Shareworthiness and motivated reasoning in hyper-partisan news sharing behavior on Twitter

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Abstract

While news sharing by ordinary social media users has received growing attention, hyper-partisan news sharing, which has been closely associated with misinformation circulation, has received less attention. In this study, we investigate hyper-partisan news sharing from two perspectives: (1) the features that make hyper-partisan news share-worthy, as well as (2) the user motivations that drive the sharing process. We scrutinize one week's content from *Infowars.com* as it was shared on Twitter. Through both manual coding of news content and semi-automated clustering of Twitter account descriptions, we find that human interest and conflict in news stories drive the sharing process from a content perspective. Concerning the user perspective, we find partial support for a sharing hypothesis based on motivated reasoning, which indicates that users are more likely to share hyper-partisan news stories if these align with their own political opinions.

Keywords: news sharing, shareworthiness, motivated reasoning, Infowars, hyper-partisan news, popularity cues

Introduction

Digital media, and social media as a distinct subset within this category, have become an ever more crucial source of news for audiences around the world over the past decade. Indeed, the 2017 Digital News Report, published by the Reuters institute for the Study of Journalism at the University of Oxford (Newman et al., 2017), points to a substantial generational shift in news engagement practices: digital media are now the main source of news for half or more of the respondents across the 36 nations it studied who were aged 44 or under, while TV and other legacy media remained central only for older news audiences. Further, social media play an ever-increasing role as a distinct space for encountering news within this overall digital media environment; in 2017, for example, fully one third of respondents aged 18-24 received their news mainly from social media (Newman et al., 2017, p.11).

This shift away from established legacy news media and towards online news engagement results in several important changes to news consumption patterns. First, it reduces news brand loyalty: online, users are able to access and engage with a substantially broader range of news brands from around the world, and many do – leading Funt et al. (2016, n.p.) to ask, "do brands even matter anymore?" Second, the use of social media for discovering the news has also shifted news engagement dynamics to a more passive mode for many users: they are using social media as "social awareness streams" that "unbundle a news story into its individual components" (Hermida, 2012, p. 665). In this environment, users encounter news serendipitously, in the form of news items shared by their friends and connections on social media platforms such as Facebook and Twitter – and this serendipity even increases the diversity of the news sources they

encounter: “those who are incidentally exposed to news on social media use more different sources of online news than non-users” (Fletcher & Nielsen, 2018, p.2459).

If the news articles that are shared by individuals in a social media user’s network, as a result of those individuals’ gatewatching of mainstream and niche news outlets (Bruns, 2018), are thus critically important in shaping the overall news diet of that user, then this places even greater importance on the news-sharing decisions made by these individuals. Such decisions can be understood from two broader perspectives: First, online news-sharing as a process of evaluating the importance and relevance of the news articles themselves – assessing a story’s *shareworthiness* (e.g. Kilgo et al., 2020; Trilling et al., 2017). In shareworthiness, users who encounter the story as published by the news outlet consider whether the story is of relevance to their own social media followers and should therefore be shared with them on Facebook, Twitter, or other platforms. In such work, multiple success factors have been identified by comparing more and less successfully shared articles on social media.

In contrast to shareworthiness as a perspective that seeks to identify crucial characteristics of the *news* driving news sharing, the second perspective seeks to understand crucial motivations of *users* driving the news sharing process (e.g. Syn & Oh, 2015). Previous studies have already found various individual motivations for sharing news, such as impression management or information seeking (e.g. Lee & Ma, 2012). Rather than assuming specific motives that drive the sharing process, we apply motivated reasoning theory to explain news sharing. Motivated reasoning suggests that people sometimes process attitude-relevant information in a biased manner in a way that favors attitude-congruent information over attitude-incongruent information (Kunda, 1990). In the same manner, we propose that users favor and prefer to share attitude-congruent news over attitude-incongruent news. We argue that motivated reasoning as an overarching theoretical framework is appropriate since previous studies have found that individuals regularly show a bias for in-groups, especially in political communication (Druckman et al., 2016; Lodge & Taber, 2000). However, both perspectives are ultimately two sides of one coin and are, as such, interdependent and inextricably interlinked.

In this article, we combine these two perspectives on news sharing by applying both perspectives to hyper-partisan news media. We select hyper-partisan news media as studies that investigate from both perspectives (shareworthiness and sharing motivations) why material from alternative, niche, and fringe news media outlets is shared remain scarce. By contrast, sharing of news online, and the shareworthiness considerations that determine it, have received an increasing amount of scholarly attention in recent years. Such studies have largely focused on shareworthiness factors and sharing motivations for general, mainstream news content, however. This is all the more problematic in light of growing concerns about the impact of partisan and hyper-partisan news sources on political discourse, especially in deeply polarised societies such as those of the United States and United Kingdom. In their study of mainstream and social media coverage of the 2016 US presidential election campaign, for instance, Faris et al. (2017, p. 11) observe “a significant reshaping of the conservative media landscape over the past several years”, and even suggest that as a result of these shifts “the center of attention and influence for

conservative media is on the far right. The center-right is of minor importance and is the least represented portion of the media spectrum" (2017, p. 10), with *Breitbart* and similar sites from the extreme right playing a particularly prominent role. Following Benkler et al. (2017), we describe such outlets as hyper-partisan: they are

> sites that revive what Richard Hofstadter called "the paranoid style in American politics," combining decontextualized truths, repeated falsehoods, and leaps of logic to create a fundamentally misleading view of the world. (2017, n.p.)

