

Reinforcing attitudes in a gatwatching news era:
Individual-level antecedents to sharing fact-checks on social media.

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Abstract

Amidst fundamental changes to the news industry, relatively little is known about who posts fact-checks online despite the increasing presence of fact-checking in society. Based upon a content analysis of Facebook and Twitter digital trace data and a linked online survey (N = 783), this study assesses three sets of individual-level attributes influencing the sharing of fact-checks in political conversations on social media: demographics, behaviors, and motivational states. Results show that posting fact-checks is linked to age, ideology, and political behaviors. Moreover, an individual's need for orientation (NFO) is an even stronger predictor of sharing a fact-check than ideological intensity or relevance, alone, and also influences the type of fact-check format (with or without a ratings scale) that is shared. Thus, in an environment increasingly marked by social curation rather than only by the producers of news, the motivational state described by NFO has important implications beyond just news *consumption* by also accounting for news *sharing*, as well. Finally, consistent with inoculation theory, participants generally shared fact-checks to reinforce their existing attitudes. Consequently, concerns over the effects of fact-checking should move beyond a limited-effects approach (e.g., changing attitudes) to also include resisting misinformation and reinforcing accurate beliefs.

Keywords: fact-checking; inoculation theory; need for orientation; persuasion; social media

Reinforcing Attitudes in a Gatewatching News Era:

Individual-level Antecedents to Sharing Fact-checks on Social Media

Over the last two decades, journalistic fact-checking has expanded beyond the internal practice of identifying and correcting errors prior to publication. The contemporary practice of external or political fact-checking entails publicly reporting on the accuracy of a claim or text already circulating in the media (Graves & Amazeen, forthcoming). As an effort to combat public misinformation, fact-checking has grown tremendously – both in practice and public demand. In the United States (U.S.), fact-checking work by organizations such as FactCheck.org, PolitiFact, and Snopes as well as by news outlets like the *Associated Press* and the *Washington Post's* Fact Checker became an integral part of the 2016 presidential election (Mantzarlis, 2016b). Moreover, fact-checking is viewed favorably and as a necessary responsibility of the news media by four out of five registered voters (Barthel & Gottfried, 2016; Nyhan & Reifler, 2015). Against a backdrop of dramatically changing news consumption habits (Pearson & Kosicki, 2017), scholars are turning their attention to understanding the role of facts in political deliberation. As such, this study seeks to explore who shares fact-checks in social media and why.

Studying who shares fact-checks is important because in the changing news landscape where news diffuses via social media, individuals are the new gatekeepers and, thus, are central to spreading – or stopping – misinformation. Political fact-checking has emerged as one remedy to misinformation that exemplifies the research and education-based solutions encouraged by scholars (Jackson & Jamieson; 2007). Although a growing corpus of scholarship has engaged the effects and effectiveness of fact-checking journalism (see Graves & Amazeen, forthcoming; ...), precisely who consumes fact-checks and why is not well understood (Shin & Thorson, 2017).

Before fact-checks can have any effect, however, they must first be seen and attended to by audiences. Serious questions have arisen about the degree to which the former is happening. Studies have found that fact-checking has little influence over the agendas of news organizations (Vargo, Guo, & Amazeen, 2018) and that people who consume digital misinformation are rarely, if ever, also confronted with a corresponding fact-check (Guess, Nyhan, & Reifler, 2017). Moreover, in a changing media landscape, news consumption in general is constrained less by the gatekeeping theory of journalism – where information is prefiltered by publishers – and increasingly by a two-step flow (Katz & Lazarsfeld, 1955) where influential individuals curate information for their social networks (Pearson & Kosicki, 2017; Thorson & Wells, 2015). These “gatewatchers” curate and provide their own commentary on the news and other information provided by official sources before sharing with their followers (Bruns, 2011, p. 117). Furthermore, gatewatchers affect perceptions of news and information more than the original sources of the news reporting (Media Insight, 2017). Thus, researching who shares fact-checks and for what purposes may contribute to our broader understanding of the changing roles of individuals in the news diffusion process.

To be sure, fact-checkers already have a great deal of information about their audiences derived from mailing lists, emails they receive, and from daily traffic reports indicating how many hits their stories receive. They also know how frequently their stories were mentioned or shared on social media sites or linked to by influential news sites. Despite all of this information, however, there are blurred boundaries between the multiple audiences that could be responsible for these metrics. Not only do lay members of the public consume fact-checks, other journalists and media organizations do, too. Thus, the extent to which engagement is distinctly coming from politicians, journalists, or lay readers is unclear (Graves, 2016).

As media effects research becomes increasingly concerned with the diffusion of messages, broadly understanding the factors that foster and hinder the sharing of information - such as fact-checks - is now just as important as understanding their initial selection or avoidance (Cappella, Kim, & Albarracin, 2015). Particularly in today's complex and user-centered media environment, media effects paradigms such as agenda-setting theory — where different individuals exhibit similar media agendas — are giving way to effects that are contingent upon the individual. To better understand mediated message flows and effects, new theoretical frameworks of curation require reexamining the types of people and conditions under which effects are present (Thorson & Wells, 2016). In addressing these issues, the present study has three specific goals. The first is to examine the influence of demographic factors (political ideology), behavioral factors (e.g. prior voting, political information seeking), and NFO (need for orientation) to better understand who shares fact-checks in social media. The second goal is to investigate whether NFO conditions which type of fact-checks are shared (those with rating scales versus context-only formats). The final aim is to explore whether fact-checks are more often shared for the purpose of attitude reinforcement or persuasive resistance.

From the perspective that fact-checks are a form of persuasive communication (Garrett & Weeks, 2013), we extend past research on media effects by identifying theoretical mechanisms that may explain which individuals choose to share fact-checks and their persuasive intent of doing so. In this way, we reinforce the utility of connecting curation actions with individual-level characteristics (Thorson & Wells, 2016), offering a more nuanced understanding of who shares fact-checks on social media, and why. Furthermore, as a theoretical measure of an individual's motivation to attend to news (Camaj & Weaver, 2013), we explore whether tenets of NFO extend beyond *consumption* to news *sharing*, as well. Following Shin and Thorson (2017), we

avoid the type of experimental design that artificially exposes participants to content they may have little or no interest in consuming. Instead, we rely upon a content analysis of actual social media behavior drawn from Facebook and Twitter digital trace data (Freelon, 2014). An online survey (N = 783) was linked with this behavioral data allowing us to assess individual-level measures that may explain fact-check sharing behavior by public audiences in the U.S. To be clear, we examine the lay public and not the sharing of fact-checks by other journalists. We end the paper with a discussion of the theoretical and practical implications of the findings.

