# Disentangling the Influence of Recommender Attributes and News-Story Attributes: A Conjoint Experiment on Exposure and Sharing Decisions on Social Networking Sites

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ORIGINAL ARTICLE

# Disentangling the Influence of Recommender Attributes and News-Story Attributes: A Conjoint Experiment on Exposure and Sharing Decisions on Social Networking Sites

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**ABSTRACT**

While news outlets still play an important role as a source of news, people increasingly receive their political information and news from social networking sites (SNSs). This study extends the literature on exposure and sharing decisions on SNSs by exploring how different attributes shape such decisions, how the two decision types differ, and by disentangling the role played by personal news recommendations and shared news stories on SNSs. As SNSs add a social dimension, exposure and sharing decisions are contingent not only upon the news story itself (news-story attributes) but also upon characteristics of the person who shares the story (recommender attributes). We designed a conjoint experiment to disentangle the effects of recommender and news-story attributes on the decision to recommend and read news and fielded it in a probability-based Norwegian online survey. The results suggest that committing to reading and sharing information are two similar yet distinct phenomena and that selective sharing is a stronger commitment than selective exposure. We also found evidence to suggest that selective sharing of news featuring a favored political party was contingent upon whether one also received information about the recommender attributes.

## Introduction

Although news outlets still play a significant role as a source of news, citizens' news exposure is increasingly shaped by what others share on social media. With SNSs, audiences are not only being exposed to news in new ways; they can also influence what other people read on social media sites (Kaiser, Keller, and Kleinen-von Königslöw 2018)

by engaging in gatekeeping decisions (Arendt, Steindl, and Kümpel 2016). This means that ordinary people who do not practice professional journalism have the opportunity to serve as gatekeepers for their followers and friends on SNSs as they can pass along information to their social media friends, acquaintances, and followers (Kümpel, Karnowski, and Keyling 2015). These developments give people new opportunities to select information in line with their political preferences—a phenomenon known as *selective exposure* (Knobloch-Westerwick 2015; Stroud 2011; Arceneaux and Johnson 2013). As with exposure decisions, people's sharing behavior can also be influenced by their prior beliefs and political preferences (Arendt, Steindl, and Kümpel 2016).

Because citizens are increasingly reliant on news recommendations and social endorsements by friends and acquaintances on SNSs, the characteristics of individuals who share news stories (herein called *recommenders*) also play a role in individuals' news selection decisions (Turcotte et al. 2015; Kaiser, Keller, and Kleinen-von Königslöw 2018). For example, prior research has found that audiences are more likely to select news for further reading in social media if it is recommended by a close friend, the recommender is politically knowledgeable, and the recommender and the user agree politically (Kaiser, Keller, and Kleinen-von Königslöw 2018).

However, largely missing from the body of work on news-selection decisions on SNSs is experimental evidence that can, on the one hand, help us understand, disentangle, and compare the role played by the characteristics of recommenders of news stories in social media (i.e., recommender attributes) from the role played by the characteristics of the shared news stories users come across on SNSs (i.e., news-story attributes). As yet, we do not know how the attributes of recommender influence, either separately or in combination with the attributes of shared news stories, selective exposure, and selective sharing decisions. This means that we do not know how selective exposure or sharing depends on the characteristics of those who endorse the information. On the other hand, there are many reasons that may shape readers' decisions to read or share a news story on SNSs. Most studies have focused on isolating the effects of a few reasons for such decisions; therefore, we lack analyses of the extent to which sharing decisions and exposure decisions differ when readers' exposure and sharing decisions are understood as involving trade-offs between a multitude of different reasons and motivations. Specifically, we lack analyses of the causal treatment effects of several attributes that may simultaneously shape the decision to recommend or read a news article on SNSs.

Following the lead of the growing literature on news recommenders and news selection decisions (Turcotte et al. 2015; Kaiser, Keller, and Kleinen-von Königslöw 2018; Anspach 2017; Bakshy, Messing, and Adamic 2015), this study explores the differences between reading decisions and sharing decisions and investigates the moderating effects of several recommender attributes on *selective exposure* and *selective sharing* of political news on social media. We contribute with a conjoint experiment that is designed to separate sharing decisions from reading decisions, as well as to separate the causal treatment effects of news-story attributes from those of recommender attributes. This enables an analysis of not only the relative effect of different attributes on exposure and sharing decisions but also the moderating effect of recommender attributes on such decisions.

## Differences between Exposure and Sharing Decisions on SNSs

News exposure and sharing decisions on SNSs are often social decisions. For instance, if an individual on Facebook shares a news story with her contacts on that SNS, these contacts are likely to come across this shared news story in their own Facebook feed. A key theoretical and empirical argument of this article is that individuals who recommend news on SNSs, what we call *recommenders*, provide information that can influence SNS users' decisions about whether to read or share (political) content they come across in their SNS news feeds. Knowledge about recommenders *and* the content they share together constitute several separate pieces of information that can affect the decision to read or share content on SNSs. We call these pieces of information *attributes*. Crucially, the influence of *recommenders' attributes is potentially distinct* from the influence of the *attributes of the content* that recommenders share.

We focus on how different attributes shape users' decisions to either read or recommend news stories they come across on SNSs through a contact's recommendation. However, exposure and sharing decisions are conceptually distinct (Weeks and Holbert 2013; Shin and Thorson 2017), have different causes (Liang 2018), and may thus also be influenced, to a different extent, by various attributes. On the one hand, for exposure decisions, a large body of literature (e.g., Knobloch-Westerwick and Meng 2009; Messing and Westwood 2014; Winter, Metzger, and Flanagin 2016) contains knowledge on how heuristic cues (Chaiken 1987; Lodge and Taber 2013)—that is, information shortcuts that guide users' decisions to read—influence exposure decisions. The core theoretical assumption is that people tend to process information heuristically and depend on different cues as mental shortcuts when they make news-exposure decisions. On the other hand, while sharing decisions may also be influenced by heuristic cues, it is reasonable to assume that sharing decisions can also be done consciously (i.e., invoked by System 2 rather than System 1—see Lodge and Taber 2013) and, thus, be less influenced by heuristic cues. While we do not aim to empirically and causally distinguish between conscious or unconscious decision-making in this study, we aim to shed light on the attributes people deem important for their news-recommending and news-reading decisions on SNSs. Because exposure and sharing decisions may have different causes in terms of conscious or unconscious decision-making, we focus on attributes rather than cues in order to compare the two selection decisions. To do so, we make the theoretical assumption that news-story and recommender attributes can reveal the underlying preferences for sharing and reading news on SNSs, making it possible to compare the two decisions. As noted by Hainmueller, Hopkins, and Yamamoto (2014), when using the method we apply in this study (i.e., a conjoint design), causal effects of multiple attributes of decisions (such as sharing and reading behavior) can be revealed through stated preferences, regardless of the underlying behavioral model.