As Benkler et al. note, this category of sites "appears to have not only successfully set the agenda for the conservative media sphere, but also strongly influenced the broader media agenda" (ibid.).

The term 'hyper-partisan' also enables us to move beyond simplistic evaluations of the truthfulness of the news articles that these sites publish. At issue here is not whether the news published in such sites is wholly 'fake' or 'real', nor whether 'fake news' is disseminated more quickly on social media platforms than 'real news' (Vousoughi et al., 2018); in reality, as the studies cited here have shown, the stories published by hyper-partisan news outlets often contain at least a kernel of truth, but twist their material well out of context. 'Fake news' is thus an inadequate, insufficiently defined term; what is more important is that hyper-partisan news content is implicated in the dissemination of mis-, dis-, and malinformation, in the definition provided by Wardle and Derakhshan (2017, p. 20), and has been blamed for disrupting elections (Shin et al., 2018) and eroding societal trust (Turcotte et al., 2015). As a result, the need to understand *what* hyper-partisan content is shared on social media (i.e. shareworthiness) and *why* some social media users choose to share such content (i.e. individual motives) becomes all the more pressing.

To complete the picture of hyper-partisan news sharing, we examine (1) news characteristics that increase or decrease the shareworthiness of hyper-partisan content, and (2) user characteristics that provide the motivations for this sharing process. We do this in two steps: first, we ask which characteristics of hyper-partisan news make articles more or less likely to be shared on social media. Second, employing motivated reasoning theories from cognitive and social psychology, we hypothesise that articles which support users' prior beliefs and attitudes are more likely to be shared. Hence, we pursue the following two research questions:

1. What makes hyper-partisan news more or less shareworthy on social media?
2. How can motivated reasoning explain hyper-partisan news sharing?

To answer these research questions, we investigate one week's content from *Infowars.com*, a well-known hyper-partisan news outlet, as it was shared on Twitter[1]. Through manual coding of news content, we compare in a first step content that was published by *Infowars* and shared on Twitter with content that was published but not shared – hence, determining the shareworthiness factors. We relied on GDELT (Leetaru & Schrodt, 2013), a public database that monitors global news coverage in real time, to identify all *Infowars* news articles published during the timeframe covered by our Twitter dataset (the final week of September 2019). In determining the shareworthiness factors, we specifically differentiate between *cross-platform* and *in-platform on-sharing*. While cross-platform sharing describes how often news were shared on Twitter in general, in-platform on-sharing assesses how often news were shared on *within* a platform (in our case Twitter). This allows for a refined interpretation of shareworthiness that distinguishes between primary and secondary sharing processes.

In addition, we collected Twitter profile descriptions from all of the accounts that shared *Infowars* URLs on Twitter, in order to use them as a proxy for understanding possible sharing motivations. Based on the profile descriptions, we grouped accounts into opinion clusters to identify if they were more likely to share opinion-congruent news stories – for instance, to determine whether self-described conservative accounts also predominantly share news articles representing such political perspectives.

Theoretical Background

Our study builds on two major theoretical foundations: shareworthiness and motivated reasoning. Respectively, these address the questions of which news stories are shared, which existing research seeks to explain by examining the inherent features of the content being shared; and of why such news stories are shared, which past studies address by exploring the likely motivations of users sharing the news. In this section, we introduce these theoretical frameworks – newsworthiness and shareworthiness on the one hand, and motivated reasoning on the other – in turn, and develop the hypotheses that guide our own research.

Which news stories are shared? From newsworthiness to shareworthiness

Today's notion of shareworthiness extends from the concept of *newsworthiness* – determining which events are most likely to become news. Developing news value theory, Östgaard (1965), as well as Galtung and Ruge (1965), introduced specific factors that impact on newsworthiness, like unexpectedness, references to individuals (human interest), or negativity. These factors have proven to influence not only journalists' selection of news stories, but also the audience's selection and preferences (Eilders, 2006). Galtung and Ruge (1965) proposed that

[1] A thorough justification of why we chose *Infowars* and Twitter can be found in the methodology section 'Sampling and time frame'.

these individual news value factors serve as a "good score of the [otherwise] elusive concept of 'newsworthiness'" (p.71).

Translating news value theory and newsworthiness to the practice of news sharing, Trilling and colleagues (2017) arrived at the concept of *shareworthiness*, which provides a central point of focus for our article. They proposed seven factors to explain why content was shared on Facebook and Twitter. Their empirical results indicated that all seven factors – geographical distance, cultural distance, higher negativity, higher positivity, the presence of conflict and human interest (only for Facebook shares), and exclusiveness (only for Twitter shares) – predicted news sharing. This research approach has been extended by others: for example, Valenzuela et al. (2017) applied news value theory to news frames and news sharing. Through in-depth interviews, they investigated how different news frames affected sharing likelihood. Their results indicate that, contrary to Trilling et al. (2017), the presence of conflict frames decreased news sharing, and that human-interest frames had no effect on sharing news.