Literature Review and Hypotheses

Fact-checking Use and Sharing

Despite the record-breaking traffic to fact-checking sites in 2016 (Mantzaris, 2016b), little is published about who reads and shares fact-checks. What we do know about the public consumption of fact-checking is that although most people have favorable views of it, Republicans have less favorable attitudes than Democrats (Nyhan & Reifler, 2015; Shin & Thorson, 2017). This is consistent with research indicating that Republicans, who consider most news organizations biased, have less favorable views of the U.S. media generally than do Democrats (Barthel & Mitchell, 2017; Mitchell, Gottfried, Kiley, & Matsa, 2014). Furthermore, to the limited degree that fact-checkers have any influence over the agendas of online news media, they are more likely to set the agenda for online emerging news media and liberal media sites (Vargo et al., 2018). Given that selective exposure predicts people will observe content that is consistent with their ideological worldview (Festinger, 1957; Stroud, 2008), we expect liberal leaning individuals are more likely to encounter and be receptive to fact-checks. Indeed, research during the 2016 U.S. election revealed that Clinton supporters were more likely to consume at least one fact-check than were Trump supporters (Guess et al., 2017).

In addition to careful *exposure* to particular types of information, people also tend to be selective about the type of messages they *share* online. For instance, political bloggers tend to share webpages that are ideologically congenial to their position (Jacobson, Myung, & Johnson, 2016). Similarly, retweets on Twitter are typically from people who share the same political views as the person who posted the original Tweet (Colleoni, Rozza, & Arvidsson, 2014). Generally, liberals are more likely to share news on social media than are conservatives (Weeks & Holbert, 2013). Moreover, Shin and Thorson (2017) found that fact-checking users (which included those who shared) were 7.5 times more likely to identify as Democrat than Republican. Thus, based upon the foregoing discussion of polarized perceptions of news media, selective exposure, and selective sharing, we predict a positive relationship between members of the general public who identify as ideologically liberal and likelihood to share a fact-check on their Facebook or Twitter feed.

H1: Ideologically liberal identification will have a positive relationship with propensity to post a fact-check.

Beyond political affiliation, little is known about other characteristics of people who have propensities to share fact-checks on social media. When considering all news, Weeks & Holbert (2013) found that age and income both had a negative impact on the propensity of an individual to share news on social media. However, topic interest – such as politics – has been shown to lead to greater activity on social media (Ancu & Cozma, 2009). Thus, those who consume more news or politics may be more likely to share a fact-check. Moreover, if a stronger interest in politics, particularly among partisans, increases not only offline political behavior – such as voting – but online news sharing, as well (Weeks & Holbert, 2013), then propensity to vote may also be related to sharing fact-checks. Given this limited literature, we pose a research question:

RQ1: Are there other demographic or behavioral differences related to the propensity to post fact-checks?

Motivations: Need for Orientation

Derived from functionalist motivational theories such as uses and gratifications (Weaver, 1980), NFO refers to individual-level needs for mass media-related orienting cues as they pertain to specific social issues (Chernov, Valenzuela, & McCombs, 2011). In this sense, NFO exists as the predominant psychological mechanism in the explanation of agenda-setting effects (Matthes, 2005; Weaver, 1980). Stated differently, those with high orientation needs tend to pay closer attention to the news media and, as such, are increasingly likely to incorporate the news agenda into their mental renderings of issue saliency.

Individual needs for orientation are the product of two lower-order variables: relevance and uncertainty. Relevance refers to the degree to which a given event or occurrence (e.g., a presidential campaign) is perceived to be personally meaningful, and therefore of interest, to a given person (Camaj & Weaver, 2013). For its part, uncertainty refers to the degree to which an individual has achieved attitudinal definiteness regarding an issue (Weaver, 1980). Orientation needs tend to be strongest when an individual perceives an issue as personally relevant but has not yet obtained attitudinal clarity on it (Weaver, 1980). Moderate orientation levels tend to be found in individuals who have high levels of interest in an issue but low levels of uncertainty. In some prior renderings of NFO – specifically as they relate to the consumption of political information (e.g., Camaj & Weaver, 2013) – such individuals have been described as *partisans* as they simultaneously possess high levels of interest in political issues and, therein, tend to hold strongly defined political preferences. Finally, low orientation needs are the result of low interest in an issue or event (Camaj & Weaver 2013; Weaver, 1980).

Turning to the present research context, different levels of NFO may be useful in predicting the motivational conditions under which lay readers are more likely to share a fact-check. For example, if it is indeed the case that high levels of NFO strongly relate to topical uncertainty and an associated motivation to turn to the media to find more information (Camaj & Weaver, 2013), then audience engagement with fact-checks as a source of information gain may signal that they are being accessed for attitude formation purposes. That is, people interested in politics who are uncertain about the clarity of a particular issue and where they stand on it may turn to a fact-check as a means of coping with the ambiguous he said/she said style of journalism prevalent in political coverage (Amazeen, 2015). However, seeking out a fact-check to acquire useful information is not the same as sharing content, particularly if one is uncertain of what they will learn or what their own attitudes are. Past research indicates that although people will sometimes look to non-congenial information for the sake of staying informed (Knobloch-Westerwick & Kleinman, 2012), publicly sharing that information is rare (Shin & Thorson, 2017).

