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Drivers of News Sharing: How Context, Content, and User Features Shape Sharing Decisions on Facebook

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ABSTRACT

What makes people share political news on Facebook? Prior studies have identified how different features predict audiences' likelihood to share news on social media – the so-called shareworthiness of news. However, we still know very little about the relative contributions of these different features for predicting why people decide to share news. We extend the literature by using an experimental design that can compare the relative importance of several key features that contribute to shaping citizens' sharing decisions: a conjoint experimental design. We use an identical layout to Facebook and a probability sample of Norwegian citizens. We find that particularly content characteristics are important, and that popularity cues and message congruence is conditional on some user characteristics such as age.

KEYWORDS

News sharing; conjoint experiment; Facebook; news dissemination; political news

Introduction

What makes people share the news on Facebook? Even though other platforms are becoming increasingly important, especially for younger generations, Facebook has established itself as a major news source for many people (Newman et al. 2021). On Facebook, users encounter news through "curated flows" (Thorson and Wells 2016) in which different actors actively influence the distribution of news. Contrary to people's decisions to read, like, or comment on a news story on Facebook, sharing is a deliberate act of curating other people's news flows; that is, by forwarding information to other people in one's network (Heidenreich et al. 2022). Through sharing, information spreads among users on Facebook, or similar social media platforms, and contributes to determining what others are exposed to. Yet, our understanding of why users choose to re-share content from news media remains relatively vague.

In recent years, several studies have approached this problem from different angles. For instance, research on the so-called "shareworthiness" (Trilling, Tolochko, and Burscher 2017) of news has transferred the concept of news values to predict the

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number of shares an article receives. Others have studied the role of partisan ideology as a predictor of news sharing (e.g., Morgan, Shafiq, and Lampe 2013); yet others have focused on the role of attention-grabbing stylistic features, so-called "clickbait" (e.g., Lischka and Garz 2023). However, we still know very little about the *relative* contributions of these different features for predicting why people decide to share news (see also Trilling et al. 2022). To put it bluntly: What matters most? Is it all about attitude consistency or the political slant of the source, as some dystopian views would suggest (Sunstein 2018)? Do sharing decisions simply mirror what journalists typically deem newsworthy (Trilling, Tolochko, and Burscher 2017)? Or is it about social cues and are we witnessing a re-inforcing process, in which people share what others have shared more often (Kümpel, Karnowski, and Keyling 2015)?

We extend the literature by studying the relative importance of several key features that contribute to shaping citizens' sharing decisions. We focus on the sharing of political news on Facebook in Norway. To this end, we use a conjoint experimental design where Norwegian internet users are faced with a choice between two news articles on Facebook. We are not aiming to estimate the absolute probability of something getting shared, but focus on the relative importance of different features. These insights should be a useful starting point for future research in terms of explaining why some news are shared, while others are not.

Theoretical Background and Related Research

In prior literature on factors that explain news sharing, at least three different theoretical perspectives can be distinguished (Orellana-Rodriguez and Keane 2018; Vermeer 2021). First, a growing body of literature focuses on the importance of structural factors, or what Vermeer (2021) labels context features. For instance, grounded in credibility theory (Metzger, Flanagin, and Medders 2010) and information processing theory (e.g., Chaiken 1987), studies have focused on how the effects of sources cues and popularity cues influence sharing practises (van Dalen 2023; Xu 2013). A second strand of literature builds on the tradition of studyi research by, amongst others García ng the "worthiness" of different features related to the content that is shared (e.g., Trilling, Tolochko, and Burscher 2017)—labeled content features by Vermeer (2021). A third perspective builds on theories on motivational explanations to news engagement (e.g., Guess et al. 2021; Shin and Thorson 2017) and focuses on how individual differences shape sharing practices—labeled user features by Vermeer (2021). The literature review by Orellana-Rodriguez and Keane (2018) illustrates that it is consistently found that all three groups of features matter for news dissemination. Yet, the question of how these dimensions operate simultaneously in shaping people's news sharing decisions is largely an unsolved puzzle. To address this gap, we build on these three perspectives and, contrary to prior studies, theorize that they matter, to a different extent, in conjunction. More specifically, we assume that users' decisions on whether or not to share a story are multidimensional. This implicates that individuals form their sharing decisions by drawing upon a range of relevant factors, and by evaluating them holistically to form a single choice of sharing the article, or not.

We propose to address this puzzle by studying the relative effect of multiple features within each of the three dimensions. The features we have chosen are

well-established examples of features within each dimension. Although our list of features is not exhaustive, we chose what we based on previous research expect to be among the most relevant features within each dimension. The need to make a selection of features to study is also dictated by the need to create ecologically valid stimuli: Some features cannot be meaningfully combined (e.g., "positivity" and "conflict framing"), and others cannot be manipulated in the stimuli we use (for instance, title and teaser in Norwegian news posts on Facebook just don't include the author of a piece).

Context Features

Prior literature has examined the extent to which the context in which a news item appears shapes people's decision to re-share the news item or not. In this study, we focus on two prominent examples of context features that, from a perspective of information processing theory (Chaiken 1987), can function as heuristic cues to guide people's sharing decisions: *source cues* and *popularity cues*. When encountering news items on social media, in typical instances, the original source is quite prominently shown. The literature on source credibility and news selection assumes that people are more likely to share news stories from sources that are reputed to be more credible compared to the other sources (Xu 2013). Even though different people may evaluate the credibility of the same online source differently (e.g., Metzger, Flanagin, and Medders 2010), arguably, some sources are generally perceived as significantly more credible than others. Hence, we can reasonably expect that source cues *via* their perceived credibility can influence sharing. In line with this argument, an experiment by Bauer and Clemm von Hohenberg (2020) showed that people reported higher sharing intentions if the source cues were well-known sources rather than made-up fictive ones.

Second, Facebook users are constantly provided with metric information about the popularity of the content featured in their news feed. A post's number of likes, shares, and comments all serve as indications, or cues, which can indicate the post's popularity among other users. A common theoretical assumption in prior literature is that such metrics can create a bandwagon effect in which users use such metrics as cues to evaluate the posts' general popularity (Kümpel, Karnowski, and Keyling 2015). Prior studies have found evidence to suggest that users are more likely to share a post if it's deemed popular by other users (e.g., Dvir-Gvirsman 2019; Messing and Westwood 2014; Ohme and Mothes 2020). It is unclear, though, if one metric is more important for users' sharing decisions than others. In this study, we focus on three common metrics: number of shares, likes, and comments.