Although academic interest in the shareworthiness of mainstream media content has grown in recent years, comparatively little is known about why users share *hyper-partisan* news, as a specific subset of news content that is distinct from ordinary news. Since hyper-partisan news outlets display features different from mainstream news – at the level of the identity of the news producer, the content produced, the organizational structure of the outlet, and its embedding in the wider news ecosystem (Holt, Figenschou, & Frischlich, 2019) – and position themselves outside of the traditional media system (e.g. by describing themselves as 'alternative' media; Figenschou & Ihlebæk, 2019), it is necessary to differentiate hyper-partisan news-sharing from traditional news-sharing: users may have different motivations for sharing such hyper-partisan content, and respond to different attributes in the content. One of the few studies that scrutinized hyper-partisan news-sharing came from Xu, Sang, and Kim (2020): using manual coding as well as computational techniques, the authors investigated how hyper-partisan news was liked and shared on Facebook. To do so, they examined articles on three levels: source, style, and content. Concerning the source, they found that, while the inclusion of the author byline in articles generally increased shares, more information about the author's biography and more hyperlinks decreased shares. Concerning style, results indicated that more emotional content was only more likely to be liked but not shared. Also, more formal and logical language, as well as multimedia content, affected neither likes nor shares. Lastly, Xu and colleagues (2020) found that specific moral frames, such as an authority frame, increased shares.

Based on these findings, we have developed a list of previously identified factors associated with shareworthiness in both mainstream and hyper-partisan media, which we discuss in the following. This list does not encompass all previously found shareworthiness factors, but instead focuses especially on repeatedly reported news values and shareworthiness factors. To be clear: our central focus in this article is on shareworthiness (i.e., the factors that make social media users share news articles), not on newsworthiness (the factors that make journalists cover news events in the first place). There are considerable overlaps between both sets of factors, and this is unsurprising: newsworthiness factors are based on what journalists expect their audiences

to be interested in, while shareworthiness factors result from the direct observation of such audience interests (as expressed in news sharing practices via social media). The two sets of factors are not entirely identical, however: journalists may cover stories that they believe audiences need to know about, whether those audiences are interested or not; audiences may share stories with limited news value if they are sufficiently amusing, surprising, or outrageous.

Proximity

In their early works, Galtung and Ruge (1965) described *proximity* as one of the news values that determine if an event is reported as news. According to the authors, the closer (culturally or geographically) an event is to the country where it is reported, the more likely it is to become news. The news value of proximity was supported by further research (Bednarek & Caple, 2017), including studies of news images (Ahva & Pantti, 2014) and among different cultures (Masterton, 2005). Moreover, the concept was successfully translated to shareworthiness (Trilling et al., 2017; Valenzuela et al., 2017). Although it has been argued that the importance of a traditional news value like proximity would decrease in a globalized world, in "today's global social media networks geographic proximity still matters" (Bruns, 2018, p. 136). One psychological explanation for the influence of proximity is that proximate content is more relatable for readers, which has also been found to influence commenting behavior (Weber, 2014). Proximate content might also be more likely to convey information that affects the individual personally. This is supported by the findings of Ahva and Pantti (2014), who investigated the role of proximity in today's digital news environment. They found proximity to be used as a central means to engage audiences.

Because our investigation examines the sharing of *Infowars* content, we define proximity from the perspective of the United States. We hypothesize that:

> *H1: Issues that are proximate (culturally and/or geographically) are more likely to be shared. In turn, issues that are culturally/geographically distant are less likely to be shared.*

Conflict

Likewise, in their list of news values, Galtung and Ruge (1965) proposed that the presence of *controversy* or *conflict* increases the likelihood of an event becoming news. A conflict is characterized by the portrayal of at least two disagreeing sides and is deemed to be of more interest to the audience than consensus (Semetko & Valkenburg, 2000). This facilitating effect of conflict has also been found for news sharing (Kim, 2015; Trilling et al., 2017; Valenzuela et al., 2017). Underlying psychological concepts that drive conflict as a news and sharing factor are sensationalism and negativity bias. Concerning the former, Ng and Zhao (2020) hypothesized that the two evolutionary needs, environmental surveillance and social involvement, cause sensational news such as conflicts to be shared more. Concerning negativity bias, psychological

studies have found that negative events elicit stronger cognitive, emotional, and behavioral responses than neutral or positive events (Baumeister et al., 2001).

We therefore hypothesize that:

H2: Issues that portray a conflict or a controversy are more likely to be shared. Issues that do not contain a conflict are less likely to be shared.

Human interest

The factor *human interest*, which gives news stories a human face or an emotional angle (Neuman et al., 1992; Semetko & Valkenburg, 2000), was introduced to the discussion of news values subsequent to Galtung and Ruge's earlier work. This factor relates to a softer style of personalized storytelling, in contrast to 'hard news', and is more entertainment-centered (Jebril et al., 2013). Concerning shareworthiness, Trilling and colleagues (2017) found human interest to be less important than conflict or proximity (especially for Twitter shares). However, others have found opposite effects (García-Perdomo et al., 2018). An investigation of the so-called Ice Bucket Challenge and its sharing has shown that most journalists utilized human interest in their reporting, for example (Kilgo et al., 2020). From a psychological perspective, a human-interest angle might trigger emotional arousal which, in turn, increases psychological engagement with the news story. We hypothesize that:

H3: Issues that portray an angle of human interest are more likely to be shared. Issues that do not contain an angle of human interest are less likely to be shared.

Morality

Similar to human interest, the news factor *morality* was introduced to the discussion on newsworthiness at a later stage (Neuman et al., 1992; Semetko & Valkenburg, 2000), and, although journalists use it less often due to their commitment to objective news reporting (Wasike, 2013), audiences often use morality frames to understand the news (de Vreese, 2012). In the case of shareworthiness, morality is defined as putting "the event or issue in the context of values, moral prescriptions, normative messages, and religious or cultural tenets" (Valenzuela et al., 2017, p. 809). A psychological reason for the importance of morality as a shareworthiness factor is that moral emotions, like outrage and disgust, are elicited by moralizing content. This is supported by a recent investigation which showed that moral-emotional language accelerated sharing on social media through social contagion (Brady et al., 2017). Similar to negativity bias, moral emotions have also been shown to mobilize people if the content resonates with or contradicts the individual's value predispositions (Rubenking, 2019). We thus hypothesize that:

H4: Issues that portray moralizing content are more likely to be shared. Issues that do not portray moralizing content are less likely to be shared.