Compared to reading news on SNSs, the decision to share information also means that other people in one's social network can view, comment on, react to (e.g., like), criticize, and spread the content to their own social network. This means that the decision to share information has a social dimension, while reading does not (or at least to a lesser extent). This may mean that even if people use similar information to inform their decision to share or read news, the threshold for sharing information is

higher than the decision to expose oneself to information on SNSs. This, again, might mean that the effects of relevant attributes on recommending information are stronger or weaker than on reading information. Because we lack prior knowledge that can help formulate formal hypotheses on the expected difference between news-reading and news-sharing decisions, we instead formulate research questions that address possible differences in the effects of news-story and recommender attributes on reading decisions versus sharing decisions. In the following, we first review two important news-story attributes and then four important recommender attributes that have all been found to shape news-story selection in prior studies.

## The Role of News-Story Attributes

A range of reasons explain why individuals choose or choose not to read or recommend a news article, such as the "shareworthiness" of a news story (Trilling, Tolochko, and Burscher 2017). We focus on two central news-story attributes that are particularly prominent predictors of news selection decisions in the selective exposure and sharing literature: *attitude alignment* and *party favorability*. We also include a third news-story attribute—*theme*—in our study to increase the realism of the news story description and account for masking effects.

When faced with a choice between reading or recommending information with which one disagrees or agrees, individuals tend to choose the latter over the former, exercising a confirmation bias toward attitude-consistent information (Hart et al. 2009; Stroud 2017; Lodge and Taber 2013). Such biased selection behavior is often explained by the theory of cognitive dissonance (Festinger 1954), that is, that people seek to reduce exposure to attitude-inconsistent information and increase exposure to attitude-consistent information. Although exposure and sharing decisions are conceptually distinct and have different causes (Liang 2018), people also tend to refrain from sharing content with which they disagree (Arendt, Steindl, and Kümpel 2016; Shin and Thorson 2017). When people do share information they disagree with, the objective is not necessarily to recommend the content but rather to provide nuances or criticize the shared content through commenting (Anspach 2017). However, in this article, we restrict our understanding of sharing behavior to individuals' acts of recommending information.

*Message alignment* describes individuals' preferences for attitude-consistent over attitude-inconsistent information. News headlines are often framed in such a way that one side of an issue is more prominent than another, and people often use such message-alignment information when they make news-selection decisions (see Knobloch-Westerwick and Meng 2009; Winter, Metzger, and Flanagin 2016). Based on the large body of evidence from the literature on selective exposure, we expect people to prefer to read recommended news that features information with which they predominantly agree rather than disagree. Turning to selective sharing, prior studies have also indicated that people tend to share like-minded content (Bigman et al. 2019; Liang 2018; Coppini et al. 2017). However, as argued by Bigman et al. (2019), some might be reluctant to share a like-minded message for fear of social repercussions if they feel the message goes against the perceived prevailing sentiment of their SNS. Thus, while we

also expect people to prefer to recommend news that features information with which they predominantly agree, we do not know whether the effects of attitude-alignment are stronger for the decision to recommend news than to read news. This leads us to formulate this research question:

> *RQ1:* To what extent, if any, do differences exist in effect sizes of how important attitude alignment is for the decision to read vs. recommend news on SNSs?

*Party favorability* as a news-story attribute refers to systematic biases in people's selection of news stories that favor a party or candidate that they like over one they dislike (e.g., Iyengar et al. 2008; Meffert and Gschwend 2012). Political news usually involves one or more politicians, party leaders, specific parties, or representatives from political parties, and a considerable body of literature (e.g., Bolsen, Druckman, and Cook 2014; Cohen 2003; Slothuus and De Vreese 2010; Iyengar and Westwood 2015) demonstrates that individuals use such information about parties to filter political information. A similar pattern has been found for people's sharing behavior on SNSs (Shin and Thorson 2017; Barberá et al. 2015; An et al. 2014). This leads us to assume that people's opinions about political parties in recommended news stories affect their likelihood of selecting such stories to recommend or read on SNSs. Thus, we assume that people are both more likely to read and recommend news that features a party they like rather dislike. However, we do not know whether the effects of party favorability are stronger for the decision to recommend news than to read it. This leads us to formulate this research question:

> *RQ2:* To what extent, if any, do differences exist in effect sizes of how important party favorability is for the decision to read vs. recommend news on SNSs?

## The Role of Recommender Attributes

While news-story attributes provide users with information about the content itself, individuals' friends and acquaintances who share news on SNSs provide additional information that may aid in the selection decisions. Importantly, Kaiser, Keller, and Kleinen-von Königslöw (2018) provide evidence to suggest that users who encounter shared and endorsed news on SNSs may form opinions about such shared content based on who the recommenders are and their relationship to the recommender. Users may also consider the recommenders' intentions for sharing the information when they decide whether to read and/or recommend the shared content. We refer to such information as *recommender attributes*. Particularly, we focus on four different recommender attributes that prior literature has found to be influential on news-selection decisions on SNSs: the strength of the friendship tie with the recommender, the political knowledge of the recommender, the popularity of the recommender, and the recommender's party preference. In addition to these attributes, we also study the effects of the recommender's language skills, gender, and religious affiliation to avoid masking effects  and to provide a more complete profile of a recommender to increase the realism for the respondents in our study. To be clear, our claim is not that these attributes constitute a complete set of characteristics of recommender

profiles but rather that the attributes we include mirror a wide set of characteristics of recommenders on SNSs and in the academic literature.

Starting with research on the strength on SNSs, prior literature has demonstrated that the tie strength between the user and recommender is an important recommender attribute in terms of shaping users' exposure decisions. People's connections on SNSs, such as "friends" on Facebook, consist of a variety of different types of relationships, stretching from close friends and family to co-workers and distant relations. This means that SNS connections consist of both strong and weak ties (Granovetter 1977). While weak ties on SNSs have the potential to offer information that the user would otherwise not be likely to happen upon (Bakshy et al. 2012), strong ties seem to be more influential in terms of selection behavior on SNSs (Bond et al. 2012; Valenzuela, Correa, and Gil de Zuniga 2018). This is further suggested by evidence from an experiment on incidental news exposure on Facebook, showing that Facebook users are more likely to read articles recommended by strong ties than by weak ones (Kaiser, Keller, and Kleinen-von Königslöw 2018). While we assume that people prefer to both read and recommend news stories recommended by strong ties over those recommended by weak ties, we do not know whether there is a difference in effect sizes between the decision to recommend and the decision to read a news story. Consequently, we pose the following research question:

> **RQ3:** To what extent, if any, do differences exist in effect sizes of how important strong ties are for the decision to read vs. recommend news on SNSs?