Content Features

Next, we zoom in on what is actually shared. From a content perspective, especially the growing body of literature on the "shareworthiness" of news provides increasing evidence that (journalistic) news values to at least some extent predict which

stories are shared more often than others on social media (Trilling, Tolochko, and Burscher 2017). Subsequent research by, amongst others García-Perdomo et al. (2018), Brown et al. (2020), Kristensen (2023), Valenzuela et al. (2017), and Wischnewski et al. (2021), showed partly conflicting results on which news values need to be included in a model of shareworthiness, but the general idea that news values influence which articles get shared on social media can be considered as generally supported. Consistent with general principles of how the popular press reaches large audiences, we can reasonably expect that personalization (e.g., an item about an unemployed person rather than about unemployment as an abstract figure) and proximity (e.g., stories about the own rather than a distant country) are important positive predictors of news sharing. Features that are relevant from a shareworthiness perspective are also supported by other streams of literature. Research on commenting – arguably a behavior with a higher threshold than sharing – suggests that indeed the news value of proximity increases engagement, while for other news values, including personalization, this could not be confirmed (Weber 2014). Also negativity and – with less certainty – positivity are considered features that increase shareworthiness (Trilling, Tolochko, and Burscher 2017). But also negativity bias literature and other research on "valence" (e.g., Soroka 2006) has emphasized people's preference for negative news. We hence expect negative stories to be shared most often, positive stories less, and dry, unemotional, stories least.

To summarize, out of the seven news values that Trilling, Tolochko, and Burscher (2017) argue to be part of shareworthiness, in this paper, we consider all that we could practically test: geographical distance, negativity, positivity, human interest framing (which we refer to as "personalization" here). We did not include cultural distance (we have only two countries, which are geographically distant and arguably culturally relatively close), conflict framing (because it would compromise our measurement of attitude congruence (see below)), and exclusiveness (because such cues are not present in isolated Facebook teasers).

In addition, often discussed under the negative umbrella term of "clickbait", the use of linguistic and stylistic devices in headlines and teasers to lure readers into clicking on them (for instance, through building suspense) has become especially important in an online context. It is important to note that clickbaitiness is not about the content or about news values, but about a specific stylistic pattern. News rooms nowadays use so-called A/B testing, the comparison of click-through rates of two different versions of a headline, to determine which attracts the most readers (Hagar and Diakopoulos 2019). Using a wealth of data from a Dutch publisher, Kuiken et al. (2017) show that indeed linguistic cues (such as the use of pronouns or punctuation) can boost what people click on. Haim et al. (2021) confirm that such markers are prevalent in Scandinavian news-related Facebook posts as well. Consequently, we expect clickbaity titles to be shared more; yet, it is important to note that a backfire effect may occur for "too 'clickbaity'" (Lamot and Paulussen 2020, p. 367) titles.[1] Note, again, that this means that we do not systematically investigate which linguistic features exactly are most "clickbaity" – this is a question that can be answered better with A/B testing over a longer time period than with conjoint experiments.

User Features

Not all content, however, resonates in the same way with every user. It is well-known that sociodemographic variables are strongly related to *whether* political news are shared or not. For instance, older users and more politically interested users are more likely to share political news (Guess et al. 2021). Beyond some evidence for an interaction between age and political-ness of content (see also Trilling et al. 2022), prior studies have not examined to what degree, and how, the effects of context and content features more broadly depend on user features such as age and political interest.

An important exception is prior literature on user features related to users' political attitudes, partisanship, and ideology (e.g., Bakshy, Messing, and Adamic 2015; Wojcieszak et al. 2022). We know, for instance, that when users are faced with a choice between sharing information with which they disagree or agree, they tend to exercise a confirmation bias toward attitude-congruent information (Hart et al. 2009; Lodge and Taber 2013; Stroud 2017) and, accordingly, choose to share the information they agree with over the information they disagree with (Arendt, Steindl, and Kümpel 2016; Johannesson and Knudsen 2021; Liang 2018; Shin and Thorson 2017). For instance, news headlines are often framed in such a way that one side of an issue is more prominent than another, and individuals can thus use the framing of a news story's message as a heuristic cue to evaluate to what extent they agree with the content in the news story (Winter, Metzger, and Flanagin 2016). We focus on attitude congruence, that is whether or not users are more likely to share a story with a political message they agree with over a story with a political message they disagree with. Following the literature on selective sharing (Arendt, Steindl, and Kümpel 2016; Johannesson and Knudsen 2021; Liang 2018; Shin and Thorson 2017), we expect that the individual sharer tends to share information with a congruent message.

Research Questions

We have several expectations about which features matter for explaining news sharing on Facebook. For some of them, we have expectations about their direction and/or strength, for others, we are less sure. In accordance with our pre-registration plan (https://osf.io/crqmg), we refrained from posing formal hypotheses because our focus is on the role they play *relative to each other*. Testing separate hypotheses about, say, the direction of individual effects would not serve this goal.

Instead, we pose three overarching research questions[2] that guide our study.

RQ1: What are the directed effects of context features and content features on the likelihood of sharing a news story on Facebook?

RQ2: How predictive are the feature groups relative to each other?

RQ3: To what extent are the effects conditional on user features?

Data and Methods

In a conjoint experiment with Norwegian Internet users, we manipulated content and context features of Facebook's preview of news articles.

We collected the data for this experiment in June 2020 and December 2020 from a probability-based online national survey conducted by the Norwegian Citizen Panel (NCP). The NCP's respondents were gathered through the postal recruitment of 25,000 individuals over 18 years. These individuals were randomly selected for recruitment from Norway's National Registry. The data will be available free of cost for scholars via the Norwegian Social Science Data Archive.