More importantly, of the three levels of NFO, Camaj and Weaver (2013) found people with moderate levels were most likely to turn to the media for political information. If moderate levels of NFO indicate strong partisan or ideological identification and an interest in a topic (Camaj & Weaver, 2013), then the use of fact-checks may function to reinforce existing attitudes. Theories of cognitive dissonance and selective exposure (Festinger, 1957) suggest most people are unlikely to seek out, much less share, non-congenial information. Indeed, partisan sharing of fact-checks on Twitter was found to either promote congenial candidates or disparage opposing candidates (Shin & Thorson, 2017). Moreover, prior research has shown that political identification can be an important component of constructions of self-concept (Cohen et al,

2007), especially when an individual possesses well-clarified and strongly held political beliefs. Sharing information about the self on social media platforms is one way to communicate important information about one's identity (Hogan, 2010). It therefore follows that those with strong political beliefs may be most likely to share fact-checking information, as such behavior communicates important information about the individual and, in so doing, reinforces the self-concept. Finally, people with low levels of NFO would be unlikely to engage with fact-checking at all as they are not interested in politics. Given the foregoing arguments, it is theorized that NFO will influence how fact-checks are shared on social media, as follows:

H2: Of the three levels of Camaj and Weaver's (2013) NFO, moderate levels will be more likely to predict the number of fact-checks posted than will high or low levels of NFO.

While traditional approaches to assessing NFO -- such as those employed by Weaver (1980), Camaj and Weaver (2013), and others -- are useful for understanding perspective and behavioral outcomes, they are generally ill-equipped to understand the precise needs underlying the orienting effect that compels people to seek out mass media (Matthes, 2005). For that reason, in this study, we also draw upon Matthes' (2005) conceptualization of NFO. In contrast to prior work, Matthes (2005) theorized that orientation needs were contingent on one or more of the following three dimensions: orientation needs pertaining to issues, orientation needs pertaining to facts, and orientation needs pertaining to journalistic evaluations. The issues dimension is similar to information seeking, or a need for surveillance of topics in the news media that are personally relevant (Atkin, 1973; Katz, Haas, & Gurevitch, 1973). The facts dimension distinguishes those who are interested in sub-aspects of an issue or details in how it is framed or discussed. The

journalistic evaluative dimension pertains to a need for guidance information. These individuals find it important to know what journalists say about an issue (Matthes, 2005).

As Matthes' (2005) issues dimension is similar to information seeking, it relates to one's desire to stay informed of the latest current events (Lin, Salwen, & Abdulla, 2005). This is consistent with the active audience perspective underlying the uses and gratifications approach that informs NFO, regarding people as motivated to select media content that gratifies their needs (Rubin, 1993). However, people seek out relevant content not only for their own consumption, but also in anticipation of being able to share it to satisfy the information needs of others (Lee & Ma, 2012). For instance, research specific to news sharing on social media revealed that along with the motivational gratifications of socializing and status seeking, fulfilling the information needs of oneself and the future information needs of others was an influential driver (Lee & Ma, 2012). Moreover, people most engaged with news – those who followed a greater number of journalists or news organizations on social media – were more likely to share news stories online (Weeks & Holbert, 2013). The incidence of social media as a new forum for influencers to share content with their network of followers is reminiscent of the two-step flow model of communication (Katz & Lazarsfeld, 1955; Oeldorf-Hirsch & Sundar, 2015) and consistent with the gatewatching approach of news curation (Bruns, 2011). Because this motivation seems to correspond to the way that Matthes (2005) conceptualized the issues dimension of NFO, and to the degree that audiences deem fact-checks as newsworthy (Barthel & Gottfried, 2016), it is likely that propensity to share political fact-checks will be influenced by this dimension. Furthermore, given the lack of evidence to suggest either of Matthes' other NFO dimensions are related to fact-check sharing, we predict that:

H3: Of the three dimensions of Matthes' (2005) NFO, the issues dimension will most strongly predict propensity to share fact-checks.

One of the core arguments to NFO as a distinct measure of motivation to attend to news is its ability to predict news-related effects better than the individual variables that comprise it (McCombs, Shaw, & Weaver, 2014). To be sure, Camaj and Weaver (2013) found that uncertainty and interest, together, can better predict media-related effects such as media attention and news media agenda setting. If the power of NFO is truly novel, the concept will be more predictive than its individual components not just for news *consumption*, but as it pertains to social media news *sharing*, as well. That is, NFO will better predict fact-check sharing on social media than either of its subcomponents, partisanship or relevance. Given H2 expects moderate levels of NFO to better predict the number of fact-checks posted than will high or low levels, we offer the following:

H4: Moderate NFO – as conceptualized by Camaj and Weaver (2013) – will predict propensity to share fact-checks better than partisanship or relevance, alone.

In addition to the individual characteristics that may condition the likelihood of sharing a fact-check, specific message factors may motivate sharing, as well. For instance, fact-checks in video format – such as from FlackCheck.org – are more effective than those in textual format (Young, Jamieson, Poulsen, & Goldring, 2018). In the U.S., however, the majority of fact-checks are text driven (Amazeen, 2013). But – perhaps to facilitate interpretation – most fact-checkers do employ some type of visual ratings meter that explicitly assesses a claim's accuracy. For example, PolitiFact uses its six-level Truth-O-Meter and the *Washington Post's* Fact Checker assigns from one to four Pinocchios. In contrast, other fact-checking organizations eschew the assignment of ratings instead relying upon contextual corrections to explain how a claim may be

misleading (Amazeen, 2013; Graves, 2016). While both formats can be effective at correcting misperceptions, a narrow majority of consumers preferred the fact-checks with rating scales. Nonetheless, over 40% of surveyed consumers preferred the implicit contextual corrections used by FactCheck.org or the *New York Times* (Amazeen, Thorson, Muddiman, & Graves, 2018).

These split format preferences seem to illustrate Matthes' (2005) suggestion that individuals differ in their need for explicit versus implicit journalistic assessments. People who have a high NFO toward journalistic evaluations have a need for guidance information and, therefore, are likely to prefer *explicit evaluations* that emphasize *what to think*. In contrast, those with lower needs for journalistic evaluations may prefer more *implicit guidance* that explains *what to think about*. In the context of fact-checking, for example, an explicit evaluation would address why a statement was “mostly false” whereas implicit guidance would explain how a statement may be inaccurate while allowing the reader to determine just how inaccurate it was. Thus, we hypothesize that the journalistic evaluation dimension of Matthes' NFO will moderate which type of fact-checking format is shared, as follows:

H5: The journalistic evaluation dimension of Matthes' (2005) NFO will be a) positively related to one's propensity to post fact-checks that include rating scales and b) negatively related to one's propensity to post fact-checks that include contextual corrections.