Building on the information utility approach (Atkin 1973), Kaiser, Keller, and Kleinen-von Königslöw (2018) argue that people are more likely to read news that is recommended by someone who provides users with useful information and has relevant expertise (Metzger and Flanagin 2013). Several studies have also demonstrated that news recommendations from opinion leaders influence news selection behavior on SNSs (Turcotte et al. 2015; Anspach 2017). This means that attributes pertaining to a recommender's expertise and utility, such as political knowledge and language skills, should influence selection behavior. We assume that people prefer to read and recommend news stories that are recommended by politically knowledgeable contacts. Thus, we ask the following research question:

> **RQ4:** To what extent, if any, do differences exist in effect sizes of how important politically knowledgeable contacts are for the decision to read vs. recommend news on SNSs?

The number of social endorsements from others on SNSs is another important attribute that several studies have found to serve as a heuristic cue that signals the utility of a recommended news story. If many users find a news story valuable enough to be endorsed, it is more likely that users will expect the shared news stories to be useful (Atkin 1973; Knobloch-Westerwick et al. 2005; Messing and Westwood 2014; Winter, Metzger, and Flanagin 2016). Such social endorsements have been found to increase the likelihood that the recommended news stories will be selected for further reading by users (Winter, Metzger, and Flanagin 2016; Messing and Westwood 2014). We assume that people prefer to read and recommend news stories recommended by contacts who are popular (i.e., operationalized as others often sharing their recommended content) on SNSs. Therefore, we ask the following research question:

**RQ5:** To what extent, if any, do differences exist in effect sizes of how important a recommender's popularity on SNSs is for the decision to read vs. recommend news on SNSs?

Party favorability is not only an important attribute in terms of reading and recommending news stories that mention political parties but also in terms of the recommender's party preference. For instance, Kaiser, Keller, and Kleinen-von Königslöw (2018) provided evidence to suggest that political similarity between the recommender and the user—when the recommender was politically knowledgeable—increased the chance of exposure to recommended news. We assume that people prefer to read and recommend news stories recommended by a contact who prefers a party they like. Thus, we posit the following research question:

**RQ6:** To what extent, if any, do differences exist in effect sizes of how important the recommender's party preference is for the decision to read vs. recommend news on SNS?

## The Influence of Recommender Attributes on News-Story Attributes

So far, we have discussed how we separately expect news-story attributes and recommender attributes to influence news reading vs. recommending decisions. On online news sites, users are likely to come across news stories without encountering the news recommender attributes discussed above. However, on SNSs, users are likely to come across the identity of the news recommenders as well (e.g., news stories that are shared by friends and acquaintances on SNSs rather than by the Facebook page of an online news site). In other words, users are likely to be presented with both news-story attributes and recommender attributes simultaneously on SNSs. Do recommender attributes influence the effects of news-story attributes? A growing body of literature has explored the conditions under which people selectively expose themselves to or share news (e.g., Messing and Westwood 2014; Winter, Metzger, and Flanagin 2016). No prior study, however, has provided evidence on the extent to which recommender attributes influence the effects of news-story attributes.

Our theoretical argument for why information about the recommender could alter the effects of news-story attributes on exposure and sharing decisions builds on the assumption that a news story's perceived utility can be a more influential attribute than the message alignment or party favorability of a news story (Atkin 1973; Messing and Westwood 2014)—at least for exposure decisions. In other words, knowledge about the recommender may include more decision-relevant information and hence override the effect of knowledge about the news stories. For instance, Messing and Westwood (2014) provided evidence from two experiments showing that social endorsements (from unknown recommenders), operationalized as the number of recommendations a headline had received from politically heterogeneous individuals on SNSs, overrode selective exposure to like-minded news sources. That said, Winter, Metzger, and Flanagin (2016) found no effects of the number of likes on selective exposure to like-minded news-story messages. Alternatively, knowledge about the recommender may alter the weight put on certain news-story attributes by implicitly increasing their information utility. For instance, receiving information that the recommender is politically knowledgeable could indicate that a political news story is likely

to be useful (Kaiser, Keller, and Kleinen-von Königslöw 2018), regardless of the message's political alignment or whether the featured party is favored.

Limited evidence exists regarding how recommender attributes (from known recommenders) influence exposure and sharing decisions as the literature on the effects of social endorsements on selective exposure has provided mixed results so far. Since we here include a range of recommender attributes rather than one or two, we formulate two research questions:

*RQ7:* To what extent and how do recommender attributes moderate the effects of news-story message alignment on exposure and sharing decisions?

*RQ8:* To what extent and how do recommender attributes moderate the effects of news-story party-favorability effects on exposure and sharing decisions?

## Method

To answer these research questions, we employ a conjoint experimental study fielded in an online panel that is nationally representative ($N = 3,860$). Below, we detail our data, experimental design, and analytical approach.

### Data

The experiment ($N = 3,860$) was fielded in wave eight of the Norwegian Citizen Panel (NCP), which ran from May 11 to June 6, 2017. The NCP is a probability-based, nationally representative online survey panel. Participants were invited to two surveys a year and recruited in three waves of postal recruitments (25,000 invitees in waves 1 and 3; 22,000 in wave 8). The participants were randomly selected for recruitment from Norway's National Registry—a list of all individuals who either are or have been residents of Norway, maintained by the official Tax Administration. This means that the entire Norwegian population had an equal and known probability of being invited. The recruitment rates for those invited were high—20%, 23%, and 20%, respectively. For more details about response rates or other methodological matters, we refer the reader to the NCP methodology report (Skjervheim, Høgestøl, and Bjørnebekk 2017). Our experiment was fielded to a random subsample of 60% of all respondents participating in survey wave 8 (which had 6,087 responses in total). Table 1 shows descriptive statistics of this subsample.