Our data collection was part of a larger time-sharing survey which collects data three times a year. We indicated that we needed at least 2000 observations. To achieve this, we were required to pool observations across waves. In wave 1 ("R18"), 1255 respondents were exposed to the stimuli. Out of those, 1092 evaluated the stimuli. In wave 2 ("R19"), 2022 respondents were exposed to the stimuli, out of which 1839 evaluated them. Among those were 182 who already participated in wave 1, so we excluded their observations from the second wave. This left us with $N_{valid} = 1092 + 1839 - 182 = 2749$ participants. User features (age, gender, political interest, topic attitudes (to calculate congruence)) were then merged in from wave 3 ("R20"), which leads to $N_{complete}$ = 1907 respondents for analyses of age ($N_{<=1959} = 840, N_{1960–1989} = 946, N_{>=1990} = 121$) and gender ($N_{female}$ = 918, N_{male} = 989). Political orientation was provided by $N_{complete}$ = 1700 (N_{left} = 1007, N_{right} = 693) respondents, and politcal interest by $N_{complete}$ = 1895 ($N_{interested}$ = 1154, $N_{lessinterested} = 741$). The effects of all other features are estimated based on N_{valid} = 2749 respondents. Our dichotomous measure of "Congruence" (see below) could by definition not be determined for respondents who reported attitudes directly at the midpoint of the scale, leading to $N_{congruence}$ = 1547 respondents for this specific analysis. Because each respondent evaluated two stimuli, we had N_{valid} = 5498, $N_{complete}$ = 3814, and $N_{congruence}$ = 3094 observations respectively.

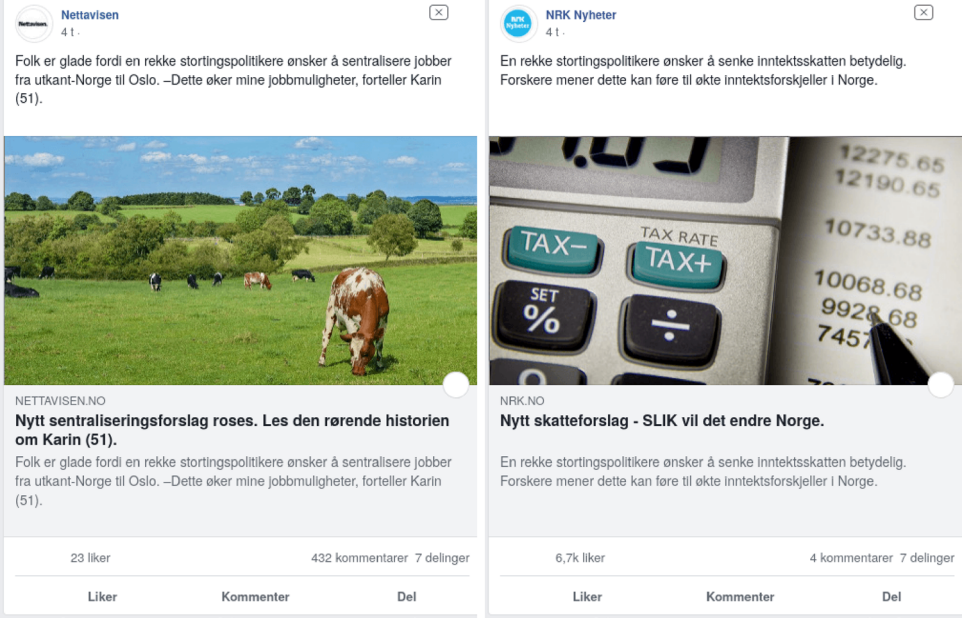

Figure 1. Two screenshots next to each other for participants to choose from.

Procedure, Stimulus Material, and Treatment Conditions

Each participant was asked to rate one pair of news stories, displayed side-by-side, embedded in the survey (see Figure 1). To ensure high external validity, we created the stimuli using Facebook's own template for shared news, so that it looks identical, in terms of layout, to the actual content that people encounter on Facebook.

The stimuli were created by randomly varying the variables that are displayed in Table A1 in the supplementary materials. Each pair of news articles is generated using the logic of the conjoint experimental approach for conducting news headlines (Knudsen and Johannesson 2019; Mukerjee and Yang 2021), using a script that we wrote to automatically generate news articles featuring the Facebook layout. All tools and scripts related to making the stimulus are available at https://doi.org/10.5281/zenodo.8337993. The pool of possible stimuli is accessible at https://doi.org/10.5281/zenodo.8338000.

All combinations of content features were possible. We created 192 stories (48 news stories per topic ×4 topics). These were inserted into templates in which the context features were varied. There are 56 different combinations of context features (again, all combinations were allowed), leading to a pool of 10,752 stimuli that could be randomly drawn for the experiment. Although this could lead respondents to rate quite similar stories from, for instance, different outlets, it is not uncommon for Norwegian news outlets to write similar stories as other outlets, sometimes differing slightly in framing and use of sources—particularly when publishing and sharing news from the Norwegian News Agency (NTB).

Such a large pool of stimuli means that standard procedures of pre-testing all stimuli cannot be applied. Sometimes, large pools of crowd workers are used instead to evaluate the different attributes in a conjoint experimental stimulus (see e.g., Mukerjee and Yang 2021), but these are not available in the Norwegian context. We could benefit here from being embedded in the Norwegian Citizen Panel. As part of their routine, the panel conducted an extensive review using expert feedback as well as think-aloud methods with potential participants to gather qualitative feedback on the question items as well as a selection of the stimuli, based on which we could fine-tune our materials.

In contrast to a typical survey experiment, common practice in conjoint experiments is to allow more unique possible profile combinations than there are observations in the data set. In our case, this means that $\frac{4{,}313}{10{,}752} = 40.1\%$ of the stimuli have been shown to at least one participant at least once. For comparison, this is much more than in a study by Hainmueller and Hopkins (2015), who had a denominator of 900,000 possible stimuli and a number of observations in the same order of magnitude as we did. In conjoint experiments, we do not need to observe all possible combinations to assess the relative treatment effects of each value, as the construction of possible combinations is completely randomized (Hainmueller, Hopkins, and Yamamoto 2014).

Measures

Dependent Variables

We follow the state-of-the-art in conjoint experiments and use two dependent variables. The first is a dichotomous variable forcing the respondents to make a choice between two news items. The second is a scale from one to five for each of the two news items.