Attitudes and Persuasion

Fact-checkers often insist that their work is not intended to change minds, but simply to provide information and educate audiences (Amazeen, 2013; Graves, 2016). As Graves (2016, p. 179) wrote, “Fact-checkers seek to *inform* but not, at least formally, to persuade or to influence.” Although the use of fact-checks has been widely studied in the academic literature to determine

their efficacy in changing people's beliefs (Graves & Amazeen, forthcoming), persuasion encompasses more than just changing existing attitudes. Outcomes of persuasion can also include shaping new attitudes as well as reinforcing existing ones (Miller, 1980/2013). Thus, when deployed in a preemptive manner, the consumption of fact-checks can serve to foster resistance to persuasive attitude change by inoculating people from misinformation. This pre-bunking deployment of a fact-check has been compared to a medical inoculation (Cook, Lewandowsky, & Ecker, 2017). That is, by refuting misinformation before it has a chance to be processed, individuals can be protected from developing misperceptions, much in the same way that vaccines protect from viruses. Moreover, just as vaccines promote development of antibodies, inoculation messages provide counterarguments that can be used to resist misinformation (McGuire, 1961). Furthermore, not only do these inoculations provide refutational counterarguments, but the process also motivates the generation of *additional* counterarguments by individuals (Ivanov et al., 2015).

These organic arguments generated and elaborated on by an individual can be integral in affecting one's attitudes. Positive statements to oneself about a message result in persuasion whereas negative statements – or counterarguing – result in resistance (Cacioppo & Petty, 1981). The act of counterarguing has been defined as statements generated against a promoted position that offer alternative positions or challenge the accuracy or validity of a position (Miller & Baron, 1973). Although counterarguing has traditionally been viewed as an internal process, more recently post-inoculation talk has been explored as an external process that may entail communication with family or friends (Ivanov et al., 2015). Indeed, comments posted on Twitter have been examined to reveal favorable attitudes to congenial fact-checks and counterarguments against noncongenial fact-checks. In this way, we can see how people share and respond to fact-

checks on social media – with reinforcing comments toward their own candidate or by resisting fact-checking messages about a congenial candidate’s opponent (Shin & Thorson, 2017).

Moreover, attitudes toward a message can be reliable indicators of behavioral intention to adopt the message position (Fazio & Olson, 2003).

Because social media tend to foster homophilous relationships, like-minded individuals often follow one another. This effect is even more pronounced among Democrats than Republicans (Colleoni, Rozza, & Arvidsson, 2014). As sharing news online is a form of political participation, people who do so may be looking to reinforce the attitudes of like-minded followers, particularly if the information is from a congenial source (Weeks & Holbert, 2013). Sharing news from an uncongenial source, while rare (Shin & Thorson, 2017), may signal the intent to foster resistance among like-minded followers (Weeks & Holbert, 2013). In this same way, the valence of social media comments can signal the type of persuasive purpose for which fact-checks are being shared, particularly if posted on one’s Facebook wall or Twitter feed – rather than privately sent to a specific individual – where most friends and followers will be like-minded. Given this logic:

H6a: If fact-checks are being shared for attitude reinforcement, we expect the posted fact-checking articles will be accompanied by a greater number of positive than negative comments.

H6b: If fact-checks are being shared for persuasive resistance, we expect the posted fact-checking articles will be accompanied by a greater number of negative comments (counter-arguments) than positive comments.

Methods

Protocol

This study captures digital trace data: actual posts users made on Facebook and Twitter (Freelon, 2014).¹ Facebook is understudied compared to Twitter, despite being far more popular, largely because of the difficulties that researchers face to systematically analyze data from it (Zhang & Leung, 2014). The challenges are largely around the limitations Facebook puts on how researchers can collect user data (Wilson, Gosling & Graham, 2012). Here, in accordance with Facebook Platform Policies (Facebook Platform Policy, 2017), we adopt a novel approach following Wells and Thorson (2017). In so doing, we created an application that asked participants to fill out a survey. Our institutional review board (IRB) vetted all study procedures and disclosures and granted approval. All data collection processes conformed to Facebook and Twitter's terms of service at the time of study execution.

Participants for the non-probability sample were recruited between March 7 - June 6, 2017 via an email invitation through Qualtrics, a U.S.-based panel provider. Sample inclusion was predicated upon respondents being U.S. citizens, holding accounts on both Facebook and Twitter, and having at least moderate levels of interest in U.S. politics. We also controlled for an approximate 50/50 gender split. Before participating in the study, participants were provided with a consent form that explained all data collection processes. Specifically, participants were told:

At the start of the survey you will be asked to link your Facebook and Twitter account to our survey application. This application will be used to gather posts (e.g., wall posts and tweets) that you have made on the respective services. These messages will be collected anonymously, and at no time will the researchers know your identity, or the identities of your friends. The data will solely be used to better understand how you share news on social media. If you meet the above criteria and would like to participate in this study, please click the below link.

The online survey included questions on interest and participation in politics, political ideology, media use, need for orientation, as well as basic demographic questions related to age, gender,

and residency. Before completing the survey, participants were prompted to link their Facebook and Twitter accounts. Respondents who had no posts on the social platforms or failed to answer the survey questions or who completed the survey more than once were excluded from analyses. Among the 783 participants who successfully completed the survey, 59% were female with an average age of 39. Median survey length was 7 minutes.

The following data types from each participants' Facebook profile was retrieved using the Facebook Graph API: status updates (mobile and desktop), notes, shared stories, events, wall posts, and stories. Tweets are the only content type available for Twitter, and as such were the only things stored. These data types all correspond to ways in which users can post textual content. Survey data and social media data were then anonymized. All names, usernames, names of friends, personal entities (e.g., entities that were identified as names by Facebook and Twitter) and personal identifying information (e.g., emails) were not stored. That is, these fields were omitted and not recorded in our databases at any time. Instead, an anonymous identification code was created in the survey document for each user and subsequently paired to social media data. Data were downloaded on June 6, 2017.