### The Experimental Design: A Choice-Based Conjoint Experiment

Conjoint experiments are particularly well-suited for studying the causal effects of multiple independent variables and comparing the causal treatment effects of several attributes simultaneously (Knudsen and Johannesson 2019). While conjoint experiments have been used in different disciplines for decades, they have experienced a renaissance ever since Hainmueller, Hopkins, and Yamamoto (2014) argued for their application to political science and causal analyses. Their popularity has also grown in

**Table 1.** Descriptive statistics of the sample.

| Variable | Value | N | % |
| --- | --- | --- | --- |
| Age | 18–25 yrs | 305 | 8 |
| Age | 26–35 yrs | 515 | 13 |
| Age | 36–45 yrs | 586 | 15 |
| Age | 46–55 yrs | 755 | 20 |
| Age | 56–65 yrs | 850 | 22 |
| Age | 66–75 yrs | 672 | 17 |
| Age | 76 yrs or more | 177 | 5 |
| Gender | Female | 1,962 | 51 |
| Gender | Male | 1,898 | 49 |
| Education | Higher (college degree or higher) | 2,016 | 54 |
| Education | None or intermediate | 1,713 | 46 |

communication science ever since their benefits for causal analyses were introduced to political communication research (Knudsen and Johannesson 2019).

We use a full factorial conjoint design—or what Hainmueller, Hopkins, and Yamamoto (2014) describe as a typical choice-based conjoint design, where the stimulus consists of a two-column table showing two different profiles in which the rows describe different attributes of the profiles. The experimental design in this study is illustrated in Figure 1(a–d). We asked 3,860 Norwegian citizens to choose between two hypothetical social-media-network profiles. These profiles randomly varied regarding attributes that described the recommender (seven attributes; see Figure 1(a)) and attributes that described the recommenders' 10 last shared news stories (three attributes; see Figure 1(b)). The recommender attributes were tie (strong/weak), gender, language skills, political knowledge, popularity on social media (whether many or few share the persons' posts), religious affiliation, and the recommenders' party preference. The news-story attributes were message alignment (counter-attitudinal, balanced, or pro-attitudinal), party favorability, and issue (five issues). The list of all possible attributes and values and the exact wording shown and explained to the respondents (translated from Norwegian) are displayed in Figure 1(f). Importantly, each attribute can take several values, and the two profiles are randomly generated. The order of attributes is randomized as well. For the recommender attributes, 1,296 possible profiles could be created. For the news-story attributes, 135 possible profiles could be created. While the possible profile combinations far exceed the profiles presented to our respondents, it is, as argued by Hainmueller, Hopkins, and Yamamoto (2014), common practice in conjoint experiments to allow more possible profile combinations than there are observations in the data set, although only a small part of the possible profiles is ever observed. Hainmueller, Hopkins, and Yamamoto (2014) demonstrate that 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.

The effects of party favorability, for both the party in the news stories and recommender's party preference, were measured by matching the party treatment(s) shown in the conjoint design (the table of profiles; see Figure 1) to measures of whether the respondents liked or disliked that party. For the like/dislike measure for each party, the respondents reported, on a seven-point scale, how much they liked or disliked each of the nine major Norwegian parties from (1) *strongly dislike* to (7) *strongly like*.
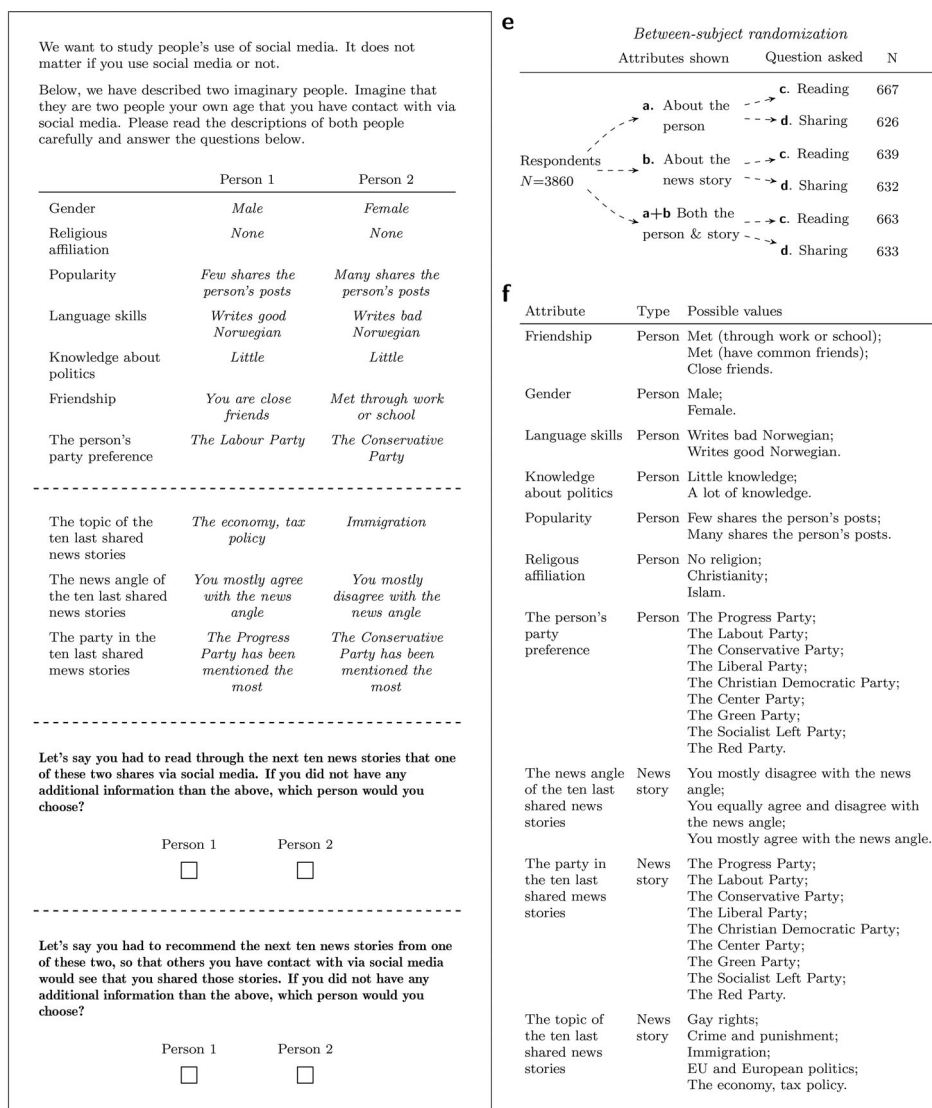
We want to study people's use of social media. It does not matter if you use social media or not.

