coefficient shows that when opinion climate perceptions shifted by one scale point (for example, an individual perceives that 1% more or fewer Americans support a policy than before the information browsing task), their attitudes shifted as well. To test for mediation, per H6, Monte Carlo confidence intervals were constructed for the product of the ‘a-path’ and b-path’ (Rockwood, 2017). Representing the impact of 10 seconds of additional exposure via a 1% change in perceptions of the opinion climate, the mediation is significant, a*b = .003 $CI_{95}[0.001, 0.005]$. Note further that the alternative ‘b-path’ on a reversed causal direction, in which attitude changes were to influence opinion climate perceptions, represents a significantly poorer fitting model, $X^2(0) = 5103.4$, $p < .001$. This check regarding causal direction offers further support for H6. Addressing RQ2, a model allowing the b-pathway to be moderated by whether the message was associated with peer or professional sources yielded no evidence for moderation ($p = .917$).

For the direct voluntary exposure effect (‘c-path’), the interaction of voluntary exposure and attitude-consistency was significant, $b = -0.07$ $CI_{95}[-0.12, -0.02]$, $t(1.088.00) = -2.97$, $p = .004$. For attitude-discrepant messages, a ten-second voluntary exposure change impacted attitudes in line with the message, $b = 0.07$ $CI_{95}[0.03, 0.11]$, $t(1068.00) = 3.46$, $p = .001$.

Persistent Attitude Impacts

To examine whether postulations in H3-5 also applied to persistent attitude impacts, a multi-level regression model predicted persistent attitude impacts from voluntary exposure

(coded such that the regression coefficient represents the impact of a 10-second increase in voluntary exposure), attitude-consistency (dummy-coded), and their interaction, as well as opinion climate perceptions. The interaction was not significant, $p = .058$. Eliminating the interaction term from the model yielded main effects of voluntary exposure, $b = 0.03$, $t(696.17) = 2.01$, $p = .045$, attitude-consistency, $b = -1.60$, $t(811.84) = -13.50$, $p < .001$, and opinion climate perceptions, $b = 0.01$, $t(823.41) = 3.64$, $p < .001$. The impacts suggested, then, are still evident 24 hours later.

Discussion

Most Americans now receive news from social media (Bialik & Matsa, 2017) while becoming increasingly polarized (Pew Research, 2017). It is not clear whether these trends are connected, but the internet facilitates selectivity and a confirmation bias, resulting in increasing polarization (e.g., Prior, 2013). In the context of social media, source perceptions may play an important role for news selection (Messing & Westwood, 2014). Drawing on cognitive dissonance theory and source perceptions, the current study examined whether messages from a peer (versus a professional) source shape the confirmation bias differently. The experiment, with unobtrusive exposure measures, included a greater diversity of topics, namely six, than prior research (i.e., Wojcieszak, in press; Westerwick et al., 2013). For three topics, messages with a conservative stance were displayed, while the other three messages featured a liberal stance. First off, a clear confirmation bias was evident across both conditions. Regardless of whether messages were associated with everyday people or with professional journalists as sources, participants spent more time with attitude-consistent content. Meanwhile, voluntary exposure to attitude-discrepant exposure was not affected, suggesting that these two facets of the confirmation bias are distinct (Garrett, 2009). However, the exposure pattern was somewhat

more differentiated when messages were associated with peers, wherein messages were displayed on a community blog and with everyday people as sources: The more importance participants attached to an issue, the stronger was their confirmation bias. This finding supported H2, which postulated that attitude importance shapes the confirmation bias. For very high importance, participants' confirmation bias while browsing a community blog with peer posts was greater than the general confirmation bias evident on a news site with journalist posts (robust to covariates).