874,266 unique URLs from 51,498 website domains were posted by study participants. Vargo, Guo, and Amazeen's (2018) list of media sources were used to extract news content by media type from the posts. To identify fact-checking sites, we used the Duke Reporters' Lab curated list of fact-checking organizations and news organizations that perform fact-checking (Adair & Stencel, 2016). All URLs included in Facebook and Twitter posts were inspected to see if they originated from a popular URL shortener service (e.g., bit.ly, or t.co). If a URL was shortened, it was expanded to its final destination using Python's request functionality (Chandra & Varanasi, 2015).

Inspection of URLs inside of posts that matched the fact-checking or news domains identified by the Duke Reporters' Lab revealed a total of 8,949 articles. Of those URLs, 2,052 (23% of the total) were manually inspected to see if the article indeed was a fact-checking article; many were not. This training data was used to build a Elasticnet Classifier model to classify the remainder of the URLs.² At its core, it is a conservative model that only selects features that contribute unique and significant explanatory power. Through a 10-fold cross-validation, the model was found to have an accuracy rate of 96.80% and a false positive rate of less than .01%. Combined with a $F_1 = 97.31\%$, the authors believe the model was not only exhaustive in its detection of further URLs, but also non-biased across all classes. This supervised machine-learning approach to identify fact-checking items yielded 261 articles.

Measures

The dependent variable of number of posted fact-checks was calculated by summing the number of fact-checks posted to a participant's Twitter and Facebook accounts. The majority of participants (85%) did not post any fact-checks ($M = 0.34$, $SD = 1.50$). Out of the 261 posted fact-checks by 118 participants, 70% included political fact-checks (some fact-checks by Snopes or Gossip Cop were decidedly non-political involving celebrity deaths or product reviews). Only 11% of participants posted at least one political fact-check. Among those who did, the number ranged from 1 to 27 posts. Participants were more likely to post fact-checks on Twitter (11%, $M = 0.23$, $SD = 1.24$) than on Facebook (6%, $M = 0.11$, $SD = 0.67$). Six percent (6%) of participants posted fact-checks on both platforms.

The independent variable of NFO was operationalized in two different ways. Following Camaj and Weaver (2013), NFO was based upon indexed measures of interest and ideology. A political interest index was calculated from four, seven-point Likert scales on the questions, "I'm

interested in politics,” “I like to learn as much as I can about politics,” “I follow politics closely,” and “I enjoy talking about politics with others” (Cronbach’s $\alpha = .94$, $M = 5.27$, $SD = 1.44$, lower numbers represent stronger disagreement). Ideology was indexed on three, seven-point bipolar scales (1= strongly liberal, 7 = strongly conservative) on the questions, “what is your political ideology,” “I tend to support candidates who are...,” and “I think of myself as a...” ($\alpha = .97$, $M = 3.73$, $SD = 1.79$). These two measures were combined to calculate three categorizations of NFO. The “low” category of NFO indicates participants (32%) with low levels of political interest (< 5) regardless of their ideological intensity. The “moderate” category of NFO indicates participants (43%) with high levels of political interest (≥ 5) and high levels of ideological intensity (< 3 or > 5). The “high” category of NFO indicates participants (25%) with high political interest (≥ 5) and low levels of ideological intensity (≥ 3 and ≤ 5); what Camaj and Weaver (2013) refer to as “interested independents” (p. 1448).

Because of the bipolar nature of the ideology measure (with strong liberals being at the low end and strong conservatives at the high end of the continuum), we created an overall ideological intensity measure that simply accounted for the strength of ideological identification on a bipartisan basis. The three variables comprising ideology were recoded into a 4-point measure so that those with stronger ideological preferences were assigned higher scores (i.e., 1=4, 2=3, 6=3, 7=4) and those with less polarized political preferences were assigned lower scores (3=2, 4=1, 5=2). The three measures were subsequently indexed (Cronbach’s $\alpha = .94$; $M = 2.45$, $SD = 1.09$).

Finally, to more granularly explore the motivations underlying fact-check sharing, orientation needs were further assessed using Matthes’ (2005) NFO scale, which, itself, is comprised of three subscales tapping orientation needs pertaining to issues, facts, and journalistic

elevations. Each subscale contained three items placed on Likert scales where 1 = strongly disagree and 7 = strongly agree. The issues dimension was indexed from the following questions: “I want to be instantly informed about recent developments in politics,” “It is important for me to constantly monitor issues related to politics,” and “I would like to hear something about politics every day” ($\alpha = .91, M = 5.05, SD = 1.44$). The facts dimension was constructed using the following items: “I want to know/learn about the many different sides of American politics,” “I would like to be thoroughly informed about the specific details of political decisions made by elected officials,” and “As it pertains to politics, I expect the news media to provide detailed background information” ($\alpha = .85, M = 5.38, SD = 1.29$). Finally, the journalistic evaluations dimension was indexed based upon the following questions: “I attach great importance to the political commentaries voiced by members of the mass media,” “It is interesting to see how members of the news media comment on politics,” and “Whenever appropriate, members of the news media should state their opinions on politics” ($\alpha = .81, M = 4.38, SD = 1.53$).

Among the 182 political fact-checking posts, 45% included some sort of unique commentary added by the account owner. These comments were coded by one of the authors for their polarity. A random subset of the posts ($n = 31$) was coded by a second author, demonstrating acceptable inter-coder reliability (Krippendorff’s $\alpha = .83$).³ Following Cacioppo and Petty (1981), negative comments were defined as those that counterargue, challenge the validity of, or offer alternative information to the posted fact-check (e.g., “How can a statement be half-true?”). Positive comments were defined as those which validate or suggest agreement/belief in the fact-check (e.g., “People are sharing this rumor and it’s just not true.”). Neutral comments were those that offered neither favorable nor unfavorable statements (e.g., “@janedoe.”).

Fact-checking format was determined by inspection of the posted fact-checks. Posts were discriminated between those that linked to a fact-check which included a visual rating scale (such as PolitiFact's "Truth-O-Meter" or the *Washington Post* Fact Checker's Pinocchios) and those that simply used contextual language to make a correction (such as FactCheck.org or *The New York Times*). Among the posted political fact-checks, 69% included a rating scale, 31% only included a contextual correction. This is consistent with past research indicating audiences prefer fact-checks with rating scales (Amazeen et al., 2018).