Below, we have described two imaginary people. Imagine that they are two people your own age that you have contact with via social media. Please read the descriptions of both people carefully and answer the questions below.

**a**

|  | Person 1 | Person 2 |
|---|---|---|
| Gender | Male | Female |
| Religious affiliation | None | None |
| Popularity | Few shares the person's posts | Many shares the person's posts |
| Language skills | Writes good Norwegian | Writes bad Norwegian |
| Knowledge about politics | Little | Little |
| Friendship | You are close friends | Met through work or school |
| The person's party preference | The Labour Party | The Conservative Party |

**b**

| The topic of the ten last news stories | The economy, tax policy | Immigration |
|---|---|---|
| The news angle of the ten last shared news stories | You mostly agree with the news angle | You mostly disagree with the news angle |
| The party in the ten last shared mews stories | The Progress Party has been mentioned the most | The Conservative Party has been mentioned the most |

**c**

Let's say you had to read through the next ten news stories that one of these two shares via social media. If you did not have any additional information than the above, which person would you choose?

Person 1 ☐   Person 2 ☐

**d**

Let's say you had to recommend the next ten news stories from one of these two, so that others you have contact with via social media would see that you shared those stories. If you did not have any additional information than the above, which person would you choose?

Person 1 ☐   Person 2 ☐

**e**

*Between-subject randomization*

| Attributes shown | Question asked | N |
|---|---|---|
| **a.** About the person | **c.** Reading | 667 |
|  | **d.** Sharing | 626 |
| **b.** About the news story | **c.** Reading | 639 |
|  | **d.** Sharing | 632 |
| **a+b** Both the person & story | **c.** Reading | 663 |
|  | **d.** Sharing | 633 |

Respondents N=3860

**f**

| Attribute | Type | Possible values |
|---|---|---|
| Friendship | Person | Met (through work or school); Met (have common friends); Close friends. |
| Gender | Person | Male; Female. |
| Language skills | Person | Writes bad Norwegian; Writes good Norwegian. |
| Knowledge about politics | Person | Little knowledge; A lot of knowledge. |
| Popularity | Person | Few shares the person's posts; Many shares the person's posts. |
| Religous affiliation | Person | No religion; Christianity; Islam. |
| The person's party preference | Person | The Progress Party; The Labout Party; The Conservative Party; The Liberal Party; The Christian Democratic Party; The Center Party; The Green Party; The Socialist Left Party; The Red Party. |
| The news angle of the ten last shared news stories | News story | You mostly disagree with the news angle; You equally agree and disagree with the news angle; You mostly agree with the news angle. |
| The party in the ten last shared mews stories | News story | The Progress Party; The Labout Party; The Conservative Party; The Liberal Party; The Christian Democratic Party; The Center Party; The Green Party; The Socialist Left Party; The Red Party. |
| The topic of the ten last shared news stories | News story | Gay rights; Crime and punishment; Immigration; EU and European politics; The economy, tax policy. |

**Figure 1.** Overview of the Experimental Design.
*Note:* This figure illustrates the experimental design. The box on the left shows a mock-up in English of the experiment as seen by the respondents; **a** shows how information about the recommender was presented, **b** the news story, **c** shows the question wording for reading, **d** sharing, **e** shows how a–d were randomly assigned between subjects, and **f** shows all the possible attributes and attribute values.

We recoded these as either liking (5–7) or disliking (1–3) the party mentioned in the treatment. We coded the party as "neither" if the respondent neither liked nor disliked the party mentioned in the treatment.

## Disentangling Recommender Attributes and News-Story Attributes

The question of how the causal treatment effect of recommender attributes affects those of the news-story attributes is inherently a counterfactual question; that is, the

question concerns not only what is but also what could have been. Choice-based con-joint designs are well-suited to study whether the effects of the included attributes are conditional upon specific attributes and whether the result is conditional on which attributes and treatments are included (Dafoe, Zhang, and Caughey 2018). We follow the approach of Acharya, Blackwell, and Sen (2018) for dealing with the causal effects of randomly including or excluding information. We test the effects of randomly including or excluding recommender attributes on the effects of the news-story attrib-utes. That way, we can test whether the effects of the latter are contingent upon the attributes of the former.

As illustrated in Figure 1(e) (the between-subject randomization process), we inves-tigated the moderation effects of the recommender attributes on selective exposure and selective sharing by splitting the sample into six groups: Respondents were ran-domly assigned to choosing among the recommender attributes only (Figure 1(a)), the news-story attributes only (Figure 1(b)), or both (Figure 1(a,b)). Furthermore, respond-ents were randomly assigned to either a dependent variable of exposure (from whom they would most likely select to *read* endorsed news stories; see Figure 1(c)) or a dependent variable of sharing (whose news stories they would most likely choose to *recommend*; see Figure 1(d)) in a social media setting. Because we wanted to account for the social cost of sharing information on SNSs compared to reading information, we operationalized these decisions as a commitment to read or share the next 10 sto-ries. Thus, our outcome of interest is from which randomly generated profile (i.e., information about news stories, information about the recommender, or both) respondents would commit to either read or recommend information.

This approach has two key advantages that necessarily also create a limitation. First, the design allows us to investigate the treatment effects of a range of different attrib-utes simultaneously, thus taking into account that there is a range of different pieces of information that can shape the likelihood of individuals sharing or reading a news story on SNSs. Second, as the design is split into six groups, in which some respondents ran-domly receive extensive information and others randomly receive limited information, we can explore counterfactual scenarios that again allow us to disentangle and compare the effects of recommender attributes with news-story attributes. While this is key to understanding, comparing, and distinguishing these causal treatment effects, it also cre-ates a less realistic scenario for the respondents. Thus, there is a trade-off between the ability to compare and disentangle causal effects and the ability to strengthen eco-logical validity. That said, because our conjoint experiment includes a total of 10 attrib-utes (in the group receiving all treatments), the decisions we measured also come closer to real-life decision situations than in traditional experiments in terms of available information as the respondents received relatively more information, thus taking into account that news-selection decisions are multidimensional.

## *Analysis*

We measure from which profiles the respondents would and would not prefer to read or share news, and we code the responses as a binary variable: one if the profile was chosen and 0 if not. This choice is our outcome of interest. In the analysis of the

results, we use the statistical approach developed by Hainmueller, Hopkins, and Yamamoto (2014) and estimate the average marginal component effects (AMCE). In the present study, the AMCE shows the average difference in the probability of a profile being selected. Each component in the profiles represents attributes with different levels that are compared to a different attribute level within the same attribute. That way, we can assess if one attribute level is more or less important for the respondents' selection decisions.