Visual content

Lastly, we want to draw attention to visual content. As *Infowars* not only publishes written news reports but also livestreams videos and shows which are "repackage[d] to fit web and social media formats" (Van den Bulck & Hyzen, 2020, p. 51), we can expect to find URLs that link to visual content. As previous studies have found, images and videos are far more likely to be shared on Twitter than in any other medium (Goel et al., 2016), although results by Xu and colleagues (2020) did not find support for this claim. This can be explained by the lower cognitive affordances and effort required in information acquisition. We therefore hypothesize that:

> *H5: Issues that contain mostly visual content, like videos, are more likely to be shared. Issues that are not visual reports are less likely to be shared.*

Why news is shared – Motivations for news sharing

Understanding news sharing from a shareworthiness perspective neglects, however, the user's motivations for news sharing. Though extrinsic content characteristics, like the shareworthiness factors discussed above, have certainly proven to explain news sharing patterns in general, it has also been shown that individuals have different intrinsic sharing motives that shape their specific news sharing choices. Such intrinsic motives may be of particular importance in the sharing of hyper-partisan news content, which is inherently designed to appeal to users with strong pre-existing ideological loyalties. We expect ideologically determined intrinsic user motivations to play a considerably stronger role in the decision to share hyper-partisan news content than they would do in sharing more balanced, mainstream news reporting, where extrinsic shareworthiness factors relating to the content and substance of a story are more important. We follow this line of inquiry by connecting the logics of news sharing with the theory of motivated reasoning.

Motivated reasoning generally proposes that people sometimes process attitude-relevant information in a biased manner in a way that favors attitude-congruent information over attitude-incongruent information (Kunda, 1990). One theoretical explanation for this biased processing relates to differing motivational states. For example, Chaiken, Giner-Sorolla, and Chen (1996) suggested that individuals are not always driven by accuracy goals when processing information. Instead, individual cognition is sometimes driven by belief preservation and self-concept defense (defense motivation). Hence, the authors predict that, once defense motivation is triggered by attitude-incongruent information, individuals favor information that reinforces prior attitudes. To reduce the threatening potential of attitude-incongruent information, attitude-contradicting content can be ignored (defensive inattention) or over-critically evaluated (defensive counterarguing). Defensive counterarguing, however, is more likely to occur when content seems easy to refute (Lowin, 1969).

In line with motivated reasoning and, especially, defense motivation, we suggest that it is more likely that individuals share attitude-congruent than attitude-incongruent news. While

attitude-congruent news should signal no threat to the individual, attitude-incongruent news could threaten the individual self-concept, leading to defensive inattention. Empirical findings from social and political psychology support this view. De Hoog (2013), for example, found that when people were confronted with self-threatening information, defense motivation was induced, resulting in biased information processing.

In line with motivated reasoning, ideology-based motivations that drive the spread of misinformation have been identified before (An et al., 2013; Marwick, 2018). An and colleagues (2013) found, for example, that users tend to share articles that were congruent with their prior attitudes and beliefs. This is supported by recent findings which show that attitude-congruent information is more likely to be shared, independent of source credibility (Clemm von Hohenberg, 2019). In fact, on Twitter "attitudinal congruence mattered more for known sources" (p. 33). Nevertheless, we acknowledge that there are rationales that could lead users to share attitude-incongruent news: for example, to discredit or correct such news. We hypothesize that:

> *H6: Individual attitudes drive the processes of news sharing in a way that those news stories that align with an individual's attitudes are more likely to be shared, whereas stories that do not align with or that are neutral to an individual's attitude are less likely to be shared.*

Methodology

Sampling and timeframe

For the present study, we collected tweets from Twitter that shared URLs from *Infowars* during the last week of September 2019. We selected Twitter as a platform that is a particularly popular social medium for news dissemination and consumption (Tandoc & Johnson, 2016), and a space that enables us to comprehensively observe the public sharing of articles from specific news outlets. We selected *Infowars*, founded by Alex Jones, as it has previously been classified as hyper-partisan (Xu et al., 2020), and has been linked to a greater network of misinformation spread (Shao et al., 2018). Further, we chose *Infowars* because amongst comparable hyper-partisan sites, it is one of the most prominent sources: the Reuters Institute *Digital News Report 2019* (Newman et al., 2019, p. 24) shows that fully 33% of its panel of US-based respondents are aware of the site. This places it second only to *Breitbart* (44%), and ahead of other key hyper-partisan outlets such as *The Blaze* (31%) and *Daily Caller* (27%). In addition, and especially also in comparison with these other prominent hyper-partisan outlets, *Infowars* serves as a particularly useful case study because its content distribution on Twitter is entirely driven by third-party accounts, rather than resulting in part from the promotional efforts of official Twitter accounts affiliated with the site: the institutional and personal accounts operated by *Infowars* and its founder Alex Jones were banned from Twitter in 2018. This means that *Infowars* content is now distributed on Twitter overwhelmingly as a result of the individual sharing decisions made by

members of its audience, while content from *Breitbart* and similar sites is instead disseminated in the first place in tweets by these sites' institutional accounts, and by the retweeting of those tweets by other users. This positions *Infowars* uniquely well as an object of study for our purposes: we can be confident that the sharing decisions we observe in our data represent individual users' original decisions on whether to share any given Infowars article, and are not influenced by the activities of the site's institutional account or the account of its leader Alex Jones.