Additional independent variables, some of which were used as controls in certain analyses, included years of Facebook account ownership ($M = 6.77$, $SD = 2.43$), years of Twitter account ownership ($M = 3.40$, $SD = 2.45$), participant age ($M = 39.34$, $SD = 12.90$), gender (with male as the high value of 1, $M = 0.41$, $SD = 0.49$), dummy variables for Democrat (40%), Independent (33%), Republican (24%), or some other party (4%), voted in the 2016 U.S. Presidential election (with yes as the high value of 2, $M = 1.84$, $SD = 0.37$), and vote choice (Clinton = 42%, Trump = 30%, Other = 14%). As a proxy for news consumption, frequency of reading the news was measured using a seven-point bipolar scale (1 = never, 7 = frequently) by asking participants, "About how often do you read the newspaper, either in hardcopy or online?" ($M = 4.21$, $SD = 2.05$). As a proxy for political interest, social media political information seeking was measured using a seven-point bipolar scale (1 = never, 7 = frequently) by asking, "About how often would you say that you purposefully seek out political information on social media?" ($M = 4.28$, $SD = 2.04$).

Results

To explore whether there were demographic characteristics that distinguished participants with a propensity to post political fact-checks (H1 and RQ1), a negative binomial regression

model was estimated with the number of fact-checks posted as the dependent variable and independent variables of age, gender, party identification (dummy vars), ideology, and age of Facebook and Twitter accounts (see Table 1).⁴ The model was significant, indicating differences based upon quantity of posted political fact-checks [LR χ^2 (8) = 299.78, $p < .001$, Pearson χ^2 = 944.23, residual df = 759, dispersion statistic = 1.24]. Coefficients for participant age [Exp(B) = 1.03; $p < .01$] and ideology [Exp(B) = 0.65; $p < .001$] were significant indicating that participants who were older in age and were liberal leaning were more likely to post a fact-check. Adding behavioral variables to a second model, including voting in the 2016 presidential election, vote choice in the 2016 election, frequency of reading the news, and social media political-information seeking, produced a more robust model [LR χ^2 (13) = 318.02, $p < .001$, Pearson χ^2 = 961.50, residual df = 748, dispersion statistic = 1.29]. While participant age [Exp(B) = 1.03; $p < .01$] and ideology [Exp(B) = 0.79; $p < .05$] remained significant, the coefficients for voting for Clinton [Exp(B) = 3.91; $p < .05$] and social media political-information seeking [Exp(B) = 1.20; $p < .05$] also reached statistical significance. Thus, H1 has been supported – identifying as liberal had a positive relationship to propensity to post fact-checks. Furthermore, voting for Clinton, more frequent social media political-information seeking and increasing age were also distinguishing characteristics of those who shared fact-checks.

-- [Insert Table 1 about here] --

To establish whether the moderate level of Camaj and Weaver's (2013) NFO best predicts the propensity to share political fact-checks (H2), a negative binomial regression was specified with the number of posted fact-checks as the dependent variable and low, moderate, and high levels of NFO as the independent variable (with low as the referent category). Because they were found to vary with the sharing of fact-checks, age, voting for Clinton, and social media

political-information seeking were held constant at their means. The model was significant indicating that an individual's NFO does affect propensity to post fact-checks on social media [LR χ^2 (2) = 266.26, $p < .001$, Pearson $\chi^2 = 1,094.95$, residual df = 761, dispersion statistic = 1.44]. Compared to those with low NFO, the coefficient for moderate NFO was significant [Exp(B) = 4.04; $p < .001$]. A second model with high NFO as the referent category also indicated a significant coefficient for moderate NFO [Exp(B) = 3.19; $p < .01$]. Those with moderate levels of NFO were predicted to post an average of 0.49 fact-checks compared to only 0.16 for those with high NFO and .12 for those with low NFO. Those with moderate NFO had a higher incidence of posting political fact-checks than those with high or low NFO (see Table 2). Thus, H2 is supported.

-- [Insert Table 2 about here] --

The relationship between Matthes' (2005) three dimensions of NFO and posting fact-checks on social media was analyzed using a negative binomial regression model with the number of posted political fact-checks as the dependent variable and each of the dimensions of NFO as independent variables: issues, facts, and evaluations. H3 predicted that the issues dimension would be most likely to predict sharing. Age, ideology, voting for Clinton, and social media political-information seeking were held constant. A significant model suggests a relationship between the NFO dimensions and propensity to post political fact-checks [LR χ^2 (3) = 265.53, $p < .001$, Pearson $\chi^2 = 1,328.18$, residual df = 753, dispersion statistic = 1.76]. The coefficient for the issues dimension was significant [Exp(B) = 1.73; $p < .05$] indicating that the need for surveillance of issues increased the propensity to share fact-checks. Because neither of the other dimensions were significant predictors of sharing fact-checks, H3 has been supported.

More than measures of ideological intensity or relevance, independently, a moderate level of Camaj and Weaver's (2013) NFO was expected to better predict propensity to share fact-checks (H4). To test this hypothesis, a series of negative binomial regression models was estimated. Each model specified the number of fact-checks posted as the dependent variable. The first model assessed the effects of ideological intensity and relevance levels as independent variables. In the second model, a dummy variable for moderate NFO, as conceptualized by Camaj and Weaver (2013), was substituted as the independent variable. Age, voting for Clinton, and social media political information seeking were held constant at their means in both models. In the first model [LR $\chi^2(2) = 263.07, p < .001$; Pearson $\chi^2 = 1,298.67$, residual df = 761, dispersion statistic = 1.71; AIC = 800.19], we observed a significant relationship between ideological intensity [Exp(B) = 1.41, $p < .05$] and fact-check sharing and a marginally significant relationship between relevance [Exp(B) = 1.24, $p < .06$] and fact-check sharing. In the second model [LR $\chi^2(1) = 266.98, p < .001$; Pearson $\chi^2 = 1,097.67$, residual df = 765, dispersion statistic = 1.44; AIC = 795.82], we also observed a significant parameter estimate between moderate NFO [Exp(B) = 3.63, $p < .001$] and propensity to post fact-checks. Comparative examination of the two models indicated that model two featured a lower AIC statistic ($\Delta\text{AIC} = -4.37$) and a dispersion statistic substantially closer to 1.00, which, taken together, suggest the second model was a better fit for the data. Moreover, a third model was estimated with the number of fact-checks posted as the dependent variable and independent variables of ideological intensity, relevance, and the dummy variable for moderate NFO. Age, voting for Clinton, and social media political information seeking were again specified as controls. Model 3 was significant [LR $\chi^2(3) = 267.19, p < .001$; Pearson $\chi^2 = 1,007.28$, residual df = 760, dispersion statistic = 1.46; AIC = 798.15] as was only one parameter coefficient: moderate NFO [Exp(B) = 2.74, $p < .05$]. Neither