The present findings suggest that exposure patterns differ depending on whether individuals are attending to political messages from peers versus professional journalists. Neither the theoretical considerations arguing that possibly lower expertise and credibility of lay bloggers would reduce the confirmation bias (H1a) nor considerations arguing that greater similarity with the source could foster greater confirmation bias on a blog (H1b) found clear support. However, the greater role of attitude importance while browsing a community blog implies that source perceptions shape the confirmation bias. To extrapolate the present findings, it can be argued that when attending to political content on social media, users will be particularly careful to select only messages they agree with if they attach high importance to the topic. In other words, they should be particularly motivated to select into a like-minded message environment or community for those topics they care about the most.

The present study further adds to the evidence that voluntary exposure impacts attitudes in line with message stance, even when the stance is attitude-discrepant (supporting H3). This finding once more challenges the notion of a disconfirmation bias that Taber and Lodge (2006) had argued for. Attitude impacts were uniform across both source types, suggesting that peer postings are just as influential as mass media messages. Importantly, they were still detectable

one day after exposure, even though the browsing time to selectively view articles was only three minutes. This is impressive evidence that even brief exposure can have lingering attitude effects.

Moreover, voluntary exposure shaped changes in perceived opinion climate, supporting H4. Drawing on the spiral of silence (Noelle-Neumann, 1974), it is highly plausible that the interpersonal cues from peer postings make as much of an impact on attitudes as mass media cues do, because this lens proposed that individuals track both types of cues to form a perception of opinion climate. In line with H5, Noelle-Neumann (1974, p. 49) argued that "observations of changes in the environment precede changes in one's own opinion," supported by the present data. Indeed, mediation analyses showed that per H6, voluntary exposure impacts on attitudes were mediated by shifts in perceived opinion climate, which replicates prior insights (Sude et al. 2019) into how voluntary exposure influences individuals. Importantly, this pattern was uniform across both types of sources, showing social media and user-generated content have impacts similar to mass media messages. The common concerns that fraudulent social media postings influence Americans' views are thus warranted, and the present study elucidates the relevant processes via perceptions of opinion climate.

Limitations

However, the student sample obviously limits the generalizability of the findings, as the sample is more educated, younger, and more technologically savvy than the population overall. Unfortunately, collecting behavioral exposure data from representative samples presents immense challenges regarding technological setup and costs. While a strength of the present study is the use of multiple messages and topics (allowing for better generalization than single-topic setups), measuring the related attitudes then requires single-item measures, because otherwise the length of the questionnaire with multiple items per topic would create undue

fatigue. The analyses focused on voluntary exposure measured in seconds logged by software, as many prior studies have done; yet the construct could be operationalized in different ways. Upon reviewer request, the same models were run while excluding any instances where an article was not clicked on, or when using a dichotomous variable for "selected/not selected" as dependent variable; overall, the models' findings fall short of significance in the reported patterns, due to smaller sample sizes or a less sensitive measure, respectively. Naturally, the specific displays used to exemplify different contexts or source types cannot represent the great diversity of actual user-generated content platforms and mass communication outlets that exist. Accordingly, the present investigation aimed to demonstrate some principles. It also cannot mimic processes that may occur when users are indeed familiar with other users of a platform and plan to interact with them in the future. Further research is desirable, using additional display types and affordances. Moreover, future research should collect insights into user perceptions of sources and contexts. Future research should ask more specifically about user perceptions and media use habits regarding messages from peer and professional sources.

Outlook

The present findings show that user-generated content is as impactful for attitudes as professional news and, if anything, induces a greater confirmation bias among those who care more about an issue. In light of worries regarding how individual attitudes and public opinion might be swayed by user-generated content, even fabricated news, researchers will need to develop further theoretical frameworks and conduct more empirical studies to understand the relevant processes. The swiftly changing online contexts and user habits present enormous challenges for research to conceptualize and understand the relevant phenomena. But chances are that user-generated content will gain further ground in public discourse and have even larger

impacts on opinions.