As the timeframe of our data collection, we selected the last week of September 2019. This covered the emergence of impeachment claims against then-US President Donald Trump, possibly resulting in higher rates of engagement on alt-right outlets such as *Infowars*. We decided to restrict the timeframe to one week of sharing. This kept the number of collected tweets small enough for comprehensive manual coding but large enough to detect trends beyond a single event, and to use computational methods in our analysis.

Data collection to answer RQ1 and H1-H5

To answer RQ1 and determine which available *Infowars* articles were shared on Twitter and which were not, we utilized the GDELT project (Global Database of Events, Language, and Tone)[2]. GDELT (Leetaru & Schrodt, 2013) is an open data project that monitors global news coverage in real-time in over 100 languages, from print media to broadcasting and web formats, applying natural language processing, data mining, and deep learning algorithms to extract about 300 categories of events, themes, and emotions. GDELT has been used to predict social unrest (Qiao et al., 2017), study political conflict (Yonamine, 2013), or examine visual media coverage (Haewoon & Jisun, 2014). As GDELT includes hyper-partisan news outlets like *Infowars* in its dataset, it provides a useful source of information on the full range of articles published on the site.

By querying GDELT, we identified 169 *Infowars* articles that were first captured by GDELT during the period of 23 to 29 September 2019. Further, to identify which of the available *Infowars* news articles were actually shared on Twitter, we used the public Twitter API to capture all tweets that contained an *Infowars.com* URL (even if shortened by *t.co* or another URL shortener), and were shared in the period of 24 to 30 September 2019. We deliberately offset the Twitter dataset collection timeframe from that of the GDELT dataset by 24 hours in order to allow sufficient time for articles from *Infowars* to be shared on Twitter, and we subsequently filtered the Twitter dataset to retain only those tweets that shared an article URL in the GDELT dataset within 24 hours of GDELT's first capture of that URL.

This means that for each URL, our analysis focuses on the sharing of *Infowars* articles on Twitter within the first 24 hours of its publication (or more correctly, its capture by GDELT, which will usually have occurred shortly after publication). We introduce this limitation in order to be able to focus on the *immediate* sharing of news articles and exclude any *residual* sharing that may

[2] https://www.gdeltproject.org/

occur well after the initial publication of an article (including out-of-context and spam-related sharing); such filtering is justified by the fact that the vast majority of news sharing for any source tends to occur within the first hours after an article's initial publication (Bruns & Keller, 2020), and that the factors and motivations for delayed sharing are likely to diverge considerably from the shareworthiness factors and motivated reasoning involved in immediate sharing that our study investigates. With these filters applied, our final Twitter dataset consisted of 5,280 original tweets from 1,064 unique accounts, sharing 168 distinct *Infowars.com* article URLs.

Strategy of analysis to answer RQ1: Manual annotation and regression analysis

In a first step, we manually coded each of the 168 article URLs in the GDELT dataset to identify the hypothesized shareworthiness factors (see H1-H5) which constituted one category in the coding system. The codebook can be found in the supplementary material, S1 (https://osf.io/uc6sm). Categories were dummy-coded and not mutually exclusive. Two independent coders were trained on 10% of the dataset, achieving satisfactory intercoder reliability (Krippendorff's alpha = between 0.72 and 0.8) after three rounds of coding.

In the next step, we determined which of those articles were shared on Twitter, finding that all but one of the articles in the GDELT dataset had been shared on Twitter within 24 hours of their publication. The least retweeted articles received 4 retweets, whereas the most retweeted article received 5,427 retweets, at a median retweet count of 30 retweets per article. In the last step, we then assessed the shareworthiness of the 168 *Infowars* articles. That is, we used the shareworthiness factors, such as conflict or morality, to explain how often an article was shared on Twitter. We used two dependent variables: for each of the 168 articles we counted (a) how often they were shared on Twitter (tweet count) and calculated (b) a retweet factor that showed the amplification of initial sharing by subsequent retweeting, by dividing the total count of retweets by the count of original shares (excluding retweets).

Previous studies have included only a tweet count for articles (e.g. Trilling et al., 2017) to assess shareworthiness. The retweet factor adds to this a measure that favors those articles which were retweeted more than they were shared in original tweets. In other words, while the tweet count provides a measure of shareworthiness that considers sharing from the original publication *into* the social media platform (i.e. cross-platform sharing), the retweet factor assesses further (in-platform) on-sharing *within* the social media space (in our case Twitter). Hence, the retweet factor allows for a refined interpretation of shareworthiness that distinguishes between primary and secondary sharing processes.

In order to test which of these factors made an article more or less shareworthy, we ran two negative binomial regression models with the tweet count and retweet factor of each individual article as dependent variables and all shareworthiness factors as predictors, controlling for article length. We chose negative binomial regressions because the standard deviation was higher than the mean for both dependent variables. We ran two negative binomial regression models with the shareworthiness factors as predictors and the tweet count and retweet factor as the respective dependent measures, as well as the control variable article length (word count).