the ideological intensity nor the relevance coefficients approached significance ($p > .10$). Thus, as predicted by H4, NFO – specifically the moderate category – functions as a stronger predictor of fact-check sharing than ideological intensity or relevance alone.

To determine whether the journalistic evaluation dimension of Matthes' NFO moderates the type of fact-checking format shared by participants (H5a/b), a t-test was used to compare the mean scores on this dimension. There was no statistical difference ($p > .05$) in the evaluation dimension scores of participants who posted any contextual fact-checks ($M = 4.38, SD = 1.35$) compared to those who posted any fact-checks with rating scales ($M = 4.48, SD = 1.65$), perhaps because many participants posted both types of fact-check formats. To further explore the relationships, two separate negative binomial regression models were specified with the number of fact-checks shared for each format type as the dependent variables and the journalistic evaluation dimension of Matthes' NFO as the independent variable. Age, ideology, voting for Clinton, and social media political information seeking were held constant. A significant model [LR $\chi^2(1) = 6.48, p < .05$, Pearson $\chi^2 = 3,478.37$, residual $df = 761$, dispersion statistic = 4.57] indicates the evaluation dimension was a significant predictor of the number of fact-checks with rating scales shared [Exp(B) = 1.17; $p < .05$]. However, this was not the case in the alternate model of the number of contextual fact-checks shared ($p > .05$). This reveals that the more likely one is to value what members of the news media say about an issue, the greater the propensity to share a fact-check utilizing the rating scale format but not the contextual format. Thus, there is support for H5a but not H5b.

In exploring whether fact-checks were shared for attitude reinforcement (H6a) or persuasive resistance (H6b), we examined the comments that were included by participants who posted a political fact-check to their Twitter or Facebook page. Examining only the posts with

political fact-checks, over half (55%) offered no commentary beyond a retweet or the headline of the fact-check article. However, consistent with H6a, 41% of the posts did provide unique commentary and were positive, validating the contents of the fact-check such as, “Nice simple and concise info about vaccinating your child...please read,” or “Read the entire Snopes article which totally debunks this rumor.” These comments suggested reinforcing prior beliefs rather than being persuaded to change existing beliefs or forming new ones. Only 3% of the comments counter-argued against or challenged the validity of the fact-check such as, “Strange...so does this mean @RealBenCarson was right last year @PolitiFact?” or “Debt Free America Act...It is true...” despite the fact-check showing otherwise. Thus, the evidence suggests support for fact-checks being shared for attitude reinforcement (H6a) rather than resistance (H6b).

Discussion

Rapid changes to the information environment coupled with an abdication of long-standing political norms have left journalists, scholars, and citizens scrambling to adjust to the realities of a seemingly post-fact world (Mantzaris, 2016a). Perhaps unsurprisingly, the role of fact-checking in democratic communications – particularly as it relates to online deliberation – has been subject to an increased amount of scholarly attention. That said, relatively little is known about the individual-level characteristics of those who post fact-check articles online. Accordingly, this study set out to better understand the relationship between demographic, behavioral, and motivational factors and the sharing of fact-checking content in political conversations on social media. Our findings show that sharing fact-checks is linked to age, ideology, and political behaviors. Moreover, and perhaps more importantly, our results suggest that an individual’s NFO is an important mechanism influencing not only one’s propensity to share a fact-check, but the type of fact-check format (with or without a ratings scale) that is

shared. Finally, the data suggest that participants shared fact-checks to reinforce their existing attitudes. As the news industry reorients itself to a curated flow of content diffusion (Thorson & Wells, 2015), these findings offer important theoretical as well as practical implications.

First, the results of this study suggest that only a small contingent of people are engaged in sharing political fact-checks on social media. In our sample, just 11% of respondents posted at least one political fact-check article. The likelihood of posting a fact-check to either one's Facebook or Twitter account increased with age, a liberal ideology, voting for Clinton, and among those most likely to seek out political information on social media. From a practical standpoint, knowing who shares fact-checks signals a potential pathway for journalists to further disseminate media content. In the digital media environment, it is no longer just the elite institutions of news that influence audiences. With the evolving media ecosystem, journalistic enterprises must engage with social media audiences in order to maintain their legitimacy (Cappella et al., 2015; Groshek & Tandoc, 2017; Pearson & Kosicki, 2017; Thorson & Wells, 2015). Indeed, for those who consume news via social media, gatewatchers are becoming more influential than the original news sources (Media Insight, 2017). Moreover, fact-checks on social media are more likely to draw attention and responses when they come from friends (Margolin, Hannak, & Weber, 2017). Thus, engaging with active sharers of fact-checks may become easier when following the axiom of "know your audience."

Second, and looking beyond demographic factors, our results suggest that the motivational state described by NFO has important theoretical implications as it pertains to sharing fact-check articles. Stated differently, while our study comports with other research demonstrating that ideological intensity is an important mechanism influencing the likelihood that individuals will share a fact-check (Shin & Thorson, 2017), we demonstrate that an

individual's NFO is an even stronger predictor than ideological intensity, alone. Thus, by theoretically extending the traditional conception of NFO from just a precursor to news *consumption* (Camaj & Weaver, 2013; Weaver, 1980), this study shows that the motivational state described by NFO also has implications related to *sharing* news content. Specifically, beyond just those with strongly defined political preferences, it is individuals who also have high interest levels in politics that were most likely to post fact-checks. This revelation provides a more nuanced understanding of the characteristics of who shares fact-checks.