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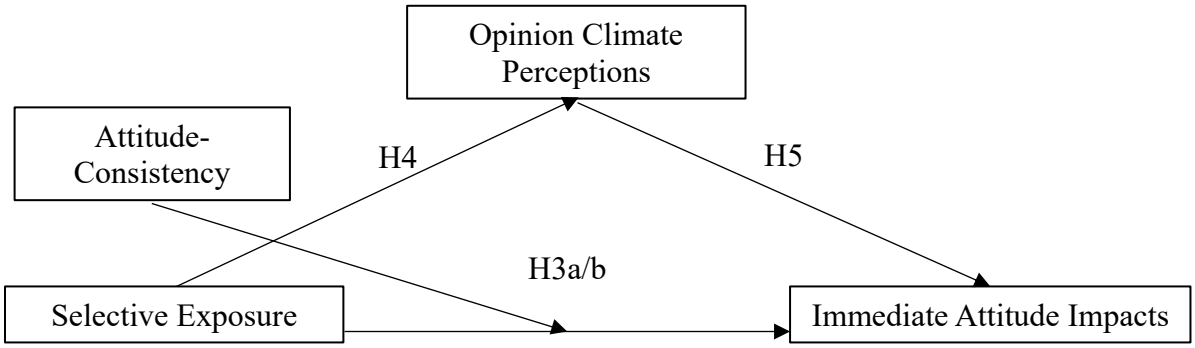

Figure 1:

Hypothesized Impact from Selective Exposure on Attitudes, Mediated by Opinion Climate Perceptions (H6)

Figure 2:

Example Screenshots of Overview Pages in the Peer Sources Condition (titled "Community Blog") and the Professional Sources Condition (titled "News Views")

Online Appendix A

Attitudes (t1, t2, t3), Immediate Attitude Impacts, Persistent Attitude Impacts, Importance (M, SD in parentheses)

Issue	Attitude Time 1	Attitude Time 2	Attitude Time 3	Immediate Impact	Persistent Impact	Importance
Banning Abortion	-2.55 (3.32)	-2.33 (3.28)	-2.20 (3.29)	0.16 (1.66)	-0.04 (1.54)	1.86 (3.26)
Death Penalty	-0.04 (3.29)	-0.09 (3.14)	-0.18 (2.91)	-0.06 (1.77)	0.11 (1.94)	0.65 (2.72)
Stricter Gun Control	2.30 (2.93)	2.17 (2.95)	1.96 (2.77)	0.33 (1.75)	0.12 (1.79)	2.50 (2.42)
Race-Based Affirmative Action	-0.33 (2.65)	0.09 (2.59)	0.38 (2.41)	-0.06 (1.87)	0.01 (2.18)	0.48 (2.48)
Governmental Regulation of Business	-0.17 (2.71)	-0.26 (2.48)	-0.03 (2.42)	0.37 (1.77)	0.25 (1.88)	0.42 (2.35)
Cutting Social Welfare	-1.85 (2.64)	-1.57 (2.60)	-1.24 (2.46)	0.50 (1.98)	0.36 (1.91)	0.82 (2.53)
N (varies by topics due to missing responses)	183-190	187-189	139-142	180-188	136-142	185-190

Note. Attitude is reported on a -5 (“strongly oppose”) to 5 (“strongly support”) scale.

Online Appendix B

Opinion Climate Perceptions and Changes (M, SD in parentheses)

Issue	Time 1	Time 2	Time 3	Change per Article Stance
Banning Abortion	44.96 (18.25)	43.65 (17.73)	47.41 (15.94)	3.39 (17.43)
Death Penalty	52.50 (19.20)	52.19 (17.91)	51.82 (18.40)	3.34 (19.23)
Stricter Gun Control	58.52 (18.28)	57.88 (19.11)	55.01 (18.68)	0.90 (17.92)
Race-based Affirmative Action	48.66 (18.57)	49.71 (16.56)	51.52 (15.05)	-1.26 (19.11)
Governmental Regulation of Business	46.98 (17.86)	45.30 (17.43)	46.95 (17.54)	1.44 (16.05)
Cutting Social Welfare	43.51 (17.49)	43.14 (17.46)	46.38 (16.85)	0.41 (17.49)
N (varies by topics due to missing responses)	185-190	188-189	141-142	182-188

Note. Opinion climate perception is reported based on prompt "about what percentage of Americans currently supports this policy?" on a sliding scale from 0% to 100%.