Data collection to answer RQ2 and H6

In RQ2 we hypothesize that accounts are more likely to share content which is congruent to the account's opinion or interests. Hence, we needed to gain deeper insights into the individual accounts which shared *Infowars* URLs. As the Twitter API allows us to download profile descriptions, we leveraged the 1,064 Twitter accounts' profile descriptions as a proxy for how these accounts identify themselves (using those Twitter accounts whose tweets were collected to answer RQ1 and H1-H6 – see previous section). Although we do not know if these descriptions are accurate or misleading, they still determine how other Twitter users perceive these accounts, and thus serve as a useful indicator of their public persona. Accounts that did not have a description (2%) were omitted from the analysis.

Strategy of analysis to answer RQ2: Automated annotation, clustering process, and logistic regression analysis

We used a semi-automated approach to cluster the collected profiles based on their descriptions (see Spierings et al., 2018; Keller 2020). We first created keyword lists to group accounts by their descriptions automatically, resulting in seven lists: (1) *Trump*, containing pro-Donald Trump keywords such as #MAGA, #KAG, or "Trump"; (2) *Patriot*, containing keywords such as #AmericaFirst, "PatriotsUnite", or "Nationalists"; (3) *Infowars*, containing keywords such as "Infowarrior", @RealAlexJones, or "InfoArmy"; (4) *Christian*, containing keywords such as "Believer", "Christ" or "Bible"; (5) *Military*, containing keywords such as "Veteran", "Served", or "Army"; (6) *Pro-Gun*, containing keywords such as "NRA" or "2A"; and (7) *Conspiracy*, containing keywords such as "WWG1WGA", "QANON, or "Conspiracy" (for a complete list of keywords, see supplementary material S2: https://osf.io/uc6sm). The automated analysis ended after several runs which neither improved the number of identified accounts, nor the correct classification of accounts (validated manually). Of the 1,043 accounts which had a profile description, 475 did not fall into at least one of the seven lists (45%).

To test validity more thoroughly, we took a random sample of 50 accounts, including accounts from each list, and conducted a manual analysis with the same criteria as for the automated analysis. We received good results in terms of accuracy (>0.8), precision (>0.7), recall (0.8), and F1-score (>0.8) for each category. Hence, the clustering resulted in seven clusters which were converted into dummy-coded categories to describe each profile. Categories were not mutually exclusive, allowing profiles to fall into more than one category.

To answer RQ2, we also needed to classify shared news articles into the same cluster categories as used for the profiles. Hence, two independent coders were trained on 10% of the dataset. The codebook for this can be found in the supplementary material S3 (https://osf.io/uc6sm). After two rounds of categorization, intercoder reliability was satisfactory for the overall categories (Krippendorff's alpha = .62 - .72), and the remaining data were coded. Similar to the profile categories, article categories were not mutually exclusive, and articles could fall into more than one category.

Finally, we conducted six logistic regressions to test whether accounts with specific interests were more likely to share news on particular topics than others, as suggested by motivated reasoning theory (H6). For all regression analyses, we entered the article category as a dependent variable and the respective profile cluster as an independent variable, while controlling for all other profile clusters.

Results

RQ 1: Which hyper-partisan news are successfully shared on Twitter?

As both data sets were almost of the same size (GDELT = 169, Twitter = 168), we expected to find only one article that needed to be omitted. Our expectations were met: of the 169 individual URLs collected by GDELT, we found that 168 were shared on Twitter within 24 hours. One of these URLs did not link to an *Infowars* article at the point of coding and had to be omitted from the analysis, leaving 167 articles. The coding process for shareworthiness factors found that most of these articles contained culturally or geographically proximate content, from a US perspective (82%). Roughly every other article contained a conflict (56%) or human-interest content (51%), while moralizing content (29%), as well as visual content such as pictures or videos (36%), were present in roughly one third of all articles. The average length of articles was 465 words.

[INSERT TABLES 1 AND 2]

Results for the tweet count variable, meaning how often an URL was tweeted or retweeted on Twitter (Tables 1 and 2), showed that three shareworthiness factors significantly influenced whether an article was shared or not (proximity, conflict, and human interest). Concerning proximity, H1, we hypothesized that proximate content would increase shareworthiness. In our data, however, we found the opposite effect. Content that thematized issues closer to the USA was less likely to be shared. By contrast, as hypothesized in H2 and H3, the factors conflict and human interest increased the likelihood of being shared. Moreover, we found no support for the hypotheses that moralizing (H4) or visual content (H5) had a significant influence on shareworthiness.

Interestingly, when examining the results for the retweet factor, we found that only the shareworthiness factor human interest reached significance, indicating that if an article had a human angle, it was more likely to receive substantial secondary amplification through retweeting. This general lack of correlation may indicate that the in-platform on-sharing of *Infowars* content through retweets is driven far more strongly by factors relating to the platform (Twitter) than the source (*Infowars*) – for instance, by the identity and the follower base of the Twitter account initially sharing the URL, or the choice of hashtags and other markers used in the original tweet.

While these results indicate which extrinsic content factors in *Infowars* articles increased their shareworthiness, we were also interested in how intrinsic account identities influenced this sharing process. In the next section, we report results for the clustering analysis.

RQ2: Can motivated sharing practices explain news sharing?