In order to measure moderation effects as well as differences between sharing and exposure decisions, we calculate the difference in the AMCE (contrasting the effect of one attribute with the effect of the same attribute under another condition). For instance, we regard recommender attributes as moderating the effects of news-story attributes if the effect of these attributes is statistically significantly higher or lower when respondents also received information about the recommender vs. information about the news story.

## Results

In this section, we present the results from the conjoint experiment. We do so in two parts. First, we present the differences between the treatment effects of sharing and of reading shared news as dependent variables. Second, we present the treatment effects of reading and sharing information and assess the moderation effect of recommender attributes on the news-story attributes.

### Differences between Reading and Sharing News on SNSs

We start by addressing whether, on SNSs, the likelihood of committing to sharing recommended news stories and that of committing to reading them differ. Figures 2 and 3 compare the effects of the likelihood of reading and sharing information when respondents are either only given information about the recommender (Figure 3) or only information about the shared news stories (Figure 2). For all figures presented in this article, dots indicate point estimates, bars illustrate 95% confidence intervals, and dots without bars are reference categories. All figures are presented in table format in the Appendix (Supplementary material).
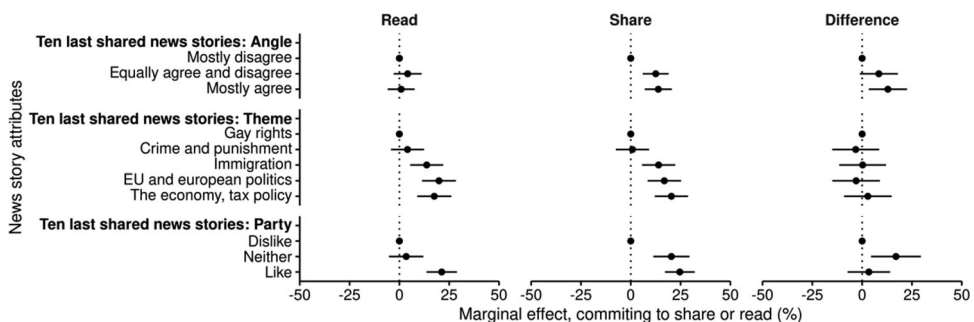


**Figure 2.** Comparing effects (AMCE) of attributes (news-story attributes) on probability to read vs. probability to share.
*Note:* The dots represent the point estimates, and the bars show 95 percent confidence intervals.
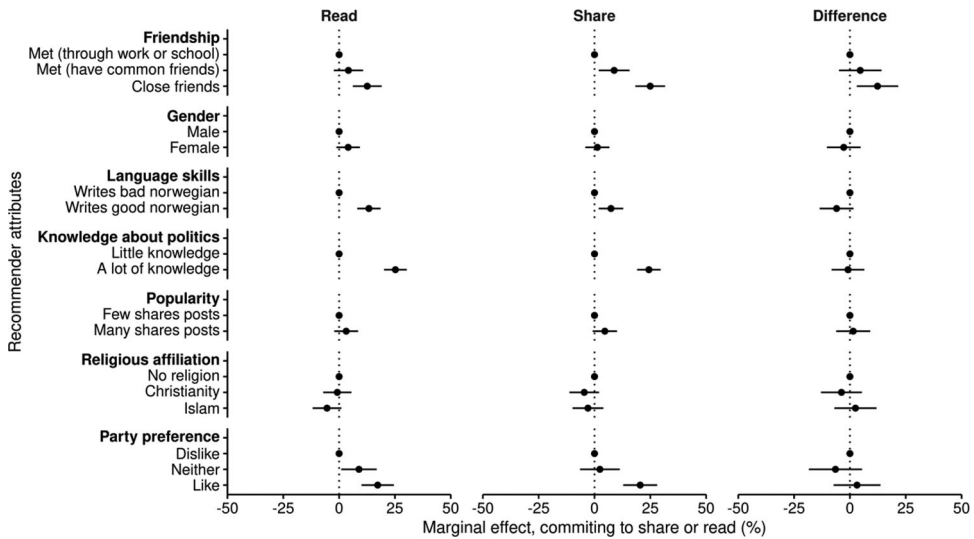
**Figure 3.** Comparing effects (AMCE) of attributes (recommender attributes) on probability to read vs. probability to share.
*Note:* The dots represent the point estimates, and the bars show 95 percent confidence intervals.

Starting with the group of respondents who only received information about the shared news stories (Figure 2), we observe statistically significant treatment effects of message alignment for sharing but not for reading recommended news stories. The respondents were 14 percentage points more likely to share news stories if they mostly agreed with the news angle. Addressing the research question on differences between sharing and reading (RQ1), we observe that the likelihood of sharing like-minded news stories is 13 percentage points higher than that of reading like-minded news stories; this difference is statistically significant. In terms of party favorability, Figure 2 shows that respondents were 21 percentage points more likely to prefer a news story featuring a party they liked. This effect was similar (25 percentage points) for sharing decisions, and the difference between recommending and reading a news story was not statistically significantly different (RQ2). The only noteworthy and statistically significant difference between reading and sharing a news story based on party favorability attributes was that respondents were more likely to share (20 percentage points), but not to read (three percentage points) about a party they neither liked nor disliked. It is also important to note that respondents were less likely to both read and share a news story if the themes were gay rights or crime and punishment and more likely if the themes were immigration, European politics, or the economy. This indicates that while message alignment and party favorability are important attributes for reading and sharing news, the themes of the news stories are just as important.

Turning to the group that only received information about the recommender attributes, we observe that the effects of the recommender are strikingly similar for reading and sharing the news stories. For both decisions, tie strength, the recommender's language skills, political knowledge, and political similarity in terms of party preference are crucial for committing to reading or recommending future news stories from that

person. For instance, respondents are 25 percentage points more likely to read and 24 percentage points more likely to share news content from a politically knowledgeable recommender. Interestingly, we find no statistically significant main effects of the recommender's popularity on social media, gender, or religious affiliation. In terms of the popularity of the recommender, this means that we find no indications of a bandwagon effect, in which respondents are more likely to share or read content when others on SNSs also tend to share the recommender's recommended content.

When comparing the two decisions, we observe that for recommender attributes, the only statistically significantly different treatment effects on the two dependent variables are for tie-strength (RQ3). Close friends, compared to recommenders they have met through work or school, are more important for the decision to share (25 percentage points) than to read (13 percentage points) the news stories (a 12 percentage-point difference). In sum, we find few indications of stark differences between reading and sharing decisions, with attitude-alignment and tie-strength being two important exceptions.