Online Appendix C

Intraclass Correlations and Model Significance

Dependent Variable by Model	ICC: Participant	ICC: Article	Test of significance of MLM vs. OLS model: X^2 (2) (p)	-2LL	N: Message contacts (participants)
Exposure (H1a/b, H2)	.00	.04	19.35 (<.001)	-3165.7	1112 (190)
Immediate Attitude Impacts (H3)	.01	.02	6.70 (.035)	-2150.4	1093 (188)
Opinion Climate Perceptions (H4)	.04	.06	0.16 (.924)	-4759.4	1093 (188)
Immediate Attitude Impacts (mediation) (H5, H6)	.01	.02	6.16 (.046)	-2129.2	1093 (188)
Persistent Attitude Impacts	.04	.05	20.35 (< .001)	-1498.6	824 (141)

Note: Intraclass correlations are derived from the unconditioned multi-level models.

Appendix D

Model-Estimated Voluntary Exposure by Attitude Consistency (Estimated Mean, S.E. in parentheses) at Level of Attitude Importance Per Source and Interaction of Source and Attitude Consistency

	Peer Sources		Professional Sources		Interaction
Attitude Importance	Attitude-Consistent Selective Exposure	Attitude-Discrepant Selective Exposure	Attitude-Consistent Selective Exposure	Attitude-Discrepant Selective Exposure	Source x Attitude Consistency
Low Attitude Importance	22.40 (4.83)	15.64** (4.69)	30.56** (5.14)	15.46** (4.99)	-6.30 (6.46)
Medium Attitude Importance	33.46** (3.49)	17.29** (4.10)	30.78** (3.54)	18.99** (4.15)	4.20 (4.97)
High Attitude Importance	44.51** (4.89)	18.94** (4.72)	31.00 (5.04)	22.53** (4.98)	17.04* (7.05)
Very High Attitude Importance	55.56** (7.66)	20.59** (6.19)	31.22 (8.06)	26.06** (6.89)	29.87 ** (11.18)

Note. For interaction term, source coded: Peers: 1, Professional: 0; attitude consistency coded (attitude-consistent: 1, attitude-discrepant: 0). Standard errors in the first column per source type refer to the standard errors of the dummy-coded attitude consistency term. Standard errors in the second column per source type thus refer to the standard error of the intercept constant. Level 1 *N* for message contacts: 1112. Level 2 *N* for participants: 190. * $p < .05$ ** $p < .01$.

Appendix E

Voluntary Exposure as a Function of Attitude-Consistency, Source, and Attitude Importance

Predictor	*B*	*df* of t-test	*t*	*p*-value
Intercept	17.29	32.54	5.12	< .001
Attitude Consistency	16.82	1101.80	4.68	< .001
Source	1.57	1101.60	0.45	.652
Attitude Importance	4.12	1102.80	4.48	< .001
Interactions				
Attitude Consistency*Source	-4.20	1101.98	-0.09	.398
Attitude Consistency*Attitude Importance	3.57	1111.39	2.86	.004
Source*Attitude Importance	0.75	1106.45	0.58	.563
Attitude Consistency*Source*Attitude Importance	-4.67	1105.70	2.56	.011

Note. Attitude Consistency coded: 1: attitude-consistent, 0: attitude-discrepant. Source coded: 1: professional source, 0: peer source. Attitude importance centered at mean. Level 1 *N* for message contacts: 1112. Level 2 *N* for participants: 190.