We categorized all account profiles and shared articles using the seven clusters described in the methodology section. We found that the biggest cluster of accounts consisted of Trump supporters (*n* = 240), followed by Christian profiles (*n* = 161), patriotic profiles (*n* = 145), Pro-Gun profiles (*n* = 75), military profiles (*n* = 71), conspiracy profiles (*n* = 59), and *Infowars* supporters (*n* = 25). Because profiles could fall into more than one category, we wanted to know if specific profile categories were associated with each other. To do so, we calculated correlations of profiles using Cramer's V for dichotomous variables. Results are presented in Table 3. According to Cohen's (1988) interpretation of Cramer's V, we found that almost all profile clusters had a medium to high correlation with the Trump cluster. This suggested that, while different accounts showed different specific interests, they connected through their overall support for Donald Trump. One exception was the cluster "*Infowars*", representing self-declared *Infowars*-followers, which correlated substantially only with the cluster "Conspiracy" (self-declared conspiracy theorists such as QAnon followers).

[INSERT TABLE 3]

Likewise, of the 167 articles, most fell into the Trump cluster (*n* = 70), followed by conspiracy articles (*n* = 38), Infowars articles (*n* = 35), articles with patriotic themes (*n* = 18), Christianity (*n* = 9), the military (*n* = 6), or Pro-Gun articles (*n* = 4). Similar to the profile clusters, articles could be categorized in more than one category. To find possible co-occurring patterns, we calculated Cramer's V for the article clusters. Results are reported in Table 4. Compared to the profile clusters, associations between these article categories were less pronounced. The strongest co-occurrence was found for articles on Christianity and Pro-Gun articles (*V* = 0.32), followed by *Infowars* and conspiracy articles (*V* = 0.31).

[INSERT TABLE 4]

As suggested by the theory of motivated reasoning, we used six logistic regressions to test whether accounts with specific interests were more likely to share news on particular topics than others (H6). Results indicate partial support for H6 (see Table 5). For articles discussing (a) Trump, (b) *Infowars*, and (c) Christianity, we found that the corresponding profile clusters were, as hypothesized, more likely to share these articles. However, for articles discussing *Infowars* or Christianity, we found a different profile cluster to be more likely to share these articles (the military cluster for *Infowars* and the conspiracy cluster for Christianity). For Pro-Gun articles or conspiracy theories, we found that seemingly unrelated profile clusters were more likely to

predict sharing. Pro-Gun articles were more likely to be shared by Christian profiles, and conspiracy articles more likely to be shared by Pro-Gun profiles. We can explain the association between Christian profiles and the sharing of Pro-Gun articles by content co-occurrence (see Table 4): we found that Pro-Gun articles often also contained content related to Christianity (V = 0.32).

Further, we found no association between any of the profile clusters with articles that discussed the military. Most surprisingly, we found the opposite effect of what we hypothesized for articles discussing patriotic content. These were, in fact, shared significantly less by accounts from the patriot cluster—the only significant negative effect we found. One possible explanation for this finding may be that accounts describing themselves as patriots use the term in such a generic way that it may lose its specificity in relation to news articles on *Infowars* that are *per se* conservative. In other words, a self-described patriot may not behave very differently to other clusters because *Infowars* news articles speak to all of these clusters.

[INSERT TABLE 5]

Discussion and conclusion

In this study, we have compared *Infowars.com* article URLs, as collected by the GDELT project, with a dataset of *Infowars.com* URLs shared on Twitter and collected by us. Overall, we found that almost all *Infowars* articles were shared on Twitter within 24 hours. This is in line with previous findings by Trilling and colleagues (2017), who found that only a marginal proportion of 8% of news articles was not shared (on either Twitter or Facebook).

Through manual coding of the articles and negative binomial regression models, we found that three shareworthiness factors (proximity, conflict, and human interest) significantly predicted sharing, if sharing is operationalized as original tweets and retweets. However, contrary to what we expected in H1, proximity decreased the likelihood of sharing. We also found that most articles contained content proximate to the USA (roughly 82%). We suggest that *Infowars* articles that did not cover US-issues became more salient simply because most content does cover the USA. In turn, increased salience could have resulted in higher shares of non-USA content. We connect the other two factors, conflict and human interest, with results found for RQ2, where we investigated users' motivations of sharing. We found that by far the biggest group of accounts endorsed Donald Trump. In addition, we see a connection to the selected timeframe of our data collection – one week after the first calls of impeachment against Donald Trump.

Moreover, moralizing content, as well as visual content, had no significant influence on sharing likelihood. The results for moralizing content seem to contradict previous findings (Valenzuela et al., 2017; Xu et al., 2020). However, Valenzuela and colleagues (2017) as well as Xu and colleagues (2020) both investigated moralizing *frames* rather than *content*. Differences could

stem from this conceptualization; additionally, the hyper-partisan nature of *Infowars* content as compared to the mainstream news observed by other studies may also mean that moralizing aspects in the content are less unusual, and therefore less significant. We found that every third article included moralizing content. Concerning visual content, our findings are in line with Xu et al. (2020), who found that multimedia content played an insignificant role in news sharing (but studied Facebook rather than Twitter).

Interestingly, when we used our retweet factor (the ratio between retweets and original shares) to investigate the shareworthiness attributes affecting the on-sharing of URLs within the platform, through retweeting, only one shareworthiness factor, human interest, remained significant. This also indicates that findings are dependent on how researchers define and operationalize shareworthiness, and specifically that a distinction between *cross-platform sharing* (in our case, from the *Infowars* site to Twitter) and *in-platform on-sharing* (through the retweeting of tweets containing *Infowars* URLs) is critical in understanding the factors that influence shareworthiness. On Twitter, certainly, but most likely also on many other social media platforms, in-platform on-sharing processes may be affected more strongly by platform features and affordances (the status and follower base of the accounts posting URLs to the platform; the injection of posts into popular hashtags and communities; or the amplification of content by trending topic and newsfeed algorithms) than by the content of the stories themselves. This perspective is also in line with the observation that many social media users engaging in the in-platform on-sharing of content may not themselves click on and read the original source story: in other words, their decision to on-share will be influenced not by the shareworthiness attributes embedded in the article itself, which they may never encounter, but only by those attributes that can be gleaned from the tweet sharing its URL.