## Disentangling the Effects of Recommender Attributes

To address RQ7 and RQ8, we start by assessing whether the likelihood of committing to share news stories on SNSs featuring a party one favors vs. disfavors is contingent upon whether or not one also receives information about recommender attributes. Figure 4 shows the AMCE when respondents were only given information about the shared story, the AMCE when respondents received both information about the shared story and the recommender, and the difference in the AMCEs between the two groups. Starting with the group that only received information about the news stories, we observe a 25-percentage-point negative effect of disliking the party mentioned in the news stories. Similarly, we observe that respondents who only receive information about the recommender attributes are 20 percentage points less likely to share news articles from a recommender who supports a party the respondent dislikes. In the condition where respondents receive both of these treatments, however, the effect of the party in the news story disappears (reduced by 18 percentage points), while the effect of the recommender's party preference is still present. This means that the party
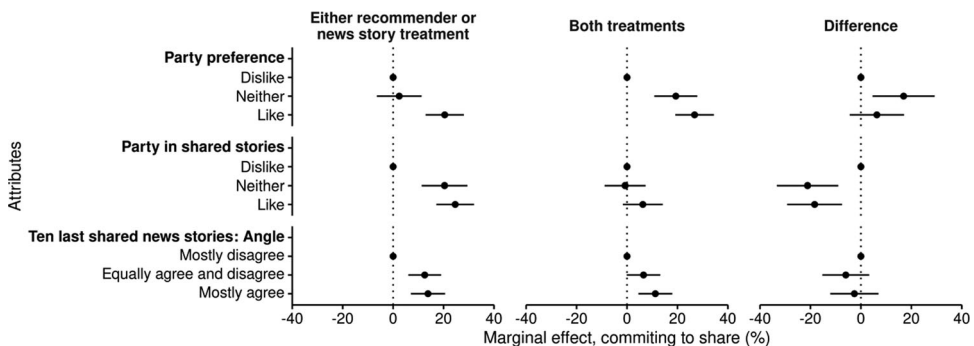


**Figure 4.** Moderation effects (conditional AMCEs) of attributes on profile selection (probability to share).
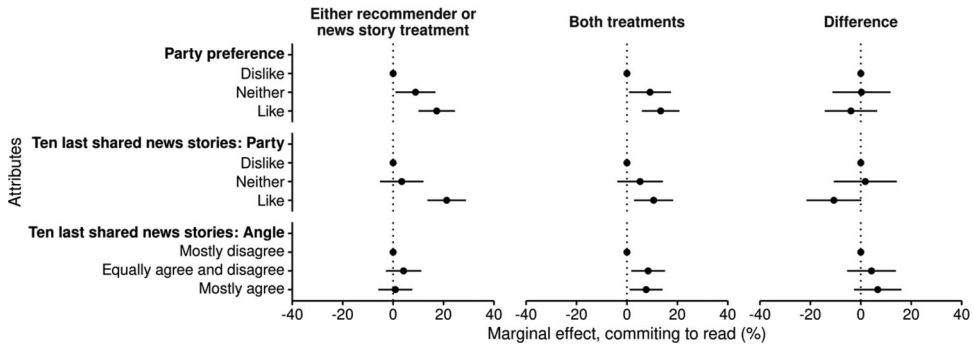*Note:* The dots represent the point estimates, and the bars show 95 percent confidence intervals.

**Figure 5.** Moderation effects (conditional AMCEs) of attributes on profile selection (probability to read).
*Note:* The dots represent the point estimates, and the bars show 95 percent confidence intervals.

favorability effect provided by the recommender overrides the party favorability effect provided by the news story.

Figure 4 also shows the treatment effects of agreeing with the shared news stories' news angle. We observe that people are less likely to share information with which they mostly disagree rather than with which they equally agree and disagree or mostly agree. This effect is not changed by respondents also receiving information about the recommender.

Figure 5 shows the exact same treatment effects as displayed in Figure 4 but for the likelihood of reading the shared information. Here, we see an effect of party favorability of both the recommender and the story. However, in contrast to the news-sharing decision, the effect of party favorability of the story is not dependent on the effects of the party favorability of the recommender. This indicates that for the reading decision, the party favorability attributes of the story and the recommender yield additive effects as they are not changed by receiving information solely about the story, solely about the recommender, or about both. That said, the change in effect of party favorability follows the same patterns as for the sharing decisions; however, the difference (11 percentage points) is not statistically significant (as indicated by the difference plot to the right in Figure 5).

Turning to the effect of reading news stories with which one mostly disagrees, we observe only a small but statistically significant effect of favoring like-minded news stories or a diet of equally like-minded and cross-cutting stories over exclusively cross-cutting stories, under conditions of receiving information about both the news story and the recommender. This effect is, however, not contingent upon receiving information about the recommender as the difference between the two conditions is not statistically significant (as indicated by the difference plot to the right in Figure 5).

## Discussion

This study extends the literature on selective exposure and sharing on SNSs by demonstrating how different news-story and recommender attributes influence reading and sharing decisions and how these two decision types differ with regard to these

attributes. Furthermore, we disentangle the treatment effects of personal news recommendations from the treatment effects of shared content on SNSs.

Our findings suggest that individuals are more likely to both read and share content they agree with, that features a party they favor, and that is recommended by a close friend who has language skills, is politically knowledgeable, and prefers a party they favor. Because our design allows us to compare the relative importance of different attributes for respondents' exposure and sharing decisions, we also show that the importance of the strength of the friendship tie, the political knowledge of the friend, and party agreement between the friend and the respondent are statistically indistinguishable. Importantly, these findings suggest that readers' decisions are not driven by one particularly strong attribute, such as party favorability, but by several equally strong attributes simultaneously. In other words, sharing and exposure decisions are complex and multidimensional decisions that incorporate several pieces of information that prior studies typically have studied in isolation.