DV1: preferred article to share (translated from Norwegian: "Which of these stories would you most likely share on Facebook such that everyone in your network can see it?" [story 1 | story 2]

DV2: likelihood to share (translated from Norwegian: "[On a scale from 1 to 5—On the same scale], how likely is it that you would have shared [Story 1 | Story 2] on Facebook?" [1–5, not likely at all – very likely] (asked for each story separately)

There is a specific reasoning behind our choice to use both a "forced" dichotomous measure and a separate continuous measure per article. It is widely known that most people do *not* share most of the news they encounter on social media. That means that realistically, no matter what stimulus we use, most people would not share it if they encountered it in real life. With the forced choice variable, we want to tap into their relative preference, even if there are external factors that would make them share none of them. With the continuous measure, we want to get closer to their "real" likelihood of sharing it, allowing them to indicate, for instance, that they would share neither of the stories in real life. At the same time, we caution that none of our measures should be used to make absolute statements like "article A has an x % likelihood of being shared on Facebook", as we expect a gap between perception and actual actions in real life.

Independent Variables

The features shown in Table A1 in the online appendix are our independent variables. To measure the credibility of the source, following the pre-analysis plan, we recoded the original sources following the grouping in Table A1. The categorizations were based on each of the outlets' brand trust scores in the Norway chapter on the Reuters Digital News Report 2021 (Moe and Bjørgan 2019). Our rationale behind the selection of specific outlets was to obtain a broad spectrum, ranging from low to high trust, including outlets with a partisan reputation and low-trust alternative sources.

Regarding the popularity cues, we based low and high engagement numbers on our evaluation and reading of the number of shares, likes, and comments that were typical on Facebook in 2019 for the sources we included in our study. We operationalized a low amount of likes as 23 and a high amount of likes as 6.7k. We did not include other so-called "reactions" in this study (i.e., emoticons that allow the user to express other types of reactions than a "like"). We operationalized a high amount of shares as 987 and low amount of shares as 7. We operationalized a high amount of comments as 432 and low amount of comments as 4. In addition, we recoded these treatment variables to separate between low engagement (i.e., 23 likes, 7 shares, and 4 comments), high engagement (i.e., 6.7k likes, 987 shares and 432 comments) or mixed. Liking happens most and commenting least often on Facebook, which is why numbers needed to be in different orders of magnitude to be realistic. As we did not find any statistically significant differences between the high and low engagement in terms of main effects or conditional effects, we do not focus on this recoded variable in the main manuscript.

To measure attitude congruence, we matched the message direction of the news story with the respondents' attitudes. We used four different statements that match the messages in the headlines, measured on a scale from 1 (Strongly disagree) to 7 (Strongly agree). We measured prior attitudes towards climate change related questions (exploring for oil in Northern Norway), a tax related question (reducing income inequalities), centralization (restructuring of municipalities), and attitudes towards refugees. These attitude items was then coded as "attitude congruent" and "attitude incongruent" (binary), based on attitude items collected in the so-called "core rounds" of the Norwegian Citizen Panel (i.e., February 2019, February 2020, and February 2021). In accordance with the preregistration plan, we use these dichotomized indicators, which also aid comparisons with other features. In the supplementary materials, we offer an additional analysis using the full range of the continuous variables.

As studies on shareworthiness often control for a news item's topic (Trilling, Tolochko, and Burscher 2017), all of our independent variables varied across four different topics. The topics (taxes, refugees, administrative centralization, oil and gas extraction) were chosen such that they can apply to both Norway and the Netherlands, and that they map to corresponding attitude questions in the larger panel. Because of the expected stark differences in baseline probabilities, including multiple topics allows us to put the importance of the other features we study into perspective, and to make sure that our findings do not hinge on specific topics only.

Analysis

We have three primary quantities of interest. For all analyses, we correct the standard errors with within-respondent clustering to get unbiased estimates of the variance (Hainmueller, Hopkins, and Yamamoto 2014).

To measure the relative effect of each feature, we estimate the average marginal component effects (AMCEs) (Hainmueller, Hopkins, and Yamamoto 2014). The AMCE shows the average difference in the probability of a story being more or less shareworthy than other stories. Each value for a given feature is compared to the different values for the same feature. In addition to analyses of the dichotomous dependent variable, we also use the dependent variable with a five-point scale as dependent variables to study the relative effects of each feature on how likely respondents are to share a news story.

The second measure is the marginal mean (see Leeper, Hobolt, and Tilley 2020), i.e., the probability of deeming a story shareworthy within each treatment condition, averaged over all other conditions. If the probability of preferring a story within a treatment condition is statistically significantly higher or lower than 50%, then the respondents deemed the story more or less shareworthy, respectively, in that treatment condition. In addition to analyses of the dichotomous dependent variable, we also use the dependent variable with a five-point scale as dependent variables to study how likely respondents are to share a news story. This enable us to not only see which of the features are more or less important for people's sharing decisions, but also to what extent respondents indicate that they would actually share the news stories.

Third, to analyze user features, we analyze conditional marginal means (see Leeper, Hobolt, and Tilley 2020) to study how the feature effects vary by age, gender, and political interest.

Results

Effects of Context Features (RQ1)

Figure 2 shows the main effects of each treatment for both dependent variables (forced choice and rating-based scale) and showing the AMCE and marginal means. For the context features, we find no statically significant main effects of any of the social cues: likes, comments, shares. However, for the source cues, taking the sources categorized under "high trust" as baseline, we observe a statistically significant difference between the baseline and the low trust right-wing hyper partisan source, where the latter is less likely to be shared than the former. Furthermore, indicated by the bottom left panel in Figure 2, the marginal means model shows that the sources categorized as "high trust sources" are more likely to be shared and the source categorized as "low trust hyper partisan source" is less likely to be shared. Note however, given that the likelihood is measured on a scale from one to five, even for the high trust media outlets the likelihood is still quite low (i.e., $MM = 1.6, SE = .04$).

Effects of Content Features (RQ1)

For the content features (i.e., proximity, valence, personalization, and clickbaity title), there are more differences to observe compared to context features. We observe significant differences in the proximity treatment, where close proximity (i.e., Norway) is more likely to be shared than remote proximity (i.e., the Netherlands).

Turning to the valence content feature, we do not identify a negativity bias, as stories featuring a negative valence were not statistically significantly more likely to be shared than positively framed stories. That said, the marginal mean model in the panel in Figure 2 reveals important differences, as it shows that while stories featuring a positive frame is significantly less likely to be shared, the negative stories are not statistically significantly different from the grand mean but the stories that include neither a negative nor a positive frame are significantly more likely to be shared.

For the personalization feature, news articles featuring personalization are—counter to our expectation—*less* likely to be shared compared to stories that do not feature personalization.