Moreover, we asked not only which content features made hyper-partisan news more shareworthy, but also whether specific accounts were more likely to share particular news. According to motivated reasoning theory, we expected that users were more likely to share news that was congruent with their personal views (H6). Our results showed that, as hypothesized, some news stories were more likely to be shared by accounts that aligned with the themes addressed in the news story, supporting the motivated sharing hypothesis. This was especially pronounced for accounts that endorsed Donald Trump, but also for those with strong affinities for *Infowars* and Christianity. However, the picture was not always as clear. For some article themes (e.g. for articles discussing the military), we did not find any strong association with any one profile cluster, whereas for others we found associations with clusters on divergent topics (e.g. articles discussing weapons, which were more likely to be shared by accounts that endorsed Christianity). We suggest that this can be explained by the medium to strong correlation (Cramer's $V = 0.32$) between weapon and Christianity themes in articles, which meant that these two themes were often interwoven within the same article.

Our analysis in this article clearly demonstrates the benefits of combining a content-focused shareworthiness perspective with a user-focused motivated reasoning perspective. We encourage scholars to continue and extend this dual approach and to thus incorporate both

perspectives into future research about mainstream as well as hyper-partisan news sharing behaviors. It is evident from our observations here that the benefit of both perspectives is greater than the sum of its parts: an analysis that addresses only the content factors that determine shareworthiness ignores the considerable diversity of interests, opinions, and ideologies that is likely to exist amongst the social media users involved in sharing any given news story; conversely, an analysis that builds exclusively on the motivated reasoning undertaken by users as they share news stories ignores that such reasoning will unfold in vastly divergent ways for different types of content. In other words, shareworthiness and motivated reasoning are two sides of one coin, interdependent, and thus inextricably interlinked – and our approach here provides a model for a more systematic exploration of that linkage.

Limitations

While our selection of only one outlet (*Infowars*) and our timeframe of one week of articles, on a single social media platform, limits the generalizability of our findings, the approach we have taken here provides a useful model for further research. Future studies would need to apply this approach to a larger number of hyper-partisan media outlets, over a longer period of time, and for multiple social media platforms, and/or could compare sharing patterns for these hyper-partisan news sites with their more mainstream counterparts. In some studies, variables such as the time of publication and the author of the article were also found to influence sharing practices (Xu et al. 2020), and these factors could also be incorporated into further analysis.

For our cluster analysis, initial profile clusters were selected based on our understanding of the data and might, therefore, display a bias. Moreover, we saw that 45% of collected accounts did not fall into one of these clusters, inducing a selection bias. Likewise, we cannot vouch for the accuracy and reliability of the self-descriptions provided by Twitter accounts. An account description might not necessarily represent an individual's attitude and can, therefore, only be treated as a proxy; more reliable information on attitudes could be gained only from direct interviews or surveys of all users, but this would introduce significant new methodological challenges. As we have shown by assessing cluster correlations, moreover, it is possible that profiles align with multiple clusters, and that this gives rise to a hierarchy of clusters and sub-clusters. For example, almost all account descriptions in our dataset aligned with the pro-Trump cluster – except for those of explicit *Infowars* supporters, which correlated more closely with conspiracy theorists. This suggests that these accounts might fall into two higher-level categories: Trump supporters and non-supporters. Further studies may attempt to use computational machine learning techniques, building on the profile descriptions as well as the tweets posted by accounts, to generate a more detailed range of account clusters, for instance, and/or they could follow Bruns, Moon, Münch, and Sadkowsky (2017) in determining account clusters based on patterns in the accounts' follower/followee networks.

Future studies

One observation from the manual coding of the tweets was that only a fraction of the tweets added further text beyond the original article headline. This may indicate the use of manual social sharing functions embedded on the article page itself; however, it could also result from automated news sharing. Automated sharing is often associated with automated or semi-automated computer programs, so-called social bots; however, such functionality is not limited only to (malicious or deceptive) bot accounts: services like *IFTTT* or *dlvr.it* enable (benign) automated social media posts on otherwise human-run accounts as well. The use of such services may be indicated by the use of specific URL shorteners (e.g. *ift.tt*), or by a service signature in the tweet metadata; future studies of shareworthiness factors should account, as far as possible, for such automatic sharing of news.

Overall, our findings concerning hypotheses H1-6 show that the hyper-partisan news outlet *Infowars* increases its shares through angles of human interest and conflict, while proximity, which has previously been found to increase shares, reduces shareworthiness. We also find that changing the operationalization of shareworthiness impacted on the outcome. We therefore suggest a differentiated approach to shareworthiness that distinguishes between the factors involved in *cross-platform sharing* and *in-platform on-sharing*, respectively. Future studies should also investigate if the importance of human-interest and conflict factors is typical for hyper-partisan news sites like *Infowars*, or if our results are unique to this specific outlet and timeframe.

Likewise, our results concerning a motivated reasoning approach to news-sharing are promising. We find that three of the major clusters (self-declared Trump supporters, Christians, and *Infowars* supporters), were indeed more likely to share news content congruent with these worldviews. As both approaches yielded promising results, we argue for an integrative model of news sharing, which considers both the shareworthiness factors in articles and the underlying attitudes of users.

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