Those with moderate and high levels of NFO are in a specific motivational state, one that is attentive and actively seeking political news (Camaj & Weaver, 2013). Here, by adopting the Matthes (2005) vision of issue importance, we paint an even finer picture of individuals not just interested generally in politics, but those who are specifically interested in the substantive nature of political issues themselves. This focused view of NFO is logical; those who care about issues and are motivated to seek out more information are also the ones who share fact checks. Moreover, these gatewatchers (Brun, 2011) appear to share fact-checks to reinforce attitudes of followers. Thus, not only is NFO an explanatory mechanism as it relates to how media influence what an individual thinks about, it also has theoretical significance in explaining behavior: presently, why people share fact-checks. In this way, these findings contribute to the literature on social curators (Thorson & Wells, 2016).

Such theoretical extension of NFO may have important ramifications for media effects generally and fact-checking research specifically. That is, as media effects research has become increasingly concerned with the diffusion of messages, understanding the factors that cultivate and inhibit the sharing of information is now just as important as understanding the initial selection and avoidance of mediated messages (Cappella et al., 2015; Pearson & Kosicki, 2017;

Thorson & Wells, 2015). In this same way, concerns over the effects of fact-checking should move beyond a limited effects approach (e.g., changing attitudes or beliefs) to also include resisting misinformation and reinforcing accurate beliefs. Furthermore, as this study has demonstrated, not only is sharing an effect in and of itself, but the conditions under which it occurs can be further scrutinized for additional insights.

In addition to why people share fact-checks, our findings indicate that NFO is also a mechanism for explaining format preference when sharing fact-checks. Specifically, Matthes' (2005) NFO dimension of journalistic evaluation was successful in predicting which type of fact-checking format individuals had a propensity to share. Those who had a need for explicit evaluations from journalists had a greater propensity for sharing fact-checks with explicit rating scales. Thus, rather than an arbitrary consumer preference, there appears to be a psychological explanation for the use of one format over another. To the degree that fact-checking is a product, its producers need to understand how and why consumers are using it. Consistent with Amazeen and colleagues (2018), this study further validates the practical need for different fact-checking formats to appeal to different types of users.

Finally, if consumers are sharing fact-checks to reinforce their currently-held positions as indicated by this study, fact-check publishers/producers can leverage this knowledge to further promote this type of behavior. For instance, while some fact-checkers already participate in the "share the facts" initiative which embeds a widget that facilitates one-click sharing on social media (Sharockman, 2016), other marketing communication efforts can highlight sharing evidence of "what you already knew was true." As Oeldorf-Hirsch and Sundar (2015) observe, it is becoming increasingly important to encourage and leverage influencers to act as sources of accurate information in their online social networks. At the same time, these findings also

underscore the imbalance between liberal and conservative perceptions of fact-checking noted in the extant literature (e.g., Nyhan & Reifler, 2015; Shin & Thorson, 2017). The revelation that conservatives were less likely to share fact-checks warrants future study.

Limitations

As with any research, certain limitations need acknowledgement. We want to emphasize that our data collection efforts focused on the natural social media behavior of Facebook and Twitter users, generally. While the sampling frame of Shin and Thorson (2017) was comprised of fact-checks generated by FactCheck.org, PolitiFact.com, the *Washington Post's* Fact Checker and the subsequent comments and retweets these generated, our study only considered fact-checks that were organically posted to an individual's Facebook or Twitter account. Moreover, we acknowledge that our nonprobability sample of 783 people, while relatively robust compared to other survey samples discussed in this study, is still likely not representative of all U.S. Facebook and Twitter users. Furthermore, participants willing to link their social media accounts to a research survey may be different than people unwilling to do so. These limitations warrant further replication of the claims provided here.

In general, this study pivots from the broad, all-encompassing theories in traditional mass communication. Theories such as agenda-setting have been often conceptualized as audience and individually agnostic; all participants exhibit largely the same effect (McCombs, Shaw & Weaver, 2014). Here we observe distinctly different media-effects at the individual level. In this way, there is no one effect that is consistent; everything is contingent on the individual (Thorson & Wells, 2016). The authors here feel that given the plethora of media-related choices that exist, this approach (vs. a mass effect approach) most accurately describes the dynamic, and user-centric environment in which users now interact with social media online. Media are not a

hypodermic needle, and consumer choice is now king with gatewatchers among those contributing to the curation of news flows (Brum, 2011; Pearson & Kosicki, 2017; Thorson & Wells, 2015; 2016). However, given that this analysis has opened up the possibility that individuals can, and should vary based on their individuality, there are most certainly other motivational and demographic independent variables that might encourage individuals to share fact-checking content on social media. Here, we surveyed popular motivations often discussed in the literature, but broader sets of uses and gratifications exist (see Hanson & Haridakis, 2008). Further study should consider additional motivating factors in order to more robustly support NFO as a truly unique driver of sharing as it pertains to social media. Beyond this, the authors encourage the analysis of other offline behaviors, such as civic and political engagement as they relate to fact-check sharing.

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¹ One limitation of big data research on social media is bots (i.e., web robots) and the inability to know who a user actually is. For instance, a study of the 2011 Russian election concluded 25,860

bots, “swarmed the hashtags that legitimate users were using to communicate in an attempt to control the conversation and stifle search results related to the election” (Thomas, Grier, & Paxson, 2012). Our study is novel in that we use data from real users verified through the Qualtrics Panel service and the Facebook platform itself. As such, we are highly confident that the social data we studied here are from real users.

² ElasticNet is a linear machine learning model trained with L1 and L2 prior as regularizer (Blondel, Seki, & Uehara, 2013). Features used to build the model were unigrams, both from the text of the corresponding Twitter or Facebook post (e.g., the text of the tweet or the description of the article as pulled in by Facebook) and tokenized unigrams from the expanded URL itself (e.g., “fact,” “claims”).

³ Disagreements were addressed by a third author.

⁴ Negative binomial regression models were specified in our analyses because the outcome variables are counts of the number of posted fact-checks with over-dispersed distributions where the mean values are smaller than the variance.