We do not identify a statistically significant difference between content that features clickbait and content that does not feature clickbait (at least according to our operationalization of the concept).

In addition, we also observe for our control feature topics that, compared to the topic of centralization, the news articles on the topic of refugees are less likely to be shared. Note also that we observe a different pattern for our two dependent variables (forced choice and rating-based scale), as the tax topic is significantly less likely to be shared with the rating-based dependent

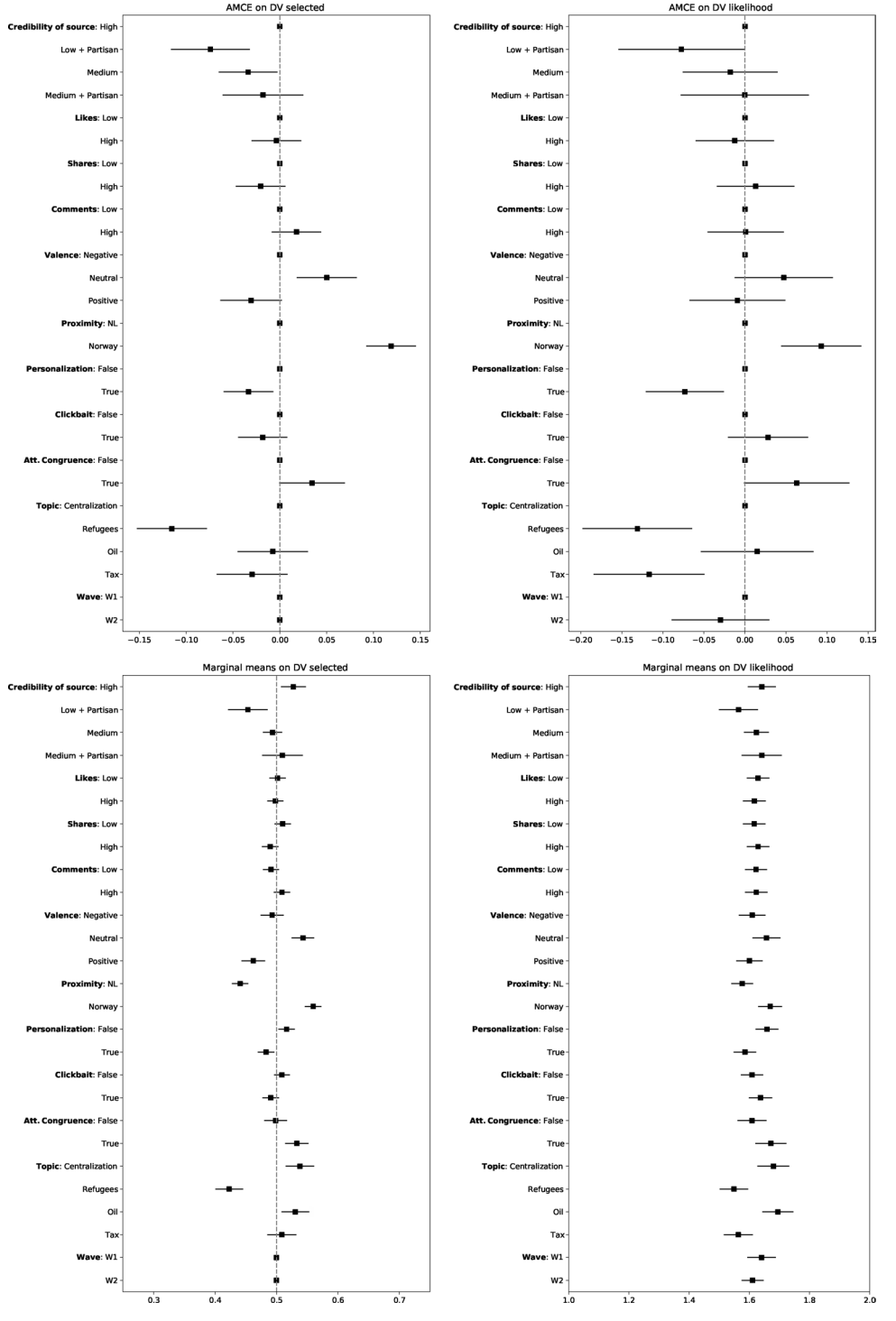

Figure 2. Treatment effects for the forced choice and rating based dependent variables (AMCE and marginal means).

variable, but equally likely to be shared with the forced choice dependent variable.

Relative Effects (RQ2)

We have now discussed the directed effects of the features categorized under context and content. To disentangle and compare the effects of context features from the effects of content, addressing RQ2, we use the AMCE-models in Figure 2 to compare the relative effects of each treatment. Figure 2 shows that the strongest predictor of news sharing, across both the forced choice and rated scale dependent variable, is the content feature proximity and the control feature topic. In both features, the difference between the highest and lowest value is about 12 percentage points. The proximity and topic features are followed by the context feature outlet.

In sum, while we find statistically significant effects of some but not all of the features categorized under context and content, it is the content features that produce the largest effects on news sharing in this study. Note that we only compared the relative effects of context and content features here because, analytically, user features are operationalized as an combination of respondent characteristics and content and context features.

Conditional Effects of User Features (RQ3)

We analyzed user features in two ways. First, we assessed the attitude congruence (between user and content) shown in Figure 2. Second, we assessed conditional effects of age, gender, and political interest in Figures 3–5.

Starting with the effect of congruence, Figure 2 shows that the messages coded as congruent (baseline) were not statistically significantly more likely to be shared than incongruent messages for both the forced choice and rated scale dependent variable. Note, however, that this effect is not robust across measures. In the supplementary materials we show that the difference between the incongruent and congruent messages is statistically significant with the continuous measure. Note also that the marginal mean models for the dichotomous measure (Figure 2) show that although incongruent messages were neither more or less likely to be shared, the congruent message was statistically significantly more likely to be shared compared to the grand mean.

Turning to the conditional effects of the user features age, gender, and political interest, we plotted the marginal means of the forced choice dependent variable by each user feature. Figure 3 shows that the pattern is more or less equal among men and women, but that the effect of some features are statistically significantly different from the grand mean (50%, or 0.50) for one gender and not for the other. For instance, the outlet categorized as "low trust right wing hyperpartisan" is only significantly different from the grand mean among women, although the coefficient point in the same direction among men. In general, the plots look similar and we draw the conclusion that there are no substantive conditional effects of gender.