An important contribution of this study is that it suggests that the commitment to read and to share news are two similar yet distinct phenomena. In terms of similarity, we find that for seven out of ten attributes, there were no statistically significant differences between the decision to read or share news. For all attributes, reading and sharing decisions also followed the same pattern. In terms of differences, we find that the effects of attitude alignment on *selective sharing* were more pronounced than on *selective exposure*. This means that attitude-consistent stories, rather than attitude-inconsistent stories, were more likely to be shared than read. This result extends the theory on selective sharing by suggesting that the key difference between selective sharing and exposure is that the former represents a stronger commitment than the latter. We also extend our theoretical understanding of how recommender attributes shape the decision to share versus read news as we found evidence to suggest that tie-strength between the recommender and the respondent was a more important attribute for sharing than for reading news. These results are in line with prior studies that argue that the act of sharing information—understood as openly recommending information on SNSs—comes with a greater social cost than reading information as other people will be able to view what you share but not what you read (Bigman et al. 2019; Liang 2018; Coppini et al. 2017).

A second key contribution of this study is that it demonstrates the importance of disentangling the effects of the recommender from the effects of the news story. On SNSs, social endorsements from other humans can serve as important information to users in terms of which news deserves their attention (Messing and Westwood 2014; Anspach 2017). Our study extends prior knowledge on social endorsements by providing evidence to suggest that while both shared content and the person who shares it on SNSs are important for people's sharing decisions, selective sharing based on party favorability seems to be contingent upon knowing the party preference of the recommender. Because our design allowed us to analytically disentangle and compare the effects of knowing the recommender's party preference, we were able to detect that the effects of party favorability on sharing decisions were contingent upon whether the respondents exclusively received information about the news story or if they also received information about the person who shared it. If we had solely studied news-

story attributes, recommender attributes, or both (but only in combination), we would not have been able to reveal this masking effect. The replication of this moderation effect of knowing the recommender's party preference in future studies would suggest that agreeing politically with the recommender is more important for sharing decisions than agreeing politically with the shared news stories. Thus, this finding is in line with and extends prior findings that have indicated that social endorsements can moderate news selection decisions on SNSs (Messing and Westwood 2014). That said, for selective exposure decisions, we found a similar, yet not statistically significant, pattern. This difference in moderation effect between sharing and reading decisions further suggests that sharing and exposure decisions are similar yet distinct in terms of their causes and conceptualizations (Liang 2018).

This study suggests that not only political and attitudinal agreement but also political agreement between the message and the receiver are important for exposure and sharing decisions. These findings also contribute to the debate on the extent to which social media is beneficial for political diversity and deliberative democracy. Although Sunstein's (2018) warnings of "echo chambers" on social media have yet to find strong empirical support (see, e.g., Dubois and Blank 2018), our findings do suggest that people are more likely to spread politically and attitudinally agreeable content from politically agreeable friends and acquaintances on SNSs. While this may not lead to "echo chambers," it may lead to ideologically skewed news feeds.

It is also important to address the key limitations inherent in the present study. Although the paired, choice-based, conjoint design has been validated to outperform other experimental designs in terms of external validity (Hainmueller, Hangartner, and Yamamoto 2015) and the inclusion of several attributes comes closer to choices that individuals face in the real world (Hainmueller, Hopkins, and Yamamoto 2014; Knudsen and Johannesson 2019), our approach is still not entirely realistic in terms of simulating a situation in which people make news-selection decisions. While our study illuminates how individuals behave in counterfactual scenarios, it does not capture the same context in which people's day-to-day exposure and sharing decisions are made. For instance, it is quite likely that several of our respondents would indeed not have read or shared any of the content we presented them with outside of the experimentally controlled environment. While that is outside the scope of this study, as we remain interested in counterfactual scenarios that allow us to explore how people behave in conditions where we can isolate and compare the effects of recommender attributes and news-story attributes, it is important to note that our results should not be interpreted as a description of how people behave or how likely people are to read or share information on SNSs. It is thus also possible that while the relative effects are likely to hold (i.e., the relative differences in effect sizes between the treatments), the actual size of the effects of the factors presented here plays out differently outside of our experimentally controlled choice environment. On that note, it is also important to mention that our operationalization of sharing decisions as recommending news does not cover all the motivations users have for sharing a news article on SNSs. Thus, our results can only speak to the act of recommending news through news sharing, not news sharing in general.

Our decision to use a typical choice-based design, presenting respondents with a table of randomized information rather than, for instance, stimulus material that mimics

the look of the SNS setting, such as the Facebook layout, also points to weaknesses in the external validity of our design. While using a more realistic design (e.g., a mock-up of the Facebook design with actual Facebook friends as in Turcotte et al. 2015) would improve the external validity of our study, it would, however, make it harder to isolate and estimate the effects of our selected attributes. Because real-world contacts on Facebook differ in numerous ways for which we cannot account, it would potentially introduce unwanted masking effects and hinder our ability to put forward a causal argument for each recommender attribute (Dafoe, Zhang, and Caughey 2018). There is a trade-off between increasing external validity and identifying causal effects without running into problems of masking effects of other, unmeasured, attributes (Knudsen and Johannesson 2019). In this study, it was important that each attribute have an equal chance to be presented to the respondents in a structured way, with equal salience, to rule out that unmeasured attributes influenced respondents' decision.

In addition, it is important to mention that while we, in this article, seek to explore and describe exposure and sharing behavior on SNSs more broadly rather than by limiting such selection behavior to one specific SNS, our study describes a situation that is closer to the opportunity structures provided by Facebook rather than, for instance, Twitter. This is important as different SNSs have different digital architectures that, again, can produce different effects on the outcome for which our design cannot account (Bossetta 2018).

Nevertheless, the results of this study have implications for how we understand the role of recommender attributes and the role of news-story attributes on SNSs, such as Facebook. The finding that there are few, yet distinct, differences between the attributes that shape sharing and exposure behavior contributes to the growing literature on selective sharing (Bigman et al. 2019; Shin and Thorson 2017; Arendt, Steindl, and Kümpel 2016) and indicates that selective exposure and selective sharing are related but distinct phenomena. These are important nuances because although the underlying assumed mechanism may differ, they are, seemingly, to a large extent, influenced by the same attributes, although, in some cases, to a different extent. Future studies should explore such distinctions between reading and sharing decisions further. We especially encourage future research that can explore the underlying mechanisms of the two decisions. The finding that the importance of party favorability as a news-story attribute was overridden by the importance of party favorability as a recommender attribute has potential implications for how we understand the role of recommender attributes in selective exposure and sharing research. The insights provided by this study particularly shed light on the role played by recommenders and their identity for selective exposure and sharing decisions on SNSs. The moderating role of the recommenders on news sharing merits further emphasis in future research on news-sharing and exposure decisions on SNSs. Political communication and journalism scholars should continue to address the relationship between recommender and news-story attributes through other measures and methods and across different platforms.

## Disclosure Statement

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