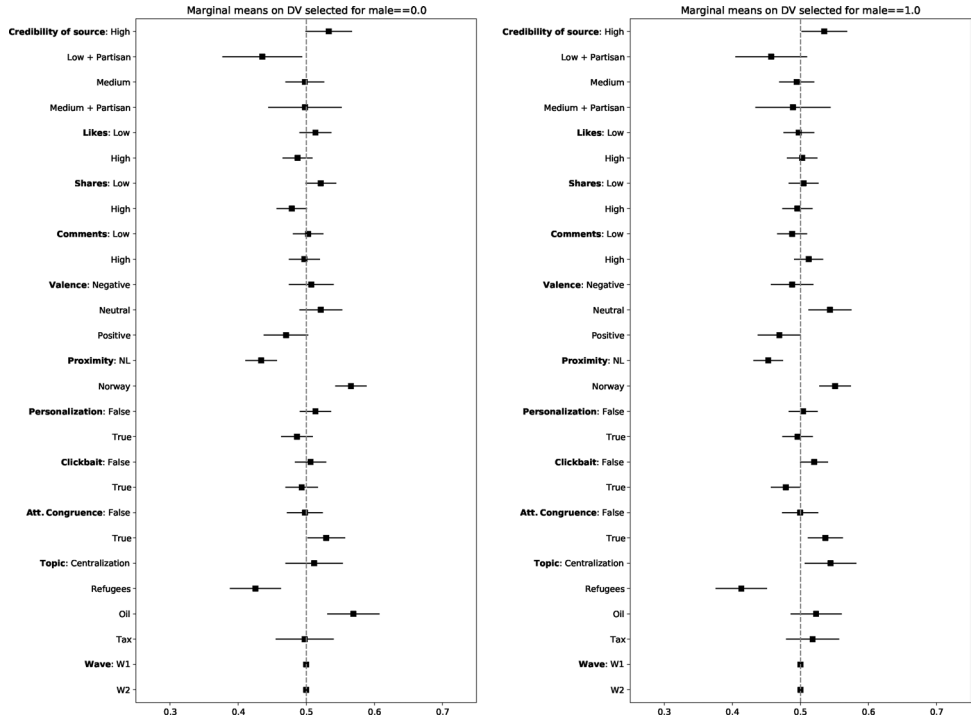

Figure 3. Conditional marginal means (by gender).

We do, however, observe conditional effects of age (Figure 4). Splitting our sample into three age-groups (a compromise between separating between younger and older respondents and not splitting our sample into more than three groups due to statistical power), we see striking differences between the youngest and oldest respondents. We remind the reader that the group of youngest respondents is (in accordance with the demographic composition of the Norwegian population) considerably smaller, and hence the confidence intervals are much larger (see the Method section). While there are no statistically significant differences in the amount of likes a post has received among the age group born in or before 1959 or the age group born in or between 1969 and 1989, we observe a clear and statistically significant difference between a low amount and a high amount of likes among respondents born in or after 1990. We see an opposite pattern for shares, as there are no significant difference between a high or a low amount of shares among the youngest age group, and a statistically significant, and clear, difference between a high and low number of shares among the oldest age group. This suggests that there are important differences between the effects of different source cues, and that these differences have different effects depending on people's age. Note also, that the difference between congruent and incongruent messages is statistically significant among the oldest respondents but not for the two other age groups. This pattern is robust across both the dichotomous and continuous measure of congruence. The difference in a story's proximity is not statically significant for the youngest respondents. Moreover, we only observe a statistically significant positive effect of negative story valence (i.e., negativity bias) among the youngest

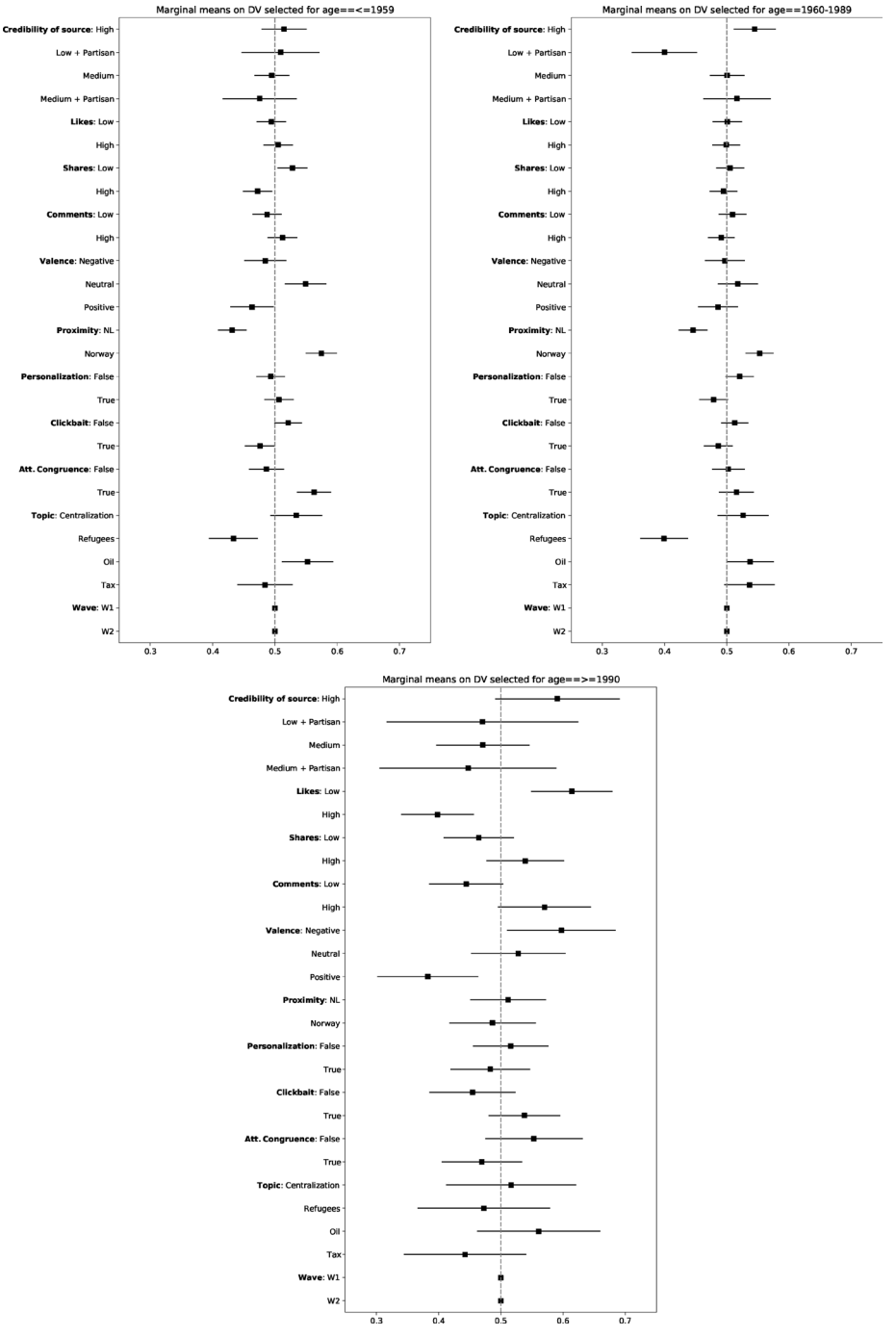

Figure 4. Conditional marginal means (by age).

respondents, and a negative and statistically significant effect of the outlet categorized as "low trust right wing hyperpartisan" among the middle age group. In sum, this suggests that age is an important user feature not only for whether a story

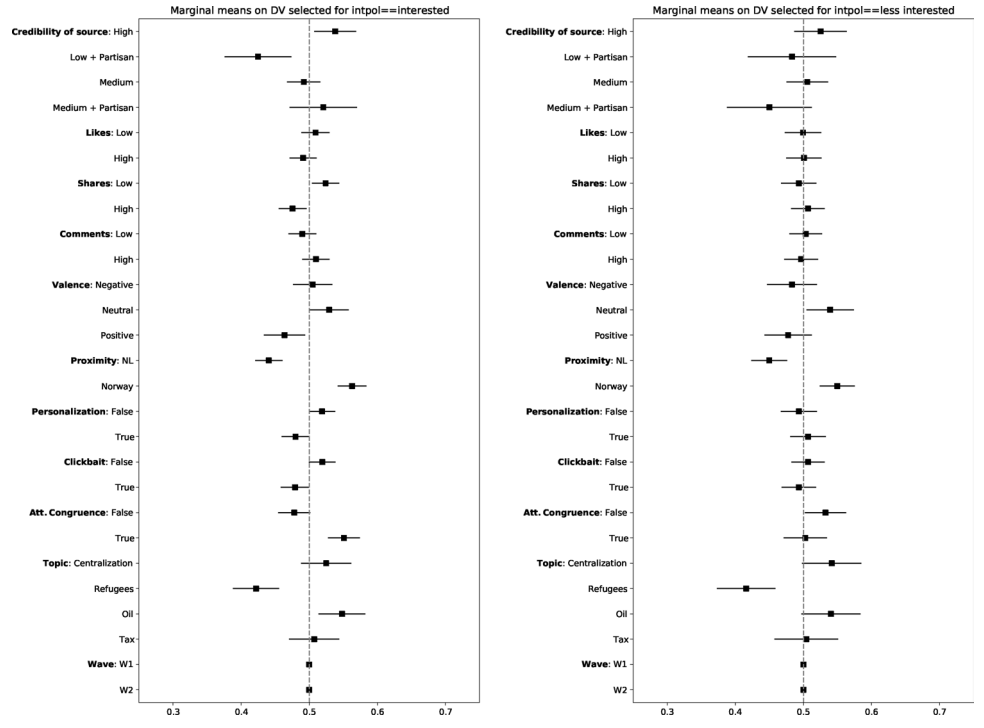

Figure 5. Conditional marginal means (by interest in politics).

gets shared, but also for the degree to which different context and content features matter for the sharing decision.

The conditional effects of interest in politics are displayed in Figure 5. As with the effects of age, we also observe that the effect of congruence is only statistically significant among the politically interested (regardless of which congruence measure we use). Moreover, the difference between the "high trust" outlets and the "low trust right wing hyperpartisan" outlet, is only statistically significant among the politically interested. We also observe that the social cue of amount of shares is only significant for the politically interested.

Discussion

This study contributes to the growing literature on the predictors of news sharing on social media by demonstrating how context features, content features, and user features both individually and in conjunction influence the likelihood that a political news story is shared on Facebook.

Our findings suggest that context, content, and user features all influence the likelihood that a news story is shared—not only in isolation but also when presented to users in conjunction. In line with prior literature on source cues and the importance of source credibility for news engagement (e.g., Metzger, Flanagin, and Medders 2010), we find that sources Norwegians typically regard in high esteem are more likely to

be shared than a hyperpartisan source by the general public. This finding also contributes an important nuance to prior studies showing that, at least in Norway, hyperpartisan sources rank high among the most shared stories (Kalsnes and Larsson 2021). Although news stories among the hyperpartisan news sites are the most shared, the hyperpartisan source itself is a predictor of an opposite pattern among the general public.

When comparing the relative effects of content and context features, we also find that the proximity feature (together with the control feature topic), categorized under content features, stand out as the most important feature for predicting news sharing. This is in line with prior literature on shareworthiness of news (e.g., García-Perdomo et al. 2018; Trilling, Tolochko, and Burscher 2017) as the proximity of an event is a predictor of which news are deemed newsworthy by journalistic professionals, and which news articles are deemed shareworthy by social media users.

We did not replicate *all* of the directed significant effects of the predictors identified in prior studies of shareworthiness.

In contrast to the literature on social cues (e.g., Haim, Kümpel, and Brosius 2018; Kümpel, Karnowski, and Keyling 2015), we find no main effects of the amount of the social cues "likes", "comments", or "shares" on Facebook, neither combined (i.e., low vs. high) nor as separate effects (but see Mukerjee and Yang (2021) for a similar finding). However, we do find heterogeneous effects of age, as the number or likes seem important for younger respondents, and the number of shares seem important for older respondents in terms of the decision to share the news post. On the one hand, these findings complicate the picture of how Facebook's technological affordances shape sharing behavior, as different social cues seems to have different effects depending on an individual's age. Different age groups may thus use social media not only in a different quantity (e.g., Andersen et al. 2020), but also qualitatively differently. On the other hand, these findings add nuance to the often-voiced argument that social cues lead to a self-reinforcing feedback loop, in which what is popular becomes even more popular because more people share it. It is, of course, still possible (even likely!) that such an amplification happens as the cues are used as an input feature in some algorithmic recommendation system. But at least our study suggests that individuals do not, in general, seem to additionally accelerate this process by re-sharing what is already (indicated as) popular.

Contrary to the growing literature of "selective sharing" (Johannesson and Knudsen 2021; Liang 2018; Shin and Thorson 2017), we do not find a statistically significant difference between attitude incongruent and attitude congruent content for our dichotomous measure of attitude consistency. That said, the direction of the difference is in the expected direction and the difference is statistically significant if we instead use a continuous measure of attitude consistency. One possible reason for the lack of robust effects across measures is that the continuous measure of attitude consistency is approximately normally distributed with a substantial proportion of respondents close to the center value. As pointed out by e.g., Knobloch-Westerwick et al. (2005), preferences for attitude congruent information is likely to intensify depending on the strength of one's attitude—a nuance that could easily be lost with a dichotomous measure. In line with the argument by Prior (2013) that one-sided news consumption is especially pronounced among those highly interested in political

news, we do find clear differences in the effects of the congruence user feature—regardless of which congruence measure we use—for those who are interested in politics and no significant difference for those who are less interested in politics.

In this regard, it is also important to discuss the generalizability of such findings across countries. We opted to study a country with high trust in journalism, high news usage, and little polarization. This is quite on the other end of the spectrum compared to highly polarized media systems, in which selective exposure research is often conducted. We may hypothesize that congruence may play a greater role in more polarized media systems.

Limitations and Future Research Directions

We studied the role of user, content, and context features in news sharing. Yet, Trilling et al. (2022) argue that a "fourth important group are network features, such as ties between users" (p. 3). While some regard follower- and followee-structures as user features (e.g., Orellana-Rodriguez and Keane 2018, p. 82), one can also argue that network features, which focus on *relations* between entities, are a separate category. Such nuances are not captured by the current study.

Some more specific limitations of the present study should also be noted. First, while the stimulus material we used in this study comes close to the look and feel of actual news posts on Facebook, was fielded in a probability-based survey panel, and used stimuli inspired by Norwegian news stories, the news stories we present to the users were not real. We needed to be able manipulate the content features, and aimed at striking a compromise between manipulating content features and enhancing the ecological validity of content presented to the respondents. We cannot rule out that this choice influenced respondents' perceived likelihood to share the story, if it had been in an even more authentic setting. In addition, although we piloted and made changes to our study based on the feedback from the Norwegian Citizens Panel's rigorous pilot services, we were not able to systematically pretest the stimulus. After all, because we aimed to study the relative effects context, content, and user features, and thus opted for a conjoint experiment, our stimulus amounted to a pool of 10,752 Facebook posts. This also means that we cannot exclude the possibility that some of our stimulus and operationalizations were more realistic and successfully reflected than others, and that this again affected the results. Similarly, because of the number of variables that we manipulated, and because of the strictly limited number of questions one can include in a large time-sharing panel, we could not include formal manipulation checks. This means that some alternative explanations, for example that incongruent items may not have been perceived as incongruent, cannot be fully excluded.

This study addresses Internet users' decisions to share a news post to their entire Facebook network. However, Facebook users also share news and other content in private message groups, Facebook groups or in other ways that does not entail sharing with *everyone* in ones network. Future work should study how context, content, and user features influences decisions to share with different types of networks, and in open or closed groups. Moreover, our sample included respondents with different

sharing practises, ranging from respondents who often share news on Facebook to respondents who never share news on Facebook or did not have a Facebook account. In the supplementary materials, we analyze to what extent our results are robust if we restrict the analysis to respondents that self-report that they share news on Facebook, finding that the effects of proximity, personalization, topic, and source cues are replicated among those who at least occasionally share news on Facebook. However, as we were only able to collect this self-report data for the respondents who participated in our first round of data collection, we only have sufficient statistical power to capture medium to large effects. This also means that we cannot meaningfully study whether the conditional effects of age and political interest are robust if we restrict the analysis to news sharers. Future work should seek to test to what extent the effects of different features on sharing behavior are conditional on people's sharing practices through self-report measures and digital trace data. Relatedly, effects could be contingent on an interaction between individual and context factors that we did not study, such as individual trust in different outlets. While it is fair to say that some outlets are generally considered more trustworthy than others by large parts of the population, it has also been shown that especially in the context of extreme content and extreme partisans, trust in specific outlets varies and influences sharing (Hopp, Ferrucci, and Vargo 2020). For such groups, our results may not hold.

Our findings illustrate the need for shareworthiness research to move beyond focusing on mainly content, and to some extent, context features. This is partly caused by the limited availability of data from social media platforms. Data that are available are usually limited to aggregate-level statistics and do not include any user features – yet, as we have seen, many effects are conditional on user features. On the other hand, also experiments are no cure for all of these issues: Even though our conjoint design tried to enhance ecological validity, the data are still collected in an artificial setting with artificial stimuli. A promising way forward could be so-called data donations: by asking respondents to share a subset of their own social-media or web-browsing data with the researchers, it is possible to combine survey questionnaire data (including experiments) with real-life traces of their online behaviour (see, e.g., the toolkit developed by Araujo et al. 2022).

All in all, we believe that our theoretical contribution to conceptualize news sharing as multidimensional decision making can provide a useful starting point for future research and theorizing of news sharing that takes multiple groups of features (e.g., user, content, and context) into account. We also believe that our results can be of relevance for journalism practice in terms of understanding why some political news gets shared, while others do not, as we illustrate how news sharing is not guided by one, or just a few factors, but by multiple features in conjunction.

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Notes

1. To combat this, we operationalized clickbait such that it is likely to increase engagement. For instance, a too clickbaity title would likely be easily recognizable, such as "You would not believe (…)". In our operationalization of the term, however, a typical example would be "Read the story about (…)" or "This is how you will be affected by the new proposal to (…)".
2. Note that the formulation of the RQs differs slightly from the formulation we chose in the preregistration because the original formulation suggested a level of accuracy that our data cannot provide.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

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